

Linked Birth/Infant Death Data Set — 1998 Birth Cohort

Introduction

This documentation is for the 1998 birth cohort linked birth/infant death data set (linked file). Previous birth cohort linked files were released for data years 1983-91. Beginning with 1995 data, the linked file was released in two different formats — period data and birth cohort data.

Period data — The numerator for the 1998 period linked file consists of all infant deaths occurring in 1998 linked to their corresponding birth certificates, whether the birth occurred in 1998 or 1997. The denominator file for this data set is the 1998 natality file, that is, all births occurring in 1998. Beginning in 1995, the period linked files form the basis for all official NCHS linked file statistics (except for special cohort studies).

Birth cohort data — The numerator of the 1998 birth cohort linked file consists of deaths to infants born in 1998 linked to their corresponding birth certificates, whether the death occurred in 1998 or 1999. The denominator file is the 1998 natality file, that is, all births occurring in 1998.

The release of linked file data in two different formats allows NCHS to meet customer demands for more timely linked file data while still meeting the needs of data users who prefer the birth cohort format. For most general purposes, differences between the birth cohort and period linked files are negligible. However, birth cohort files are preferred for multivariate and some other types of detailed analysis because they follow a given cohort of births for an entire year to ascertain their mortality experience. This is generally considered to be a more robust methodology than the period file, which is essentially cross-sectional in nature.

The 1998 birth cohort linked file includes several separate data files. The first file includes linked birth and death certificate data for all US infants born in 1998 who died before their first birthday - referred to as the numerator file. The second file contains information from the death certificate for all US infant death records which could not be linked to their corresponding birth certificates - referred to as the unlinked death file. The third file is the 1998 NCHS natality file for the US with a few minor modifications - referred to as the denominator-plus file. These same three data files are also available for Puerto Rico, the Virgin Islands, and Guam.

For the denominator-plus file, selected variables from the numerator file have been added to the denominator file to facilitate processing. These variables include age at death (and recodes), underlying cause of death (and the 61-cause recode), place of accident, and record weight. These variables are the most widely used variables from the numerator file. With the previous file format it was sometimes necessary to combine the numerator and denominator files when performing certain multivariate statistical techniques. Now, when the number of variables required from the numerator file is limited, the denominator-plus file may be used by itself for

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ease of programming. Infant death identification numbers are also included, so that the same infant can be uniquely identified and matched between the numerator and denominator-plus files.

Weighting

In part to correct for known biases in the data, changes were made to the linked file beginning with the 1995 data year. These changes include the addition of a record weight and an imputation for not-stated birthweight. In the 1998 birth cohort linked file, 98.3% of infant death records were linked to their corresponding birth certificates. Overall, 1.7% of infant death records could not be linked because the matching birth certificate could not be found; however this percent varied considerably by State and other characteristics (see section on *Percent of records linked* below). Beginning with 1995 data, a record weight was added to the infant death records to correct in part for biases in percent of records linked by major characteristics. The number of infant deaths in the linked file are weighted to equal the sum of the linked plus unlinked infant deaths by age at death and state. The formula for computing the weights is as follows:

$$\frac{\text{number of linked infant deaths} + \text{number of unlinked infant deaths}}{\text{number of linked infant deaths}}$$

A separate weight is computed for each State of residence of birth and each age at death category (<1 day, 1-27 days, 28 days-1 year). Thus, weights are 1.0 for states which link all of their infant deaths. These weights have been added to all linked infant death records in the numerator file, and in the denominator-plus file. In the denominator-plus file, records for surviving infants have been assigned a weight of 1.0. This causes the denominator-plus file to weight up to about 478 (by residence) or 478 (by occurrence) more than the total number of live births (about 3.9 million), thus most runs on live birth data from the denominator-plus file should be run unweighted. Weights have not been computed for the Puerto Rico, Virgin Islands, and Guam files.

The addition of weighting to the file has greatly reduced bias, but has also created challenges for data analysis. The researcher should be aware that the use of the weights is appropriate for some, but not all applications. Weights should be used when computing the total number of infant deaths, or the number of infant deaths by characteristics, either from the numerator or the denominator-plus files. Weights should not be used when computing the total number of live births, or the number of live births by characteristics from the denominator-plus file, as the use of weights under these circumstances will yield a slight overestimate of the total number of US births. For multivariate analysis, the use of weights is generally recommended, however, a decision should be made on an individual basis, depending on the type of multivariate technique used, and the goals of the particular analysis.

Imputed birthweight

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An imputation for not-stated birthweight has been added to the data set, to reduce potential bias in the computation of birthweight-specific infant mortality rates. Basically, if birthweight is not-stated and the period of gestation is known, birthweight is assigned the value from the previous record with the same period of gestation, race, sex, and plurality. Imputed values are flagged. The addition of this imputation reduced the percent of not-stated responses for birthweight, thus reducing (but not eliminating) the potential for underestimation when computing birthweight-specific infant mortality rates.

Methodology

The methodology used to create the national file of linked birth and infant death records takes advantage of two existing data sources:

1. State linked files for the identification of linked birth and infant death certificates; and
2. NCHS natality and mortality computerized statistical files, the source of computer records for the two linked certificates.

Virtually all States routinely link infant death certificates to their corresponding birth certificates for legal and statistical purposes. When the birth and death of an infant occur in different States, copies of the records are exchanged by the State of death and State of birth in order to effect a link. In addition, if a third State is identified as the State of residence at the time of birth or death, that State is also sent a copy of the appropriate certificate by the State where the birth or death occurred.

The NCHS natality and mortality files, produced annually, include statistical data from birth and death certificates that are provided to NCHS by States under the Vital Statistics Cooperative Program (VSCP). The data have been coded according to uniform coding specifications, have passed rigid quality control standards, have been edited and reviewed, and are the basis for official U.S. birth and death statistics.

To initiate processing, NCHS obtained matching birth certificate numbers from States for all infant deaths that occurred in their jurisdiction. We used this information to extract final, edited mortality and natality data from the NCHS natality and mortality statistical files. Individual birth and death records were selected from their respective files and linked into a single statistical record, thereby establishing a national linked record file.

After the initial linkage, NCHS returned to the States where the death occurred computer lists of unlinked infant death certificates for follow up linking. If the birth

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occurred in a State different from the State of death, the State of birth identified on the death certificate was contacted to obtain the linking birth certificate. State additions and corrections were incorporated, and a final, national linked file was produced. Characteristics of the natality and mortality data from which the linked file is constructed are described in detail in the Technical Appendices and Addenda included in this document.

Characteristics of Unlinked File

For the 1998 birth cohort linked file 478, or 1.7% of all infant death records could not be linked to their corresponding birth certificates. Unlinked records are included in a separate data file in this data set. The unlinked record file uses the same record layout as the numerator file of linked birth and infant death records. However, except as noted below, tape locations 1-210, reserved for information from the matching birth certificate, are blank since no matching birth certificate could be found for these records. The sex field (tape location 79) contains the sex of infant as reported on the death certificate, rather than the sex of infant from the birth certificate, which is not available. The race field (tape location 36-37) contains the race of the decedent as reported on the death certificate rather than the race of mother as reported on the birth certificate as is the case with the linked record file. The race of mother on the birth certificate is generally considered to be more accurate than the race information from the death certificate (see section on *Comparison of race data from birth and death certificates* in the Mortality Technical Appendix included in this documentation). Also, date of birth as reported on the death certificate is used to generate age at death. This information is used in place of date of birth from the birth certificate, which is not available.

Documentation table 6 shows counts of unlinked records by race and age at death for each State of residence. The user is cautioned in using table 6 that the race and residence items are based on information reported on the death certificate; whereas, tables 1-5 present data from the linked file in which the race and residence items are based on information reported on the birth certificate. (see section on *Comparison of race data from birth and death certificates* in the Mortality Technical Appendix included in this documentation).

Percent of Records Linked

The 1998 birth cohort linked file includes 27,743 linked infant death records and 478 unlinked infant death records by place of occurrence. The linked file is weighted to the sum of linked plus unlinked records, thus the total number of weighted infant deaths by place of occurrence is 28,221. While the overall percent linked for infant deaths in the 1998 birth cohort linked file is 98.3%, there are differences in percent linked by certain variables. These differences have important implications for how the data is analyzed.

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Table 1 shows the percent of infant deaths linked by State of residence. While most States link a high percentage of infant deaths, linkage rates for some States are well below the national average. When a high percentage of deaths remain unlinked, infant mortality rates computed for these States are underestimated. It is for this reason that weights were added to the linked files beginning with 1995 data, to correct for biases in the data due to poor data linkage for particular states.

Geographic classification

Geographic codes in this data set have been updated to reflect the results of the 1990 census, and differ slightly from those used in previous linked files. Because of confidentiality concerns, only those counties and cities with a population size of 250,000 or more are separately identified in this data set. Users should refer to the geographic code outline in this document for the list of available areas and codes.

For events to be included in the linked file, both the birth and death must occur inside the 50 States and D.C. in the case of the 50 States and D.C. file; or in Puerto Rico, the Virgin Islands or Guam in the case of the Puerto Rico, Virgin Islands and Guam file. In tabulations of linked data and denominator data events occurring in each of the respective areas to nonresidents are included in tabulations that are by place of occurrence, and excluded from tabulations by place of residence. These exclusions are based on the usual place of residence of the mother. This item is contained in both the denominator file and the birth section of the numerator (linked) file. Nonresidents are identified by a code 4 in location 11 of these files.

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Table 1. Percent of infant deaths linked by state of residence of birth: United States, 1998 birth cohort

| | | | |
|----------------------|--------|------------------|--------|
| United States | 98.3% | Nebraska | 100.0% |
| Alabama | 99.8% | Nevada | 95.9% |
| Alaska | 98.5% | New Hampshire | 100.0% |
| Arizona | 98.1% | New Jersey | 98.1% |
| Arkansas | 97.3% | New Mexico | 94.9% |
| California | 96.3% | Upstate New York | 98.0% |
| Colorado | 99.8% | New York City | 97.7% |
| Connecticut | 99.0% | North Carolina | 99.7% |
| Delaware | 100.0% | North Dakota | 100.0% |
| District of Columbia | 98.9% | Ohio | 95.1% |
| Florida | 99.9% | Oklahoma | 92.8% |
| Georgia | 100.0% | Oregon | 99.6% |
| Hawaii | 100.0% | Pennsylvania | 98.5% |
| Idaho | 97.8% | Rhode Island | 100.0% |
| Illinois | 98.6% | South Carolina | 100.0% |
| Indiana | 98.3% | South Dakota | 100.0% |
| Iowa | 100.0% | Tennessee | 100.0% |
| Kansas | 98.9% | Texas | 97.8% |
| Kentucky | 98.0% | Utah | 99.6% |
| Louisiana | 98.1% | Vermont | 100.0% |
| Maine | 97.6% | Virginia | 99.0% |
| Maryland | 98.9% | Washington | 99.1% |
| Massachusetts | 97.9% | West Virginia | 98.1% |
| Michigan | 98.8% | Wisconsin | 100.0% |
| Minnesota | 100.0% | Wyoming | 100.0% |
| Mississippi | 99.5% | | |
| Missouri | 98.6% | | |
| Montana | 97.3% | | |

Demographic and Medical Classification

The documents listed below describe in detail the procedures employed for demographic classification on both the birth and death records and medical classification on death records. While not absolutely essential to the proper interpretation of the data for a number of general applications, these documents should nevertheless be studied carefully prior to any detailed analysis of demographic or medical (especially multiple cause) data variables. In particular, there are a number of exceptions to the ICD rules in multiple cause-of-death coding which, if not treated properly, may result in faulty analysis of the data.

- A. Manual of the International Statistical Classification of Diseases, Injuries, and the Cause-of-Death, Ninth Revision (ICD-9) Volumes 1 and 2.
- B. NCHS Instruction Manual Data Preparation Part 2a, Vital Statistics Instructions for Classifying the Underlying Cause-of-Death. Published annually.
- C. NCHS Instruction Manual Data Preparation, Part 2b, Vital Statistics Instructions for Classifying Multiple Cause-of-Death. Published annually.
- D. NCHS Instruction Manual Data Preparation, Part 2c, Vital Statistics ICD-9 ACME Decision Tables for Classifying Underlying Causes-of-Death. Published annually.
- E. NCHS Instruction Manual Data Preparation, Part 2d, Vital Statistics NCHS Procedures for Mortality Medical Data System File Preparation and Maintenance, Effective 1985.
- F. NCHS Instruction Manual Data Tabulation, Part 2f, Vital Statistics ICD-9 TRANSAX Disease Reference Tables for Classifying Multiple Causes-of-Death, 1982-85.
- G. NCHS Instruction Manual Part 2g, Vital Statistics, Data Entry Instructions for the Mortality Medical Indexing, Classification, and Retrieval system (MICAR). Published annually.
- H. NCHS Instruction Manual Part 2h, Vital Statistics, Dictionary of Valid Terms for the Mortality Medical Indexing, Classification, and Retrieval System (MICAR). Published annually.
- I. NCHS Instruction Manual Data Preparation, Part 3a, Vital Statistics Classification and Coding Instructions for Live Birth Records. Published annually.

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- J. NCHS Instruction Manual Data Preparation, Part 4, Vital Statistics Demographic Classification and Coding Instructions for Death Records. Published annually.
- K. NCHS Instruction Manual Tabulation, Part 11, Vital Statistics Computer Edits for Mortality Data, Effective 1990.

Copies of NCHS Instruction Manuals may be requested from the Chief, Data Preparation Branch, Division of Data Processing, National Center for Health Statistics, P.O. Box 12214, Research Triangle Park, North Carolina 27709.

In addition, the user should refer to the Technical Appendices of the Vital Statistics of the United States for information on the source of data, coding procedures, quality of the data, etc. The Technical Appendices for natality and mortality are part of this documentation package.

Cause-of-Death Data

Mortality data are traditionally analyzed and published in terms of underlying cause-of-death. The underlying cause-of-death data are coded and classified as described in the Mortality Technical Appendices. NCHS has augmented underlying cause-of-death data with data on multiple causes reported on the death certificate. The linked file includes both underlying and multiple cause-of-death data.

The multiple cause of death codes were developed with two objectives in mind. First, to facilitate etiological studies of the relationships among conditions, it was necessary to reflect accurately in coded form each condition and its location on the death certificate in the exact manner given by the certifier. Secondly, coding needed to be carried out in a manner by which the underlying cause of death could be assigned through computer applications. The approach was to suspend the linkage provisions of the ICD for the purpose of condition coding and code each entity with minimum regard to other conditions present on the certification. This general approach is hereafter called entity coding.

Unfortunately, the set of multiple cause codes produced by entity coding is not conducive to a third objective -- the generation of person-based multiple cause statistics. Person-based analysis requires that each condition be coded within the context of every other condition on the same certificate and modified or linked to such conditions as provided by ICD-9. By definition, the entity data cannot meet this requirement since the linkage provisions distort the character and placement of the information originally recorded by the certifying physician.

Since the two objectives are incompatible, NCHS has chosen to create from the original set of entity codes a new code set called record axis multiple cause data. Essentially,

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the axis of classification has been converted from an entity basis to a record (or person) basis. The record axis codes are assigned in terms of the set of codes that best describe the overall medical certification portion of the death certificate.

This translation is accomplished by a computer system called TRANSAX (translation of axis) through selective use of traditional linkage and modification rules for mortality coding. Underlying cause linkages which simply prefer one code over another for purposes of underlying cause selection are not included. Each entity code on the record is examined and modified or deleted as necessary to create a set of codes which are free of contradictions and are the most precise within the constraints of ICD-9 and medical information on the record. Repetitive codes are deleted. The process may (1) combine two entity axis categories together to a new category thereby eliminating a contradiction or standardizing the data; or (2) eliminate one category in favor of another to promote specificity of the data or resolve contradictions. The following examples from ICD-9 illustrate the effect of this translation:

- Case 1: When reported on the same record as separate entities, cirrhosis of liver and alcoholism are coded to 5715 (cirrhosis of liver without mention of alcohol) and 303 (alcohol dependence syndrome). Tabulation of records with 5715 would on the surface falsely imply that such records had no mention of alcohol. A preferable codification would be 5712 (alcoholic cirrhosis of liver) in lieu of both 5715 and 303.
- Case 2: If "gastric ulcer" and "bleeding gastric ulcer" are reported on a record they are coded to 5319 (gastric ulcer, unspecified as acute or chronic, without mention of hemorrhage or perforation) and 5314 (gastric ulcer, chronic or unspecified, with hemorrhage). A more concise codification would be to code 5314 only since the 5314 shows both the gastric ulcer and the bleeding.

Entity Axis Codes

The original conditions coded for selection of the underlying cause of death are reformatted and edited prior to creating the public-use tape. The following paragraphs describe the format and application of entity axis data.

Format — Each entity-axis code is displayed as an overall seven byte code with subcomponents as follows:

1. Line indicator: The first byte represents the line of the certificate on which the code appears. Six lines (1-6) are allowable with the fourth and fifth denoting one or two written in "due to"s beyond the three lines provided in Part I of the U.S. standard

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death certificate. Line "6" represents Part II of the certificate.

2. Position indicator: The next byte indicates the position of the code on the line, i.e., it is the first (1), second (2), third (3),... eighth (8) code on the line.
3. Cause category: The next four bytes represent the ICD-9 cause code.
4. Nature of injury flag: ICD-9 uses the same series of numbers (800-999) to indicate nature of injury (N codes) and external cause codes (E codes). This flag distinguishes between the two with a one (1) representing nature of injury codes and a zero (0) representing all other cause codes.

A maximum of 20 of these seven byte codes are captured on a record for multiple-cause purposes. This may consist of a maximum of 8 codes on any given line with up to 20 codes distributed across three or more lines depending on where the subject conditions are located on the certificate. Codes may be omitted from one or more lines, e.g., line 1 with one or more codes, line 2 with no codes, line 3 with one or more codes.

In writing out these codes, they are ordered as follows: line 1 first code, line 1 second code, etc. ----- line 2 first code, line 2 second code, etc. ----- line 3 ----- line 4 ----- line 5 ----- line 6. Any space remaining in the field is left blank. The specifics of locations are contained in the record layout given later in this document.

Edit — The original conditions are edited to remove invalid codes, reverify the coding of certain rare causes of death, and assure age/cause and sex/cause compatibility. Detailed information relating to the edit criteria and the sets of cause codes which are valid to underlying cause coding and multiple cause coding are provided in Part 11 of the NCHS Vital Statistics Instruction Manual Series.

Entity axis applications — The entity axis multiple cause data is appropriate to analyses which require that each condition be coded as a stand alone entity without linkage to other conditions and/or require information on the placement of such conditions in the certificate. Within this framework, the entity data are appropriate to the examination of etiological relationships among conditions, accuracy of certification reporting, and the validity of traditional assumptions in underlying cause selection.

Additionally, the entity data provide in certain categories a more detailed code assignment which is linked out in the creation of record axis data. Where such detail is needed for a study, the user should selectively employ entity data. Finally, the

researcher may not wish to be bound by the assumptions used in the axis translation process preferring rather to investigate hypotheses of his own predilection.

By definition, the main limitation of entity axis data is that an entity code does not necessarily reflect the best code for a condition when considered within the context of the medical certification as a whole. As a result certain entity codes can be misleading or even contradict other codes in the record. For example, category 5750 is titled "Acute cholecystitis without mention of calculus". Within the framework of entity codes this is interpreted to mean that the codable entity itself contained no mention of calculus rather than that calculus was not mentioned anywhere on the record. Tabulation of records with a "5750" as a count of persons having acute cholecystitis without mention of calculus would therefore be erroneous. This illustrates the fact that under entity coding the ICD-9 titles cannot be taken literally. The user must study the rules for entity coding as they relate to his/her research prior to utilization of entity data. The user is further cautioned that the inclusion notes in ICD-9 which relate to modifying and combining categories are seldom applicable to entity coding (except where provided in Part 2b of the Vital Statistics Instruction Manual Series).

In tabulating the entity axis data, one may count codes with the resultant tabulation of an individual code representing the number of times the disease(s) represented by the code appears in the file. In this kind of tabulation of morbid condition prevalence, the counts among categories may be added together to produce counts for groups of codes. Alternatively, subject to the limitations given above, one may count persons having mention of the disease represented by a code or codes. In this instance it is not correct to add counts for individual codes to create person counts for groups of codes. Since more than one code in the researcher's interest may appear together on the certificate, totaling must account for higher order interactions among codes. Up to 20 codes may be assigned on a record; therefore, a 20-way interaction is theoretically possible. All totaling must be based on mention of one or more of the categories under investigation.

Record Axis Codes

The following paragraphs describe the format and application of record-axis data. Part 2f of the Vital Statistics Instruction Manual Series describes the TRANSAX process for creating record axis data from entity axis data.

Format — Each record (or person) axis code is displayed in five bytes. Location information is not relevant. The Code consists of the following components:

1. Cause category: The first four bytes represent the ICD-9 cause code.

2. Nature of injury flag: The last byte contains a 0 or 1 with the 1 indicating that the cause is a nature of injury category.

Again, a maximum of 20 codes are captured on a record for multiple cause purposes. The codes are written in a 100-byte field in ascending code number (5 bytes) order with any unused bytes left blank.

Edit — The record axis codes are edited for rare causes and age/cause and sex/cause compatibility. Likewise, individual code validity is checked. The valid code set for record axis coding is the same as that for entity coding.

Record axis applications — The record axis multiple cause data set is the basis for NCHS core multiple cause tabulations. Location of codes is not relevant to this data set and conditions have been linked into the most meaningful categories for the certification. The most immediate consequence for the user is that the codes on the record already represent mention of a disease assignable to that particular ICD-9 category. This is in contrast to the entity code which is assigned each time such a disease is reported on two different lines of the certification. Secondly, the linkage implies that within the constraints of ICD-9 the most meaningful code has been assigned. The translation process creates for the user a data set which is edited for contradictions, duplicate codes, and imprecisions. In contrast to entity axis data, record axis data are classified in a manner comparable to underlying cause of death classification thereby facilitating joint analysis of these variables. Likewise, they are comparable to general morbidity coding where the linkage provisions of ICD-9 are usually utilized. A potential disadvantage of record axis data is that some detail is sacrificed in a number of the linkages.

