

SOURCES OF DATA

Death and fetal-death statistics

Mortality statistics for 1979 are again, as for all previous years except 1972, based on information from all death records received by the National Center for Health Statistics (NCHS). The records are furnished by all the States, the District of Columbia, and the independent registration area of New York City. As a result of personnel and budgetary restrictions, mortality statistics for 1972 were based on information obtained from a 50-percent sample of death records instead of from all records. Fetal-death statistics for all years are based upon 100 percent of the records.

Although the United States vital statistics system covers the 50 States, the District of Columbia, Puerto Rico, the Virgin Islands, and Guam, in this report the term *United States* refers only to the aggregate of the 50 States (including New York City) and the District of Columbia.

Death statistics for Puerto Rico, the Virgin Islands, and Guam were not included for 1972 but are included in section 8 of the reports for each of the years 1973-78 and in section 9 for 1979. The Virgin Islands was admitted to the "registration area" for deaths in 1924; Puerto Rico, in 1932; and Guam, in 1970. Tabulations for Puerto Rico and the Virgin Islands have been regularly shown in the annual volumes from the year of their admission through 1971 except for the years 1967 through 1969. Tabulations for Guam have been included for 1970 and 1971. Information for 1972 for these three areas is 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.

Another change from procedures for prior years, begun for 1971 and continued for 1972 through 1979, is that tabulations of deaths are based on information from two sources. Before 1971, tabulations of deaths and fetal deaths were based solely on information obtained from copies of the original certificates. The information from these copies was edited, classified, and tabulated. For 1960 and for each year thereafter through 1970, all mortality information taken from these records has been 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 use of State-coded demographic data was begun is shown below for New York City, Puerto Rico, and each of the 42 States now furnishing demographic data.

1971

Florida

1972

Maine
Missouri
New Hampshire

Rhode Island
Vermont

1973

Colorado
Michigan

New York (except
New York City)

1974

Illinois
Iowa
Kansas
Montana

Nebraska
Oregon
South Carolina

1975

Louisiana
Maryland
North Carolina
Oklahoma

Tennessee
Virginia
Wisconsin

1976

Alabama
Kentucky
Minnesota

Nevada
Texas
West Virginia

1977

Alaska
Idaho
Massachusetts

New York City
Ohio
Puerto Rico

1978

Indiana
Utah

Washington

1979

Connecticut
Hawaii
Mississippi

New Jersey
Pennsylvania
Wyoming

For the remaining eight States, the District of Columbia, the Virgin Islands, and Guam, mortality

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statistics for 1975 are based on information obtained directly from copies of the original certificates received from the registration offices.

Medical data, coded by the States according to NCHS specifications, have been used by NCHS since 1974 for two States (Iowa and Michigan); and since 1975 for five additional States (Louisiana, Nebraska, North Carolina, Virginia, and Wisconsin).

Fetal-death data are obtained directly from copies of original reports of fetal deaths received by NCHS.

Standard certificates and reports

The standard certificate of death and the 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 the documents used to collect information on these events. They have been modified in each State to the extent necessitated 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 Standard Certificate of Death appeared shortly before the formation of the registration area. 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 statis-

FIGURE 7-A.

(PHYSICIAN, MEDICAL EXAMINER OR CORONER)
US STANDARD
CERTIFICATE OF DEATH

Form Approved
OMB No. 428-1901

STATE FILE NUMBER

DECEDENT-NAME FIRST MIDDLE LAST			SEX	DATE OF DEATH (Mo Day Yr)
RACE (Indicate Hispanic or Latin American race last) SEX (M or F)			DATE OF BIRTH (Mo Day Yr)	COUNTY OF DEATH
CITY, TOWN OR LOCATION OF DEATH			HOSPITAL OR OTHER INSTITUTION (Note: If not in either, give street and number)	IF HOME OR RST (Indicate DOA, CP, Enter Res., Hospice, Nursing)
STATE OF DEATH	CITY OR TOWNSHIP OF DEATH	MARRIED NEVER MARRIED WIDOWED DIVORCED (Specify)	SURVIVING SPOUSE (If male, give maiden name)	
SOCIAL SECURITY NUMBER	USUAL OCCUPATION (Last held if within 6 months of death; if none, state if retired)	KIND OF BUSINESS OR INDUSTRY		
RESIDENCE STATE	CITY, TOWN OR LOCATION	STREET AND NUMBER		INSIDE CITY LIMITS (Specify City or Town)
MOTHER, MAIDEN NAME FIRST MIDDLE LAST			CITY OR TOWN STATE ZIP	
BIRTHAL CREMATION REMOVAL OTHER (Specify)			CEMETERY OR CREMATORY - NAME	LOCATION CITY OR TOWN STATE
FUNERAL SERVICE CEMETERY OR OTHER (Specify)			NAME OF FACILITY	ADDRESS OF FACILITY
DATE SIGNED (Mo Day Yr)		HOUR OF DEATH	DATE SIGNED (Mo Day Yr)	
NAME OF ATTENDING PHYSICIAN IF OTHER THAN CERTIFIER (Specify)			DATE SIGNED (Mo Day Yr)	
NAME AND ADDRESS OF CERTIFIER (PHYSICIAN, MEDICAL EXAMINER OR CORONER) (Specify)			DATE SIGNED (Mo Day Yr)	
REGISTRAR			DATE RECEIVED BY REGISTRAR (Mo Day Yr)	
IMMEDIATE CAUSE (IF FOR ONLY ONE CAUSE PER LINE FOR 1a, 1b, AND 1c)				
DUE TO OR AS A CONSEQUENCE OF				
DUE TO OR AS A CONSEQUENCE OF				
OTHER (Specify cause(s) (Specify contributing factors) (Specify related to cause given in PART 1a)				
AUTOPSY (Specify Yes or No)		WAS CASE REFERRED TO MEDICAL EXAMINER OR CORONER (Specify Yes or No)		
DATE OF INJURY (Mo Day Yr)		HOUR OF INJURY	DESCRIBE HOW INJURY OCCURRED	
PLACE OF INJURY (At home, farm, street, factory, office, building)		LOCATION	STREET OR R. F. D. NO. CITY OR TOWN STATE	

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tics; 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 registration, identification, legal, medical, 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 standard certificate of death and report of fetal death were recommended for State use beginning January 1, 1978. The Standard Certificate of Death and 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 either a physician or a medical examiner or a coroner. Two other forms of

the 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 while the other is designed for the medical examiner's or coroner's signature.

Among the changes in the new revision is 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?" which was previously on the certificate but was deleted during 1968-77. 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 included

FIGURE 7-B.

Form Approved
OMB No. 68R 1901

U.S. STANDARD
REPORT OF FETAL DEATH

STATE FILE NUMBER

TYPE OF PRINT OR PERMANENT INK TO BE USED HANDBOOK FOR INSTRUCTIONS	1. HOSPITAL NAME (If not in hospital give street and number)			2. CITY, TOWN, OR LOCATION OF DELIVERY			3. COUNTY OF DELIVERY		
	4. DATE OF DELIVERY (Month Day Year)			5. HOUR OF DELIVERY			6. SEX OF FETUS		
MOTHER	7. MOTHER - MAIDEN NAME (First Middle Last)			8. RACE (Specify if American Indian or Alaskan Natives)			9. RESIDENCE (State County)		
	10. CITY, TOWN, OR LOCATION			11. STREET AND HOUSE NUMBER			12. EDUCATION (Specify if American Indian or Alaskan Natives)		
	13. RACE (Specify if American Indian or Alaskan Natives)			14. EDUCATION (Specify if American Indian or Alaskan Natives)			15. DATE LAST IN SCHOOL (Month Day Year)		
FATHER	16. MONTH OF PREGNANCY PRENATAL CARE BEGAN (First Second or Third Trimester)			17. PRENATAL VISITS (Total number)			18. THIS BIRTH (Single or Multiple Birth)		
	19. FATHER'S NAME (First Middle Last)			20. RACE (Specify if American Indian or Alaskan Natives)			21. EDUCATION (Specify if American Indian or Alaskan Natives)		
CAUSE OF FETAL DEATH	22. PART I (Enter only one cause per line for 14, 15, and 16)			23. IMMEDIATE CAUSE			24. SPECIFIC FETAL DEATH		
	25. DUE TO OR AS A CONSEQUENCE OF			26. DUE TO OR AS A CONSEQUENCE OF			27. DUE TO OR AS A CONSEQUENCE OF		
	28. PART II (Other significant conditions of fetus or mother - conditions contributing to fetal death but not related to cause given in I)			29. FETUS DIED BEFORE LABOR DURING LABOR OR DELIVERY UNKNOWN			30. PHYSICIAN'S ESTIMATE OF GESTATION		
	31. MULTIPLE BIRTHS (Specify if monozygotic or dizygotic)			32. COMPLICATIONS OF PREGNANCY			33. COMPLICATIONS OF LABOR AND OF DELIVERY		
FETAL DEATHS	34. CONCURRENT ILLNESSES OR CONDITIONS AFFECTING THE PREGNANCY			35. CONCURRENT ILLNESSES OR CONDITIONS AFFECTING THE PREGNANCY			36. CONCURRENT ILLNESSES OR CONDITIONS AFFECTING THE PREGNANCY		
	37. NAME OF PHYSICIAN OR ATTENDANT (Type name)			38. NAME OF PERSON COMPLETING REPORT (Type name)			39. TITLE		
40. SIGNATURE OF PHYSICIAN OR ATTENDANT			41. SIGNATURE OF PERSON COMPLETING REPORT			42. SIGNATURE OF PERSON COMPLETING REPORT			

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the entire United States. These statistics were based on information collected during the decennial census of that year. Similar decennial collections were made by census enumerators at each census up to and including the census of 1900, but because of the time interval between the occurrence of a death and census enumeration, these reports were inaccurate and incomplete.

In 1880 the U.S. Bureau of the Census established a national "registration area" for deaths. This original area consisted of two States—Massachusetts and New Jersey—the District of Columbia, and several large cities having efficient systems for death registrations. By 1900, eight other States had been admitted to the death-registration area. For 1880, 1890, and 1900, mortality data were received from the States and cities included in this expanding area, but the figures for the entire country were still compiled from the reports of census enumerators.