The user can take the record axis codes as literally representing the information conveyed in ICD-9 category titles. While knowledge of the rules for combining and linking and coding conditions is useful, it is not a prerequisite to meaningful analysis of the data as long as one is willing to accept the assumptions of the axis translation process. The user is cautioned, however, that due to special rules in mortality coding, not all linkage notes in ICD-9 are utilized. (See Part 2f of the Vital Statistics Instruction Manual Series.)

The user should proceed with caution in using record axis data to count conditions as opposed to people with conditions since linkages have been invoked and duplicate codes have been eliminated. As with entity data, person based tabulations which combine individual cause categories must take into account the possible interaction of up to 20 codes on a single certificate.

In using the NCHS multiple cause data, the user is urged to review the information in this document and its references. The instructional material does change from year to

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year and revision to revision. The user is cautioned that coding of specific ICD-9 categories should be checked in the appropriate instruction manual. What may appear on the surface to be the correct code by ICD-9 may in fact not be correct as given in the instruction manuals.

If on the surface it is not obvious whether entity axis or record axis data should be employed in a given application, detailed examination of Part 2f of the Vital Statistics Instruction Manual Series and its attachments will probably provide the necessary information to make a decision. It allows the user to determine the extent of the trade-offs between the two sets of data in terms of specific categories and the assumptions of axis translation. In certain situations, a combination of entity and record axis data may be the more appropriate alternative.

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List of Data Elements and Locations

| <u>Data Items</u> | <u>Denominator- Plus File</u> | <u>Numerator Birth</u> | <u>File Death</u> | <u>Unlinked File</u> |
|-------------------------------|-----------------------------------|----------------------------|-----------------------|--------------------------|
| 1. General | | | | |
| a. Match status | 1 | 1 | -- | 1 |
| b. Infant death number | 2-6 | 2-6- | -- | -- |
| c. Year of birth | 7-10 | 7-10 | -- | -- |
| d. Year of death | -- | -- | 524-527 | 524-527 |
| e. Resident status | 11 | 11 | 505 | 505 |
| f. Record weight | 223-230 | -- | 223-230 | -- |
| 2. Occurrence | | | | |
| a. FIPS state | 14-15 | 14-15 | 508-509 | 508-509 |
| b. FIPS county | 16-18 | 16-18 | 510-512 | 510-512 |
| 3. Residence | | | | |
| a. FIPS state | 19-20 | 19-20 | 513-514 | 513-514 |
| b. FIPS county | 21-23 | 21-23 | 515-517 | 515-517 |
| c. FIPS place | 24-28 | 24-28 | 518-522 | 518-522 |
| d. NCHS state | 12-13 | 12-13 | 506-507 | 506-507 |
| 4. Infant | | | | |
| a. Age | 211-214 | -- | 211-214 | 211-214+ |
| b. Race | -- | -- | -- | 35-38* |
| c. Sex | 78-79 | 78-79 | -- | 78-79* |
| d. Gestation | 70-77 | 70-77 | -- | -- |
| e. Birthweight | 80-87 | 80-87 | -- | -- |
| f. Plurality | 88-89 | 88-89 | -- | -- |
| g. Apgar score | 90-91 | 90-91 | -- | -- |
| h. Day of week of birth/death | 209 | 209 | 532 | 532 |
| i. Month of birth/death | 205-206 | 205-206 | 528-529 | 528-529 |
| 5. Mother | | | | |
| a. Age | 29-32 | 29-32 | -- | -- |
| b. Race | 35-38 | 35-38 | -- | -- |
| c. Education | 39-41 | 39-41 | -- | -- |
| d. Marital status | 42-43 | 42-43 | -- | -- |
| e. Place of birth | 44-46 | 44-46 | -- | -- |
| f. Hispanic origin | 33-34 | 33-34 | -- | -- |
| 6. Father | | | | |
| a. Age | 60-62 | 60-62 | -- | -- |
| b. Race | 65-66 | 65-66 | -- | -- |
| c. Hispanic origin | 63-64 | 63-64 | -- | -- |

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List of Data Elements and Locations

| <u>Data Items</u> | <u>Denominator- Plus File</u> | <u>Numerator File</u> | | <u>Unlinked File</u> |
|--|-----------------------------------|-----------------------|--------------|--------------------------|
| | | <u>Birth</u> | <u>Death</u> | |
| 7. Pregnancy items | | | | |
| a. Month prenatal care began | 51-53 | 51-53 | -- | -- |
| b. Number of prenatal visits | 54-55 | 54-55 | -- | -- |
| c. Adequacy of care recode ⁵⁶ | 56 | -- | -- | |
| d. Total birth order | 47-48 | 47-48 | -- | -- |
| e. Live birth order | 49-50 | 49-50 | -- | -- |
| 8. Medical and Health Data | | | | |
| a. Method of delivery | 92-99 | 92-99 | -- | -- |
| b. Medical risk factors | 100-117 | 100-117 | -- | -- |
| c. Other risk factors | | | | |
| Tobacco | 118-121 | 118-121 | -- | -- |
| Alcohol | 122-125 | 122-125 | -- | -- |
| Weight gain during pregnancy | 126-128 | 126-128 | -- | -- |
| d. Obstetric procedures | 129-136 | 129-136 | -- | -- |
| e. Complications of labor and/or delivery | 137-153 | 137-153 | -- | -- |
| f. Abnormal conditions of the newborn | 154-163 | 154-163 | -- | -- |
| g. Congenital anomalies | 164-186 | 164-186 | -- | -- |
| h. Underlying cause of death | | | 216-219 | 216-219 |
| i. 61 Infant cause recode | | | 220-222 | 220-222 |
| j. Multiple conditions | | | 261-504 | 261-504 |
| 9. Other items | | | | |
| a. Place of delivery | 67 | 67 | -- | -- |
| b. Attendant at birth | 68 | 68 | -- | -- |
| c. Hospital and patient status | -- | -- | 523 | 523 |
| e. Place of accident | -- | -- | 215 | 215 |
| f. Residence reporting flags | 187-203 | 187-203 | -- | -- |

+ For the unlinked file, date of birth as reported on the death certificate is used to generate age at death. See section on Changes Beginning with 1995 Data for explanation.

* For the unlinked file, these items are from the death certificate. See section on Changes Beginning with 1995 Data for explanation.

Denominator Record and Natality Section of Numerator (Linked) Record

| <u>Item Location</u> | <u>Item Length</u> | <u>Variable Name, Item and Code Outline</u> |
|---|--------------------|--|
| 1 | 1 | <p><u>MATCHS</u> <u>Match Status</u></p> <p>1 ... Matched Birth/Infant Death Record 2 ... Surviving infant record 3 ... Unmatched infant death record Note: This code is used in the unlinked file only.</p> |
| 2- 6 | 5 | <p><u>IDNUMBER</u> <u>Infant Death Number</u></p> <p>This number uniquely identifies the same infant in the numerator and denominator-plus files.</p> |
| <p>Locations 7-210 of the linked file contain data from the Birth Certificate. Locations 211-222, 261-535 of linked file contain data from the Death Certificate.</p> | | |
| <p>Residence items in the Denominator Record and in the natality section of the Numerator (linked) Record refer to the usual place of residence of the <u>Mother</u>; whereas in the mortality section of the Numerator (Linked) Record, these items refer to the residence of the <u>Decedent</u>.</p> | | |
| 7-10 | 4 | <p><u>BIRYR</u> <u>Year of Birth</u></p> <p>1998 ... Born in 1998</p> |
| 11 | 1 | <p><u>RESSTATB</u> <u>Resident Status - Birth</u></p> <p><u>United States Occurrence</u></p> <p>1 ... RESIDENTS: State and county of occurrence and residence are the same. 2 ... INTRASTATE NONRESIDENTS: State of occurrence and residence are the same, but county is different. 3 ... INTERSTATE NONRESIDENTS: State of occurrence and residence are different, but both are in the 50 States and D.C. 4 ... FOREIGN RESIDENTS: State of occurrence is one of the 50 States or the District of Columbia, but place of residence of mother is outside of the 50 States and D.C.</p> <p><u>Puerto Rico Occurrence</u></p> <p>1 ... RESIDENTS: State and county of occurrence and residence are the same. 2 ... INTRASTATE NONRESIDENTS: State of occurrence and residence are the same, but county is different. 4 ... FOREIGN RESIDENTS: Occurred in Puerto Rico to a resident of any other place.</p> |

Denominator Record and Natality Section of Numerator (Linked) Record

| <u>Item</u> | <u>Item</u> | <u>Variable Name,</u> <u>Item and Code Outline</u> |
|-------------|-------------|---|
| 11 | 1 | <p><u>Virgin Islands Occurrence</u></p> <p>1 ... RESIDENTS: State and county of occurrence and residence are the same.</p> <p>2 ... INTRASTATE NONRESIDENTS: State of occurrence and residence are the same, but county is different.</p> <p>4 ... FOREIGN RESIDENTS: Occurred in the Virgin Islands to a resident of any other place.</p> <p><u>Guam Occurrence</u></p> <p>1 ... RESIDENTS: Occurred in Guam to a resident of Guam or to a resident of the U.S.</p> <p>4 ... FOREIGN RESIDENTS: Occurred in Guam to a resident of any place other than Guam or the U.S.</p> |
| 12-13 | 2 | <p><u>BRSTATE</u></p> <p><u>Expanded State of Residence - NCHS Codes - Birth</u></p> <p>This item is designed to separately identify New York City records from other New York State records.</p> <p><u>United States Occurrence</u></p> <p>01 ... Alabama</p> <p>02 ... Alaska</p> <p>03 ... Arizona</p> <p>04 ... Arkansas</p> <p>05 ... California</p> <p>06 ... Colorado</p> <p>07 ... Connecticut</p> <p>08 ... Delaware</p> <p>09 ... District of Columbia</p> <p>10 ... Florida</p> <p>11 ... Georgia</p> <p>12 ... Hawaii</p> <p>13 ... Idaho</p> <p>14 ... Illinois</p> <p>15 ... Indiana</p> <p>16 ... Iowa</p> <p>17 ... Kansas</p> <p>18 ... Kentucky</p> <p>19 ... Louisiana</p> <p>20 ... Maine</p> <p>21 ... Maryland</p> <p>22 ... Massachusetts</p> <p>23 ... Michigan</p> <p>24 ... Minnesota</p> <p>25 ... Mississippi</p> <p>26 ... Missouri</p> |

Denominator Record and Natality Section of Numerator (Linked) Record

| Item <u>Location</u> | Item <u>Length</u> | Variable Name, <u>Item and Code Outline</u> |
|-------------------------|-----------------------|--|
| 12-13 | 2 | <u>BRSTATE</u> <u>Expanded State of Residence - NCHS Codes - Birth (Cond't)</u> |

This item is designed to separately identify New York City records from other New York State records.

United States Occurrence

| | | |
|----------|-----|------------------------|
| 27 | ... | Montana |
| 28 | ... | Nebraska |
| 29 | ... | Nevada |
| 30 | ... | New Hampshire |
| 31 | ... | New Jersey |
| 32 | ... | New Mexico |
| 33 | ... | New York |
| 34 | ... | New York City |
| 35 | ... | North Carolina |
| 36 | ... | North Dakota |
| 37 | ... | Ohio |
| 38 | ... | Oklahoma |
| 39 | ... | Oregon |
| 40 | ... | Pennsylvania |
| 41 | ... | Rhode Island |
| 42 | ... | South Carolina |
| 43 | ... | South Dakota |
| 44 | ... | Tennessee |
| 45 | ... | Texas |
| 46 | ... | Utah |
| 47 | ... | Vermont |
| 48 | ... | Virginia |
| 49 | ... | Washington |
| 50 | ... | West Virginia |
| 51 | ... | Wisconsin |
| 52 | ... | Wyoming |
| 53-58,60 | ... | Foreign Residents |
| 53 | ... | Puerto Rico |
| 54 | ... | Virgin Islands |
| 55 | ... | Guam |
| 56 | ... | Canada |
| 57 | ... | Cuba |
| 58 | ... | Mexico |
| 60 | ... | Remainder of the World |

Puerto Rico Occurrence

| | | |
|----------------|-----|---|
| 53 | ... | Puerto Rico |
| 01-52,54-58,60 | ... | Foreign Residents: Refer to U.S. for specific code structure. |

Virgin Islands Occurrence

| | | |
|----------------|-----|---|
| 54 | ... | Virgin Islands |
| 01-53,55-58,60 | ... | Foreign Residents: Refer to U.S. for specific code structure. |

Denominator Record and Natality Section of Numerator (Linked) Record

| <u>Item</u> | <u>Item</u> | <u>Variable Name,</u> <u>Item and Code Outline</u> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-------------|-------------|---|----|-----|---------|-------|-----|--|-------------|-----|---|----|-----|----------|----|-----|------------|----|-----|----------|----|-----|-------------|----|-----|----------|----|-----|----------------------|----|-----|---------|----|-----|---------|----|-----|--------|----|-----|-------|----|-----|----------|----|-----|---------|----|-----|------|----|-----|--------|----|-----|----------|----|-----|-----------|----|-----|-------|----|-----|----------|----|-----|---------------|----|-----|----------|----|-----|-----------|----|-----|-------------|----|-----|----------|----|-----|---------|----|-----|----------|----|-----|--------|
| 12-13 | 2 | <p><u>BRSTATE</u> <u>Expanded State of Residence - NCHS Codes - Birth (Cond't)</u></p> <p>This item is designed to separately identify New York City records from other New York State records.</p> <p><u>Guam Occurrence</u></p> <table border="0"> <tr> <td>55</td> <td>...</td> <td>Guam</td> </tr> <tr> <td>01-52</td> <td>...</td> <td>U.S. resident is also considered a resident of Guam.</td> </tr> <tr> <td>53,54,58,60</td> <td>...</td> <td>Foreign Residents: Refer to U.S. for specific code structure.</td> </tr> </table> | 55 | ... | Guam | 01-52 | ... | U.S. resident is also considered a resident of Guam. | 53,54,58,60 | ... | Foreign Residents: Refer to U.S. for specific code structure. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 55 | ... | Guam | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 01-52 | ... | U.S. resident is also considered a resident of Guam. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 53,54,58,60 | ... | Foreign Residents: Refer to U.S. for specific code structure. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 14-18 | 5 | <p><u>FIPSOCCB</u> <u>Federal Information Processing Standards</u> <u>(FIPS) Geographic Codes (Occurrence) - Birth</u></p> <p>Refer to the Geographic Code Outline further back in this document for a detailed list of areas and codes. For an explanation of FIPS codes, reference should be made to various National Institute of Standards and Technology (NIST) publications.</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 14-15 | 2 | <p><u>STOCCFIPB</u> <u>State of Occurrence (FIPS) - Birth</u></p> <p><u>United States</u></p> <table border="0"> <tr><td>01</td><td>...</td><td>Alabama</td></tr> <tr><td>02</td><td>...</td><td>Alaska</td></tr> <tr><td>04</td><td>...</td><td>Arizona</td></tr> <tr><td>05</td><td>...</td><td>Arkansas</td></tr> <tr><td>06</td><td>...</td><td>California</td></tr> <tr><td>08</td><td>...</td><td>Colorado</td></tr> <tr><td>09</td><td>...</td><td>Connecticut</td></tr> <tr><td>10</td><td>...</td><td>Delaware</td></tr> <tr><td>11</td><td>...</td><td>District of Columbia</td></tr> <tr><td>12</td><td>...</td><td>Florida</td></tr> <tr><td>13</td><td>...</td><td>Georgia</td></tr> <tr><td>15</td><td>...</td><td>Hawaii</td></tr> <tr><td>16</td><td>...</td><td>Idaho</td></tr> <tr><td>17</td><td>...</td><td>Illinois</td></tr> <tr><td>18</td><td>...</td><td>Indiana</td></tr> <tr><td>19</td><td>...</td><td>Iowa</td></tr> <tr><td>20</td><td>...</td><td>Kansas</td></tr> <tr><td>21</td><td>...</td><td>Kentucky</td></tr> <tr><td>22</td><td>...</td><td>Louisiana</td></tr> <tr><td>23</td><td>...</td><td>Maine</td></tr> <tr><td>24</td><td>...</td><td>Maryland</td></tr> <tr><td>25</td><td>...</td><td>Massachusetts</td></tr> <tr><td>26</td><td>...</td><td>Michigan</td></tr> <tr><td>27</td><td>...</td><td>Minnesota</td></tr> <tr><td>28</td><td>...</td><td>Mississippi</td></tr> <tr><td>29</td><td>...</td><td>Missouri</td></tr> <tr><td>30</td><td>...</td><td>Montana</td></tr> <tr><td>31</td><td>...</td><td>Nebraska</td></tr> <tr><td>32</td><td>...</td><td>Nevada</td></tr> </table> | 01 | ... | Alabama | 02 | ... | Alaska | 04 | ... | Arizona | 05 | ... | Arkansas | 06 | ... | California | 08 | ... | Colorado | 09 | ... | Connecticut | 10 | ... | Delaware | 11 | ... | District of Columbia | 12 | ... | Florida | 13 | ... | Georgia | 15 | ... | Hawaii | 16 | ... | Idaho | 17 | ... | Illinois | 18 | ... | Indiana | 19 | ... | Iowa | 20 | ... | Kansas | 21 | ... | Kentucky | 22 | ... | Louisiana | 23 | ... | Maine | 24 | ... | Maryland | 25 | ... | Massachusetts | 26 | ... | Michigan | 27 | ... | Minnesota | 28 | ... | Mississippi | 29 | ... | Missouri | 30 | ... | Montana | 31 | ... | Nebraska | 32 | ... | Nevada |
| 01 | ... | Alabama | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 02 | ... | Alaska | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 04 | ... | Arizona | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 05 | ... | Arkansas | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 06 | ... | California | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 08 | ... | Colorado | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 09 | ... | Connecticut | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | ... | Delaware | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 11 | ... | District of Columbia | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 12 | ... | Florida | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 13 | ... | Georgia | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 15 | ... | Hawaii | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 16 | ... | Idaho | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 17 | ... | Illinois | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 18 | ... | Indiana | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 19 | ... | Iowa | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 20 | ... | Kansas | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 21 | ... | Kentucky | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 22 | ... | Louisiana | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 23 | ... | Maine | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 24 | ... | Maryland | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 25 | ... | Massachusetts | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 26 | ... | Michigan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 27 | ... | Minnesota | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 28 | ... | Mississippi | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 29 | ... | Missouri | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 30 | ... | Montana | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 31 | ... | Nebraska | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 32 | ... | Nevada | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

1998
Denominator Record and Natality Section of Numerator (Linked) Record

| Item <u>Location</u> | Item <u>Length</u> | Variable Name, <u>Item and Code Outline</u> |
|-------------------------|-----------------------|--|
| 14-15 | 2 | <p><u>STOCCFIPB</u> <u>State of Occurrence (FIPS) - Birth (Cond't)</u></p> <p><u>United States</u></p> <p>33 ... New Hampshire 34 ... New Jersey 35 ... New Mexico 36 ... New York 37 ... North Carolina 38 ... North Dakota 39 ... Ohio 40 ... Oklahoma 41 ... Oregon 42 ... Pennsylvania 44 ... Rhode Island 45 ... South Carolina 46 ... South Dakota 47 ... Tennessee 48 ... Texas 49 ... Utah 50 ... Vermont 51 ... Virginia 53 ... Washington 54 ... West Virginia 55 ... Wisconsin 56 ... Wyoming</p> <p><u>Puerto Rico</u></p> <p>72 ... Puerto Rico</p> <p><u>Virgin Islands</u></p> <p>78 ... Virgin Islands</p> <p><u>Guam</u></p> <p>66 ... Guam</p> |
| 16-18 | 3 | <p><u>CNTOCFIPB</u> <u>County of Occurrence (FIPS) - Birth</u></p> <p>001-nnn ... Counties and county equivalents (independent and coextensive cities) are numbered alphabetically within each State. (Note: To uniquely identify a county, both the State and county codes must be used.)</p> <p>999 ... County with less than 250,000 population</p> |

Denominator Record and Natality Section of Numerator (Linked) Record

| <u>Item</u> | <u>Item</u> | <u>Variable Name,</u> <u>Item and Code Outline</u> |
|-------------|-------------|--|
| 19-23 | 5 | <u>FIPSRESB</u> <u>Federal Information Processing Standards (FIPS) Geographic Codes (Residence) - Birth</u> |

Refer to the Geographic Code Outline further back in this document for a detailed list of areas and codes. For an explanation of FIPS codes, reference should be made to various National Institute of Standards and Technology (NIST) publications.

| | | |
|-------|---|--|
| 19-20 | 2 | <u>STRESFIPB</u> <u>State of Residence (FIPS) - Birth</u> |
|-------|---|--|

United States Occurrence

| | | |
|----|-----|----------------------|
| 00 | ... | Foreign residents |
| 01 | ... | Alabama |
| 02 | ... | Alaska |
| 04 | ... | Arizona |
| 05 | ... | Arkansas |
| 06 | ... | California |
| 08 | ... | Colorado |
| 09 | ... | Connecticut |
| 10 | ... | Delaware |
| 11 | ... | District of Columbia |
| 12 | ... | Florida |
| 13 | ... | Georgia |
| 15 | ... | Hawaii |
| 16 | ... | Idaho |
| 17 | ... | Illinois |
| 18 | ... | Indiana |
| 19 | ... | Iowa |
| 20 | ... | Kansas |
| 21 | ... | Kentucky |
| 22 | ... | Louisiana |
| 23 | ... | Maine |
| 24 | ... | Maryland |
| 25 | ... | Massachusetts |
| 26 | ... | Michigan |
| 27 | ... | Minnesota |
| 28 | ... | Mississippi |
| 29 | ... | Missouri |
| 30 | ... | Montana |
| 31 | ... | Nebraska |
| 32 | ... | Nevada |
| 33 | ... | New Hampshire |
| 34 | ... | New Jersey |
| 35 | ... | New Mexico |
| 36 | ... | New York |
| 37 | ... | North Carolina |
| 38 | ... | North Dakota |
| 39 | ... | Ohio |
| 40 | ... | Oklahoma |
| 41 | ... | Oregon |
| 42 | ... | Pennsylvania |