Beginning with 1900, mortality statistics were collected annually for the death-registration area. In 1902 the U.S. Bureau of the Census, which had previously functioned only in census years, was made a permanent agency by an act of Congress. This act authorized the Director of the U.S. Bureau of the Census to obtain annually copies of records filed in the vital statistics offices of States and cities having adequate death-registration systems. At that time not all States had enacted laws requiring death registrations, and in many States the existing laws were poorly enforced. The growth of the registration area is indicated in table 7-1.

The death-registration area for 1900 consisted of 10 States, the District of Columbia, and a number of cities located in nonregistration States. In 1900 the registration area included 40.5 percent of the population of the continental United States. The original registration area was predominantly urban and was characterized by a high proportion of white persons. If the reporting cities located in nonregistration States are excluded, the population coverage of the death-registration States is much lower, only 26.2 percent of the total population of the United States.

Statistics of fetal deaths (the term "stillbirth" was used for many years) were first published for the birth-registration area in 1918. However, they were not included in the reports issued for the succeeding 3 years. Beginning with 1922, statistics of fetal deaths have been published each year for the birth-registration area.

Table 7-1 presents for each year through 1932 the estimated midyear population of the United States and the estimated midyear population of the birth- and death-registration States. Both registration areas included the entire United States for the first time in 1933.

Before 1940 most of the national mortality

tabulations published by the U.S. Bureau of the Census were based on data collected from the registration areas. However, beginning with 1940 all published material given in statistical series for the United States before the death-registration area was completed omits data for registration cities located in nonregistration States and includes only statistics for the registration States. This change decreases the mortality statistics coverage of the United States by excluding cities in nonregistration States, but it has advantages in that more reliable population estimates are available for the registration States than for smaller registration areas.

Rates for the expanding group of death-registration States are approximations of rates for the entire Nation, and general comparisons over a long period of time can be made. More exact trends for parts of the United States can be secured by using some constant area such as the original registration States or the registration States in 1920.

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, race, and sex, have been similarly classified and tabulated, differences between the enumeration method of obtaining population data and the registration method of 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}

Following is a discussion of the classification of certain important items.

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" refer 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 possessions 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 both deaths of residents and nonresidents of the United States. Consequently, for each year during 1970-79, the total number of deaths in the United States by place of occurrence is somewhat greater than the total by place of residence. For 1979 this difference amounts to 2,935 deaths.

Mortality statistics by place of occurrence are shown in tables 1-10, 1-18, 1-19, 1-28, 1-29, 1-30, 3-1, 3-8, 8-1, and 8-7.

Before 1970, except for 1964 and 1965, deaths of nonresidents of the United States occurring in the United States have been 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 show 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 shows that considerable improvement in the quality of residence data had taken place since 1950. The results were the same—an overstatement of events in urban areas by NCHS compared 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. Two factors contribute to this difference in magnitude. The first factor is an item that was added to the Standard Certificate of Death in 1956, asking if residence is inside or outside city limits. This new item aided in properly allocating the residence of persons living near cities but outside the corporate limits. The second factor is that there is more likelihood of movement for hospital utilization for births than for deaths.

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.

*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

Standard metropolitan statistical areas.—Except in the New England States, a standard metropolitan

statistical area (SMSA) is a county or a group of contiguous counties containing at least one city of 50,000 inhabitants or more, or "twin cities" with a combined population of at least 50,000 in the 1970 census. In addition to the county or counties containing such a city or cities, contiguous counties are included in an SMSA if, according to specified criteria, they are essentially metropolitan in character and are socially and economically integrated with the central city or cities.⁶

In New England 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 use the SMSA classification for these States because its data are not coded to identify all towns. Instead, NCHS uses the metropolitan State economic area (MSEA) made up of county units, as established by the U.S. Bureau of the Census.⁷

For tables 8-4 and 8-8 in this report, the SMSA's and their component counties are those established by the U.S. Office of Management and Budget as of 1970 (except in the New England States) and used by the U.S. Bureau of the Census.

Tables 1-17 and 2-9, however, are limited to the 50 largest SMSA's and MSEA's (in the New England States), established by the Office of Federal Statistical Policy and Standards for 1979. These 50 largest units for 1979 are the same as those for 1978.

The list of 50 largest units for 1979 differs from the list for 1970. Moreover, the county components for some of the SMSA's and MSEA's that appear on both lists are different for 1979 from the components for 1970.

As a result, sometimes the number of deaths shown for the same-named SMSA or MSEA in tables 8-4 and 8-8 based on units established for 1970 will differ from the number of deaths shown in tables 1-17 and 2-9 based on units established for 1979.

Standard consolidated areas.—For the metropolitan complexes around New York and Chicago, several contiguous SMSA's and additional counties that do not appear to meet the formal integration criteria for SMSA's, but do have strong interrelationships of other kinds have been combined into the New York-Northeastern New Jersey and the Chicago-Northwestern Indiana Standard Consolidated Areas.⁶

Metropolitan and nonmetropolitan counties.—Counties included in SMSA's or in New England MSEA's for 1970 are called metropolitan counties; all other counties are classified as nonmetropolitan.

Population-size groups (formerly "urban" and "rural" areas).—Vital statistics data for cities and certain other urban places in 1979 are classified according to the population enumerated in the 1970 Census of Population. In this report "Population-size groups" refer to two groups, "Urban places" and

"Balance of area." "Urban places" consist of the following places:

1. Each incorporated city and other urban places of 10,000 inhabitants or more.
2. Each town in New England and each township in 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 1,500 persons or more per square mile.
3. Each county in States other than the New England States, New Jersey, and Pennsylvania that had no incorporated municipality within its boundary and had a density of 1,500 persons or more per square mile. (Arlington County, Virginia, is the only county classified as urban under this rule.)

"Balance of area" consists of all other places.

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) are published in 1979. State or country of birth of a decedent is assigned to 1 of 50 States or the District of Columbia; or to the territorial possessions of 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 1979, about 0.5 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. The 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 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 1979, deaths are classified by race—white, black, Indian, Chinese, Japanese, Filipino, other Asian or Pacific Islander, and other races. This is the first time mortality data for Filipino and other Asian or Pacific Islander have appeared in this report.

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 for the period 1969-79. 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 extended 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 1979 the number of death records for which the race was not stated was 1,311, or 0.1 percent of the total deaths. Death records with race entry not stated were assigned to a racial designation as follows: If the preceding record were 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 or color 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 1962-64 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) are published in this report for the first time since 1961. Previously they had been published in the annual reports for the years 1949-51 and 1959-61. Several reports specifically analyzing mortality by marital status have been published including the special study based on 1959-61 data.⁸ Reference to earlier reports may be found in the appendix of part B of this special study.

Mortality statistics by marital status are tabulated separately for never married, married, widowed, and divorced. Certificates in which the marriage was specified as being annulled are classified as never married. Where marital status was specified as separated or common-law marriage, it was classified as married. Of the 1,848,270 resident deaths 15 years of age and over, 8,383 (0.5 percent) certificates had marital status not stated.

Place of death and status of decedent

For the first time since 1958, mortality data for 1979 are shown by place of death (tables 1-28 and 1-29). In addition, mortality data are shown for the first time 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 the 42 States in the Vital Statistics Cooperative Program (VSCP), NCHS accepts the State definition, classification, or codes for hospitals, medical centers, or other institutions. For the remaining eight States and the District of Columbia not in the VSCP, 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, then the entry is coded appropriately to one of the following: (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 39 States that have item 7d or its equivalent on their death certificates:

Alaska	New Hampshire
Arizona	New Jersey
Arkansas	New Mexico
Colorado	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
Maine	Utah
Michigan	Vermont
Mississippi	Virginia
Missouri	West Virginia
Montana	Wisconsin
Nebraska	Wyoming
Nevada	

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 1979, deaths by month are shown in this report in tables 1-19, 1-20, 1-23, 1-30, 2-11, 2-12, 2-13, and 3-9.

The year 1972 was the first data year for which date of death was published (table 1-30). Unpublished data for selected causes by date of death for 1962 are available in NCHS.

Number of deaths by date of death in this report are shown for 1979 for the total number of deaths and for the number of deaths for the following three causes, for which the greatest general interest in date of occurrence of death has been expressed: Motor vehicle accidents, Suicide, and Homicide and legal intervention.

These data in table 1-30 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 year 1958 was the last year for which autopsy data were tabulated. For 1972-79 all registration areas requested information on the death certificate as to whether autopsies were performed.

For 1979 autopsies were reported on 294,182 death certificates (15.4 percent of the total, table 1-26).

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

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

There were eight other categories for which 40 percent or more death certificates reported autopsies. Autopsies were reported for 9.4 percent of the Major cardiovascular diseases. Among all causes other than the major cardiovascular group, autopsies were reported for 21.3 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."⁹ 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 guide the coder in 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, which is conceptually easy to understand, and is 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 chain of events leading to death from starting. The rules for coding underlying causes of death are included with the ICD as a means of stand-

ardizing 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 in accordance with the 1975 *Revision of the International Classification of Diseases* (ICD-9).⁹ In addition to specifying that the Classification be used, WHO—in an effort to promote international comparability—recommended a basic list for tabulation of mortality data. This is in contrast to the several special lists recommended by WHO for use under the Eighth Revision. The system recommended under the Ninth Revision is more flexible, allowing for the construction of tabulation lists from the rubrics of a basic list. The recommended Basic Tabulation List (BTL) 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 non-violent deaths to ICD categories 001-799. Rubrics relating to chapter 17 (nature-of-injury causes 47 through 56) are not used by NCHS; 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 cause lists have been developed for tabulation and publication of mortality data by NCHS: The Each-Cause List, List of 282 Selected Causes, List of 72 Selected Causes, List of 61 Selected Causes of Infant Death, and the 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, in several instances, comparability could not 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). An unpublished each-cause table includes these subcategories. Special fifth-digit subcategories are

also used in the accident section to identify place of accident when deaths from nontransport accidents are shown. 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 decennial list revisions.—The International Lists, in use in this country since 1900, have been revised decennially so that the disease classification may be consistent with advances in medical science and with changes in diagnostic practice. Each decennial revision of the International Lists has produced some break in comparability of cause-of-death statistics. For the first five revisions the continuity in the mortality trends is not considered a problem of great concern. Van Buren described some of the major shifts in the cause-of-death statistics up to the Fifth Revision (1938) due to changes in the classification of causes of death.¹⁰ Dunn and Shackley measured the change in mortality statistics by cause due to the Fifth Revision.¹¹

This was done by coding mortality records for 1940 by the 1929 and 1938 revisions. The results of the study have been useful in evaluating the effects of the Fifth Revision and changes in the joint-cause selection procedure.