44 ... Rhode Island
1998
Denominator Record and Natality Section of Numerator (Linked) Record

| <u>Item</u> | <u>Item</u> | <u>Variable Name,</u> <u>Item and Code Outline</u> |
|-------------|-------------|--|
| 19-20 | 2 | <p><u>STRESFIPB</u> <u>State of Residence (FIPS) - Birth Cond't</u></p> <p><u>United States Occurrence</u> 45 ... South Carolina 46 ... South Dakota 47 ... Tennessee 48 ... Texas 49 ... Utah 50 ... Vermont 51 ... Virginia 53 ... Washington 54 ... West Virginia 55 ... Wisconsin 56 ... Wyoming</p> <p><u>Puerto Rico Occurrence</u> 00-56,66,78 ... Foreign Residents: Refer to U.S. for specific code structure 72 ... Puerto Rico</p> <p><u>Virgin Islands Occurrence</u> 00-56,66,72 ... Foreign Residents: Refer to U.S. for specific code structure 78 ... Virgin Islands</p> <p><u>Guam Occurrence</u> 00,72,78 ... Foreign Residents: Refer to U.S. for specific code structure 01-56 ... U.S. Resident is also considered a resident of Guam. Refer to U.S. for specific code structure 66 ... Guam</p> |
| 21-23 | 3 | <p><u>CNTYRFPB</u> <u>County of Residence (FIPS) - Birth</u></p> <p>000 ... Foreign residents 001-999 ... Counties and county equivalents (independent and coextensive cities) are numbered alphabetically within each State (Note: To uniquely identify a county, both the State and county codes must be used.) 999 ... County with less than 250,000 population</p> |
| 24-28 | 5 | <p><u>PLRES</u> <u>Place (City) of Residence (FIPS)</u></p> <p>A complete list of cities is shown in the Geographic Code Outline further back in this document.</p> <p>00000 ... Foreign residents 00001-99999 ... Code range</p> |

99999 ... Balance of county; or city less than
250,000 population
1998
Denominator Record and Natality Section of Numerator (Linked) Record

| <u>Item</u> | <u>Item</u> | <u>Variable Name,</u> <u>Item and Code Outline</u> | | | | | | | | | | | | | | | | | | | | | | | | |
|-------------|-------------|--|-------|-----|--|---|-----|----------------------|---|-----|----------------|---|-----|---------------|---|-----|---------------------------|---|-----|----------------------------|---|-----|------------------------------|---|-----|---------------|
| 29 | 1 | <p><u>MAGEFLG</u> <u>Age of Mother Flag</u></p> <p>This position is flagged whenever age is imputed or the mother's reported age is used. The reported age is used, if valid, when computed age derived from the date of birth is not available or when it is outside the 10-49 code range.</p> <table border="0"> <tr> <td>Blank</td> <td>...</td> <td>Not imputed and reported age is not used</td> </tr> <tr> <td>1</td> <td>...</td> <td>Reported age is used</td> </tr> <tr> <td>2</td> <td>...</td> <td>Age is imputed</td> </tr> </table> | Blank | ... | Not imputed and reported age is not used | 1 | ... | Reported age is used | 2 | ... | Age is imputed | | | | | | | | | | | | | | | |
| Blank | ... | Not imputed and reported age is not used | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | ... | Reported age is used | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | ... | Age is imputed | | | | | | | | | | | | | | | | | | | | | | | | |
| 30-31 | 2 | <p><u>DMAGE</u> <u>Age of Mother</u></p> <p>This item is: a) computed using dates of birth of mother and of delivery; b) reported; or c) imputed. This is the age item used in NCHS publications.</p> <table border="0"> <tr> <td>10-54</td> <td>...</td> <td>Age in single years</td> </tr> </table> | 10-54 | ... | Age in single years | | | | | | | | | | | | | | | | | | | | | |
| 10-54 | ... | Age in single years | | | | | | | | | | | | | | | | | | | | | | | | |
| 32 | 1 | <p><u>MAGER8</u> <u>Age of Mother Recode 8</u></p> <table border="0"> <tr> <td>1</td> <td>...</td> <td>Under 15 years</td> </tr> <tr> <td>2</td> <td>...</td> <td>15 - 19 years</td> </tr> <tr> <td>3</td> <td>...</td> <td>20 - 24 years</td> </tr> <tr> <td>4</td> <td>...</td> <td>25 - 29 years</td> </tr> <tr> <td>5</td> <td>...</td> <td>30 - 34 years</td> </tr> <tr> <td>6</td> <td>...</td> <td>35 - 39 years</td> </tr> <tr> <td>7</td> <td>...</td> <td>40 - 44 years</td> </tr> <tr> <td>8</td> <td>...</td> <td>45 - 54 years</td> </tr> </table> | 1 | ... | Under 15 years | 2 | ... | 15 - 19 years | 3 | ... | 20 - 24 years | 4 | ... | 25 - 29 years | 5 | ... | 30 - 34 years | 6 | ... | 35 - 39 years | 7 | ... | 40 - 44 years | 8 | ... | 45 - 54 years |
| 1 | ... | Under 15 years | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | ... | 15 - 19 years | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | ... | 20 - 24 years | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | ... | 25 - 29 years | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | ... | 30 - 34 years | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | ... | 35 - 39 years | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | ... | 40 - 44 years | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | ... | 45 - 54 years | | | | | | | | | | | | | | | | | | | | | | | | |
| 33 | 1 | <p><u>ORMOTH</u> <u>Hispanic Origin of Mother</u></p> <p>Hispanic origin is reported for all areas except Puerto Rico.</p> <table border="0"> <tr> <td>0</td> <td>...</td> <td>Non-Hispanic</td> </tr> <tr> <td>1</td> <td>...</td> <td>Mexican</td> </tr> <tr> <td>2</td> <td>...</td> <td>Puerto Rican</td> </tr> <tr> <td>3</td> <td>...</td> <td>Cuban</td> </tr> <tr> <td>4</td> <td>...</td> <td>Central or South American</td> </tr> <tr> <td>5</td> <td>...</td> <td>Other and unknown Hispanic</td> </tr> <tr> <td>9</td> <td>...</td> <td>Origin unknown or not stated</td> </tr> </table> | 0 | ... | Non-Hispanic | 1 | ... | Mexican | 2 | ... | Puerto Rican | 3 | ... | Cuban | 4 | ... | Central or South American | 5 | ... | Other and unknown Hispanic | 9 | ... | Origin unknown or not stated | | | |
| 0 | ... | Non-Hispanic | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | ... | Mexican | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | ... | Puerto Rican | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | ... | Cuban | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | ... | Central or South American | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | ... | Other and unknown Hispanic | | | | | | | | | | | | | | | | | | | | | | | | |
| 9 | ... | Origin unknown or not stated | | | | | | | | | | | | | | | | | | | | | | | | |

1998
Denominator Record and Natality Section of Numerator (Linked) Record

| Item <u>Location</u> <u>Length</u> | Item | Variable Name, <u>Item and Code Outline</u> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|------|--|-------|-----|---------------------|----|-----|-----------------|----|-----|---|----|-----|---------------------------|----|-----|----------------------------|----|-----|-----------------------------------|----|-----|--------------------|----|-----|--------------------------|----|-----|------------------------------|----|-----|--------|----|-----|------------|----|-----|-----------|----|-----|--|----|-----|---|
| 34 | 1 | <p><u>ORRACEM</u> <u>Hispanic Origin and Race of Mother Recode</u></p> <p>Hispanic origin is reported for all areas except Puerto Rico.</p> <table border="0"> <tr><td>1</td><td>...</td><td>Mexican</td></tr> <tr><td>2</td><td>...</td><td>Puerto Rican</td></tr> <tr><td>3</td><td>...</td><td>Cuban</td></tr> <tr><td>4</td><td>...</td><td>Central or South American</td></tr> <tr><td>5</td><td>...</td><td>Other and unknown Hispanic</td></tr> <tr><td>6</td><td>...</td><td>Non-Hispanic White</td></tr> <tr><td>7</td><td>...</td><td>Non-Hispanic Black</td></tr> <tr><td>8</td><td>...</td><td>Non-Hispanic other races</td></tr> <tr><td>9</td><td>...</td><td>Origin unknown or not stated</td></tr> </table> | 1 | ... | Mexican | 2 | ... | Puerto Rican | 3 | ... | Cuban | 4 | ... | Central or South American | 5 | ... | Other and unknown Hispanic | 6 | ... | Non-Hispanic White | 7 | ... | Non-Hispanic Black | 8 | ... | Non-Hispanic other races | 9 | ... | Origin unknown or not stated | | | | | | | | | | | | | | | |
| 1 | ... | Mexican | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | ... | Puerto Rican | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | ... | Cuban | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | ... | Central or South American | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | ... | Other and unknown Hispanic | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | ... | Non-Hispanic White | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | ... | Non-Hispanic Black | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | ... | Non-Hispanic other races | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9 | ... | Origin unknown or not stated | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 35 | 1 | <p><u>MRACEIMP</u> <u>Race of Mother Imputation Flag</u></p> <table border="0"> <tr><td>Blank</td><td>...</td><td>Race is not imputed</td></tr> <tr><td>1</td><td>...</td><td>Race is imputed</td></tr> <tr><td>2</td><td>...</td><td>All other races, formerly code 09, is imputed</td></tr> </table> | Blank | ... | Race is not imputed | 1 | ... | Race is imputed | 2 | ... | All other races, formerly code 09, is imputed | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Blank | ... | Race is not imputed | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | ... | Race is imputed | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | ... | All other races, formerly code 09, is imputed | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 36-37 | 2 | <p><u>MRACE</u> <u>Race of Mother - Birth Record or for Unlinked Records Race of Decedent from Death Record</u></p> <p>Beginning with 1992 data, some areas started reporting additional Asian or Pacific Islander codes for race. Codes 18-68 replace old code 08 for these areas. Code 78 replaces old code 08 for all other areas. For consistency with Census race code 09 (all other races) used prior to 1992 has been imputed.</p> <p><u>United States Occurrence</u></p> <table border="0"> <tr><td>01</td><td>...</td><td>White</td></tr> <tr><td>02</td><td>...</td><td>Black</td></tr> <tr><td>03</td><td>...</td><td>American Indian (includes Aleuts and Eskimos)</td></tr> <tr><td>04</td><td>...</td><td>Chinese</td></tr> <tr><td>05</td><td>...</td><td>Japanese</td></tr> <tr><td>06</td><td>...</td><td>Hawaiian (includes part-Hawaiian)</td></tr> <tr><td>07</td><td>...</td><td>Filipino</td></tr> <tr><td>18</td><td>...</td><td>Asian Indian</td></tr> <tr><td>28</td><td>...</td><td>Korean</td></tr> <tr><td>38</td><td>...</td><td>Samoan</td></tr> <tr><td>48</td><td>...</td><td>Vietnamese</td></tr> <tr><td>58</td><td>...</td><td>Guamanian</td></tr> <tr><td>68</td><td>...</td><td>Other Asian or Pacific Islander in areas reporting codes 18-58</td></tr> <tr><td>78</td><td>...</td><td>Combined other Asian or Pacific Islander, includes codes 18-68 for areas that do not report them separately</td></tr> </table> | 01 | ... | White | 02 | ... | Black | 03 | ... | American Indian (includes Aleuts and Eskimos) | 04 | ... | Chinese | 05 | ... | Japanese | 06 | ... | Hawaiian (includes part-Hawaiian) | 07 | ... | Filipino | 18 | ... | Asian Indian | 28 | ... | Korean | 38 | ... | Samoan | 48 | ... | Vietnamese | 58 | ... | Guamanian | 68 | ... | Other Asian or Pacific Islander in areas reporting codes 18-58 | 78 | ... | Combined other Asian or Pacific Islander, includes codes 18-68 for areas that do not report them separately |
| 01 | ... | White | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 02 | ... | Black | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 03 | ... | American Indian (includes Aleuts and Eskimos) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 04 | ... | Chinese | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 05 | ... | Japanese | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 06 | ... | Hawaiian (includes part-Hawaiian) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 07 | ... | Filipino | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 18 | ... | Asian Indian | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 28 | ... | Korean | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 38 | ... | Samoan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 48 | ... | Vietnamese | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 58 | ... | Guamanian | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 68 | ... | Other Asian or Pacific Islander in areas reporting codes 18-58 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 78 | ... | Combined other Asian or Pacific Islander, includes codes 18-68 for areas that do not report them separately | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Denominator Record and Natality Section of Numerator (Linked) Record

| Item <u>Location</u> <u>Length</u> | Item | Variable Name, <u>Item and Code Outline</u> |
|--|------|---|
| 36-37 | 2 | <p><u>MRACE</u> <u>Race of Mother - Birth Record or for Unlinked Records Race of Decedent from Death Record (Cond't)</u></p> <p><u>Puerto Rico Occurrence</u></p> <p>00 ... Other races 01 ... White 02 ... Black</p> <p><u>Virgin Islands Occurrence</u></p> <p>01 ... White 02 ... Black 03 ... American Indian (includes Aleuts and Eskimos) 04 ... Chinese 05 ... Japanese 06 ... Hawaiian (includes part-Hawaiian) 07 ... Filipino 08 ... Other Asian or Pacific Islander</p> <p><u>Guam Occurrence</u></p> <p>01 ... White 02 ... Black 03 ... American Indian (includes Aleuts and Eskimos) 04 ... Chinese 05 ... Japanese 06 ... Hawaiian (includes part-Hawaiian) 07 ... Filipino 08 ... Other Asian or Pacific Islander 58 ... Guamanian</p> |
| 38 | 1 | <p><u>MRACE3</u> <u>Race of Mother Recode</u></p> <p>1 ... White 2 ... Races other than White or Black 3 ... Black</p> |

1998
Denominator Record and Natality Section of Numerator (Linked) Record

| <u>Item</u> | <u>Item</u> | <u>Variable Name,</u> <u>Item and Code Outline</u> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-------------|-------------|---|-------|-----|-------------------------------|-------|-----|----------------------------|----|-----|-----------------------|----|-----|------------------------|----|-----|-----------------------------------|----|-----|---------------------------------------|----|-----|-----------------------|----|-----|--------------------|----|-----|--------------------|----|-----|--------------------|----|-----|----------------------------|----|-----|------------|
| 39-40 | 2 | <p><u>DMEDUC</u> <u>Education of Mother Detail</u></p> <p>All areas report education of mother.</p> <table border="0"> <tr><td>00</td><td>...</td><td>No formal education</td></tr> <tr><td>01-08</td><td>...</td><td>Years of elementary school</td></tr> <tr><td>09</td><td>...</td><td>1 year of high school</td></tr> <tr><td>10</td><td>...</td><td>2 years of high school</td></tr> <tr><td>11</td><td>...</td><td>3 years of high school</td></tr> <tr><td>12</td><td>...</td><td>4 years of high school</td></tr> <tr><td>13</td><td>...</td><td>1 year of college</td></tr> <tr><td>14</td><td>...</td><td>2 years of college</td></tr> <tr><td>15</td><td>...</td><td>3 years of college</td></tr> <tr><td>16</td><td>...</td><td>4 years of college</td></tr> <tr><td>17</td><td>...</td><td>5 or more years of college</td></tr> <tr><td>99</td><td>...</td><td>Not stated</td></tr> </table> | 00 | ... | No formal education | 01-08 | ... | Years of elementary school | 09 | ... | 1 year of high school | 10 | ... | 2 years of high school | 11 | ... | 3 years of high school | 12 | ... | 4 years of high school | 13 | ... | 1 year of college | 14 | ... | 2 years of college | 15 | ... | 3 years of college | 16 | ... | 4 years of college | 17 | ... | 5 or more years of college | 99 | ... | Not stated |
| 00 | ... | No formal education | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 01-08 | ... | Years of elementary school | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 09 | ... | 1 year of high school | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | ... | 2 years of high school | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 11 | ... | 3 years of high school | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 12 | ... | 4 years of high school | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 13 | ... | 1 year of college | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 14 | ... | 2 years of college | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 15 | ... | 3 years of college | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 16 | ... | 4 years of college | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 17 | ... | 5 or more years of college | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 99 | ... | Not stated | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 41 | 1 | <p><u>MEDUC6</u> <u>Education of Mother Recode</u></p> <table border="0"> <tr><td>1</td><td>...</td><td>0 - 8 years</td></tr> <tr><td>2</td><td>...</td><td>9 - 11 years</td></tr> <tr><td>3</td><td>...</td><td>12 years</td></tr> <tr><td>4</td><td>...</td><td>13 - 15 years</td></tr> <tr><td>5</td><td>...</td><td>16 years and over</td></tr> <tr><td>6</td><td>...</td><td>Not stated</td></tr> </table> | 1 | ... | 0 - 8 years | 2 | ... | 9 - 11 years | 3 | ... | 12 years | 4 | ... | 13 - 15 years | 5 | ... | 16 years and over | 6 | ... | Not stated | | | | | | | | | | | | | | | | | | |
| 1 | ... | 0 - 8 years | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | ... | 9 - 11 years | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | ... | 12 years | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | ... | 13 - 15 years | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | ... | 16 years and over | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | ... | Not stated | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 42 | 1 | <p><u>DMARIMP</u> <u>Marital Status of Mother Imputation Flag</u></p> <table border="0"> <tr><td>Blank</td><td>...</td><td>Marital status is not imputed</td></tr> <tr><td>1</td><td>...</td><td>Marital status is imputed</td></tr> </table> | Blank | ... | Marital status is not imputed | 1 | ... | Marital status is imputed | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Blank | ... | Marital status is not imputed | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | ... | Marital status is imputed | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 43 | 1 | <p><u>DMAR</u> <u>Marital Status of Mother</u></p> <p>Marital status is not reported by all areas. See reporting flags.</p> <p><u>United States/Virgin Islands/Guam Occurrence</u></p> <table border="0"> <tr><td>1</td><td>...</td><td>Married</td></tr> <tr><td>2</td><td>...</td><td>Unmarried</td></tr> <tr><td>9</td><td>...</td><td>Unknown or not stated</td></tr> </table> <p><u>Puerto Rico Occurrence</u></p> <table border="0"> <tr><td>1</td><td>...</td><td>Married</td></tr> <tr><td>2</td><td>...</td><td>Unmarried parents living together</td></tr> <tr><td>3</td><td>...</td><td>Unmarried parents not living together</td></tr> <tr><td>9</td><td>...</td><td>Unknown or not stated</td></tr> </table> | 1 | ... | Married | 2 | ... | Unmarried | 9 | ... | Unknown or not stated | 1 | ... | Married | 2 | ... | Unmarried parents living together | 3 | ... | Unmarried parents not living together | 9 | ... | Unknown or not stated | | | | | | | | | | | | | | | |
| 1 | ... | Married | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | ... | Unmarried | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9 | ... | Unknown or not stated | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | ... | Married | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | ... | Unmarried parents living together | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | ... | Unmarried parents not living together | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9 | ... | Unknown or not stated | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Denominator Record and Natality Section of Numerator (Linked) Record

| Item | Item | Variable Name, Item and Code Outline |
|-------|------|--|
| 44-45 | 2 | <u>MPLBIR</u> <u>Place of Birth of Mother</u> |
| | | 01 ... Alabama |
| | | 02 ... Alaska |
| | | 03 ... Arizona |
| | | 04 ... Arkansas |
| | | 05 ... California |
| | | 06 ... Colorado |
| | | 07 ... Connecticut |
| | | 08 ... Delaware |
| | | 09 ... District of Columbia |
| | | 10 ... Florida |
| | | 11 ... Georgia |
| | | 12 ... Hawaii |
| | | 13 ... Idaho |
| | | 14 ... Illinois |
| | | 15 ... Indiana |
| | | 16 ... Iowa |
| | | 17 ... Kansas |
| | | 18 ... Kentucky |
| | | 19 ... Louisiana |
| | | 20 ... Maine |
| | | 21 ... Maryland |
| | | 22 ... Massachusetts |
| | | 23 ... Michigan |
| | | 24 ... Minnesota |
| | | 25 ... Mississippi |
| | | 26 ... Missouri |
| | | 27 ... Montana |
| | | 28 ... Nebraska |
| | | 29 ... Nevada |
| | | 30 ... New Hampshire |
| | | 31 ... New Jersey |
| | | 32 ... New Mexico |
| | | 33 ... New York |
| | | 34 ... North Carolina |
| | | 35 ... North Dakota |
| | | 36 ... Ohio |
| | | 37 ... Oklahoma |
| | | 38 ... Oregon |
| | | 39 ... Pennsylvania |
| | | 40 ... Rhode Island |
| | | 41 ... South Carolina |
| | | 42 ... South Dakota |
| | | 43 ... Tennessee |
| | | 44 ... Texas |
| | | 45 ... Utah |
| | | 46 ... Vermont |
| | | 47 ... Virginia |
| | | 48 ... Washington |
| | | 49 ... West Virginia |

Denominator Record and Natality Section of Numerator (Linked) Record

| <u>Item Location</u> | <u>Length</u> | <u>Item</u> | <u>Variable Name, Item and Code Outline</u> |
|----------------------|---------------|-------------|---|
| 44-45 | 2 | | <p><u>MPLBIR</u> <u>Place of Birth of Mother (Cond't)</u></p> <p>50 ... Wisconsin 51 ... Wyoming 52 ... Puerto Rico 53 ... Virgin Islands 54 ... Guam 55 ... Canada 56 ... Cuba 57 ... Mexico 59 ... Remainder of the World 99 ... Not Classifiable</p> |
| 46 | 1 | | <p><u>MPLBIRR</u> <u>Place of Birth of Mother Recode</u></p> <p><u>United States Occurrence</u></p> <p>1 ... Born in the 50 States and D.C. 2 ... Born outside the 50 States and DC 3 ... Unknown or not stated</p> <p><u>Puerto Rico/Virgin Island/ Guam Occurrence</u> Blank ... This item not recorded</p> |
| 47-48 | 2 | | <p><u>DTOTORD</u> <u>Detail Total Birth Order</u></p> <p>Sum of live birth order and other terminations of pregnancy. If either item is unknown, this item is made unknown.</p> <p>01-40 ... Total number of live births and other terminations of pregnancy 99 ... Unknown</p> |
| 49-50 | 2 | | <p><u>DLIVORD</u> <u>Detail Live Birth Order</u></p> <p>Sum of live births now living and now dead plus one. If either item is unknown, this item is made unknown.</p> <p>00-31 ... Number of children born alive to mother 99 ... Unknown</p> |