Sixth Revision.—The Sixth Revision of the International Lists of Diseases and Causes of Death was adopted by the World Health Organization in July 1948 and used for mortality data in the United States from 1949 through 1957. This revision represented a more sweeping change than any previous revision.

The classification scheme was expanded considerably to provide specific categories for nonfatal diseases and injuries to provide a classification which could be used for coding morbidity as well as mortality records.

In addition to the expanded scope of the Sixth Revision of the International Classification, there was a major change in the method of selection of the cause of death for primary tabulation. A large proportion of death certificates filed annually in the United States reports two or more diseases or conditions as causes of death. General statistical practice requires that cases involving more than one cause of death be assigned to a single cause, making it necessary to select the one cause to which the death will be assigned. The method of selection has an important effect upon the resulting statistics.

In 1948 the World Health Assembly adopted, along with the Sixth Revision of the International Lists, a form of medical certification and rules for classification of the underlying cause of death for international use. The form of medical certification in the Standard Certificate of Death is shown in figure 7-A. It is designed to facilitate the selection of the underlying cause of death when two or more causes are recorded. In general, if the certification is completed properly, the underlying cause of death entered by the physician is the cause to be tabulated. This procedure, used in the United States beginning with deaths in 1949, differs markedly from that used in previous years. Formerly, definite priority relationships were set up for combinations of causes reported on the death certificate. The single cause to be tabulated was chosen according to these fixed rules.

Comparability between the Sixth and Fifth Revisions.—To maintain a time series of mortality rates for comparable causes, the International Conference for the Sixth Revision of the International Lists recommended that deaths for a country as a whole in 1949 and 1950 be coded according to both the Sixth and Fifth Revisions. In the United States, 1950 mortality data were used for the dual coding. The differences resulting from the use of the two revisions are expressed by a factor termed the comparability ratio. This is the number of deaths assigned to a particular cause under the Sixth Revision divided by the number of deaths assigned to that cause using the Fifth Revision.^{12,13}

Seventh Revision.—Changes in the Seventh Revision were held to a minimum because of the relatively short experience with the Sixth Revision. In compliance with a recommendation of the Expert Committee on Health Statistics, the changes were limited to essential ones and amendments of errors and inconsistencies. Provisions previously contained in an addendum¹⁴ were integrated into the manual.¹⁵ Since these provisions had been used with the Sixth

Revision, they did not represent classification changes. The only change made in three-digit categories consisted of rewording a few titles. In a few cases the rewording included redefining morbid conditions classifiable to these categories and transferring certain terms from one category to another. The three-digit categories which were affected are listed in section I, volume I, of *Vital Statistics of the United States, 1958*. There were also a number of changes in four-digit subcategories, consisting mostly of the addition of subdivisions to provide more detailed classification of malignant neoplasms of specified sites. The three-digit categories for which there were additions, deletions, or changes in the four-digit subcategories are also listed in section I of the 1958 report.

The international rules for selecting the cause of death for primary mortality classification were recast for use with the Seventh Revision to simplify them and to organize them from the viewpoint of the coder making the cause-of-death assignment. The intent of the rules remains the same, that is, to code the cause which the medical certifier judged to be the underlying cause starting the train of events leading directly to death. In recasting the rules, some interpretations were modified—mainly those involving selection of the underlying cause for improperly completed certifications. In adapting coding procedures to reporting practices in the United States, some additional changes in interpretations were made.

In the majority of cases, application of the rules for the Sixth and Seventh Revisions resulted in the same code assignment. There were some differences in individual assignments affecting a number of categories. Many of these individual assignments were compensatory and resulted in no detectable discontinuity of trends for various causes of death; the comparability of a number of categories was affected to a limited extent.

Comparability between the Seventh and Sixth Revisions.—To estimate the magnitude of the effect of the Seventh Revision upon the comparability of mortality trends for various causes, a 10-percent sample of deaths in 1958 was classified using both the Sixth and Seventh Revisions. The comparability ratios for selected causes and a discussion of the results of this study are published in "Comparability of Mortality Statistics for the Sixth and Seventh Revisions, United States, 1958."¹⁶

Eighth Revision.—During the data years 1968-78 the cause-of-death statistics published by the National Center for Health Statistics were classified in accordance with the *Eighth Revision International Classification of Diseases, Adapted for Use in the United States (ICDA)*¹⁷ which was based on the 1965 Revision of the International Classification of Diseases (ICD).¹⁸ The ICDA gave greater detail and

specificity in some categories than was provided by the Eighth Revision of the ICD. Complete correspondence between these two classifications was maintained at the three-digit level, but new four-digit subdivisions were created in various parts of the ICDA. Where necessary, existing four-digit subdivisions were renumbered to accommodate the additional subcategories in logical sequence. In the ICDA, subdivisions which did not correspond exactly with the ICD were identified by asterisks. In *Vital Statistics of the United States* for each of the years 1968-78 those four-digit subcategory numbers which differed from those in the ICD were also shown with asterisks.

The Eighth Revision contained major modifications in several sections of the mortality tabulation lists. Also, the international rules for selecting the underlying cause were simplified. In addition, changes were introduced in the special rules and decisions which adapted the coding procedures to reporting practices in the United States. The important changes are summarized for each of these sections in the introduction to the ICDA, pages xxiv-xxviii. Following are some of the many changes made:

Infective and parasitic diseases.—In the Seventh Revision, list titles for diarrheal conditions were scattered over several sections of the classification. In the Eighth Revision all the Seventh Revision subdivisions for these conditions, including those for infants, were brought together under one category, Diarrheal diseases (009).

Diseases of the nervous system and sense organs.—Vascular lesions affecting central nervous system (330-334) in the Seventh Revision were transferred in the Eighth Revision to "section VII, Diseases of the circulatory system," where they appeared as Cerebrovascular diseases (430-438).

Certain causes of perinatal morbidity and mortality.—This section represented an integration of "Section XV, Certain diseases of early infancy" and Classification of causes of stillbirth (Y30-Y39) in the Seventh Revision. The age qualifications used in previous revisions to classify the same conditions in or outside this section were deleted. For example, Pneumonia of newborn (763) of the Seventh Revision was no longer in this section. Instead, it was included in the Eighth Revision with Pneumonia (480-486), to which pneumonias are assigned without regard to age.

Accidents, poisonings, and violence.—A new subsection (E980-E989) was introduced for the classification of deaths where it was not possible

for the certifier to determine whether the injuries were accidentally or purposely inflicted.

Comparability between the Eighth and Seventh Revisions.—To measure the degree of discontinuity in cause-of-death statistics resulting from the introduction of the Eighth Revision, provisional estimates of selected comparability ratios based on dual coding of a stratified sample of 1966 death certificates by the Seventh and Eighth Revisions of the International Classification of Diseases were computed. These ratios appeared in the *Monthly Vital Statistics Report* of the National Center for Health Statistics, Volume 17, Number 8, Supplement; and in *Comparability of Mortality Statistics for the Seventh and Eighth Revisions of the International Classification of Diseases, United States, Vital and Health Statistics*, Series 2, No. 66, DHEW Pub. No. (HRA) 76-1340.

Significant coding changes during the Eighth Revision.—Beginning with 1969 a special four-digit subcategory, Chronic obstructive lung disease (*519.3), was added to obtain the number of certificates on which medical certifiers had entered this more general term rather than a more specific diagnosis of chronic bronchitis, emphysema, or asthma. The number of certificates assigned to (*519.3) increased from 2,704 for 1969 to 28,613 for 1978. It is necessary to add together the number of deaths assigned to this new four-digit category and the number of deaths assigned to Bronchitis, emphysema, and asthma (ICDA Nos. 490-493) to obtain a measure of mortality from all chronic obstructive lung diseases.

To provide that deaths would not be assigned to Chronic obstructive lung disease (*519.3) if a more specific diagnosis such as chronic bronchitis, emphysema, or asthma also appeared on the death certificate, the coding procedures were updated for 1971 and 1972 data years in accordance with the following linkages:

*519.3 Chronic obstructive lung disease without mention of asthma, bronchitis, or emphysema

*Excludes conditions in *519.3 with conditions in:*

- 490 Bronchitis (491) (Chronic bronchitis)
- 491 (Chronic bronchitis) (491)
- 492 (Emphysema) (492)
- 493 (Asthma) (493)

But the limitation imposed by these linkage provisions did not alter the upward trend in the number of deaths assigned to Chronic obstructive lung disease without mention of asthma, bronchitis, or emphysema (*519.3). The number of deaths assigned to (*519.3) increased from 6,321 for 1971 to 8,210 for 1972.

Under the Eighth Revision of the ICDA, deaths assigned to chronic obstructive lung disease or chronic obstructive pulmonary disease were assigned to Other diseases of lung (ICDA No. 519.2). Despite the transfer of these deaths from this category to the new category Chronic obstructive lung disease (No. *519.3), the number of deaths assigned to Other diseases of lung (ICDA No. 519.2) also continued to increase—from 1,306 deaths for 1969 to 2,318 for 1978.

Also beginning with 1971 a special four-digit subcategory (*E854.8) was added to identify Acute narcotism, not otherwise specified, whether or not the circumstances were undetermined. Also, a preference was given to Drug dependence (ICDA No. 304) when a statement of drug dependence or a synonymous term appeared on the certificate with mention of poisoning by certain addictive drugs.

In addition, beginning with 1971 the term "cerebral sclerosis (general)" was classified to Generalized ischemic cerebrovascular disease (ICDA No. 437) rather than to Other demyelinating diseases of central nervous system (ICDA No. 341). As a result of this transfer, the number of deaths assigned to this latter category decreased from 569 for 1970 to 96 for 1971.

For 1973 the significant coding changes were concerned with the sudden infant death syndrome (SIDS). NCHS modified the ICDA and the procedures for classifying information recorded on the death certificate to facilitate the identification and analysis of data related to known and suspected cases of SIDS. Three fourth-digit subdivisions were created under ICDA category 795 (Sudden death). These subdivisions together with the inclusion terms are as follows:

*795.0 Sudden infant death syndrome, under 1 year of age

Acute fatal infant syndrome
Cause unknown
Cot or crib death
Died without sign of disease, so stated
Found dead (in bed, cot, cradle, crib, etc.) (infant)
Infant found in bed
Other unknown and unspecified causes, so stated
SDI, SID, SIDS, SUDI, SUID
Sudden death (in infancy) (infant) (syndrome)
(unattended) (unexpected) (unexplained)
Undetermined (cause) (in infancy) (infant)
Unexpected death (in infancy) (infant)
Unexplained death (in infancy) (infant)
Unknown (cause)

*795.1 Sudden death syndrome, 1 year of age

The same terms under *795.0 when age is 1 year

*795.2 All other sudden deaths, age 2 years and over

Died suddenly Fell dead
Dropped dead Sudden death

Ninth Revision—Cause of death statistics beginning with 1979 are classified by NCHS in accordance

with the Ninth Revision.⁹ In the Ninth Revision, as in the Eighth Revision, the Classification is arranged in 17 main sections or chapters. The first chapter deals with diseases caused by well-defined infectious and parasitic agents. The next two chapters deal with categories for Neoplasms and for Endocrine, nutritional and metabolic diseases and immunity disorders. Most of the remaining chapters are arranged according to the principal anatomical sites of diseases with special chapters for Mental disorders; Complications of pregnancy, childbirth, and the puerperium; Congenital anomalies; Certain conditions originating in the perinatal period; and a chapter for Symptoms, signs, and ill-defined conditions.

The last chapter (XVII), Injury and poisoning, represents a decided departure from the corresponding chapter in previous revisions. The role of the E code for external causes was changed. In the Sixth, Seventh, and Eighth Revisions, chapter XVII—Accidents, poisonings, and violence—consisted of two alternative classifications, one according to the nature of the injury (the N code), and the other according to the external cause (the E code). In the Ninth Revision, chapter XVII consists only of titles for nature of injury as part of the main classification. The N prefix that was used before the category numbers for these titles in the Eighth Revision has been dropped. In the Ninth Revision the E code is a supplementary classification. For underlying cause of death, where both an E code and another code are applicable, the E code is still used when the other code is from chapter XVII. When the other code is from chapters I-XVI that code and not the E code is used.

In many ways, the Ninth and the Eighth Revisions are similar. The essential basis of the Eighth Revision was retained as much as possible.¹⁹ Thus, overall blocks of classification numbers previously allocated to each chapter were retained. The Ninth Revision is, however, more specific. Thus, many Eighth Revision category numbers were split into more fourth-digit subcategories. In addition, categories and subcategories not found in the Eighth Revision were added to the Ninth Revision.

Following are some of the major changes between the Eighth and Ninth Revisions, applicable to underlying cause coding in the United States. They are arranged according to the chapters in the Ninth Revision of the ICD.

I. Infectious and parasitic diseases.—Under the Ninth Revision, colitis, diarrhea, enteritis, and gastroenteritis, without further specification, are assumed to be of noninfectious origin and are classified to chapter IX, Diseases of the digestive system. In the Eighth Revision, unless stated to be noninfectious or due to a noninfectious condition, they were as-

sumed to be of infectious origin and were coded to chapter I, Infective and parasitic diseases. This change transferred deaths that were assigned by the Eighth Revision to Diarrheal diseases (ICDA No. 009) to the Ninth Revision title Other noninfective gastroenteritis and colitis (ICD No. 558).

A section pulling together all late effects of infectious and parasitic diseases was added to chapter I in the Ninth Revision. In the Eighth Revision a few conditions had special late effects codes; for certain other conditions late effects were coded to the resulting chronic condition; for the remaining conditions in chapter I, late effects were coded to the regular code for the infectious or parasitic disease.

The code span for tuberculosis included late effects under the Eighth Revision but not under the Ninth; pleural effusion was assumed to be tuberculous under the Eighth Revision but not under the Ninth; and erysipelas was combined with streptococcal sore throat and scarlatina but was excluded from the most nearly comparable Eighth Revision cause.

In the Eighth Revision, deaths from serum hepatitis went to the condition being treated, if known. Otherwise they were assigned to an E code, usually to Complications and misadventures in other and unspecified therapeutic procedures in infusion and transfusion (ICDA No. E931.2). Under the Ninth Revision, because serum hepatitis does not have a code in chapter XVII, deaths attributed to this cause are assigned to Viral hepatitis B without mention of hepatic coma (ICD No. 070.3).

Deaths from Septicemia (ICDA No. 038) that occurred among the newborn were transferred in the Ninth Revision from chapter I to chapter XV—Certain conditions originating in the perinatal period or, more specifically, to Other infection specific to the perinatal period (ICD No. 771.8).

II. Neoplasms.—A new section, Neoplasms of uncertain behavior (ICD Nos. 235-238), has been added to this chapter. Among the conditions transferred to this new section are some of the conditions under the Eighth Revision title Polycythemia vera (ICDA No. 208) and Myelofibrosis (ICDA No. 209).

III. Endocrine, nutritional, and metabolic diseases and immunity disorders.—A new title—Disorders of fluid, electrolyte and acid-base balance (ICD No. 276)—has been added to this chapter. Most of these conditions were previously assigned to chapter XVI, Symptoms and ill-defined conditions, but were not coded as the underlying cause of death because conditions in this chapter were not coded if another codable condition was entered on the certificate.

VII. Diseases of the circulatory system.—In the Eighth Revision, mitral and aortic incompetence,

insufficiency, regurgitation, and stenosis were assumed to be rheumatic unless stated to be non-rheumatic or due to another condition that would cause a valvular heart disease. According to the Ninth Revision the conditions described by these terms are assumed to be nonrheumatic unless specified as rheumatic or due to a rheumatic heart disease, with one exception—mitral stenosis. The condition described by this term is assumed, as for the Eighth Revision, to be rheumatic.

In the Ninth Revision there is no separate category for malignant hypertension. The new fourth digits for Hypertensive disease (ICD Nos. 401-404) indicate whether the hypertensive disease was specified as malignant, benign, or not specified as malignant or benign. The Eighth Revision fourth digits denoting the presence of hypertension in ischemic heart and cerebrovascular diseases no longer exist, making it impossible to show hypertension with these conditions for underlying cause tabulations. According to the Ninth Revision, Cardiovascular disease, unspecified (ICD No. 429.2) has been separated from Ischemic heart disease (ICD Nos. 410-414).

Diseases of pulmonary circulation have been brought together in a new group—Diseases of pulmonary circulation (ICD Nos. 415-417). These pulmonary diseases have been separated from those in the group title Diseases of veins and lymphatics, and other diseases of circulatory system (ICD Nos. 451-459).

The Ninth Revision transferred Heart failure, unspecified (ICD No. 428.9) to this chapter—Diseases of the circulatory system—from the Eighth Revision chapter XVI, Symptoms and ill-defined conditions (ICDA Nos. 780-796), where it appeared as Acute heart failure, undefined (ICDA No. 782.4).

VIII. Diseases of the respiratory system.—New titles have been added for respiratory conditions including Pneumonitis due to solids and liquids (ICD No. 507); and Chronic airways obstruction, not elsewhere classified (ICD No. 496). Most of the deaths assigned by the new Ninth Revision title Pneumonitis due to solids and liquids (ICD No. 507) were transferred from the Eighth Revision title Pneumonia, unspecified (ICDA No. 486), more particularly from aspiration pneumonia, which was an inclusion term under ICDA No. 486.

The deaths assigned by the Eighth Revision to Chronic obstructive lung disease without mention of asthma, bronchitis, or emphysema (*519.3), a subtitle first introduced by NCHS for deaths occurring in 1969, have been transferred to the new Ninth Revision title Chronic airways obstruction, not elsewhere classified (ICD No. 496).

There was a change in the linkage provision that affects the coding of diseases of the respiratory

system. In the Eighth Revision, asthma linked with bronchitis and emphysema. The Ninth Revision does not provide this linkage.

The Ninth Revision title Bronchiectasis (ICD No. 494) has been placed in the section Chronic obstructive pulmonary disease and allied conditions (ICD Nos. 490-496). According to the Eighth Revision Bronchiectasis (ICDA No. 518) was a title included in the group Other diseases of respiratory system (ICDA Nos. 510-519).

IX. Diseases of the digestive system.—The instruction in the Eighth Revision was to code ulcer, site unspecified, and peptic ulcer, site unspecified, reported due to, with, or causing gastrointestinal hemorrhage to gastrointestinal ulcer which was an inclusion term under ICDA No. 534. This instruction was changed for the Ninth Revision to provide that these conditions be coded to Peptic ulcer (ICD No. 533).

Another change involved the transfer of an inclusion term, congenital diaphragmatic hernia, under Diaphragmatic (ICDA No. 551.3), a subtitle under Other hernia of abdominal cavity without mention of obstruction (ICDA No. 551) to Anomalies of diaphragm (ICD No. 756.6).

X. Diseases of the genitourinary system.—Several changes occurred in this chapter between the Eighth and Ninth Revisions. Acute renal failure deaths were transferred from Acute nephritis (ICDA No. 580) to the new Ninth Revision title Acute renal failure (ICD No. 584). Deaths from chronic renal failure were transferred from Chronic nephritis (ICDA No. 582) to the new Ninth Revision title Chronic renal failure (ICD No. 585). In addition, the following reassignments occurred: (1) Renal failure, NOS, from Other renal disease (ICDA No. 593.2) to the new Ninth Revision title Renal failure, unspecified (ICD No. 586); (2) Uremia (ICDA No. 792) to the new title Chronic renal failure (ICD No. 585), and to Renal failure, unspecified (ICD No. 586); and (3) Acute tubular nephrosis (ICDA No. 593.1) to the new Ninth Revision title Acute renal failure, with lesion of tubular necrosis (ICD No. 584.5).

XI. Complications of pregnancy, childbirth, and the puerperium.—The most nearly comparable Eighth Revision title to the Ninth Revision title Pregnancy with abortive outcome (ICD Nos. 630-638) is Abortions (ICDA Nos. 640-645). A major change is that deaths from Ectopic pregnancy (ICDA No. 631) have been transferred from Complications of pregnancy (ICDA Nos. 630-634) to Pregnancy with abortive outcome (ICD Nos. 630-638).

XV. Certain conditions originating in the perinatal period.—This chapter was extensively revised, includ-

ing the change in title. In the Eighth Revision the comparable title was Certain causes of perinatal morbidity and mortality. Conditions that were classifiable to other chapters according to the Eighth Revision are now included in this chapter if they arise during the perinatal period.

Some of the conditions that were previously classified by the Eighth Revision to Anoxic and hypoxic conditions not elsewhere classifiable (ICDA No. 776) were transferred by the Ninth Revision to Other respiratory conditions of newborn (ICD No. 770). The title Birth trauma (ICD No. 767) of the Ninth Revision does not include all types of intracranial hemorrhage; it excludes intraventricular and subarachnoid hemorrhage.