Denominator Record and Natality Section of Numerator (Linked) Record

| Item | Item | Variable Name, Item and Code Outline |
|-------|------|---|
| 51-52 | 2 | <p><u>MONPRE</u> <u>Detail Month of Pregnancy Prenatal Care Began</u></p> <p>00 ... No prenatal care 01 ... 1st month 02 ... 2nd month 03 ... 3rd month 04 ... 4th month 05 ... 5th month 06 ... 6th month 07 ... 7th month 08 ... 8th month 09 ... 9th month 99 ... Unknown or not stated</p> |
| 53 | 1 | <p><u>MPRE5</u> <u>Month Prenatal Care Began Recode 5</u></p> <p>1 ... 1st Trimester (1st-3rd month) 2 ... 2nd Trimester (4th-6th month) 3 ... 3rd Trimester (7th-9th month) 4 ... No prenatal care 5 ... Unknown or not stated</p> |
| 54-55 | 2 | <p><u>NPREVIST</u> <u>Total Number of Prenatal Visits</u></p> <p>00 ... No prenatal visits 01-48 ... Stated number of visits 49 ... 49 or more visits 99 ... Unknown or not stated</p> |
| 56 | 1 | <p><u>ADEQUACY</u> <u>Adequacy of Care Recode (Kessner Index)</u></p> <p>This code is based on a modified Kessner criterion. Month Prenatal Care Began, Number of Prenatal Visits, and Gestation are the items used to generate this recode.</p> <p>1 ... Adequate 2 ... Intermediate 3 ... Inadequate 4 ... Unknown</p> |
| 57-59 | 3 | <p><u>R1</u> <u>Reserved Positions</u></p> |

Denominator Record and Natality Section of Numerator (Linked) Record

| <u>Item</u> | <u>Item</u> | <u>Variable Name,</u> <u>Item and Code Outline</u> |
|-------------|-------------|---|
| 60 | 1 | <p><u>FAGERFLG</u> <u>Reported Age of Father Used Flag</u></p> <p>This position is flagged whenever the Father's reported age in years is used. The reported age is used, if valid, when age derived from date of birth is not available or when it is less than 10.</p> <p>Blank ... Reported age is not used 1 ... Reported age is used</p> |
| 61-62 | 2 | <p><u>DFAGE</u> <u>Age of Father</u></p> <p>This item is either computed from date of birth of father and of child or is the reported age. This is the age item used in NCHS publications.</p> <p>10-98 ... Age in single years 99 ... Unknown or not stated</p> |
| 63 | 1 | <p><u>ORFATH</u> <u>Hispanic Origin of Father</u></p> <p>Hispanic origin is reported for all areas except Puerto Rico.</p> <p>0 ... Non-Hispanic 1 ... Mexican 2 ... Puerto Rican 3 ... Cuban 4 ... Central or South American 5 ... Other and unknown Hispanic 9 ... Origin unknown or not stated</p> |
| 64 | 1 | <p><u>ORRACEF</u> <u>Hispanic Origin and Race of Father Recode</u></p> <p>Hispanic origin is reported for all areas except Puerto Rico.</p> <p>1 ... Mexican 2 ... Puerto Rican 3 ... Cuban 4 ... Central or South American 5 ... Other and unknown Hispanic 6 ... Non-Hispanic White 7 ... Non-Hispanic Black 8 ... Non-Hispanic other or unknown race 9 ... Origin unknown or not stated</p> |

1998

Denominator Record and Natality Section of Numerator (Linked) Record

| Item | Item | Variable Name, Item and Code Outline |
|-----------------|---------------|---|
| <u>Location</u> | <u>Length</u> | |

| | | |
|-------|---|--|
| 65-66 | 2 | |
|-------|---|--|

FRACE
Race of Father

Beginning with 1992 data, some areas started reporting additional Asian or Pacific Islander codes for race. See reporting flags. Codes 18 -68 replace old code 08 for these areas. Code 78 replaces old code 08 for all other areas. Code 09 (all other races) has been changed to 99.

United States Occurrence

| | | |
|----|-----|---|
| 01 | ... | White |
| 02 | ... | Black |
| 03 | ... | American Indian (includes Aleuts and Eskimos) |
| 04 | ... | Chinese |
| 05 | ... | Japanese |
| 06 | ... | Hawaiian (includes part-Hawaiian) |
| 07 | ... | Filipino |
| 18 | ... | Asian Indian |
| 28 | ... | Korean |
| 38 | ... | Samoan |
| 48 | ... | Vietnamese |
| 58 | ... | Guamanian |
| 68 | ... | Other Asian or Pacific Islander in areas reporting codes 18-58 |
| 78 | ... | Combined other Asian or Pacific Islander, includes codes 18-68 for areas that do not report them separately |
| 99 | ... | Unknown or not stated |

Puerto Rico Occurrence

| | | |
|----|-----|-----------------------|
| 00 | ... | Other races |
| 01 | ... | White |
| 02 | ... | Black |
| 99 | ... | Unknown or not stated |

Virgin Islands Occurrence

| | | |
|----|-----|---|
| 01 | ... | White |
| 02 | ... | Black |
| 03 | ... | American Indian (includes Aleuts and Eskimos) |
| 04 | ... | Chinese |
| 05 | ... | Japanese |
| 06 | ... | Hawaiian (includes part-Hawaiian) |
| 07 | ... | Filipino |
| 08 | ... | Other Asian or Pacific Islander |
| 99 | ... | Unknown or not stated |

1998

Denominator Record and Natality Section of Numerator (Linked) Record

| Item <u>LocationLength</u> | Item | Variable Name, <u>Item and Code Outline</u> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-------------------------------|------|--|-------|-----|-------------------------------|----|-----|------------------------------|----|-----|---|----|-----|---------------|----|-----|----------|----|-----|-----------------------------------|----|-----|----------|----|-----|---------------------------------|----|-----|-----------|----|-----|-----------------------|
| 65-66 | 2 | <p><u>FRACE</u> <u>Race of Father (Cond't)</u></p> <p><u>Guam Occurrence</u></p> <table border="1"> <tr><td>01</td><td>...</td><td>White</td></tr> <tr><td>02</td><td>...</td><td>Black</td></tr> <tr><td>03</td><td>...</td><td>American Indian (includes Aleuts and Eskimos)</td></tr> <tr><td>04</td><td>...</td><td>Chinese</td></tr> <tr><td>05</td><td>...</td><td>Japanese</td></tr> <tr><td>06</td><td>...</td><td>Hawaiian (includes part-Hawaiian)</td></tr> <tr><td>07</td><td>...</td><td>Filipino</td></tr> <tr><td>08</td><td>...</td><td>Other Asian or Pacific Islander</td></tr> <tr><td>58</td><td>...</td><td>Guamanian</td></tr> <tr><td>99</td><td>...</td><td>Unknown or not stated</td></tr> </table> | 01 | ... | White | 02 | ... | Black | 03 | ... | American Indian (includes Aleuts and Eskimos) | 04 | ... | Chinese | 05 | ... | Japanese | 06 | ... | Hawaiian (includes part-Hawaiian) | 07 | ... | Filipino | 08 | ... | Other Asian or Pacific Islander | 58 | ... | Guamanian | 99 | ... | Unknown or not stated |
| 01 | ... | White | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 02 | ... | Black | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 03 | ... | American Indian (includes Aleuts and Eskimos) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 04 | ... | Chinese | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 05 | ... | Japanese | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 06 | ... | Hawaiian (includes part-Hawaiian) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 07 | ... | Filipino | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 08 | ... | Other Asian or Pacific Islander | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 58 | ... | Guamanian | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 99 | ... | Unknown or not stated | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 67 | 1 | <p><u>PLDEL</u> <u>Place or Facility of Delivery</u></p> <table border="1"> <tr><td>1</td><td>...</td><td>Hospital</td></tr> <tr><td>2</td><td>...</td><td>Freestanding Birthing Center</td></tr> <tr><td>3</td><td>...</td><td>Clinic or Doctor's Office</td></tr> <tr><td>4</td><td>...</td><td>A Residence</td></tr> <tr><td>5</td><td>...</td><td>Other</td></tr> <tr><td>9</td><td>...</td><td>Unknown or Not Stated</td></tr> </table> | 1 | ... | Hospital | 2 | ... | Freestanding Birthing Center | 3 | ... | Clinic or Doctor's Office | 4 | ... | A Residence | 5 | ... | Other | 9 | ... | Unknown or Not Stated | | | | | | | | | | | | |
| 1 | ... | Hospital | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | ... | Freestanding Birthing Center | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | ... | Clinic or Doctor's Office | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | ... | A Residence | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | ... | Other | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9 | ... | Unknown or Not Stated | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 68 | 1 | <p><u>BIRATTND</u> <u>Attendant at Delivery</u></p> <table border="1"> <tr><td>1</td><td>...</td><td>Doctor of Medicine (M.D.)</td></tr> <tr><td>2</td><td>...</td><td>Doctor of Osteopathy (D.O.)</td></tr> <tr><td>3</td><td>...</td><td>Certified Nurse Midwife (C.N.M.)</td></tr> <tr><td>4</td><td>...</td><td>Other Midwife</td></tr> <tr><td>5</td><td>...</td><td>Other</td></tr> <tr><td>9</td><td>...</td><td>Unknown or not stated</td></tr> </table> | 1 | ... | Doctor of Medicine (M.D.) | 2 | ... | Doctor of Osteopathy (D.O.) | 3 | ... | Certified Nurse Midwife (C.N.M.) | 4 | ... | Other Midwife | 5 | ... | Other | 9 | ... | Unknown or not stated | | | | | | | | | | | | |
| 1 | ... | Doctor of Medicine (M.D.) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | ... | Doctor of Osteopathy (D.O.) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | ... | Certified Nurse Midwife (C.N.M.) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | ... | Other Midwife | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | ... | Other | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9 | ... | Unknown or not stated | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 69 | 1 | <p><u>R2</u> <u>Reserved position</u></p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 70 | 1 | <p><u>GESTESTM</u> <u>Clinical Estimate of Gestation Used Flag</u> This position is flagged whenever the clinical estimate of gestation is used. It is used when gestation could not be computed or when the computed gestation is outside the 17-47 code range.</p> <table border="1"> <tr><td>Blank</td><td>...</td><td>Clinical Estimate is not used</td></tr> <tr><td>1</td><td>...</td><td>Clinical Estimate is used</td></tr> </table> | Blank | ... | Clinical Estimate is not used | 1 | ... | Clinical Estimate is used | | | | | | | | | | | | | | | | | | | | | | | | |
| Blank | ... | Clinical Estimate is not used | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | ... | Clinical Estimate is used | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

1998
Denominator Record and Natality Section of Numerator (Linked) Record

| Item <u>LocationLength</u> | Item | Variable Name, <u>Item and Code Outline</u> |
|-------------------------------|------|--|
| 71-72 | 2 | <p><u>CLINGEST</u> <u>Clinical Estimate of Gestation</u></p> <p>Clinical estimate is not reported by all areas. See reporting flags.</p> <p>17-47 ... Estimated gestation in weeks 99 ... Unknown or not stated</p> |
| 73 | 1 | <p><u>GESTIMP</u> <u>Gestation Imputation Flag</u></p> <p>Blank ... Gestation is not imputed 1 ... Gestation is imputed</p> |
| 74-75 | 2 | <p><u>GESTAT</u> <u>Gestation - Detail in Weeks</u></p> <p>This item is: a) computed using dates of birth of child and last normal menses; b) imputed from LMP date; c) the clinical estimate; or d) unknown when there is insufficient data to impute or no valid clinical estimate. This is the gestation item used in NCHS publications.</p> <p>17-47 ... 17th through 47th week of gestation 99 ... Unknown</p> |
| 76-77 | 2 | <p><u>GESTAT 10</u> <u>GESTATION RECODE 10</u></p> <p>01 ... Under 20 weeks 02 ... 20 - 27 weeks 03 ... 28 - 31 weeks 04 ... 32 - 35 weeks 05 ... 36 weeks 06 ... 37 - 39 weeks 07 ... 40 weeks 08 ... 41 weeks 09 ... 42 weeks and over 10 ... Not stated</p> |
| 78 | 1 | <p><u>CSEXIMP</u> <u>Sex Imputation Flag</u></p> <p>Blank ... Sex is not imputed 1 ... Sex is imputed</p> |
| 79 | 1 | <p><u>CSEX</u> <u>Sex</u></p> <p>1 ... Male 2 ... Female</p> |

Denominator Record and Natality Section of Numerator (Linked) Record

| Item <u>Location</u> | Item <u>Length</u> | Variable Name, <u>Item and Code Outline</u> |
|-------------------------|-----------------------|---|
| 80-87 | 8 | <u>BIRTHWEIGHT</u> Beginning in 1995, an imputation for not-stated birthweight was added to reduce potential bias in the data (see section on Changes beginning with the 1995 data year in the introductory text to this documentation). The following imputation flag can be used to delete imputed values for those researchers wishing to use only reported birthweight data. |
| 80 | 1 | <u>BWIF</u> <u>Birth Weight Imputation Flag</u> Blank ... Birthweight is not imputed 1 ... Birthweight is imputed |
| 81-84 | 4 | <u>DBIRWT</u> <u>Birth Weight Detail in Grams (Imputed)</u> 0227-8165 ... Number of grams 9999 ... Not stated birth weight |
| 85-86 | 2 | <u>BIRWT12</u> <u>Birth Weight Recode 12 (Imputed)</u> 01 ... 499 grams or less 02 ... 500-999 grams 03 ... 1000-1499 grams 04 ... 1500-1999 grams 05 ... 2000-2499 grams 06 ... 2500-2999 grams 07 ... 3000-3499 grams 08 ... 3500-3999 grams 09 ... 4000-4499 grams 10 ... 4500-4999 grams 11 ... 5000-8165 grams 12 ... Unknown or not stated |
| 87 | 1 | <u>BIRWT4</u> <u>Birth Weight Recode 4 (Imputed)</u> 1 ... 1499 grams or less 2 ... 1500-2499 grams 3 ... 2500 grams or more 4 ... Unknown or not stated |
| 88 | 1 | <u>PLURIMP</u> <u>Plurality Imputation Flag</u> Blank ... Plurality is not imputed 1 ... Plurality is imputed |

Denominator Record and Natality Section of Numerator (Linked) Record

| <u>Item Location</u> | <u>Length</u> | <u>Item</u> | <u>Variable Name, Item and Code Outline</u> |
|----------------------|---------------|-------------|---|
| 89 | | 1 | <p><u>DPLURAL</u> <u>Plurality</u></p> <p>1 ... Single 2 ... Twin 3 ... Triplet 4 ... Quadruplet 5 ... Quintuplet or higher</p> |
| 90-91 | | 2 | <p><u>FMAPS</u> <u>Five-Minute Apgar Score</u></p> <p>Apgar score is not reported by all areas. See reporting flags.</p> <p>00-10 ... A score of 0-10 99 ... Unknown or not stated</p> |
| 92-186 | 95 | | <p><u>MEDINFO</u> <u>Medical and Health Data</u></p> <p>Some States do not report an entire item while other States do not report all of the categories within an item. If an item is not reported, it is indicated by code zero in the appropriate reporting flag. If a category within an item is not reported it is indicated by code 8 in the position for that category.</p> |
| 92-99 | | 8 | <p><u>DELMETH</u> <u>Method of Delivery</u></p> <p>Each method is assigned a separate position, and the code structure for each method (position) is:</p> <p>1 ... The method was used 2 ... The method was not used 8 ... Method not on certificate 9 ... Method unknown or not stated</p> |
| 92 | | 1 | <p><u>VAGINAL</u> <u>Vaginal</u></p> |
| 93 | | 1 | <p><u>VBAC</u> <u>Vaginal Birth After Previous C-Section</u></p> |
| 94 | | 1 | <p><u>PRIMAC</u> <u>Primary C-Section</u></p> |
| 95 | | 1 | <p><u>REPEAC</u> <u>Repeat C-Section</u></p> |
| 96 | | 1 | <p><u>FORCEP</u> <u>Forceps</u></p> |

Denominator Record and Natality Section of Numerator (Linked) Record

| Item <u>LocationLength</u> | Item | Variable Name, <u>Item and Code Outline</u> |
|-------------------------------|------|--|
| 97 | 1 | <u>VACUUM</u> <u>Vacuum</u> |
| 98 | 1 | <u>R3</u> <u>Reserved Position</u> |
| 99 | 1 | <u>DELMETH5</u> <u>Method of Delivery Recode</u> |
| | | 1 ... Vaginal (excludes Vaginal after previous C-section) |
| | | 2 ... Vaginal birth after previous C section |
| | | 3 ... Primary C-section |
| | | 4 ... Repeat C-Section |
| | | 5 ... Not stated |
| 100-117 18 | | <u>MEDRISK</u> <u>Medical Risk Factors</u> |
| | | Each risk factor is assigned a separate position, and the code structure for each risk factor (position) is: |
| | | 1 ... Factor reported |
| | | 2 ... Factor not reported |
| | | 8 ... Factor not on certificate |
| | | 9 ... Factor not classifiable |
| 100 | 1 | <u>MRFLAG</u> <u>No Medical Risk Factors Reported Flag</u> |
| | | Blank ... One or more medical risk factors coded, one, eight, or nine |
| | | 2 ... No medical risk factors reported. Each factor is coded a two. |
| 101 | 1 | <u>ANEMIA</u> <u>Anemia (Hct.<30/Hgb.<10)</u> |
| 102 | 1 | <u>CARDIAC</u> <u>Cardiac disease</u> |
| 103 | 1 | <u>LUNG</u> <u>Acute or chronic lung disease</u> |
| 104 | 1 | <u>DIABETES</u> <u>Diabetes</u> |
| 105 | 1 | <u>HERPES</u> <u>Genital herpes</u> |
| 106 | 1 | <u>HYDRA</u> |

Hydramnios/Oligohydramnios

1998

Denominator Record and Natality Section of Numerator (Linked) Record

| <u>Item</u> | <u>Item</u> | <u>Variable Name,</u> <u>Item and Code Outline</u> |
|-------------|-------------|---|
| 107 | 1 | <u>HEMO</u> <u>Hemoglobinopathy</u> |
| 108 | 1 | <u>CHYPER</u> <u>Hypertension, chronic</u> |
| 109 | 1 | <u>PHYPER</u> <u>Hypertension, pregnancy-associated</u> |
| 110 | 1 | <u>ECLAMP</u> <u>Eclampsia</u> |
| 111 | 1 | <u>INCERVIX</u> <u>Incompetent cervix</u> |
| 112 | 1 | <u>PRE4000</u> <u>Previous infant 4000+ grams</u> |
| 113 | 1 | <u>PRETERM</u> <u>Previous preterm or small-for-gestational-age infant</u> |
| 114 | 1 | <u>RENAL</u> <u>Renal disease</u> |
| 115 | 1 | <u>RH</u> <u>Rh sensitization</u> |
| 116 | 1 | <u>UTERINE</u> <u>Uterine bleeding</u> |
| 117 | 1 | <u>OTHERMR</u> <u>Other Medical Risk Factors</u> |
| 118-128 | 11 | <u>OTHERRSK</u> <u>Other Risk Factors for this Pregnancy</u> |
| 118-121 | 4 | <u>TOBACRSK</u> <u>Tobacco Risks</u> |
| 118 | 1 | <u>TOBACCO</u> <u>Tobacco Use During Pregnancy</u> |
| | | 1 ... Yes |
| | | 2 ... No |
| | | 9 ... Unknown or not stated |
| 119-120 | 2 | <u>CIGAR</u> <u>Average Number of Cigarettes Per Day</u> |
| | | 00-97 ... As stated |

| | | |
|----|-----|-------------------------------|
| 98 | ... | 98 or more cigarettes per day |
| 99 | ... | Unknown or not stated |

1998

Denominator Record and Natality Section of Numerator (Linked) Record

| Item <u>LocationLength</u> | Item | Variable Name, <u>Item and Code Outline</u> |
|-------------------------------|------|--|
| 121 | 1 | <u>CIGAR6</u> <u>Average Number of Cigarettes Per Day Recode</u> 0 ... Non-smoker 1 ... 1-5 cigarettes per day 2 ... 6-10 cigarettes per day 3 ... 11-20 cigarettes per day 4 ... 21-40 cigarettes per day 5 ... 41 or more cigarettes per day 6 ... Unknown or not stated |
| 122-125 | 4 | <u>ALCOHRSK</u> <u>Alcohol</u> |
| 122 | 1 | <u>ALCOHOL</u> <u>Alcohol Use During Pregnancy</u> 1 ... Yes 2 ... No 9 ... Unknown or not stated |
| 123-124 | 2 | <u>DRINK</u> <u>Average Number of Drinks Per Week</u> 00-97 ... As stated 98 ... 98 or more drinks per week 99 ... Unknown or not stated |
| 125 | 1 | <u>DRINK5</u> <u>Average Number of Drinks Per Week Recode</u> 0 ... Non-drinker 1 ... 1 drink per week 2 ... 2 drinks per week 3 ... 3-4 drinks per week 4 ... 5 or more drinks per week 5 ... Unknown or not stated |
| 126-128 | 3 | <u>WTGANRSK</u> <u>Weight Gain During Pregnancy</u> |
| 126-127 | 2 | <u>WTGAIN</u> <u>Weight Gain</u> 00-97 ... Stated number of pounds 98 ... 98 pounds or more 99 ... Unknown or not stated |

1998
Denominator Record and Natality Section of Numerator (Linked) Record

| <u>Item</u> <u>LocationLength</u> | <u>Item</u> | <u>Variable Name,</u> <u>Item and Code Outline</u> | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--------------------------------------|-------------|---|-------|-----|---|---|-----|---|---|-----|------------------------------|---|-----|----------------------------|---|-----|--------------|---|-----|--------------|---|-----|--------------|---|-----|-------------------|---|-----|-----------------------|
| 128 | 1 | <p><u>WTGAIN9</u> <u>Weight Gain Recode</u></p> <table border="0"> <tr><td>1</td><td>...</td><td>Less than 16 pounds</td></tr> <tr><td>2</td><td>...</td><td>16-20 pounds</td></tr> <tr><td>3</td><td>...</td><td>21-25 pounds</td></tr> <tr><td>4</td><td>...</td><td>26-30 pounds</td></tr> <tr><td>5</td><td>...</td><td>31-35 pounds</td></tr> <tr><td>6</td><td>...</td><td>36-40 pounds</td></tr> <tr><td>7</td><td>...</td><td>41-45 pounds</td></tr> <tr><td>8</td><td>...</td><td>46 or more pounds</td></tr> <tr><td>9</td><td>...</td><td>Unknown or not stated</td></tr> </table> | 1 | ... | Less than 16 pounds | 2 | ... | 16-20 pounds | 3 | ... | 21-25 pounds | 4 | ... | 26-30 pounds | 5 | ... | 31-35 pounds | 6 | ... | 36-40 pounds | 7 | ... | 41-45 pounds | 8 | ... | 46 or more pounds | 9 | ... | Unknown or not stated |
| 1 | ... | Less than 16 pounds | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | ... | 16-20 pounds | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | ... | 21-25 pounds | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | ... | 26-30 pounds | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | ... | 31-35 pounds | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | ... | 36-40 pounds | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | ... | 41-45 pounds | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | ... | 46 or more pounds | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9 | ... | Unknown or not stated | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 129-136 | 8 | <p><u>OBSTETRC</u> <u>Obstetric Procedures</u></p> <p>Each procedure is assigned a separate position, and the code structure for each procedure (position) is:</p> <table border="0"> <tr><td>1</td><td>...</td><td>Procedure reported</td></tr> <tr><td>2</td><td>...</td><td>Procedure not reported</td></tr> <tr><td>8</td><td>...</td><td>Procedure not on certificate</td></tr> <tr><td>9</td><td>...</td><td>Procedure not classifiable</td></tr> </table> | 1 | ... | Procedure reported | 2 | ... | Procedure not reported | 8 | ... | Procedure not on certificate | 9 | ... | Procedure not classifiable | | | | | | | | | | | | | | | |
| 1 | ... | Procedure reported | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | ... | Procedure not reported | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | ... | Procedure not on certificate | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9 | ... | Procedure not classifiable | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 129 | 1 | <p><u>OBFLAG</u> <u>Obstetric Flag</u></p> <table border="0"> <tr><td>Blank</td><td>...</td><td>One or more obstetric procedures coded, one, eight, or nine</td></tr> <tr><td>2</td><td>...</td><td>No obstetric procedures reported. Each factor is coded a two.</td></tr> </table> | Blank | ... | One or more obstetric procedures coded, one, eight, or nine | 2 | ... | No obstetric procedures reported. Each factor is coded a two. | | | | | | | | | | | | | | | | | | | | | |
| Blank | ... | One or more obstetric procedures coded, one, eight, or nine | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | ... | No obstetric procedures reported. Each factor is coded a two. | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 130 | 1 | <p><u>AMNIO</u> <u>Amniocentesis</u></p> | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 131 | 1 | <p><u>MONITOR</u> <u>Electronic fetal monitoring</u></p> | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 132 | 1 | <p><u>INDUCT</u> <u>Induction of labor</u></p> | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 133 | 1 | <p><u>STIMULA</u> <u>Stimulation of labor</u></p> | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 134 | 1 | <p><u>TOCOL</u> <u>Tocolysis</u></p> | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| | | |
|-----|---|---|
| 135 | 1 | <u>ULTRAS</u> <u>Ultrasound</u> |
| 136 | 1 | <u>OTHEROB</u> <u>Other Obstetric Procedures</u> |

1998
Denominator Record and Natality Section of Numerator (Linked) Record

| <u>Item</u> | <u>Item</u> | <u>Variable Name,</u> <u>Item and Code Outline</u> | | | | | | | | | | | | |
|-------------|-------------|---|-------|-----|--|---|-----|---|---|-----|---------------------------------|---|-----|-------------------------------|
| 137-153 | 17 | <u>LABOR</u> <u>Complications of Labor and/or Delivery</u> Each complication is assigned a separate position, and the code structure for each complication (position) is: <table> <tr> <td>1</td> <td>...</td> <td>Complication reported</td> </tr> <tr> <td>2</td> <td>...</td> <td>Complication not reported</td> </tr> <tr> <td>8</td> <td>...</td> <td>Complication not on certificate</td> </tr> <tr> <td>9</td> <td>...</td> <td>Complication not classifiable</td> </tr> </table> | 1 | ... | Complication reported | 2 | ... | Complication not reported | 8 | ... | Complication not on certificate | 9 | ... | Complication not classifiable |
| 1 | ... | Complication reported | | | | | | | | | | | | |
| 2 | ... | Complication not reported | | | | | | | | | | | | |
| 8 | ... | Complication not on certificate | | | | | | | | | | | | |
| 9 | ... | Complication not classifiable | | | | | | | | | | | | |
| 137 | 1 | <u>FBFLAG</u> <u>Labor Flag</u> <table> <tr> <td>Blank</td> <td>...</td> <td>One or more labor and/or delivery complications coded, one, eight, or nine</td> </tr> <tr> <td>2</td> <td>...</td> <td>No labor and/or delivery complication reported. Each factor is coded a two.</td> </tr> </table> | Blank | ... | One or more labor and/or delivery complications coded, one, eight, or nine | 2 | ... | No labor and/or delivery complication reported. Each factor is coded a two. | | | | | | |
| Blank | ... | One or more labor and/or delivery complications coded, one, eight, or nine | | | | | | | | | | | | |
| 2 | ... | No labor and/or delivery complication reported. Each factor is coded a two. | | | | | | | | | | | | |
| 138 | 1 | <u>FEBRILE</u> <u>Febrile (>100 degrees F. or 38 degrees C.)</u> | | | | | | | | | | | | |
| 139 | 1 | <u>MECONIUM</u> <u>Meconium, moderate/heavy</u> | | | | | | | | | | | | |
| 140 | 1 | <u>RUPTURE</u> <u>Premature rupture of membrane (>12 hours)</u> | | | | | | | | | | | | |
| 141 | 1 | <u>ABRUPTIO</u> <u>Abruptio placenta</u> | | | | | | | | | | | | |
| 142 | 1 | <u>PREPLACE</u> <u>Placenta previa</u> | | | | | | | | | | | | |
| 143 | 1 | <u>EXCEBLD</u> <u>Other excessive bleeding</u> | | | | | | | | | | | | |
| 144 | 1 | <u>SEIZURE</u> <u>Seizures during labor</u> | | | | | | | | | | | | |
| 145 | 1 | <u>PRECIP</u> <u>Precipitous labor (<3 hours)</u> | | | | | | | | | | | | |
| 146 | 1 | <u>PROLONG</u> <u>Prolonged labor (>20 hours)</u> | | | | | | | | | | | | |

| | | |
|-----|---|--|
| 147 | 1 | <u>DYSFUNC</u> <u>Dysfunctional labor</u> |
| 148 | 1 | <u>BREECH</u> <u>Breech/Malpresentation</u> |

1998
Denominator Record and Natality Section of Numerator (Linked) Record

| <u>Item</u> | <u>Item</u> | <u>Variable Name,</u> <u>Item and Code Outline</u> | | | | | | | | | | | | |
|-------------|-------------|--|-------|-----|---|---|-----|--|---|-----|------------------------------|---|-----|----------------------------|
| 149 | 1 | <u>CEPHALO</u> <u>Cephalopelvic disproportion</u> | | | | | | | | | | | | |
| 150 | 1 | <u>CORD</u> <u>Cord prolapse</u> | | | | | | | | | | | | |
| 151 | 1 | <u>ANESTHE</u> <u>Anesthetic complications</u> | | | | | | | | | | | | |
| 152 | 1 | <u>DISTRESS</u> <u>Fetal distress</u> | | | | | | | | | | | | |
| 153 | 1 | <u>OTHERLB</u> <u>Other Complications of Labor and/or Delivery</u> | | | | | | | | | | | | |
| 154-163 | 10 | <u>NEWBORN</u> <u>Abnormal conditions of the Newborn</u> Each condition is assigned a separate position, and the code structure for each condition (position) is: <table style="margin-left: 40px;"> <tr> <td>1</td> <td>...</td> <td>Condition reported</td> </tr> <tr> <td>2</td> <td>...</td> <td>Condition not reported</td> </tr> <tr> <td>8</td> <td>...</td> <td>Condition not on certificate</td> </tr> <tr> <td>9</td> <td>...</td> <td>Condition not classifiable</td> </tr> </table> | 1 | ... | Condition reported | 2 | ... | Condition not reported | 8 | ... | Condition not on certificate | 9 | ... | Condition not classifiable |
| 1 | ... | Condition reported | | | | | | | | | | | | |
| 2 | ... | Condition not reported | | | | | | | | | | | | |
| 8 | ... | Condition not on certificate | | | | | | | | | | | | |
| 9 | ... | Condition not classifiable | | | | | | | | | | | | |
| 154 | 1 | <u>NBFLAG</u> <u>Newborn Flag</u> <table style="margin-left: 40px;"> <tr> <td>Blank</td> <td>...</td> <td>One or more abnormal conditions of the newborn coded, one, eight, or nine</td> </tr> <tr> <td>2</td> <td>...</td> <td>No abnormal condition of the newborn reported. Each factor is coded a two.</td> </tr> </table> | Blank | ... | One or more abnormal conditions of the newborn coded, one, eight, or nine | 2 | ... | No abnormal condition of the newborn reported. Each factor is coded a two. | | | | | | |
| Blank | ... | One or more abnormal conditions of the newborn coded, one, eight, or nine | | | | | | | | | | | | |
| 2 | ... | No abnormal condition of the newborn reported. Each factor is coded a two. | | | | | | | | | | | | |
| 155 | 1 | <u>NANEMIA</u> <u>Anemia Hct.>39/Hgb.<13)</u> | | | | | | | | | | | | |
| 156 | 1 | <u>INJURY</u> <u>Birth injury</u> | | | | | | | | | | | | |
| 157 | 1 | <u>ALCOSYN</u> <u>Fetal alcohol syndrome</u> | | | | | | | | | | | | |
| 158 | 1 | <u>HYALINE</u> | | | | | | | | | | | | |

Hyaline membrane disease

159 1 **MECONSYN**
Meconium aspiration syndrome

160 1 **VENL30**
Assisted ventilation, less than 30 minutes

1998

Denominator Record and Natality Section of Numerator (Linked) Record

Item
LocationLength

Item

Variable Name,
Item and Code Outline

161 1 **VEN30M**
Assisted ventilation, 30 minutes or more

162 1 **NSEIZ**
Seizures

163 1 **OTHERAB**
Other Abnormal Conditions of the Newborn

164-186 23 **CONGENIT**
Congenital Anomalies

Each anomaly is assigned a separate position, and the code structure for each anomaly (position) is:

1 ... Anomaly reported
2 ... Anomaly not reported
8 ... Anomaly not on certificate
9 ... Anomaly not classifiable

164 1 **CGFLAG**
Congenital Flag

Blank ... One or more congenital anomalies coded, one, eight, or nine
2 ... No congenital anomaly is reported. Each factor is coded a two.

165 1 **ANEN**
Anencephalus

166 1 **SPINA**
Spina bifida/Meningocele

167 1 **HYDRO**
Hydrocephalus

168 1 **MICROCE**
Microcephalus

169 1 **NERVOUS**
Other central nervous system anomalies

170 1 **HEART**

Heart malformations

171 1 **CIRCUL**
Other circulatory/respiratory anomalies

172 1 **RECTAL**
Rectal atresia/stenosis

1998

Denominator Record and Natality Section of Numerator (Linked) Record

| <u>Item</u> | <u>Item</u> | <u>Variable Name,</u> <u>Item and Code Outline</u> |
|-------------|-------------|--|
| 173 | 1 | <u>TRACHEO</u> <u>Tracheo-esophageal fistula/Esophageal atresia</u> |
| 174 | 1 | <u>OMPHALO</u> <u>Omphalocele/Gastroschisis</u> |
| 175 | 1 | <u>GASTRO</u> <u>Other gastrointestinal anomalies</u> |
| 176 | 1 | <u>GENITAL</u> <u>Malformed genitalia</u> |
| 177 | 1 | <u>RENALAGE</u> <u>Renal agenesis</u> |
| 178 | 1 | <u>UROGEN</u> <u>Other urogenital anomalies</u> |
| 179 | 1 | <u>CLEFTLP</u> <u>Cleft lip/palate</u> |
| 180 | 1 | <u>ADACTYLY</u> <u>Polydactyly/Syndactyly/Adactyly</u> |
| 181 | 1 | <u>CLUBFOOT</u> <u>Club foot</u> |
| 182 | 1 | <u>HERNIA</u> <u>Diaphragmatic hernia</u> |
| 183 | 1 | <u>MUSCULO</u> <u>Other musculoskeletal/integumental anomalies</u> |
| 184 | 1 | <u>DOWNS</u> <u>Down's syndrome</u> |
| 185 | 1 | <u>CHROMO</u> <u>Other chromosomal anomalies</u> |
| 186 | 1 | <u>OTHERCON</u> <u>Other congenital anomalies</u> |
| 187-203 | 17 | <u>FLRES</u> |

Reporting Flags for Place of Residence

These positions contain flags to indicate whether or not the specified item is included on the birth certificate of the State of residence or of the SMSA of residence. The code structure of each flag (position) is:

| | | |
|---|-----|---|
| 0 | ... | The item is not reported |
| 1 | ... | The item is reported or partially reported. |

1998

Denominator Record and Natality Section of Numerator (Linked) Record

| <u>Item</u> | <u>Item</u> | <u>Variable Name,</u> <u>Item and Code Outline</u> |
|-------------|-------------|--|
| 187 | 1 | <u>ORIGM</u> <u>Origin of mother</u> |
| 188 | 1 | <u>ORIGF</u> <u>Origin of father</u> |
| 189 | 1 | <u>EDUCM</u> <u>Education of mother</u> |
| 190 | 1 | <u>R4</u> <u>Reserved Position</u> |
| 191 | 1 | <u>GESTE</u> <u>Clinical estimate of gestation</u> |
| 192 | 1 | <u>R5</u> <u>Reserved position</u> |
| 193 | 1 | <u>FMAPSRF</u> <u>5-minute Apgar score</u> |
| 194 | 1 | <u>DELMETRF</u> <u>Method of delivery</u> |
| 195 | 1 | <u>MEDRSK</u> <u>Medical risk factors</u> |
| 196 | 1 | <u>TOBUSE</u> <u>Tobacco use</u> |
| 197 | 1 | <u>ALCUSE</u> <u>Alcohol use</u> |
| 198 | 1 | <u>WTGN</u> <u>Weight gain</u> |
| 199 | 1 | <u>OBSTRC</u> <u>Obstetric procedures</u> |
| 200 | 1 | <u>CLABOR</u> <u>Complications of labor and/or delivery</u> |
| 201 | 1 | <u>ABNML</u> |

Abnormal conditions of newborn

| | | |
|-----|---|--|
| 202 | 1 | <u>CONGAN</u> <u>Congenital anomalies</u> |
| 203 | 1 | <u>API flag</u> <u>Race codes 18-68 reported (beginning with 1992 data)</u> |

1998
Denominator Record and Natality Section of Numerator (Linked) Record

| <u>Item</u> | <u>Item</u> | <u>Variable Name,</u> <u>Item and Code Outline</u> |
|-------------|-------------|--|
| 204 | 1 | <u>CDOBMIMP</u> <u>Month of Birth of Child Imputation Flag</u> Blank ... Month is not imputed 1 ... Month is imputed |
| 205-206 | 2 | <u>BIRMON</u> <u>Month of Birth</u> 01 ... January 02 ... February 03 ... March 04 ... April 05 ... May 06 ... June 07 ... July 08 ... August 09 ... September 10 ... October 11 ... November 12 ... December |
| 207-208 | 2 | <u>R6</u> <u>Reserved Position</u> |
| 209 | 1 | <u>WEEKDAYB</u> <u>Day of Week Child Born</u> 1 ... Sunday 2 ... Monday 3 ... Tuesday 4 ... Wednesday 5 ... Thursday 6 ... Friday 7 ... Saturday |
| 210 | 1 | <u>R7</u> <u>Reserved Position</u> |

1998
Denominator Record and Mortality Section of Numerator (Linked) Record

Locations 211-535 contain data from the Death Certificate. Data in locations 211-222 are included on both the numerator and denominator-plus files. Data in locations 223-535 are include in the numerator file only. Residence items in the Denominator Record and in the natality section of the Numerator (Linked) Record refer to the usual place of residence of the Mother; whereas in the mortality section of the Numerator (Linked) Record, these items refer to the place of residence of the Decedent.

| <u>Item</u> | <u>Item</u> | <u>Variable Name,</u> <u>Item and Code Outline</u> |
|-------------|-------------|--|
| 211-213 | 3 | <p><u>AGED</u> <u>Age at Death in Days</u></p> <p>The generated age at death in days is calculated from the date of death on the death certificate minus the date of birth on the birth certificate unless the reported age of death is less than 2 days, then the reported age is used. If the exact date of birth and/or death is unknown, the age is imputed.</p> <p>000-364 ... Number of days</p> |
| 214 | 1 | <p><u>AGER5</u> <u>Infant Age Recode 5</u></p> <p>1 ... Under 1 hour 2 ... 1-23 hours 3 ... 1-6 days 4 ... 7-27 days (late neonatal) 5 ... 28 days and over (postneonatal)</p> |
| 215 | 1 | <p><u>ACCIDPL</u> <u>Place of Accident for Causes E850-E869 and E880-E928</u></p> <p>Blank ... Causes other than E850-E869 and E880-E928 0 ... Home 1 ... Farm 2 ... Mine and quarry 3 ... Industrial place and premises 4 ... Place for recreation and sport 5 ... Street and highway 6 ... Public building 7 ... Resident institution 8 ... Other specified places 9 ... Place of accident not specified</p> |

216-219

4

UCOD
ICD Code (9th Revision)

See the International Classification of Diseases, 1975 Revision, Volume 1. For injuries and poisoning, the external cause is coded (E800-E999) rather than the Nature of Injury (800-999). These positions do not include the letter E for the external cause of injury. For those causes that do not have a 4th digit, location 219 is blank.

1998

Denominator Record and Mortality Section of Numerator (Linked) Record

Item Item
LocationLength

Variable Name,
Item and Code Outline

220-222 3

UCODR61
61 Infant Cause Recode

A recode of the ICD cause code into 61 groups for NCHS publications. Further back in this document is a complete list of recodes and the causes included.

010-680 ... Code range (not inclusive)

223-230

8

RECWT
Record weight

Beginning in 1995, a record weight was added to the linked file to adjust for the approximately 2-3% of infant death records each year which cannot be linked to their corresponding birth certificates. Weights are generally slightly greater than 1.0 for infant death records, and are set at 1.0 for surviving live birth records. Weights are appropriate for us in some circumstances, but not others — please see Introduction for further details. The weights were used to produce all NCHS linked file tables, including Documentation tables 1-5 included in this tape documentation. The general format for the record weight is the number one followed by a decimal point and six decimal places as follows:

1.XXXXXX

Here ends the Denominator file. Documentation for the Mortality Section of the Numerator (Linked) file begins with multiple conditions in positions 261-504.

1998
Mortality Section of Numerator (Linked) Record

| Item <u>LocationLength</u> | Item | Variable Name, <u>Item and Code Outline</u> |
|-------------------------------|------|---|
| 261-504 | 244 | <p><u>MULTCOND</u> <u>Multiple Conditions</u></p> <p>See the "International Classification of Diseases", 1975 Revision, Volume 1. Both the entity-axis and record-axis conditions are coded according to this revision (9th).</p> |
| 261-262 | 2 | <p><u>EANUM</u> <u>Number of Entity-Axis Conditions</u></p> <p>00-20 ... Code range</p> |
| 263-402 | 140 | <p><u>ENTITY</u> <u>ENTITY - AXIS CONDITIONS</u></p> <p>Space has been provided for a maximum of 20 conditions. Each condition takes 7 positions in the record. Records that do not have 20 conditions are blank in the unused area.</p> <p>Position 1: Part/line number on certificate</p> <p>1 ... Part I, line 1 (a) 2 ... Part I, line 2 (b) 3 ... Part I, line 3 (c) 4 ... Part I, line 4 (d) 5 ... Part I, line 5 (e) 6 ... Part II,</p> <p>Position 2: Sequence of condition within part/line</p> <p>1-7 ... Code range</p> <p>Position 3 - 6: Condition code (ICD 9th Revision)</p> <p>Position 7: Nature of Injury Flag</p> <p>1 ... Indicates that the code in positions 3-6 is a Nature of Injury code 0 ... All other codes</p> |
| 263-269 | 7 | 1st Condition |
| 270-276 | 7 | 2nd Condition |

| | | |
|---------|---|----------------------|
| 277-283 | 7 | 3rd Condition |
| 284-290 | 7 | 4th Condition |
| 291-297 | 7 | 5th Condition |

1998
Mortality Section of Numerator (Linked) Record

| <u>Item</u> | <u>Item</u> | <u>Variable Name,</u> <u>Item and Code Outline</u> |
|-------------|-------------|--|
| 298-304 | 7 | 6th Condition |
| 305-311 | 7 | 7th Condition |
| 312-318 | 7 | 8th Condition |
| 319-325 | 7 | 9th Condition |
| 326-332 | 7 | 10th Condition |
| 333-339 | 7 | 11th Condition |
| 340-346 | 7 | 12th Condition |
| 347-353 | 7 | 13th Condition |
| 354-360 | 7 | 14th Condition |
| 361-367 | 7 | 15th Condition |
| 368-374 | 7 | 16th Condition |
| 375-381 | 7 | 17th Condition |
| 382-388 | 7 | 18th Condition |
| 389-395 | 7 | 19th Condition |
| 396-402 | 7 | 20th Condition |
| | | <u>RANUM</u> |
| 403-404 | 2 | <u>Number of Record-Axis Conditions</u> |
| | | 00-20 ... Code range |
| 405-504 | 100 | <u>RECORD</u> <u>RECORD - AXIS CONDITIONS</u> |

Space has been provided for a maximum of 20 conditions. Each condition takes 5 positions in the record. Records that do not have 20 conditions are blank in the unused area.