XVI. Symptoms, signs, and ill-defined conditions.—Many inclusion terms for this chapter were transferred to chapters I-XV. Some of the most important of these transfers were the following: Acute heart failure, undefined (ICDA No. 782.4) to Heart failure, unspecified (ICD No. 428.9); Uremia (ICDA No. 792) to Chronic renal failure (ICD No. 585) and to Renal failure, unspecified (ICD No. 586); Electrolyte disorders (ICDA No. *788.0) to Disorders of fluid, electrolyte and acid-base balance (ICD No. 276) and to Late metabolic acidosis of newborn (ICD No. 775.7); Encephalopathy (ICDA No. 781.7) to Encephalopathy, unspecified (ICD No. 348.3); Pylorospasm (ICDA No. 784.2) to Other (ICD No. 537.8) under Other disorders of stomach and duodenum; Hematemesis (ICDA No. 784.5) to Hematemesis (ICD No. 578.0); Melena (not of newborn) (ICDA No. 785.7) to Melena (ICD No. 578.1); Hematuria (ICDA No. 789.3) to Hematuria (ICD No. 599.7); and Depression (ICDA No. 790.2) to Depressive disorder, not elsewhere classified (ICD No. 311).

Comparability between the Ninth and Eighth Revisions.—As between the Eighth and the Seventh Revisions, 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*.²⁰ The 72-cause list is also a basic list used in this volume.

Coding in 1979.—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.²¹ Due to implementation of the Ninth Revision substantial coding changes occurred for 1979.

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 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 medical attendant 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 delimited 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.²² 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 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 attending physicians. It may also be used as a rough measure of the specificity of the medical diagnoses made by the physicians 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 1979, 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 0.2 percent for Rhode Island to 7.1 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 then, including 1979, to select the underlying cause of death. The system used 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 at 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 1979, the decision table instruction manual was updated to reflect Ninth Revision codes, and selection and modification rules.²³

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 (e.g., 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 Nos. 630-676). In contrast to previous revisions which did not define maternal death, under the Ninth Revision, WHO has 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."⁹

Under the Eighth Revision, maternal deaths were assigned to category title "Complications of pregnancy, childbirth, and the puerperium" (ICDA Nos. 630-678). While WHO did not define maternal mortality, there was a classification rule which 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 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 death was coded by NCHS as a maternal death. The change from an under-1-year limitation on duration under the Eighth Revision to an under-42-days limitation is not expected to have much effect on the comparability of maternal mortality statistics. However, comparability is affected by a number of changes under the Ninth Revision, including the expansion of causes considered as maternal. Under the Ninth Revision, Indirect obstetric causes (ICD Nos. 647-648) are included. These causes include infective and parasitic conditions and other current conditions in the mother classifiable elsewhere but complicating pregnancy, childbirth, and the puerperium, such as syphilis, tuberculosis, diabetes mellitus, drug dependence, congenital cardiovascular disorders, and other conditions. For additional discussion of comparability of maternal deaths between the Eighth and Ninth Revisions, see the cause-of-death section.

Fetal deaths

In May 1950 the World Health Organization recommended the adoption for international use of the definition of fetal death as "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."²⁴ The term "fetal death" was defined on an all-inclusive basis to end confusion arising from usage of such terms as still-birth, 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, of the 55 registration areas (including the 50 States, the District of Columbia, New York City, Puerto Rico, the Virgin Islands, and Guam), a total of

40 registration areas use this definition. Of the remaining 15 areas, 14 use a shortened definition, and 1 (Puerto Rico) has no formal definition. (See table A.)²⁵

As another step toward increasing the comparability of data on fetal deaths for different countries, the World Health Organization recommended that in classifying fetal deaths for statistical purposes they be grouped 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*,²⁶ implemented in 1978, recommended that spontaneous fetal deaths of 20 weeks or more gestation 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.

Because the health implications are different for spontaneous fetal deaths and induced terminations of pregnancy, and because the National Center for Health Statistics began receiving increasing numbers of reports on induced terminations of pregnancy, beginning with 1970 fetal deaths, procedures were implemented that attempted to separate reports on spontaneous fetal deaths from those on induced terminations of pregnancy, based on reported information on each report. These procedures are still in use.

Comparability and completeness of data.—State requirements for registration of fetal deaths vary. Most

of the States require registration of fetal deaths of gestations of 20 weeks or more. Table 3-1 in section 3 shows the minimum period of gestation required by each State for fetal-death registration. There is substantial evidence that not all fetal deaths for which registration is required are reported.²⁷

Underregistration is more of a problem near the lower limit for States having a minimum gestation period requirement. Failure to register fetal deaths near the lower limit results to a large degree from underestimating the gestation period. This is illustrated by the fact that for areas requiring registration of all fetal deaths, the total number reported for 20-23 weeks is higher than the numbers reported for 24-27 and 28-31 weeks. For most of the other areas, however, the opposite is true.

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 or unknown gestation for those States requiring registration at 20 weeks or more only. Beginning with 1969, fetal deaths of not stated gestation were excluded for States requiring registration of all products of conception except for those with a stated birth weight of 500 grams or more. In 1979 this rule was applied to the following States: Colorado, Georgia, Hawaii, New York, Rhode Island, and Virginia. Each year there are some exceptions to this procedure. In 1979 Arkansas was one such exception; this State required the reporting of fetal deaths of all periods of gestation in 1979; 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 which report all periods of gestation. The areas are Arkansas, Colorado, Georgia, Hawaii, New York, Rhode Island, and Virginia. However, Arkansas is excluded from this table because of individual reporting problems explained below. None of these reporting problems, however, should appreciably affect the data for fetal deaths of 20 weeks or more gestation.

In States requiring the reporting of fetal deaths of all periods of gestation, generally at least half of the reported fetal deaths are less than 20 weeks gestation. Only 7.7 percent of all fetal deaths reported for Arkansas in 1979 were of less than 20 weeks gestation. Beginning with data year 1971, Arkansas introduced a form for confidential reporting of abortions. It is believed that most spontaneous fetal deaths of under 20 weeks gestation are reported on this form and not on the report of fetal death. The National Center for Health Statistics only receives fetal-death reports from Arkansas.

Some liveborn infants who die shortly after birth, particularly those born prematurely who die before

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Table A. Areas adopting standard definition of fetal death and reporting all periods of gestation, date last normal menstrual period began (LMP), birth weight in pounds and ounces, pregnancy history, and marital status: Each State, 1979

Area	Standard definition	All periods of gestation	Date last normal menstrual period began (LMP)	Birth weight in pounds and ounces	Pregnancy history	Marital status
Alabama			x		x	x
Alaska	x		x	x		x
Arizona	x		x		x	x
Arkansas	x	¹ x		x		
California	x		x		x	
Colorado	x	x	x			x
Connecticut	x			x		
Delaware				x		
District of Columbia			x	x		x
Florida	² x		x			x
Georgia	x	x	x			(³)
Hawaii	x	x	x		x	x
Idaho			x	x	x	x
Illinois	x		x	x		x
Indiana			x	x	x	x
Iowa	x		x		x	x
Kansas			x		x	x
Kentucky			x	x	x	x
Louisiana	x		x			x
Maine	x		x		x	x
Maryland	x		x			
Massachusetts	x		x		x	x
Michigan	² x		x		x	
Minnesota	x		x			x
Mississippi	x		x		x	x
Missouri			x		x	x
Montana			x		x	
Nebraska	x		x		x	x
Nevada			x		x	(³)
New Hampshire	x		x	x	x	x
New Jersey	x		x			x
New Mexico	x			x		
New York	x	x	x			
New York City		x	x		x	
North Carolina	x		x			x
North Dakota	x		x		x	x
Ohio	² x		x		x	
Oklahoma	x		x	x		x
Oregon	² x		x		x	x
Pennsylvania				x		x
Rhode Island	x	x	x	x	x	x
South Carolina	x		x		x	x
South Dakota	x		x		x	x
Tennessee	x		x		x	x
Texas	x					(³)
Utah			x		x	x
Vermont	x		x			
Virginia	x	x				x
Washington	x		x		⁴ x	x
West Virginia	x		x	x		x
Wisconsin	² x				x	x
Wyoming			x		x	x
Puerto Rico				x		x
Virgin Islands	x	x	x			x
Guam	x		x		x	x

¹ Requires the reporting of all periods of gestation; however, those under 20 weeks are not transmitted to NCHS.

² Uses the standard definition but includes either a gestational age or birth weight criteria in the definition.

³ Reports marital status on the Report of Fetal Death but not on the Certificate of Live Birth.

⁴ Specifies not to include terminations.

the umbilical cord is severed or while the placenta is still attached, may be erroneously reported as fetal deaths. This type of error may be more of a problem in States lacking a precise definition of fetal deaths.

Georgia.—Beginning with data year 1975, fetal deaths occurring in Georgia are reported only to the State and county level. This affects the figures concerning fetal deaths in tables 3-6, 8-1, and 8-2. In tables 3-6 and 8-2 all fetal deaths occurring in Georgia are assigned to "Balance of area" and not to "Urban places." Consequently, reported fetal deaths and fetal-death ratios for the United States and Georgia for "Urban Areas" are lower than they would be if needed residence information were available for fetal deaths occurring in Georgia. Also, the figures for "Balance of area" are higher than they would be if this same information were available. In table 8-1 all fetal deaths occurring in Georgia are assigned to "Balance of county" and not to specified urban places. Fetal deaths that are assigned to specified urban places are those occurring outside of Georgia to residents of Georgia.

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 affected the tabulation of fetal deaths with not stated gestational age, including trend data in table 3-7. Whereas data for 1974-77 includes fetal deaths of not stated gestational age only if birth weight was stated as 500 grams or more, data in 1978 and 1979 include all fetal deaths of not stated gestational age.

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 "500 grams or more."

Tennessee.—Beginning in 1979, Tennessee changed its reporting requirements for spontaneous fetal deaths from "20 weeks or more gestation" to "22 weeks or more gestation or a weight of 500 grams or more."

Period of gestation.—The period of gestation is the number of completed weeks elapsed between the first day of the last menstrual period and the date of delivery, irrespective of whether the product of conception was liveborn or born without evidence of life. The first day of the last normal menstrual period (LMP) is used as the initial date since 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 gestation 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 1979 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), 26 do not specify how weight should be given; 16 specified that weight should be given in pounds and ounces; 6 specified grams; and the remaining 7 areas specified weight should be given either in pounds and ounces or in grams (see table A).