Positions 1-4: Condition code (ICD 9th Revision)

Position 5: Nature of Injury Flag

1 ... Indicates that the code in positions 1-4 is a Nature
of Injury code
0 ... All other codes

1998
Mortality Section of Numerator (Linked) Record

| <u>Item</u> | <u>Item</u> | <u>Variable Name,</u> <u>Item and Code Outline</u> |
|-------------|-------------|---|
| 405-409 | 5 | 1st Condition |
| 410-414 | 5 | 2nd Condition |
| 415-419 | 5 | 3rd Condition |
| 420-424 | 5 | 4th Condition |
| 425-429 | 5 | 5th Condition |
| 430-434 | 5 | 6th Condition |
| 435-439 | 5 | 7th Condition |
| 440-444 | 5 | 8th Condition |
| 445-449 | 5 | 9th Condition |
| 450-454 | 5 | 10th Condition |
| 455-459 | 5 | 11th Condition |
| 460-464 | 5 | 12th Condition |
| 465-469 | 5 | 13th Condition |
| 470-474 | 5 | 14th Condition |
| 475-479 | 5 | 15th Condition |
| 480-484 | 5 | 16th Condition |
| 485-489 | 5 | 17th Condition |
| 490-494 | 5 | 18th Condition |
| 495-499 | 5 | 19th Condition |
| 500-504 | 5 | 20th Condition |
| 505 | 1 | <u>RESSTATD</u> |

Resident Status - Death

United States Occurrence

- 1 ... RESIDENTS: State and county of occurrence and residence are the same.
- 2 ... INTRASTATE NONRESIDENTS: State of occurrence and residence are the same, but county is different.
- 3 ... INTERSTATE NONRESIDENTS: State of occurrence and residence are different, but both are in the 50 States and D.C.
- 4 ... FOREIGN RESIDENTS: State of occurrence is one of the 50 States or the District of Columbia, but place of residence is outside of the 50 States and D.C.

1998

Mortality Section of Numerator (Linked) Record

Item Item
LocationLength

Variable Name,
Item and Code Outline

505 1

RESSTATD

Resident Status - Death (Cond't)

Puerto Rico Occurrence

- 1 ... RESIDENTS: State and county of occurrence and residence are the same.
- 2 ... INTRASTATE NONRESIDENTS: State of occurrence and residence are the same, but county is different.
- 4 ... FOREIGN RESIDENTS: Occurred in Puerto Rico to a resident of any other place.

Virgin Islands Occurrence

- 1 ... RESIDENTS: State and county of occurrence and residence are the same.
- 2 ... INTRASTATE NONRESIDENTS: State of occurrence and residence are the same, but county is different.
- 4 ... FOREIGN RESIDENTS: Occurred in the Virgin Islands to a resident of any other place.

Guam Occurrence

- 1 ... RESIDENTS: Occurred in Guam to a resident of Guam or to a resident of the U.S.
- 4 ... FOREIGN RESIDENTS: Occurred in Guam to a resident of any place other than Guam or the U.S.

506-507 2

DRSTATE

Expanded State of Residence - NCHS Codes - Deaths

This item is designed to separately identify New York City records from other New York State records.

United States Occurrence

- 01 ... Alabama
- 02 ... Alaska
- 03 ... Arizona
- 04 ... Arkansas
- 05 ... California
- 06 ... Colorado
- 07 ... Connecticut

| | | |
|----|-----|----------------------|
| 08 | ... | Delaware |
| 09 | ... | District of Columbia |
| 10 | ... | Florida |
| 11 | ... | Georgia |
| 12 | ... | Hawaii |
| 13 | ... | Idaho |
| 14 | ... | Illinois |
| 15 | ... | Indiana |
| 16 | ... | Iowa |
| 17 | ... | Kansas |
| 18 | ... | Kentucky |
| 19 | ... | Louisiana |
| 20 | ... | Maine |

1998

Mortality Section of Numerator (Linked) Record

| <u>Item</u> | <u>Item</u> | <u>Variable Name,</u> |
|-----------------------|-------------|---|
| <u>LocationLength</u> | | <u>Item and Code Outline</u> |
| 506-507 | 2 | <u>DRSTATE</u> <u>Expanded State of Residence - NCHS Codes - Deaths (Cond't)</u> |
| | | <u>United States Occurrence</u> |
| | | 21 ... Maryland |
| | | 22 ... Massachusetts |
| | | 23 ... Michigan |
| | | 24 ... Minnesota |
| | | 25 ... Mississippi |
| | | 26 ... Missouri |
| | | 27 ... Montana |
| | | 28 ... Nebraska |
| | | 29 ... Nevada |
| | | 30 ... New Hampshire |
| | | 31 ... New Jersey |
| | | 32 ... New Mexico |
| | | 33 ... New York |
| | | 34 ... New York City |
| | | 35 ... North Carolina |
| | | 36 ... North Dakota |
| | | 37 ... Ohio |
| | | 38 ... Oklahoma |
| | | 39 ... Oregon |
| | | 40 ... Pennsylvania |
| | | 41 ... Rhode Island |
| | | 42 ... South Carolina |
| | | 43 ... South Dakota |
| | | 44 ... Tennessee |
| | | 45 ... Texas |
| | | 46 ... Utah |
| | | 47 ... Vermont |
| | | 48 ... Virginia |
| | | 49 ... Washington |
| | | 50 ... West Virginia |
| | | 51 ... Wisconsin |
| | | 52 ... Wyoming |
| | | 53-58,60 ... Foreign Residents |
| | | 53 ... Puerto Rico |
| | | 54 ... Virgin Islands |
| | | 55 ... Guam |

| | | |
|----|-----|------------------------|
| 56 | ... | Canada |
| 57 | ... | Cuba |
| 58 | ... | Mexico |
| 60 | ... | Remainder of the World |

Puerto Rico Occurrence

| | | |
|----------------|-----|---|
| 53 | ... | Puerto Rico |
| 01-52,54-58,60 | ... | Foreign Residents: Refer to U.S. for specific code structure. |

1998

Mortality Section of Numerator (Linked) Record

Item Item
LocationLength

Variable Name,
Item and Code Outline

506-507 2

DRSTATE
Expanded State of Residence - NCHS Codes - Deaths (Cond't)

Virgin Islands Occurrence

| | | |
|----------------|-----|---|
| 54 | ... | Virgin Islands |
| 01-53,55-58,60 | ... | Foreign Residents: Refer to U.S. for specific code structure. |

Guam Occurrence

| | | |
|-------------|-----|---|
| 55 | ... | Guam |
| 01-52 | ... | U.S. resident is also considered a resident of Guam. |
| 53,54,58,60 | ... | Foreign Residents: Refer to U.S. for specific code structure. |

508-512 5

FIPSOCCD
Federal Information Processing Standards
(FIPS) Geographic Codes (Occurrence) - Death

Refer to the Geographic Code Outline further back in this document for a detailed list of areas and codes. For an explanation of FIPS codes, reference should be made to various National Institute of Standards and Technology (NIST) publications.

508-509 2

STOCCFIPD
State of Occurrence (FIPS) - Death

United States

| | | |
|----|-----|----------------------|
| 01 | ... | Alabama |
| 02 | ... | Alaska |
| 04 | ... | Arizona |
| 05 | ... | Arkansas |
| 06 | ... | California |
| 08 | ... | Colorado |
| 09 | ... | Connecticut |
| 10 | ... | Delaware |
| 11 | ... | District of Columbia |
| 12 | ... | Florida |
| 13 | ... | Georgia |
| 15 | ... | Hawaii |
| 16 | ... | Idaho |
| 17 | ... | Illinois |
| 18 | ... | Indiana |

| | | |
|----|-----|---------------|
| 19 | ... | Iowa |
| 20 | ... | Kansas |
| 21 | ... | Kentucky |
| 22 | ... | Louisiana |
| 23 | ... | Maine |
| 24 | ... | Maryland |
| 25 | ... | Massachusetts |
| 26 | ... | Michigan |
| 27 | ... | Minnesota |
| 28 | ... | Mississippi |
| 29 | ... | Missouri |
| 30 | ... | Montana |

1998
Mortality Section of Numerator (Linked) Record

Item Item
LocationLength

Variable Name,
Item and Code Outline

508-509 2

STOCCFIPD
State of Occurrence (FIPS) - Death (Cond't)

United States

| | | |
|----|-----|----------------|
| 31 | ... | Nebraska |
| 32 | ... | Nevada |
| 33 | ... | New Hampshire |
| 34 | ... | New Jersey |
| 35 | ... | New Mexico |
| 36 | ... | New York |
| 37 | ... | North Carolina |
| 38 | ... | North Dakota |
| 39 | ... | Ohio |
| 40 | ... | Oklahoma |
| 41 | ... | Oregon |
| 42 | ... | Pennsylvania |
| 44 | ... | Rhode Island |
| 45 | ... | South Carolina |
| 46 | ... | South Dakota |
| 47 | ... | Tennessee |
| 48 | ... | Texas |
| 49 | ... | Utah |
| 50 | ... | Vermont |
| 51 | ... | Virginia |
| 53 | ... | Washington |
| 54 | ... | West Virginia |
| 55 | ... | Wisconsin |
| 56 | ... | Wyoming |

Puerto Rico

72 ... Puerto Rico

Virgin Islands

78 ... Virgin Islands

Guam

66 ... Guam

510-512 3

CNTOCFIPD
County of Occurrence (FIPS) - Death

| | | |
|---------|-----|--|
| 001-nnn | ... | Counties and county equivalents (independent and coextensive cities) are numbered alphabetically within each State. (Note: To uniquely identify a county, both the State and county codes must be used.) |
| 999 | ... | County with less than 250,000 population |

1998
Mortality Section of Numerator (Linked) Record

Item Item
LocationLength

Variable Name,
Item and Code Outline

513-517 5

FIPSRES
Federal Information Processing Standards (FIPS) Geographic Codes (Residence) - Death

Refer to the Geographic Code Outline further back in this document for a detailed list of areas and codes. For an explanation of FIPS codes, reference should be made to various National Institute of Standards and Technology (NIST) publications.

513-514

2

STRESFIP
State of Residence (FIPS) - Death

United States Occurrence

| | | |
|----|-----|----------------------|
| 00 | ... | Foreign residents |
| 01 | ... | Alabama |
| 02 | ... | Alaska |
| 04 | ... | Arizona |
| 05 | ... | Arkansas |
| 06 | ... | California |
| 08 | ... | Colorado |
| 09 | ... | Connecticut |
| 10 | ... | Delaware |
| 11 | ... | District of Columbia |
| 12 | ... | Florida |
| 13 | ... | Georgia |
| 15 | ... | Hawaii |
| 16 | ... | Idaho |
| 17 | ... | Illinois |
| 18 | ... | Indiana |
| 19 | ... | Iowa |
| 20 | ... | Kansas |
| 21 | ... | Kentucky |
| 22 | ... | Louisiana |
| 23 | ... | Maine |
| 24 | ... | Maryland |
| 25 | ... | Massachusetts |
| 26 | ... | Michigan |
| 27 | ... | Minnesota |
| 28 | ... | Mississippi |
| 29 | ... | Missouri |

| | | |
|----|-----|----------------|
| 30 | ... | Montana |
| 31 | ... | Nebraska |
| 32 | ... | Nevada |
| 33 | ... | New Hampshire |
| 34 | ... | New Jersey |
| 35 | ... | New Mexico |
| 36 | ... | New York |
| 37 | ... | North Carolina |
| 38 | ... | North Dakota |
| 39 | ... | Ohio |
| 40 | ... | Oklahoma |

1998
Mortality Section of Numerator (Linked) Record

| <u>Item</u> | <u>Item</u> | <u>Variable Name,</u> <u>Item and Code Outline</u> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-----------------|-------------|---|-----|-----|-------------------|----|-----|--------------|----|-----|--------------|----|-----|----------------|----|-----|--------------|----|-----|-----------|----|-----|-------|----|-----|------|----|-----|---------|----|-----|----------|----|-----|------------|----|-----|---------------|----|-----|-----------|----|-----|---------|----|-----|-------------|--------------|-----|--|----|-----|----------------|--------------|-----|--|----|-----|------|-----------------|-----|--|
| 513-514 | 2 | <p><u>STRESFIPD</u> <u>State of Residence (FIPS) - Death (Cond't)</u></p> <p><u>United States Occurrence</u></p> <table> <tr><td>41</td><td>...</td><td>Oregon</td></tr> <tr><td>42</td><td>...</td><td>Pennsylvania</td></tr> <tr><td>44</td><td>...</td><td>Rhode Island</td></tr> <tr><td>45</td><td>...</td><td>South Carolina</td></tr> <tr><td>46</td><td>...</td><td>South Dakota</td></tr> <tr><td>47</td><td>...</td><td>Tennessee</td></tr> <tr><td>48</td><td>...</td><td>Texas</td></tr> <tr><td>49</td><td>...</td><td>Utah</td></tr> <tr><td>50</td><td>...</td><td>Vermont</td></tr> <tr><td>51</td><td>...</td><td>Virginia</td></tr> <tr><td>53</td><td>...</td><td>Washington</td></tr> <tr><td>54</td><td>...</td><td>West Virginia</td></tr> <tr><td>55</td><td>...</td><td>Wisconsin</td></tr> <tr><td>56</td><td>...</td><td>Wyoming</td></tr> </table> <p><u>Puerto Rico Occurrence</u></p> <table> <tr><td>72</td><td>...</td><td>Puerto Rico</td></tr> <tr><td>00-56, 66,78</td><td>...</td><td>Foreign resident: Refer to U.S. for specific code structure.</td></tr> </table> <p><u>Virgin Islands Occurrence</u></p> <table> <tr><td>78</td><td>...</td><td>Virgin Islands</td></tr> <tr><td>00-56, 66,72</td><td>...</td><td>Foreign resident: Refer to U.S. for specific code structure.</td></tr> </table> <p><u>Guam Occurrence</u></p> <table> <tr><td>66</td><td>...</td><td>Guam</td></tr> <tr><td>01-56, 00,72,78</td><td>...</td><td>Foreign resident: Refer to U.S. for specific code structure.</td></tr> </table> | 41 | ... | Oregon | 42 | ... | Pennsylvania | 44 | ... | Rhode Island | 45 | ... | South Carolina | 46 | ... | South Dakota | 47 | ... | Tennessee | 48 | ... | Texas | 49 | ... | Utah | 50 | ... | Vermont | 51 | ... | Virginia | 53 | ... | Washington | 54 | ... | West Virginia | 55 | ... | Wisconsin | 56 | ... | Wyoming | 72 | ... | Puerto Rico | 00-56, 66,78 | ... | Foreign resident: Refer to U.S. for specific code structure. | 78 | ... | Virgin Islands | 00-56, 66,72 | ... | Foreign resident: Refer to U.S. for specific code structure. | 66 | ... | Guam | 01-56, 00,72,78 | ... | Foreign resident: Refer to U.S. for specific code structure. |
| 41 | ... | Oregon | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 42 | ... | Pennsylvania | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 44 | ... | Rhode Island | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 45 | ... | South Carolina | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 46 | ... | South Dakota | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 47 | ... | Tennessee | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 48 | ... | Texas | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 49 | ... | Utah | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 50 | ... | Vermont | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 51 | ... | Virginia | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 53 | ... | Washington | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 54 | ... | West Virginia | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 55 | ... | Wisconsin | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 56 | ... | Wyoming | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 72 | ... | Puerto Rico | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 00-56, 66,78 | ... | Foreign resident: Refer to U.S. for specific code structure. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 78 | ... | Virgin Islands | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 00-56, 66,72 | ... | Foreign resident: Refer to U.S. for specific code structure. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 66 | ... | Guam | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 01-56, 00,72,78 | ... | Foreign resident: Refer to U.S. for specific code structure. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 515-517 | 3 | <p><u>CNTYRFPD</u> <u>County of Residence (FIPS) - Death</u></p> <table> <tr><td>000</td><td>...</td><td>Foreign residents</td></tr> </table> | 000 | ... | Foreign residents | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 000 | ... | Foreign residents | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| | | |
|---------|-----|--|
| 001-nnn | ... | Counties and county equivalents (independent and coextensive cities) are numbered alphabetically within each State (Note: To uniquely identify a county, both the State and county codes must be used.) A complete list of counties is shown in the Geographic Code Outline further back in this document. |
| 999 | ... | County with less than 250,000 population |

1998
Mortality Section of Numerator (Linked) Record

| <u>Item Location</u> | <u>Length</u> | <u>Item</u> | <u>Variable Name, Item and Code Outline</u> | | | | | | | | | | | | | | | | | | | | | | | | |
|----------------------|---------------|---|---|-------|-----|--|-------------|-----|---|-------|-----|---|----|-----|---|----|-----|--------------|---|-----|-----------|---|-----|-------|---|-----|------------------------|
| 518-522 | 5 | | <p><u>PLRES</u> <u>Place (City) of Residence (FIPS)</u></p> <p>A complete list of cities is shown in the Geographic code outline further back in this document.</p> <table> <tr> <td>00000</td> <td>...</td> <td>Foreign residents</td> </tr> <tr> <td>00001-nnnnn</td> <td>...</td> <td>Code range</td> </tr> <tr> <td>99999</td> <td>...</td> <td>Balance of county; or city less than 250,000 population</td> </tr> </table> | 00000 | ... | Foreign residents | 00001-nnnnn | ... | Code range | 99999 | ... | Balance of county; or city less than 250,000 population | | | | | | | | | | | | | | | |
| 00000 | ... | Foreign residents | | | | | | | | | | | | | | | | | | | | | | | | | |
| 00001-nnnnn | ... | Code range | | | | | | | | | | | | | | | | | | | | | | | | | |
| 99999 | ... | Balance of county; or city less than 250,000 population | | | | | | | | | | | | | | | | | | | | | | | | | |
| 523 | 1 | | <p><u>HOSPD</u> <u>Hospital and Patient Status</u></p> <table> <tr> <td>1</td> <td>...</td> <td>Hospital, Clinic or Medical Center - Inpatient</td> </tr> <tr> <td>2</td> <td>...</td> <td>Hospital, Clinic or Medical Center - Outpatient or admitted to Emergency Room</td> </tr> <tr> <td>3</td> <td>...</td> <td>Hospital, Clinic or Medical Center - Dead on arrival</td> </tr> <tr> <td>4</td> <td>...</td> <td>Hospital, Clinic or Medical Center - Patient status unknown</td> </tr> <tr> <td>5</td> <td>...</td> <td>Nursing home</td> </tr> <tr> <td>6</td> <td>...</td> <td>Residence</td> </tr> <tr> <td>7</td> <td>...</td> <td>Other</td> </tr> <tr> <td>9</td> <td>...</td> <td>Place of death unknown</td> </tr> </table> | 1 | ... | Hospital, Clinic or Medical Center - Inpatient | 2 | ... | Hospital, Clinic or Medical Center - Outpatient or admitted to Emergency Room | 3 | ... | Hospital, Clinic or Medical Center - Dead on arrival | 4 | ... | Hospital, Clinic or Medical Center - Patient status unknown | 5 | ... | Nursing home | 6 | ... | Residence | 7 | ... | Other | 9 | ... | Place of death unknown |
| 1 | ... | Hospital, Clinic or Medical Center - Inpatient | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | ... | Hospital, Clinic or Medical Center - Outpatient or admitted to Emergency Room | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | ... | Hospital, Clinic or Medical Center - Dead on arrival | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | ... | Hospital, Clinic or Medical Center - Patient status unknown | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | ... | Nursing home | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | ... | Residence | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | ... | Other | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9 | ... | Place of death unknown | | | | | | | | | | | | | | | | | | | | | | | | | |
| 524-527 | 4 | | <p><u>DTHYR</u> <u>Year of Death</u></p> <table> <tr> <td>1998</td> <td>...</td> <td>Death occurred in 1998</td> </tr> <tr> <td>1999</td> <td>...</td> <td>Death occurred in 1999</td> </tr> </table> | 1998 | ... | Death occurred in 1998 | 1999 | ... | Death occurred in 1999 | | | | | | | | | | | | | | | | | | |
| 1998 | ... | Death occurred in 1998 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1999 | ... | Death occurred in 1999 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 528-529 | 2 | | <p><u>DTHMON</u> <u>Month of Death</u></p> <table> <tr> <td>01</td> <td>...</td> <td>January</td> </tr> <tr> <td>02</td> <td>...</td> <td>February</td> </tr> <tr> <td>03</td> <td>...</td> <td>March</td> </tr> <tr> <td>04</td> <td>...</td> <td>April</td> </tr> <tr> <td>05</td> <td>...</td> <td>May</td> </tr> </table> | 01 | ... | January | 02 | ... | February | 03 | ... | March | 04 | ... | April | 05 | ... | May | | | | | | | | | |
| 01 | ... | January | | | | | | | | | | | | | | | | | | | | | | | | | |
| 02 | ... | February | | | | | | | | | | | | | | | | | | | | | | | | | |
| 03 | ... | March | | | | | | | | | | | | | | | | | | | | | | | | | |
| 04 | ... | April | | | | | | | | | | | | | | | | | | | | | | | | | |
| 05 | ... | May | | | | | | | | | | | | | | | | | | | | | | | | | |

| | | |
|----|-----|-----------|
| 06 | ... | June |
| 07 | ... | July |
| 08 | ... | August |
| 09 | ... | September |
| 10 | ... | October |
| 11 | ... | November |
| 12 | ... | December |

530-531 2

R8
Reserved Position

1998
Mortality Section of Numerator (Linked) Record

Item Item
LocationLength

Variable Name,
Item and Code Outline

532 1

WEEKDAYD
Day of Week of Death

| | | |
|---|-----|-----------|
| 1 | ... | Sunday |
| 2 | ... | Monday |
| 3 | ... | Tuesday |
| 4 | ... | Wednesday |
| 5 | ... | Thursday |
| 6 | ... | Friday |
| 7 | ... | Saturday |
| 9 | ... | Unknown |

533-535 3

R9
Reserved positions

1998 Linked Birth/Infant Death Data Set — Birth Cohort

Geographic Code Outline

The following pages show the geographic codes used by the Division of Vital Statistics in the processing of vital event data occurring in the United States. For the linked data set, counties and cities with a population of 250,000 or more are identified.

Federal Information Processing Standards (FIPS) State, County, and City/Place Codes: For the 1998 birth cohort linked file, the county and city/place codes and the State code immediately preceding them are FIPS codes. These codes were effective with the 1994 data year and are based on the results of the 1990 Census. County and county equivalents (independent and coextensive cities) are numbered alphabetically within each State. When an event occurs to a nonresident of the United States, residence data are coded only to the "State" level, or to the remainder of the world. For an explanation of FIPS codes, reference should be made to various National Bureau of Standards (NBS) publications.

Listing of Counties Identified in the Linked Data Set

Vital Statistics Geographic Code Outline Effective With 1998 Data Page 1

| State | County | State and County Name |
|-------|--------|---|
| 01 | | Alabama |
| | 073 | Jefferson |
| | 097 | Mobile |
| 02 | | Alaska |
| 04 | | Arizona |
| | 013 | Maricopa |
| | 019 | Pima |
| 05 | | Arkansas |
| | 119 | Pulaski |
| 06 | | California |
| | 001 | Alameda |
| | 013 | Contra Costa |
| | 019 | Fresno |
| | 029 | Kern |
| | 037 | Los Angeles |
| | 053 | Monterey |
| | 059 | Orange |
| | 065 | Riverside |
| | 067 | Sacramento |
| | 071 | San Bernardino |
| | 073 | San Diego |
| | 075 | San Francisco, coext. with San Francisco city |
| | 077 | San Joaquin |
| | 081 | San Mateo |
| | 083 | Santa Barbara |
| | 085 | Santa Clara |
| | 095 | Solano |
| | 097 | Sonoma |
| | 099 | Stanislaus |
| | 107 | Tulare |
| | 111 | Ventura |

Listing of Counties Identified in the Linked Data Set

Vital Statistics Geographic Code Outline Effective With 1998 Data Page 2

| State | County | State and County Name |
|-------|--------|---------------------------------|
| 08 | | Colorado |
| | 001 | Adams |
| | 005 | Arapahoe |
| | 031 | Denver, coext. with Denver city |
| | 041 | El Paso |
| | 059 | Jefferson |
| 09 | | Connecticut |
| | 001 | Fairfield |
| | 003 | Hartford |
| | 009 | New Haven |
| | 011 | New London |
| 10 | | Delaware |
| | 003 | New Castle |
| 11 | | District of Columbia |
| | 001 | District of Columbia |
| 12 | | Florida |
| | 009 | Brevard |
| | 011 | Broward |
| | 025 | Dade |
| | 031 | Duval |
| | 033 | Escambia |
| | 057 | Hillsborough |
| | 071 | Lee |
| | 095 | Orange |
| | 099 | Palm Beach |
| | 101 | Pasco |
| | 103 | Pinellas |
| | 105 | Polk |
| | 115 | Sarasota |
| | 117 | Seminole |
| | 127 | Volusia |
| 13 | | Georgia |
| | 067 | Cobb |

089 De Kalb
121 Fulton
135 Gwinnett

Listing of Counties Identified in the Linked Data Set

| State | County | State and County Name |
|-------|--------|---------------------------------------|
| 15 | | Hawaii |
| | 003 | Honolulu |
| 16 | | Idaho |
| 17 | | Illinois |
| | 031 | Cook |
| | 043 | Du Page |
| | 089 | Kane |
| | 097 | Lake |
| | 163 | St. Clair |
| | 197 | Will |
| | 201 | Winnebago |
| 18 | | Indiana |
| | 003 | Allen |
| | 089 | Lake |
| | 097 | Marion |
| 19 | | Iowa |
| | 153 | Polk |
| 20 | | Kansas |
| | 091 | Johnson |
| | 173 | Sedgwick |
| 21 | | Kentucky |
| | 111 | Jefferson |
| 22 | | Louisiana |
| | 033 | East Baton Rouge |
| | 051 | Jefferson |
| | 071 | Orleans, coext. with New Orleans city |
| 23 | | Maine |
| 24 | | Maryland |

003 Anne Arundel
 005 Baltimore
 510 Baltimore city
 031 Montgomery

Listing of Counties Identified in the Linked Data Set

| State | County | State and County Name |
|-------|--------|-----------------------|
| 24 | | Maryland |
| | 033 | Prince George's |
| 25 | | Massachusetts |
| | 005 | Bristol |
| | 009 | Essex |
| | 013 | Hampden |
| | 017 | Middlesex |
| | 021 | Norfolk |
| | 023 | Plymouth |
| | 025 | Suffolk |
| | 027 | Worcester |
| 26 | | Michigan |
| | 049 | Genesee |
| | 065 | Ingham |
| | 081 | Kent |
| | 099 | Macomb |
| | 125 | Oakland |
| | 161 | Washtenaw |
| | 163 | Wayne |
| 27 | | Minnesota |
| | 037 | Dakota |
| | 053 | Hennepin |
| | 123 | Ramsey |
| 28 | | Mississippi |
| | 049 | Hinds |
| 29 | | Missouri |
| | 095 | Jackson |
| | 189 | St. Louis |
| | 510 | St. Louis city |
| 30 | | Montana |

31 Nebraska
055 Douglas

Listing of Counties Identified in the Linked Data Set

Vital Statistics Geographic Code Outline Effective With 1998 Data Page 5

| State | County | State and County Name |
|-------|--------|--|
| 32 | | Nevada |
| | 003 | Clark |
| | 031 | Washoe |
| 33 | | New Hampshire |
| | 011 | Hillsborough |
| 34 | | New Jersey |
| | 003 | Bergen |
| | 005 | Burlington |
| | 007 | Camden |
| | 013 | Essex |
| | 017 | Hudson |
| | 021 | Mercer |
| | 023 | Middlesex |
| | 025 | Monmouth |
| | 027 | Morris |
| | 029 | Ocean |
| | 031 | Passaic |
| | 039 | Union |
| 35 | | New Mexico |
| | 001 | Bernalillo |
| 36 | | New York |
| | 001 | Albany |
| | 027 | Dutchess |
| | 029 | Erie |
| | 055 | Monroe |
| | 059 | Nassau |
| | 085 | Staten Island borough, Richmond county |
| | 081 | Queens borough, Queens county |
| | 061 | Manhattan borough, New York county |
| | 047 | Brooklyn borough, Kings county |
| | 005 | Bronx borough, Bronx county |

| | | |
|-----|-----|-------------|
| | 065 | Oneida |
| 067 | | Onondaga |
| 071 | | Orange |
| 087 | | Rockland |
| 103 | | Suffolk |
| 119 | | Westchester |

Listing of Counties Identified in the Linked Data Set

| State | County | State and County Name |
|-------|--------|-----------------------|
| 37 | | North Carolina |
| | 051 | Cumberland |
| | 067 | Forsyth |
| | 081 | Guilford |
| | 119 | Mecklenburg |
| | 183 | Wake |
| 38 | | North Dakota |
| 39 | | Ohio |
| | 017 | Butler |
| | 035 | Cuyahoga |
| | 049 | Franklin |
| | 061 | Hamilton |
| | 093 | Lorain |
| | 095 | Lucas |
| | 099 | Mahoning |
| | 113 | Montgomery |
| | 151 | Stark |
| | 153 | Summit |
| 40 | | Oklahoma |
| | 109 | Oklahoma |
| | 143 | Tulsa |
| 41 | | Oregon |
| | 005 | Clackamas |
| | 039 | Lane |
| | 051 | Multnomah |
| | 067 | Washington |
| 42 | | Pennsylvania |
| | 003 | Allegheny |
| | 011 | Berks |

017 Bucks
 029 Chester
 045 Delaware
 049 Erie
 071 Lancaster
 077 Lehigh
 079 Luzerne

Listing of Counties Identified in the Linked Data Set

| State | County | State and County Name |
|-------|--------|---|
| 42 | | Pennsylvania |
| | 091 | Montgomery |
| | 101 | Philadelphia, coext. with Philadelphia city |
| | 129 | Westmoreland |
| | 133 | York |
| 44 | | Rhode Island |
| | 007 | Providence |
| 45 | | South Carolina |
| | 019 | Charleston |
| | 045 | Greenville |
| | 079 | Richland |
| 46 | | South Dakota |
| 47 | | Tennessee |
| | 037 | Davidson |
| | 065 | Hamilton |
| | 093 | Knox |
| | 157 | Shelby |
| 48 | | Texas |
| | 029 | Bexar |
| | 061 | Cameron |
| | 085 | Collin |
| | 113 | Dallas |
| | 121 | Denton |
| | 141 | El Paso |
| | 201 | Harris |
| | 215 | Hidalgo |
| | 355 | Nueces |
| | 439 | Tarrant |

| | |
|-----|-----------|
| 453 | Travis |
| 49 | Utah |
| 035 | Salt Lake |
| 049 | Utah |
| 50 | Vermont |

Listing of Counties Identified in the Linked Data Set

| State | County | State and County Name |
|-------|--------|-----------------------|
| 51 | | Virginia |
| | 059 | Fairfax |
| | 710 | Norfolk city |
| | 810 | Virginia Beach city |
| 53 | | Washington |
| | 033 | King |
| | 053 | Pierce |
| | 061 | Snohomish |
| | 063 | Spokane |
| 54 | | West Virginia |
| 55 | | Wisconsin |
| | 025 | Dane |
| | 079 | Milwaukee |
| | 133 | Waukesha |
| 56 | | Wyoming |

Listing of Counties Identified in the Linked Data Set

Vital Statistics Geographic Code Outline Effective With 1998 Data Page 9

| State | County | State and County Name |
|-------|--------|-----------------------|
| 72 | | Puerto Rico |
| | 127 | San Juan |
| 78 | | Virgin Islands |
| 66 | 010 | Guam |
| 00 | 000 | Canada |
| 00 | 000 | Cuba |
| 00 | 000 | Mexico |
| 00 | 000 | Remainder of World |

Listing of Cities/Places Identified in the Linked Data Set

Vital Statistics Geographic Code Outline Effective With 1998 Data Page 1

| State | FIPS Codes | City/Place | State and City/Place Name |
|-------|------------|----------------------|---------------------------|
| 01 | | Alabama | |
| | 07000 | Birmingham | |
| 02 | | Alaska | |
| 04 | | Arizona | |
| | 46000 | Mesa | |
| | 55000 | Phoenix | |
| | 77000 | Tucson | |
| 05 | | Arkansas | |
| 06 | | California | |
| | 02000 | Anaheim | |
| | 27000 | Fresno | |
| | 43000 | Long Beach | |
| | 44000 | Los Angeles | |
| | 53000 | Oakland | |
| | 64000 | Sacramento | |
| | 66000 | San Diego | |
| | 67000 | San Francisco | |
| | 68000 | San Jose | |
| | 69000 | Santa Ana | |
| 08 | | Colorado | |
| | 16000 | Colorado Springs | |
| | 20000 | Denver | |
| 09 | | Connecticut | |
| 10 | | Delaware | |
| 11 | | District of Columbia | |
| | 50000 | Washington | |

Listing of Cities/Places Identified in the Linked Data Set

| State | FIPS Codes | City/Place | State and City/Place Name |
|-------|------------|------------|---------------------------|
| 12 | | | Florida |
| | 35000 | | Jacksonville |
| | 45000 | | Miami |
| | 71000 | | Tampa |
| 13 | | | Georgia |
| | 04000 | | Atlanta |
| 15 | | | Hawaii |
| | 17000 | | Honolulu |
| 16 | | | Idaho |
| 17 | | | Illinois |
| | 14000 | | Chicago |
| 18 | | | Indiana |
| | 36000 | | Indianapolis |
| 19 | | | Iowa |
| 20 | | | Kansas |
| | 79000 | | Wichita |
| 21 | | | Kentucky |
| | 48000 | | Louisville |
| 22 | | | Louisiana |
| | 55000 | | New Orleans |
| 23 | | | Maine |
| 24 | | | Maryland |
| | 04000 | | Baltimore |
| 25 | | | Massachusetts |
| | 07000 | | Boston |

Listing of Cities/Places Identified in the Linked Data Set

| State | FIPS Codes | City/Place | State and City/Place Name |
|-------|------------|------------|--|
| 26 | | | Michigan |
| | 22000 | | Detroit |
| 27 | | | Minnesota |
| | 43000 | | Minneapolis |
| | 58000 | | St. Paul |
| 28 | | | Mississippi |
| 29 | | | Missouri |
| | 38000 | | Kansas City |
| | 65000 | | St. Louis |
| 30 | | | Montana |
| 31 | | | Nebraska |
| | 37000 | | Omaha |
| 32 | | | Nevada |
| | 40000 | | Las Vegas |
| 33 | | | New Hampshire |
| 34 | | | New Jersey |
| | 51000 | | Newark |
| 35 | | | New Mexico |
| | 02000 | | Albuquerque |
| 36 | | | New York |
| | 51000 | | Bronx borough, Bronx county |
| | 11000 | | Buffalo |
| | 51000 | | Manhattan borough, New York county |
| | 51000 | | Queens borough, Queens county |
| | 51000 | | Staten Island borough, Richmond county |

Listing of Cities/Places Identified in the Linked Data Set

| State | FIPS Codes City/Place State and City/Place Name |
|-------|---|
| 37 | North Carolina 12000 Charlotte |
| 38 | North Dakota |
| 39 | Ohio 15000 Cincinnati 16000 Cleveland 18000 Columbus 77000 Toledo |
| 40 | Oklahoma 55000 Oklahoma City 75000 Tulsa |
| 41 | Oregon 59000 Portland |
| 42 | Pennsylvania 60000 Philadelphia 61000 Pittsburgh |
| 44 | Rhode Island |
| 45 | South Carolina |
| 46 | South Dakota |
| 47 | Tennessee 48000 Memphis 52010 Nashville-Davidson |
| 48 | Texas 04000 Arlington 05000 Austin 17000 Corpus Christi 19000 Dallas 24000 El Paso |

Listing of Cities/Places Identified in the Linked Data Set

| State | FIPS Codes | City/Place | State and City/Place Name |
|-------|------------|------------|---------------------------|
| 48 | | | Texas |
| | 27000 | | Fort Worth |
| | 35000 | | Houston |
| | 65000 | | San Antonio |
| 49 | | | Utah |
| 50 | | | Vermont |
| 51 | | | Virginia |
| | 57000 | | Norfolk |
| | 82000 | | Virginia Beach |
| 53 | | | Washington |
| | 63000 | | Seattle |
| 54 | | | West Virginia |
| 55 | | | Wisconsin |
| | 53000 | | Milwaukee |
| 56 | | | Wyoming |

| State | FIPS Codes City/Place State and City/Place Name |
|-------|---|
| 72 | 00000 Puerto Rico |
| 78 | 00000 Virgin Islands |
| 66 | 00000 Guam |
| 00 | 00000 Canada |
| 00 | 00000 Cuba |
| 00 | 00000 Mexico |
| 00 | 00000 Remainder of World |

Chapter 5

Ninth Revision 61 Causes of Death Adapted for use by DVS
 ST: 1 = Subtotal Limited: Sex: 1 = Males; 2 = Females
 Length = of Cause Title Age: 1 = 5 & Over; 2 = 10-54;
 3 = 28 Days & Over

***** Cause Subtotals are not Identified in this File *****

| 61 Recode | S T | Limited Sex | Len- Age | gth | Cause Title And ICD-9 Codes Included |
|--------------|--------|----------------|-------------|-----|---|
| 010 | | | | 039 | Certain intestinal infections (008-009) |
| 020 | | | | 020 | Whooping cough (033) |
| 030 | | | | 029 | Meningococcal infection (036) |
| 040 | | | 3 | 016 | Septicemia (038) |
| 050 | | | | 024 | Viral diseases (045-079) |
| 060 | | | | 025 | Congenital syphilis (090) |
| 070 | | | | 110 | Remainder of infectious and parasitic diseases (001-007,010-032,034-035,037,039-041, *042-*044,080-088,091-139) |
| 080 | | | | 089 | Malignant neoplasms, including neoplasms of lymphatic and hematopoietic tissues (140-208) |
| 090 | | | | 108 | Benign neoplasms, carcinoma in situ, and neoplasms of uncertain behavior and of unspecified nature (210-239) |
| 100 | | | | 030 | Diseases of thymus gland (254) |
| 110 | | | | 023 | Cystic fibrosis (277.0) |
| 120 | | | | 052 | Diseases of blood and blood-forming organs (280-289) |
| 130 | | | | 020 | Meningitis (320-322) |
| 140 | | | | 059 | Other diseases of nervous system and sense organs (323-389) |
| 150 | | | | 044 | Acute upper respiratory infections (460-465) |
| 160 | | | | 042 | Bronchitis and bronchiolitis (466,490-491) |
| 170 | 1 | | | 033 | Pneumonia and influenza (480-487) |
| 180 | | | | 021 | Pneumonia (480-486) |
| 190 | | | | 017 | Influenza (487) |
| 200 | | | | 061 | Remainder of diseases of respiratory system (470-478, 492-519) |
| 210 | | | | 093 | Hernia of abdominal cavity and intestinal obstruction without mention of hernia (550-553,560) |
| 220 | | | | 075 | Gastritis, duodenitis, and noninfective enteritis and colitis (535,555-558) |
| 230 | | | | 067 | Remainder of diseases of digestive system (520-534,536-543,562-579) |
| 240 | 1 | | | 030 | Congenital anomalies (740-759) |
| 250 | | | | 042 | Anencephalus and similar anomalies (740) |

| | | | |
|-----|---|-----|---|
| 260 | | 020 | Spina bifida (741) |
| 270 | | 034 | Congenital hydrocephalus (742.3) |
| 280 | | 092 | Other congenital anomalies of central nervous system and eye (742.0-742.2,742.4-742.9,743) |
| 290 | | 041 | Congenital anomalies of heart (745-746) |
| 300 | | 056 | Other congenital anomalies of circulatory system (747) |
| 310 | | 050 | Congenital anomalies of respiratory system (748) |
| 320 | | 052 | Congenital anomalies of digestive system (749-751) |
| 330 | | 056 | Congenital anomalies of genitourinary system (752-753) |
| 340 | | 058 | Congenital anomalies of musculoskeletal system (754-756) |
| 350 | | 025 | Down's syndrome (758.0) |
| 360 | | 043 | Other chromosomal anomalies (758.1-758.9) |
| 370 | | 062 | All other and unspecified congenital anomalies (744,757,759) |
| 380 | 1 | 064 | Certain conditions originating in the perinatal period (760-779) |
| 390 | | 091 | Newborn affected by maternal conditions which may be unrelated to present pregnancy (760) |
| 400 | | 063 | Newborn affected by maternal complications of pregnancy (761) |
| 410 | | 074 | Newborn affected by complications of placenta, cord, and membranes (762) |
| 420 | | 069 | Newborn affected by other complications of labor and delivery (763) |
| 430 | | 048 | Slow fetal growth and fetal malnutrition (764) |
| 440 | | 077 | Disorders relating to short gestation and unspecified low birthweight (765) |
| 450 | | 065 | Disorders relating to long gestation and high birthweight (766) |
| 460 | | 020 | Birth trauma (767) |
| 470 | 1 | 047 | Intrauterine hypoxia and birth asphyxia (768) |
| 480 | | 051 | Fetal distress in liveborn infant (768.2-768.4) |
| 490 | | 032 | Birth asphyxia (768.5-768.9) |
| 500 | | 037 | Respiratory distress syndrome (769) |
| 510 | | 047 | Other respiratory conditions of newborn (770) |
| 520 | | 051 | Infections specific to the perinatal period (771) |
| 530 | | 027 | Neonatal hemorrhage (772) |
| 540 | | 094 | Hemolytic disease of newborn, due to isoimmunization, and other perinatal jaundice (773-774) |
| 550 | | 088 | Syndrome of "infant of a diabetic mother" and neonatal diabetes mellitus (775.0-775.1) |
| 560 | | 040 | Hemorrhagic disease of newborn (776.0) |
| 570 | | 098 | All other and ill-defined conditions originating in the perinatal period (775.2-775.9,776.1-779) |

| | | | |
|-----|---|-----|--|
| 580 | 1 | 053 | Symptoms, signs, and ill-defined conditions (780-799) |
| 590 | | 038 | Sudden infant death syndrome (798.0) |
| 600 | | 075 | Symptoms, signs, and all other ill-defined conditions (780-797,798.1-799) |
| 610 | 1 | 041 | Accidents and adverse effects (E800-E949) |
| 620 | | 118 | Inhalation and ingestion of food or other object causing obstruction of respiratory tract or suffocation (E911-E912) |
| 630 | | 042 | Accidental mechanical suffocation (E913) |
| 640 | | 067 | Other accidental causes and adverse effects (E800-E910,E914-E949) |
| 650 | 1 | 020 | Homicide (E960-E969) |
| 660 | | 047 | Child battering and other maltreatment (E967) |
| 670 | | 038 | Other homicide (E960-E966,E968-E969) |
| 680 | | 027 | All other causes (Residual) |

DOCUMENTATION TABLE 1

LIVE BIRTHS AND INFANT DEATHS BY STATE OF OCCURRENCE AND BY STATE OF RESIDENCE AT BIRTH
UNITED STATES, PUERTO RICO, VIRGIN ISLANDS, AND GUAM - 1998 LINK BIRTH COHORT DATA