In tabulating and presenting 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 one 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 to 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.

Total-birth order.—The number of a live birth or a fetal death in the total birth order is the sum of the live births and fetal deaths which a mother has had including the birth being recorded. For example, if a mother has previously given birth to two live babies and to one born dead, the next event to occur, whether a live birth or fetal death, is counted as number four in the 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 (include both spontaneous fetal deaths and induced terminations of pregnancy) before 20 weeks; and number of other terminations (include both spontaneous fetal deaths and induced terminations) after 20 weeks. Of the 55 registration areas (including the 50 States, the District of Columbia, New York City, Puerto Rico, the Virgin Islands, and Guam), 31 areas have adopted the 4 standard items on pregnancy history as shown in table A.

Eighteen areas have information on the number of previous live births, now living; number of previous live births, now dead; and number of previous fetal deaths any time after conception. Four areas request information on the number of previous live births, now living; number of previous live births, now dead; and number of previous fetal deaths; these areas also specify a gestational age for including information on previous fetal deaths.

Two areas (Colorado and New York State) ask for information on number of previous live births, now living; number of previous live births, now dead; and number of other terminations, spontaneous and induced. Total birth order for all 55 areas is calculated from the sum of the available information. Thus information on total birth order may not be completely comparable for all 55 registration areas.

Marital status.—Table 3-4 shows fetal deaths by marital status. Only fetal deaths to residents of States which provided for reporting this item on both their certificate of live birth and report of fetal death in 1979 are included. The areas shown in table A are reporting areas.

There are no quantitative data on the characteristics of unmarried women who may misreport their marital status or who fail to register fetal deaths. Underregistration 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 age 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 fetal deaths and live births).

Perinatal mortality

Perinatal definitions.—Beginning with data year 1979, perinatal mortality data for the United States and each State are 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 birthweight 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 birthweight and gestational age are not reported for infant deaths in the United States, NCHS was unable to recommend the adoption of these definitions. Three definitions of perinatal mortality are currently in use in the United States: Perinatal Definition I, which is generally used for international comparisons, includes fetal deaths of 28 weeks or more gestation and infant deaths of less than 7 days; Perinatal Definition II includes fetal deaths of 20 weeks or more gestation and infant deaths of less than 28 days; and Perinatal Definition III includes fetal deaths of 20 weeks or more gestation and infant deaths of less than 7 days.

Not stated.—Fetal deaths with gestation not stated are presumed to be of 20 weeks gestation or more if (a) the State requires reporting of all fetal deaths of gestation age 20 weeks or more or (b) 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 distributed to the category 28 weeks or more, according to the distribution of fetal deaths with stated gestational age. 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 ges-

tational age groups on the basis of the distribution of stated cases.

QUALITY OF DATA

Completeness of registration

All States have adopted laws that require the registration of births, deaths, and 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. Overall registration 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 20 weeks gestation or more. National statistical data on fetal deaths include only those fetal deaths of 20 weeks gestation or more.

Massachusetts data

The 1964 statistics for deaths exclude approximately 6,000 events registered in Massachusetts, primarily to residents of the 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 1979 the mortality data for these items were obtained from two sources: (1) Microfilm images of the original certificates furnished by eight States, the District of Columbia, and the Virgin Islands, and photocopies from Guam; and (2) records on data tape furnished by the remaining 42 States, New York City, and Puerto Rico. For the eight States, the District of Columbia, the Virgin Islands, and Guam that send only copies of the original certificates, the demographic items on a 10-percent sample of the certificates were independently verified. For the 36 States, New York City, and Puerto Rico that furnished records on data tape before 1979, the demographic items on about 200 records per State per month were independently verified. For the six States (Connecticut, Hawaii, Mississippi, New Jersey, Pennsylvania, and Wyoming) that furnished records on data tape for the first time for 1979, the demographic items were independently verified for a 50-percent sample for the first 3 months, and for about 200 records per area for each of the last 9 months of 1979.

The above-mentioned 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. Systematic errors in coding infrequent events may escape detection during sample verification.

Medical items on the death certificate.—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).

For the States that did not furnish State-coded medical data the medical items were coded for 100 percent of the death records. Then the medical items on a 10-percent sample of the records were independently verified. For the seven States (Iowa, Louisiana, Michigan, Nebraska, North Carolina, Virginia, and Wisconsin) that furnished State-coded medical data, the medical items were independently verified for about 200 records per State per month.

Since a new revision of the International Classification of Diseases (ICD) was implemented in 1979, NCHS and State coders were required to demonstrate proficiency in coding under ICD-9 before using this verification scheme.²⁸

For cause-of-death coding, systematic errors in coding infrequent events are controlled by listing the rare and impossible codes from the computer and reverifying the cause-of-death assignment. Similar procedures are utilized to assure consistency between cause-of-death and age and/or sex items.

Demographic items on the report of fetal death.—For 1979, data on fetal deaths were coded by the U.S. Bureau of the Census. 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 completing coding and entering on data tape, 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 record or adjusted by arbitrary code assignment.²⁹ 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 sam-

ple 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*, Volume II, Part A, 1972.

COMPUTATION OF RATES AND OTHER MEASURES

Population bases

The death rates shown in this report were computed on the basis of population statistics published or made available by the U.S. Bureau of the Census. Rates for 1940, 1950, 1960, and 1970 are based on the populations 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. Population estimates for 1971-79 are based on the results of the 1970 Census of Population, estimates of census coverage, and data for components of change. The rates and life table values for 1971-79 will subsequently be revised due to the large difference between the 1980 census enumeration and the previously estimated population for 1980. Adjusted rates for 1979 may be computed by multiplying the reported age-race-sex rates by the corresponding factors shown in table 7-4. A ratio of less than 1.0000 indicates that the 1980 census-consistent estimate for 1979 was greater than the 1970 census-consistent estimate for 1979 and would result in a corresponding decrease in the death rate. Conversely, a ratio greater than 1.0000 indicates that the 1980 census-consistent estimate for 1979 was less than the 1970 census-consistent estimate for 1979 and would result in an increase in the death rate. The ratios differ by age, race, and sex. Ratios departing substantially from 1.0000 characterize the age groups 75-84 years and 85 years and over, especially for the black population.

Revised death rates for 1971-79 will also be reflected in revised life table values. Generally, the revised life tables would show higher life expectancy, especially for the black population, and higher survival probabilities.

Population estimates for 1979.—Estimates of the total resident population of the United States by age, race, and sex in 1979 are published by the Bureau of the Census in *Current Population Reports*, Series P-25, Number 870, and are shown in table 7-2. Total estimated populations for States shown in table 7-3 are published in Series P-25, Number 876; populations by broad age groups were prepared by the Bureau of the Census for NCHS and do not appear in

The populations of the 50 largest SMSA's and their component counties for July 1, 1979 are unpublished estimates prepared by the Bureau of the Census.

Population estimates for 1971.—The rates by age, race, and sex in Section 1 of *Vital Statistics of the United States, 1971*, were based on provisional estimates of the 1971 population; but the life table values for 1971 in section 5 were based on revised estimates of the 1971 population. These revised estimates are shown in *Current Population Reports*, Series P-25, No. 519, Washington, D.C., 1974. They differed considerably from the provisional estimates for a number of age-race-sex groups. Table 6-4 of the report for 1971 shows, for example, that the revised estimates are 7 to 25 percent lower than the provisional estimates for persons other than white in the youngest (under 10 years) and oldest (80 years and over) age groups. The limited number of statistics for 1971 shown in this report are based on the revised populations. Also available in NCHS is a set of unpublished trend tables for which the rates for 1971 are based on the revised population. These tables include age-race-sex-cause specific death rates for both the List of 69 Selected Causes of Death and the List of 281 Selected Causes of Death.

Population estimates for 1961-69.—Comparison of revised populations for 1969 (and several earlier years since 1960) with the provisional populations which were used to calculate annual death rates for these same age, race, and sex groups indicated a similar problem. 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 Census, *Current Population Reports*, Series P-25, No. 519. The data shown in table 1-10 for 1961-69 have not been revised.

Population of the birth- and death-registration States and the United States.—The resident population of the birth- and death-registration States for 1900-1932 and for the United States for 1900-1979 is 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.

Rates and ratios based on live births.—Infant, neonatal, and maternal mortality rates, and fetal death and perinatal mortality rates and ratios are computed on the basis of the number of live births instead of the estimated population under 1 year of age.

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

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Table B. Sources for resident population and population including Armed Forces abroad: Birth- and death-registration States, 1900-1932, and United States, 1900-1979

Year	Source
1978-79	U.S. Bureau of the Census, <i>Current Population Reports</i> , Series P-25, No. 870, January 1980.
1977	U.S. Bureau of the Census, <i>Current Population Reports</i> , Series P-25, No. 721, April 1978.
1975-76	U.S. Bureau of the Census, <i>Current Population Reports</i> , Series P-25, No. 643, January 1977.
1974	U.S. Bureau of the Census, <i>Current Population Reports</i> , Series P-25, No. 529, September 1974.
1971-73	U.S. Bureau of the Census, <i>Current Population Reports</i> , Series P-25, No. 519, April 1974.
1970	U.S. Bureau of the Census, <i>U.S. Census of Population: 1970, Number of Inhabitants</i> , Final Report PC(1)-A1, United States Summary, 1971.
1961-69	Same as for 1971-73.
1960	U.S. Bureau of the Census, <i>U.S. Census of Population: 1960, Number of Inhabitants</i> , PC(1)-A1, United States Summary, 1964.
1951-59	U.S. Bureau of the Census, <i>Current Population Reports</i> , Series P-25, No. 310, June 30, 1965.
1940-50	U.S. Bureau of the Census, <i>Current Population Reports</i> , Series P-25, No. 499, May 1973.
1930-39	U.S. Bureau of the Census, <i>Current Population Reports</i> , Series P-25, No. 499, May 1973, and the National Office of Vital Statistics, <i>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.

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

Mortality statistics may be subject to underregistration of deaths and misclassification of the demographic characteristics reported on the death certificate. Another source of error in the death statistics concerns the population figures used in computing death rates. Intercensal population estimates are affected by undercounts or overcounts in the decennial census. The net census undercount is determined by both undercount and by misclassification of demographic characteristics. The effect of the net census undercounts (or overcounts) on the death rates also depends on the misreporting of age on the death certificate.³⁰ While mortality statistics are not adjusted for possible age misreporting, mortality rates based on populations adjusted for net census undercount may be more accurate than rates based on the unadjusted populations. Thus it is useful to consider the possible impact of net census undercount on

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 three decennial censuses—1950, 1960, and 1970. These studies provide estimates of the national population that was not enumerated in the respective censuses, by age, race, and sex, as well as a set of exploratory estimates of coverage for States.^{31,32} The reports for 1970 include ranges of estimates of net census undercount based on alternative methodological assumptions for age, race, and sex subgroups of the national population and illustrative estimates for individual States.

These evaluative 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 consequences for vital statistics measures.³²

The impact of net census undercounts on vital statistics measures can be of several types: (1) Effects on levels of the observed rates, (2) effects on differ-

group differences shown by summary measures such as age-adjusted rates and life expectancy.

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 that would have existed if the age-specific rates of the particular year prevailed in a population whose age distribution was like that of the United States in 1940. The rates for the total population and for each race-sex group were adjusted separately, using the same standard population. It is important not to compare age-adjusted death rates directly with crude rates shown in other tables. The standard 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

United States abridged life tables are constructed by reference to a standard table.³³ 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 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, since the 1969-71 decennial life tables were not yet available. In addition, life table values for 1951-59 and 1961-69 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 prior to the initiation of the annual abridged life table series in 1945. The figures in table 6-5 for the race and sex groups for the following years were estimated to meet these needs.³⁴

Years	Race and sex groups
1900-1945	Total
1900-1947	Male
1900-1947	Female
1900-1950	White
1900-1944	White, male
1900-1944	White, female
1900-1950	All other
1900-1944	All other, male
1900-1944	All other, female

The geographic areas covered in life tables before 1929-31 were limited to the death-registration areas. 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 1909-1911, 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 1979 cover the conterminous United States. United States life tables 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 which 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.³⁵ 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 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

$$1. N - 2\sqrt{N} \text{ and } N + 2\sqrt{N}$$

covers the "true" number of events.

$$2. R - 2\frac{R}{\sqrt{N}} \text{ and } R + 2\frac{R}{\sqrt{N}}$$

covers the "true" rate.

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

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Table 7-1. Population of Birth- and Death-Registration States, 1900-1932, and United States, 1900-1979

[Population enumerated as of April 1 for 1940, 1950, 1960, and 1970 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
1979	220,584,000	220,098,000	1939	131,029,000	130,879,718	..	..	..	..
1978	218,717,000	218,279,000	1938	129,989,000	129,824,839	..	..	..	..
1977	216,817,000	216,232,080	1937	128,981,000	128,824,829	..	..	..	..
1976	215,118,000	214,849,000	1936	128,181,000	128,053,180	..	..	..	..
1975	213,540,000	213,022,000	1935	127,383,000	127,250,233	..	..	..	..
1974	211,929,000	211,390,000	1934	126,485,000	126,373,773	..	..	..	..
1973	210,404,000	209,851,000	1933	125,690,000	125,578,783	..	..	..	..
1972	208,842,000	208,230,000	1932	124,849,000	124,840,471	47	118,803,899	47	118,803,899
1971	207,045,000	206,212,000	1931	124,148,000	124,039,948	46	117,455,229	47	118,148,987
1970	204,270,000	203,211,829	1930	123,198,000	123,078,741	46	116,544,948	47	117,238,279
1969	202,677,000	201,388,000	1929	..	121,799,939	46	115,317,450	46	115,317,450
1968	200,708,000	199,399,000	1928	..	120,501,115	44	113,628,180	44	113,628,180
1967	198,712,000	197,457,000	1927	..	119,029,062	40	104,320,830	42	107,084,532
1966	196,580,000	195,579,000	1926	..	117,399,225	38	90,400,390	41	100,822,603
1965	194,303,000	193,529,000	1925	..	115,831,983	33	89,294,584	40	102,031,568
1964	191,898,000	191,141,000	1924	..	114,113,483	33	87,000,298	38	98,319,089
1963	189,242,000	188,482,000	1923	..	111,849,945	30	81,072,123	38	88,798,197
1962	186,539,000	185,771,000	1922	..	110,054,779	30	79,590,748	37	82,702,901
1961	183,691,000	182,992,000	1921	..	108,541,499	27	70,807,680	34	87,814,447
1960	179,833,000	179,323,175	1920	..	106,498,420	23	63,587,307	34	88,079,383
1959	177,294,000	176,513,000	1919	105,083,000	104,512,110	22	61,212,078	30	83,157,882
1958	174,141,000	173,320,000	1918	104,550,000	103,202,801	20	58,153,782	30	79,008,419
1957	171,274,000	170,371,000	1917	103,414,000	103,295,813	20	55,197,952	27	70,234,775
1956	168,221,000	167,306,000	1916	..	101,985,984	11	32,844,013	28	68,971,177
1955	166,275,000	164,308,000	1915	..	100,549,013	10	31,098,897	24	61,884,847
1954	162,381,000	161,164,000	1914	..	99,117,597	..	..	24	60,993,309
1953	158,585,000	158,242,000	1913	..	97,226,814	..	..	23	58,158,740
1952	156,954,000	155,487,000	1912	..	95,331,300	..	..	22	54,847,700
1951	154,297,000	153,310,000	1911	..	93,967,814	..	..	22	53,929,644
1950	151,132,000	150,887,381	1910	..	92,408,538	..	..	20	47,470,437
1949	149,198,000	148,865,000	1909	..	90,481,525	..	..	18	44,223,513
1948	146,831,000	146,090,000	1908	..	88,708,976	..	..	17	38,634,759
1947	144,126,000	143,448,000	1907	..	87,000,271	..	..	15	34,552,837
1946	141,399,000	140,054,000	1906	..	85,436,556	..	..	15	33,782,299
1945	138,829,000	137,481,000	1905	..	83,819,688	..	..	10	21,787,980
1944	136,397,000	135,885,000	1904	..	82,184,974	..	..	10	21,332,076
1943	134,739,000	134,245,000	1903	..	80,632,152	..	..	10	20,843,222
1942	134,880,000	133,920,000	1902	..	79,160,196	..	..	10	20,582,807
1941	133,402,000	133,121,000	1901	..	77,585,129	..	..	10	20,237,453
1940	131,820,000	131,659,275	1900	..	76,084,134	..	..	10	19,980,448

¹ Alaska included beginning 1958 and Hawaii 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: U. S. Bureau of the Census, published and unpublished data, see text.

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Table 7-2. Estimates of Total Resident Population of the United States, by Age, Race, and Sex July 1, 1979

(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	220,088,000	107,804,000	113,083,000	189,948,000	82,861,000	97,307,000	30,132,000	14,345,000	15,796,000	25,883,000	12,294,000	13,579,000
Under 1 year	2,891,000	1,380,000	1,501,000	2,711,000	1,391,000	1,320,000	889,000	899,000	290,000	484,000	245,000	239,000
1-4 years	12,266,000	6,322,000	6,044,000	10,126,000	5,184,000	4,942,000	2,223,000	1,129,000	1,104,000	1,893,000	963,000	930,000
5-9 years	16,483,000	8,424,000	8,059,000	12,570,000	6,960,000	6,610,000	2,822,000	1,475,000	1,448,000	2,807,000	1,396,000	1,411,000
10-14 years	16,971,000	8,312,000	8,659,000	15,004,000	7,899,000	7,205,000	3,067,000	1,543,000	1,524,000	2,886,000	1,365,000	1,521,000
15-19 years	20,882,000	10,580,000	10,281,000	17,548,000	8,919,000	8,629,000	3,314,000	1,861,000	1,863,000	2,911,000	1,465,000	1,446,000
20-24 years	20,527,000	10,254,000	10,273,000	17,483,000	8,794,000	8,689,000	3,044,000	1,490,000	1,564,000	2,815,000	1,247,000	1,568,000
25-29 years	18,242,000	9,091,000	9,251,000	15,805,000	7,820,000	7,986,000	2,537,000	1,171,000	1,265,000	2,123,000	964,000	1,140,000
30-34 years	16,521,000	8,161,000	8,380,000	14,261,000	7,185,000	7,107,000	2,140,000	977,000	1,163,000	1,746,000	796,000	948,000
35-39 years	13,571,000	6,818,000	6,953,000	11,868,000	5,852,000	6,016,000	1,704,000	786,000	837,000	1,441,000	661,000	780,000
40-44 years	11,504,000	5,585,000	5,909,000	10,040,000	4,935,000	5,104,000	1,464,000	669,000	806,000	1,246,000	583,000	663,000
45-49 years	11,217,000	5,471,000	5,746,000	9,807,000	4,817,000	4,990,000	1,410,000	664,000	756,000	1,199,000	566,000	634,000
50-54 years	11,724,000	5,866,000	6,088,000	10,411,000	5,063,000	5,358,000	1,322,000	613,000	708,000	1,131,000	537,000	603,000
55-59 years	11,387,000	5,426,000	5,939,000	10,203,000	4,886,000	5,315,000	1,184,000	540,000	624,000	1,017,000	471,000	546,000
60-64 years	9,585,000	4,467,000	5,088,000	8,870,000	4,071,000	4,809,000	915,000	416,000	499,000	814,000	367,000	447,000
65-69 years	8,088,000	3,865,000	4,223,000	7,746,000	3,453,000	4,293,000	842,000	412,000	430,000	682,000	376,000	483,000
70-74 years	6,564,000	3,277,000	3,807,000	6,008,000	2,820,000	3,486,000	579,000	257,000	321,000	510,000	221,000	289,000
75-79 years	4,774,000	2,378,000	2,896,000	4,336,000	1,929,000	2,410,000	325,000	149,000	187,000	398,000	175,000	223,000
80-84 years	3,780,000	1,977,000	2,503,000	3,548,000	1,663,000	2,185,000	232,000	91,000	140,000	311,000	131,000	180,000
85 years and over	2,332,000	1,120,000	1,212,000	2,081,000	937,000	1,144,000	240,000	83,000	157,000	309,000	130,000	140,000

SOURCE: U. S. Bureau of the Census. CURRENT POPULATION REPORTS, Series P-25 No. 870

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Table 7-3. Estimates of Total Resident Population, by Age, for the United States, Each Division and State, Puerto Rico, Virgin Islands, and Guam: July 1, 1978

(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 9 years	9-19 years	20-44 years	45-64 years	65 years and over
United States *	220,096,000	19,646,000	66,435,000	89,486,000	43,903,000	24,628,000
Geographic divisions						
New England	12,291,000	722,000	3,067,000	4,486,000	2,544,000	1,482,000
Middle Atlantic	36,711,000	2,294,000	6,929,000	12,993,000	6,039,000	4,446,000
East North Central	41,297,000	2,917,000	10,704,000	16,184,000	6,126,000	4,374,000
West North Central	17,116,000	1,213,000	4,304,000	6,116,000	3,321,000	2,142,000
South Atlantic	34,976,000	2,414,000	8,888,000	12,832,000	6,888,000	4,149,000
East South Central	14,106,000	1,063,000	3,673,000	5,087,000	2,711,000	1,562,000
West South Central	22,470,000	1,850,000	5,870,000	8,313,000	4,182,000	2,343,000
Mountain	19,873,000	967,000	2,807,000	2,823,000	1,883,000	1,613,000
Pacific	30,486,000	2,227,000	7,280,000	11,891,000	6,054,000	3,196,000
New England						
Maine	1,097,000	77,000	284,000	376,000	284,000	136,000
New Hampshire	887,000	60,000	227,000	388,000	172,000	80,000
Vermont	463,000	34,000	131,000	183,000	86,000	39,000
Massachusetts	5,789,000	323,000	1,426,000	2,129,000	1,188,000	711,000
Rhode Island	829,000	53,000	229,000	328,000	188,000	123,000
Connecticut	3,115,000	175,000	780,000	1,181,000	673,000	386,000
Middle Atlantic						
New York	17,646,000	1,097,000	4,303,000	6,316,000	3,827,000	2,119,000
New Jersey	7,332,000	482,000	1,804,000	2,588,000	1,434,000	843,000
Pennsylvania	11,731,000	716,000	2,821,000	4,086,000	2,827,000	1,491,000
East North Central						
Ohio	10,731,000	746,000	2,737,000	3,832,000	2,153,000	1,142,000
Indiana	5,400,000	390,000	1,414,000	1,978,000	1,046,000	579,000
Illinois	11,229,000	804,000	2,856,000	4,089,000	2,256,000	1,239,000
Michigan	9,207,000	651,000	2,453,000	3,458,000	1,758,000	887,000
Wisconsin	4,720,000	321,000	1,223,000	1,707,000	913,000	586,000
West North Central						
Minnesota	4,080,000	286,000	1,043,000	1,908,000	743,000	478,000
Iowa	2,903,000	200,000	723,000	1,004,000	580,000	381,000
Missouri	4,867,000	334,000	1,200,000	1,742,000	966,000	638,000
North Dakota	647,000	52,000	171,000	229,000	130,000	80,000
South Dakota	688,000	55,000	179,000	229,000	139,000	88,000
Nebraska	1,574,000	118,000	387,000	546,000	302,000	204,000
Kansas	2,388,000	170,000	572,000	864,000	471,000	301,000
South Atlantic						
Delaware	582,000	40,000	149,000	222,000	114,000	57,000
Maryland	4,148,000	253,000	1,069,000	1,625,000	620,000	388,000
District of Columbia	656,000	39,000	158,000	263,000	123,000	72,000
Virginia	5,197,000	342,000	1,311,000	2,040,000	1,020,000	483,000
West Virginia	1,878,000	142,000	481,000	642,000	407,000	228,000
North Carolina	5,806,000	399,000	1,438,000	2,109,000	1,081,000	571,000
South Carolina	2,832,000	234,000	782,000	1,101,000	537,000	389,000
Georgia	5,117,000	398,000	1,382,000	1,961,000	820,000	488,000
Florida	8,880,000	565,000	1,861,000	2,879,000	1,860,000	1,082,000
East South Central						
Kentucky	3,527,000	271,000	907,000	1,275,000	680,000	393,000
Tennessee	4,380,000	313,000	1,095,000	1,607,000	872,000	482,000
Alabama	3,769,000	264,000	983,000	1,348,000	732,000	427,000
Mississippi	2,429,000	213,000	686,000	827,000	426,000	278,000
West South Central						
Arkansas	2,180,000	168,000	548,000	742,000	422,000	308,000
Louisiana	4,018,000	342,000	1,117,000	1,454,000	726,000	379,000
Oklahoma	2,892,000	221,000	705,000	1,033,000	589,000	383,000
Texas	13,380,000	1,119,000	3,500,000	4,884,000	2,475,000	1,302,000
Mountain						
Montana	786,000	63,000	204,000	278,000	158,000	83,000
Idaho	905,000	80,000	279,000	318,000	189,000	81,000
Wyoming	450,000	42,000	115,000	165,000	82,000	36,000
Colorado	2,772,000	217,000	701,000	1,114,000	501,000	279,000
New Mexico	1,241,000	112,000	348,000	448,000	227,000	109,000
Arizona	2,450,000	215,000	632,000	859,000	456,000	289,000
Utah	1,367,000	174,000	380,000	484,000	213,000	106,000
Nevada	702,000	55,000	178,000	281,000	147,000	81,000
Pacific						
Washington	3,826,000	281,000	871,000	1,514,000	745,000	415,000
Oregon	2,527,000	190,000	603,000	805,000	504,000	294,000
California	22,884,000	1,826,000	5,459,000	8,710,000	4,574,000	2,316,000
Alaska	406,000	43,000	120,000	175,000	56,000	10,000
Hawaii	815,000	76,000	237,000	357,000	174,000	70,000
Puerto Rico	3,168,600	---	---	---	---	---
Virgin Islands	96,200	---	---	---	---	---
Guam	118,200	---	---	---	---	---

* Excludes Puerto Rico, Virgin Islands, and Guam
 SOURCE: U.S. Bureau of the Census, CURRENT POPULATION REPORTS, Series P-25, Nos. 870 and 876, and unpublished data

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Table 7-4. Ratio of Estimated 1970 Census-Consistent Resident Population for 1979 to Estimated 1980 Census-Consistent Resident Population for 1979 by Age, Race, and Sex: United States, July 1, 1979

Age	All races			Total			All other					
	Both sexes	Male	Female	Both sexes	Male	Female	Total			Black		
							Both sexes	Male	Female	Both sexes	Male	Female
All ages	0.9801	0.9805	0.9797	0.9804	0.9807	0.9804	0.9773	0.9792	0.9755	0.9830	0.9876	0.9799
Under 5 years	.9742	.9741	.9744	.9743	.9743	.9743	.9864	.9903	.9835	.9833	.9879	.9898
Under 1 year	.9577	.9684	.9570	.9582	.9593	.9593	.9488	.9538	.9588	.9588	.9673	.9697
1-4 years	.9797	.9783	.9793	.9722	.9714	.9732	1.0107	1.0116	1.0082	1.0085	1.0128	1.0043
5-14 years	.9768	.9757	.9775	.9745	.9755	.9755	.9870	.9888	.9870	.9833	.9843	.9823
5-9 years	.9732	.9726	.9738	.9693	.9685	.9703	.9818	.9833	.9884	.9813	.9837	.9888
10-14 years	.9797	.9785	.9810	.9782	.9781	.9804	.9824	.9808	.9838	.9832	.9848	.9865
15-24 years	.9751	.9733	.9768	.9768	.9748	.9788	.9858	.9851	.9888	.9718	.9712	.9788
15-19 years	.9772	.9751	.9783	.9788	.9772	.9828	.9834	.9840	.9827	.9713	.9732	.9884
20-24 years	.9730	.9715	.9746	.9738	.9724	.9753	.9885	.9882	.9788	.9707	.9888	.9723
25-34 years	.9874	.9858	.9888	.9703	.9888	.9708	.9488	.9388	.9878	.9823	.9448	.9881
25-29 years	.9815	.9800	.9838	.9858	.9842	.9871	.9385	.9350	.9458	.9410	.9845	.9478
30-34 years	.9741	.9738	.9745	.9788	.9764	.9751	.9840	.9880	.9718	.9882	.9888	.9723
35-44 years	.9884	.9818	1.0048	1.0014	.9858	1.0071	.9784	.9841	.9888	1.0080	1.0017	1.0088
35-39 years	.9885	.9818	1.0051	1.0010	.9848	1.0070	.9818	.9872	.9828	1.0081	1.0046	1.0141
40-44 years	.9884	.9822	1.0044	1.0018	.9884	1.0071	.9747	.9888	.9885	1.0084	.9882	1.0044
45-54 years	1.0007	1.0083	.9854	.9888	1.0017	.9881	1.0141	1.0437	.9888	1.0002	1.0088	.9888
45-49 years	1.0004	1.0048	.9885	.9878	.9888	.9882	1.0188	1.0447	.9874	1.0258	1.0082	.9884
50-54 years	1.0008	1.0078	.9844	.9897	1.0038	.9881	1.0082	1.0425	.9820	1.0143	1.0040	.9788
55-64 years	.9768	.9875	.9878	.9780	.9887	.9704	.9878	.9758	.9428	.9883	.9817	.9811
55-59 years	.9814	.9820	.9720	.9838	.9833	.9754	.9804	.9800	.9440	.9885	.9848	.9478
60-64 years	.9715	.9821	.9824	.9734	.9833	.9648	.9841	.9887	.9415	.9880	.9888	.9881
65-74 years	.9857	.9881	.9831	.9837	.9880	.9821	1.0133	1.0278	1.0035	1.0318	1.0478	1.0188
65-69 years	.9835	.9858	.9818	.9858	.9880	.9842	1.0588	1.0848	1.0878	1.0811	1.0847	1.0885
70-74 years	.9886	1.0040	.9848	1.0040	1.0072	1.0020	.9480	.9725	.9251	.9444	.9778	.9804
75-84 years	.9883	.9885	.9824	.9854	.9428	.9314	.9538	.9858	.9278	.9888	.9887	.9882
75-79 years	.9847	.9185	.9858	.9185	.9300	.9128	.7814	.9187	.7248	.9788	.7143	.8483
80-84 years	.9870	.9731	.9837	.9811	.9851	.9888	1.0057	1.0581	1.0218	.9882	.9881	.9877
85 years and over	1.0814	1.0850	1.0888	1.0338	1.0324	1.0341	1.3783	1.4088	1.1772	1.3387	1.3482	1.3482

NOTE: Computed from populations published by the U.S. Bureau of the Census in CURRENT POPULATION REPORTS: POPULATION ESTIMATES AND PROJECTIONS Series P-25 Nos. 870 and 817