(RESIDENCE OF BIRTH IS OF THE MOTHER)

| STATE | LIVE BIRTHS | | INFANT DEATHS | | | |
|----------------------|-------------|-----------|---------------|-----------|-------------|-----------|
| | Occurrence | Residence | UNWEIGHTED | | WEIGHTED 1/ | |
| | | | Occurrence | Residence | Occurrence | Residence |
| UNITED STATES 2/ | 3,945,192 | 3,941,553 | 27,743 | 27,720 | 28,221 | 28,198 |
| ALABAMA..... | 61,209 | 62,074 | 617 | 615 | 619 | 616 |
| ALASKA..... | 9,832 | 9,926 | 63 | 66 | 63 | 67 |
| ARIZONA..... | 78,076 | 78,243 | 566 | 558 | 573 | 569 |
| ARKANSAS..... | 35,763 | 36,865 | 302 | 326 | 310 | 335 |
| CALIFORNIA..... | 522,290 | 521,661 | 2,905 | 2,901 | 3,024 | 3,012 |
| COLORADO..... | 59,816 | 59,577 | 422 | 408 | 423 | 409 |
| CONNECTICUT..... | 43,669 | 43,820 | 299 | 295 | 301 | 298 |
| DELAWARE..... | 11,023 | 10,578 | 104 | 98 | 104 | 98 |
| DISTRICT OF COLUMBIA | 15,138 | 7,686 | 181 | 91 | 183 | 92 |
| FLORIDA..... | 195,734 | 195,637 | 1,429 | 1,426 | 1,432 | 1,428 |
| GEORGIA..... | 123,262 | 122,368 | 1,027 | 1,028 | 1,028 | 1,028 |
| HAWAII..... | 17,619 | 17,583 | 119 | 117 | 119 | 117 |
| IDAHO..... | 18,959 | 19,391 | 118 | 131 | 123 | 134 |
| ILLINOIS..... | 179,462 | 182,588 | 1,455 | 1,514 | 1,472 | 1,536 |
| INDIANA..... | 85,176 | 85,122 | 640 | 649 | 651 | 660 |
| IOWA..... | 37,433 | 37,282 | 219 | 237 | 219 | 237 |
| KANSAS..... | 37,450 | 38,422 | 254 | 271 | 254 | 274 |
| KENTUCKY..... | 52,880 | 54,329 | 353 | 391 | 362 | 399 |
| LOUISIANA..... | 67,100 | 66,888 | 604 | 604 | 617 | 616 |
| MAINE..... | 13,530 | 13,733 | 77 | 82 | 79 | 84 |
| MARYLAND..... | 67,408 | 71,972 | 532 | 613 | 538 | 620 |
| MASSACHUSETTS..... | 82,216 | 81,411 | 410 | 413 | 419 | 422 |
| MICHIGAN..... | 132,443 | 133,666 | 1,066 | 1,071 | 1,079 | 1,084 |
| MINNESOTA..... | 65,094 | 65,202 | 394 | 388 | 394 | 388 |
| MISSISSIPPI..... | 41,942 | 42,939 | 397 | 420 | 400 | 422 |
| MISSOURI..... | 77,701 | 75,358 | 624 | 558 | 638 | 566 |
| MONTANA..... | 10,742 | 10,795 | 74 | 73 | 77 | 75 |
| NEBRASKA..... | 23,915 | 23,534 | 199 | 182 | 199 | 182 |
| NEVADA..... | 28,218 | 28,699 | 183 | 187 | 189 | 195 |
| NEW HAMPSHIRE..... | 13,933 | 14,429 | 65 | 67 | 65 | 67 |
| NEW JERSEY..... | 111,709 | 114,550 | 676 | 714 | 688 | 728 |
| NEW MEXICO..... | 26,960 | 27,318 | 175 | 186 | 185 | 196 |
| NEW YORK STATE..... | 135,408 | 138,296 | 783 | 792 | 806 | 808 |
| NEW YORK CITY..... | 124,240 | 119,911 | 794 | 775 | 803 | 793 |
| NORTH CAROLINA..... | 112,785 | 111,688 | 1,035 | 1,022 | 1,038 | 1,025 |
| NORTH DAKOTA..... | 9,156 | 7,932 | 82 | 70 | 82 | 70 |
| OHIO..... | 153,400 | 152,794 | 1,172 | 1,148 | 1,221 | 1,207 |
| OKLAHOMA..... | 48,449 | 49,461 | 401 | 401 | 433 | 432 |
| OREGON..... | 46,278 | 45,273 | 254 | 235 | 256 | 236 |
| PENNSYLVANIA..... | 146,465 | 145,899 | 1,041 | 1,012 | 1,060 | 1,027 |
| RHODE ISLAND..... | 13,489 | 12,599 | 101 | 87 | 102 | 87 |
| SOUTH CAROLINA..... | 51,701 | 53,877 | 496 | 525 | 496 | 525 |
| SOUTH DAKOTA..... | 10,391 | 10,288 | 93 | 95 | 93 | 95 |
| TENNESSEE..... | 82,412 | 77,396 | 722 | 632 | 723 | 632 |
| TEXAS..... | 346,101 | 342,283 | 2,118 | 2,093 | 2,164 | 2,139 |
| UTAH..... | 46,128 | 45,165 | 263 | 244 | 264 | 245 |
| VERMONT..... | 6,257 | 6,582 | 49 | 53 | 49 | 53 |

DOCUMENTATION TABLE 1

LIVE BIRTHS AND INFANT DEATHS BY STATE OF OCCURRENCE AND BY STATE OF RESIDENCE AT BIRTH
 UNITED STATES, PUERTO RICO, VIRGIN ISLANDS, AND GUAM - 1998 LINK BIRTH COHORT DATA

(RESIDENCE OF BIRTH IS OF THE MOTHER)

| STATE | LIVE BIRTHS | | INFANT DEATHS | | | |
|----------------------|-------------|-----------|---------------|-----------|-------------|-----------|
| | Occurrence | Residence | UNWEIGHTED | | WEIGHTED 1/ | |
| | | | Occurrence | Residence | Occurrence | Residence |
| VIRGINIA..... | 92,021 | 94,351 | 674 | 694 | 681 | 701 |
| WASHINGTON..... | 78,980 | 79,663 | 441 | 458 | 444 | 462 |
| WEST VIRGINIA..... | 21,574 | 20,747 | 164 | 154 | 168 | 157 |
| WISCONSIN..... | 66,421 | 67,450 | 487 | 503 | 487 | 503 |
| WYOMING..... | 5,834 | 6,252 | 24 | 47 | 24 | 47 |
| FOREIGN RESIDENTS... | - | 3,637 | - | 23 | - | 23 |
| PUERTO RICO 3/..... | 60,518 | 60,412 | 640 | 638 | - | - |
| VIRGIN ISLANDS 3/... | 1,915 | 1,800 | 17 | 17 | - | - |
| GUAM 3/..... | 4,328 | 4,318 | 35 | 35 | - | - |

1/ Figures are based on weighted data rounded to the nearest infant, so categories may not add to totals.

2/ Excludes data for Puerto Rico, Virgin Islands, and Guam occurrences.

3/ Data from the Puerto Rico, Virgin Islands, and Guam file.

DOCUMENTATION TABLE 2

LIVE BIRTHS, INFANT DEATHS, AND INFANT MORTALITY RATES BY RACE OF MOTHER, SEX AND BIRTHWEIGHT OF CHILD:
 UNITED STATES, 1998 BIRTH COHORT DATA
 (INFANT DEATHS WEIGHTED)

(RATES ARE PER 1000 LIVE BIRTHS)

| RACE OF MOTHER AND SEX | TOTAL | <500 GRAMS | 500-749 GRAMS | 750-999 GRAMS | 1000-1249 GRAMS | 1250-1499 GRAMS | 1500-1999 GRAMS | 2000-2499 GRAMS | 2500 GRAMS OR MORE | NOT STATED |
|------------------------|-----------|------------|---------------|---------------|-----------------|-----------------|-----------------|-----------------|--------------------|------------|
| ALL RACES 1/ | | | | | | | | | | |
| BOTH SEXES | | | | | | | | | | |
| LIVE BIRTHS..... | 3,941,553 | 6,349 | 11,041 | 11,716 | 13,238 | 15,389 | 59,014 | 182,462 | 3,640,324 | 2,020 |
| INFANT DEATHS... | 28,197 | 5,480 | 5,336 | 1,865 | 936 | 756 | 1,705 | 2,274 | 9,472 | 374 |
| INF.MORT.RATE... | 7.2 | 863.1 | 483.3 | 159.2 | 70.7 | 49.1 | 28.9 | 12.5 | 2.6 | 185.0 |
| MALE | | | | | | | | | | |
| LIVE BIRTHS..... | 2,016,205 | 3,175 | 5,528 | 6,129 | 6,828 | 7,745 | 28,797 | 83,593 | 1,873,365 | 1,045 |
| INFANT DEATHS... | 15,713 | 2,765 | 3,047 | 1,187 | 550 | 419 | 875 | 1,194 | 5,446 | 232 |
| INF.MORT.RATE... | 7.8 | 870.7 | 551.1 | 193.7 | 80.5 | 54.1 | 30.4 | 14.3 | 2.9 | 221.6 |
| FEMALE | | | | | | | | | | |
| LIVE BIRTHS..... | 1,925,348 | 3,174 | 5,513 | 5,587 | 6,410 | 7,644 | 30,217 | 98,869 | 1,766,959 | 975 |
| INFANT DEATHS... | 12,484 | 2,716 | 2,290 | 678 | 386 | 336 | 830 | 1,080 | 4,026 | 142 |
| INF.MORT.RATE... | 6.5 | 855.6 | 415.3 | 121.4 | 60.3 | 44.0 | 27.5 | 10.9 | 2.3 | 145.9 |
| WHITE | | | | | | | | | | |
| BOTH SEXES | | | | | | | | | | |
| LIVE BIRTHS..... | 3,118,727 | 3,502 | 6,510 | 7,360 | 8,670 | 10,252 | 40,802 | 126,790 | 2,913,643 | 1,198 |
| INFANT DEATHS... | 18,460 | 3,049 | 3,231 | 1,222 | 613 | 507 | 1,171 | 1,593 | 6,865 | 208 |
| INF.MORT.RATE... | 5.9 | 870.6 | 496.4 | 166.0 | 70.8 | 49.5 | 28.7 | 12.6 | 2.4 | 173.8 |
| MALE | | | | | | | | | | |
| LIVE BIRTHS..... | 1,596,704 | 1,723 | 3,280 | 3,891 | 4,555 | 5,262 | 20,136 | 58,313 | 1,498,930 | 614 |
| INFANT DEATHS... | 10,300 | 1,506 | 1,845 | 772 | 362 | 283 | 598 | 819 | 3,988 | 127 |
| INF.MORT.RATE... | 6.5 | 874.0 | 562.4 | 198.4 | 79.5 | 53.8 | 29.7 | 14.0 | 2.7 | 207.6 |
| FEMALE | | | | | | | | | | |
| LIVE BIRTHS..... | 1,522,023 | 1,779 | 3,230 | 3,469 | 4,115 | 4,990 | 20,666 | 68,477 | 1,414,713 | 584 |
| INFANT DEATHS... | 8,160 | 1,543 | 1,387 | 450 | 251 | 224 | 573 | 773 | 2,878 | 81 |
| INF.MORT.RATE... | 5.4 | 867.3 | 429.3 | 129.8 | 61.1 | 45.0 | 27.7 | 11.3 | 2.0 | 138.2 |
| BLACK | | | | | | | | | | |
| BOTH SEXES | | | | | | | | | | |
| LIVE BIRTHS..... | 609,902 | 2,583 | 4,127 | 3,861 | 4,017 | 4,432 | 15,383 | 45,369 | 529,816 | 314 |
| INFANT DEATHS... | 8,392 | 2,206 | 1,903 | 555 | 283 | 215 | 439 | 566 | 2,099 | 129 |
| INF.MORT.RATE... | 13.8 | 854.1 | 461.0 | 143.6 | 70.3 | 48.4 | 28.5 | 12.5 | 4.0 | 410.7 |
| MALE | | | | | | | | | | |
| LIVE BIRTHS..... | 310,107 | 1,319 | 2,038 | 1,972 | 1,981 | 2,113 | 7,179 | 20,454 | 272,885 | 166 |
| INFANT DEATHS... | 4,667 | 1,147 | 1,078 | 359 | 162 | 117 | 229 | 316 | 1,177 | 83 |
| INF.MORT.RATE... | 15.1 | 869.6 | 528.7 | 182.2 | 81.7 | 55.4 | 31.9 | 15.5 | 4.3 | 497.2 |
| FEMALE | | | | | | | | | | |
| LIVE BIRTHS..... | 299,795 | 1,264 | 2,089 | 1,889 | 2,036 | 2,319 | 8,204 | 24,915 | 256,931 | 148 |
| INFANT DEATHS... | 3,725 | 1,059 | 825 | 195 | 121 | 98 | 210 | 249 | 922 | 46 |
| INF.MORT.RATE... | 12.4 | 837.9 | 394.9 | 103.4 | 59.3 | 42.0 | 25.6 | 10.0 | 3.6 | 313.6 |

1/ INCLUDES RACES OTHER THAN WHITE AND BLACK

DOCUMENTATION TABLE 3

LIVE BIRTHS, INFANT DEATHS, AND INFANT MORTALITY RATES BY BIRTHWEIGHT, RACE OF MOTHER, AND GESTATIONAL AGE:
UNITED STATES, 1998 BIRTH COHORT DATA

(INFANT DEATHS WEIGHTED)
(RATES ARE PER 1000 LIVE BIRTHS)

| BIRTHWEIGHT | GESTATION | | | | | | | | | |
|-----------------------|-----------|--------------|----------------|----------------|-------------|----------------|-------------|-------------|---------------------|---------------|
| | TOTAL | <28 WEEKS | 28-31 WEEKS | 32-35 WEEKS | 36 WEEKS | 37-39 WEEKS | 40 WEEKS | 41 WEEKS | 42 WEEKS OR MORE | NOT STATED |
| ALL RACES 1/ | | | | | | | | | | |
| - | | | | | | | | | | |
| TOTAL | | | | | | | | | | |
| LIVE BIRTHS..... | 3,941,553 | 29,037 | 47,486 | 212,210 | 163,542 | 1,859,198 | 853,416 | 443,502 | 292,766 | 40,396 |
| INFANT DEATHS..... | 28,197 | 11,836 | 2,207 | 2,533 | 1,063 | 5,628 | 1,914 | 1,162 | 921 | 932 |
| INF. MORT. RATE.... | 7.2 | 407.6 | 46.5 | 11.9 | 6.5 | 3.0 | 2.2 | 2.6 | 3.1 | 23.1 |
| LESS THAN 2,500 GRAMS | | | | | | | | | | |
| LIVE BIRTHS..... | 299,209 | 27,959 | 35,733 | 99,134 | 33,588 | 75,882 | 11,455 | 5,354 | 6,393 | 3,711 |
| INFANT DEATHS..... | 18,352 | 11,815 | 2,120 | 1,882 | 525 | 1,110 | 207 | 146 | 141 | 406 |
| INF. MORT. RATE.... | 61.3 | 422.6 | 59.3 | 19.0 | 15.6 | 14.6 | 18.1 | 27.2 | 22.1 | 109.5 |
| LESS THAN 500 GRAMS | | | | | | | | | | |
| LIVE BIRTHS..... | 6,349 | 5,921 | 218 | 12 | 3 | 13 | 3 | - | - | 179 |
| INFANT DEATHS..... | 5,480 | 5,197 | 139 | 11 | 2 | 7 | 1 | - | - | 123 |
| INF. MORT. RATE.... | 863.1 | 877.7 | 636.9 | 936.5 | 675.3 | 552.1 | 333.3 | - | - | 685.2 |
| 500-749 GRAMS | | | | | | | | | | |
| LIVE BIRTHS..... | 11,041 | 9,333 | 1,307 | 126 | 19 | 13 | - | 2 | 6 | 235 |
| INFANT DEATHS..... | 5,336 | 4,784 | 372 | 41 | 11 | 2 | - | - | 4 | 122 |
| INF. MORT. RATE.... | 483.3 | 512.6 | 284.8 | 323.7 | 585.6 | 158.1 | - | - | 669.9 | 520.3 |
| 750-999 GRAMS | | | | | | | | | | |
| LIVE BIRTHS..... | 11,716 | 7,042 | 3,751 | 501 | 42 | 113 | 48 | 19 | 17 | 183 |
| INFANT DEATHS..... | 1,865 | 1,351 | 388 | 61 | 6 | 8 | 6 | 3 | 3 | 39 |
| INF. MORT. RATE.... | 159.2 | 191.8 | 103.4 | 122.0 | 146.5 | 72.5 | 127.2 | 158.5 | 182.0 | 214.1 |
| 1,000-1,249 GRAMS | | | | | | | | | | |
| LIVE BIRTHS..... | 13,238 | 3,135 | 7,070 | 2,131 | 153 | 326 | 98 | 48 | 82 | 195 |
| INFANT DEATHS..... | 936 | 295 | 424 | 131 | 19 | 27 | 6 | 2 | 6 | 26 |
| INF. MORT. RATE.... | 70.7 | 94.1 | 59.9 | 61.5 | 126.4 | 81.9 | 63.5 | 42.4 | 74.5 | 132.4 |
| 1,250-1,499 GRAMS | | | | | | | | | | |
| LIVE BIRTHS..... | 15,389 | 861 | 8,051 | 4,797 | 408 | 662 | 146 | 77 | 142 | 245 |
| INFANT DEATHS..... | 756 | 84 | 317 | 230 | 32 | 53 | 5 | 6 | 11 | 19 |
| INF. MORT. RATE.... | 49.1 | 97.3 | 39.3 | 47.9 | 77.5 | 79.9 | 35.0 | 78.9 | 78.6 | 76.3 |
| 1,500-1,999 GRAMS | | | | | | | | | | |
| LIVE BIRTHS..... | 59,014 | 988 | 11,224 | 31,506 | 5,035 | 7,191 | 989 | 548 | 806 | 727 |
| INFANT DEATHS..... | 1,705 | 77 | 357 | 698 | 128 | 296 | 47 | 35 | 31 | 36 |
| INF. MORT. RATE.... | 28.9 | 78.4 | 31.8 | 22.2 | 25.4 | 41.1 | 47.4 | 63.0 | 38.0 | 49.8 |

SEE FOOTNOTES AT END OF TABLE.

DOCUMENTATION TABLE 3

LIVE BIRTHS, INFANT DEATHS, AND INFANT MORTALITY RATES BY BIRTHWEIGHT, RACE OF MOTHER, AND GESTATIONAL AGE:
UNITED STATES, 1998 BIRTH COHORT DATA

(INFANT DEATHS WEIGHTED)
(RATES ARE PER 1000 LIVE BIRTHS)

| BIRTHWEIGHT | GESTATION | | | | | | | | | |
|---------------------|-----------|--------------|----------------|----------------|-------------|----------------|-------------|-------------|---------------------|---------------|
| | TOTAL | <28 WEEKS | 28-31 WEEKS | 32-35 WEEKS | 36 WEEKS | 37-39 WEEKS | 40 WEEKS | 41 WEEKS | 42 WEEKS OR MORE | NOT STATED |
| ALL RACES 1/ | | | | | | | | | | |
| - | | | | | | | | | | |
| 2,000-2,499 GRAMS | | | | | | | | | | |
| LIVE BIRTHS..... | 182,462 | 679 | 4,112 | 60,061 | 27,928 | 67,564 | 10,171 | 4,660 | 5,340 | 1,947 |
| INFANT DEATHS..... | 2,274 | 27 | 123 | 710 | 326 | 717 | 142 | 100 | 86 | 41 |
| INF. MORT. RATE.... | 12.5 | 39.1 | 30.0 | 11.8 | 11.7 | 10.6 | 14.0 | 21.4 | 16.2 | 21.3 |
| 2,500-2,999 GRAMS | | | | | | | | | | |
| LIVE BIRTHS..... | 650,006 | 1,078 | 4,251 | 53,704 | 59,439 | 362,599 | 88,982 | 38,929 | 34,772 | 6,252 |
| INFANT DEATHS..... | 3,090 | 21 | 41 | 375 | 299 | 1,564 | 361 | 207 | 178 | 44 |
| INF. MORT. RATE.... | 4.8 | 19.9 | 9.6 | 7.0 | 5.0 | 4.3 | 4.1 | 5.3 | 5.1 | 7.1 |
| 3,000-3,499 GRAMS | | | | | | | | | | |
| LIVE BIRTHS..... | 1,458,017 | - | 4,955 | 37,738 | 47,946 | 772,992 | 321,158 | 152,255 | 106,987 | 13,986 |
| INFANT DEATHS..... | 3,684 | - | 34 | 193 | 168 | 1,832 | 676 | 389 | 340 | 53 |
| INF. MORT. RATE.... | 2.5 | - | 6.8 | 5.1 | 3.5 | 2.4 | 2.1 | 2.6 | 3.2 | 3.8 |
| 3,500-3,999 GRAMS | | | | | | | | | | |
| LIVE BIRTHS..... | 1,136,056 | - | 2,547 | 17,152 | 17,886 | 501,416 | 314,195 | 170,344 | 101,961 | 10,555 |
| INFANT DEATHS..... | 1,993 | - | 12 | 57 | 57 | 862 | 479 | 295 | 196 | 35 |
| INF. MORT. RATE.... | 1.8 | - | 4.8 | 3.3 | 3.2 | 1.7 | 1.5 | 1.7 | 1.9 | 3.3 |
| 4,000-4,499 GRAMS | | | | | | | | | | |
| LIVE BIRTHS..... | 335,215 | - | - | 3,796 | 3,902 | 125,268 | 100,003 | 63,771 | 35,268 | 3,207 |
| INFANT DEATHS..... | 561 | - | - | 21 | 8 | 211 | 154 | 102 | 53 | 11 |
| INF. MORT. RATE.... | 1.7 | - | - | 5.6 | 2.1 | 1.7 | 1.5 | 1.6 | 1.5 | 3.5 |
| 4,500-4,999 GRAMS | | | | | | | | | | |
| LIVE BIRTHS..... | 54,827 | - | - | 586 | 679 | 18,689 | 16,010 | 11,661 | 6,637 | 565 |
| INFANT DEATHS..... | 114 | - | - | 1 | 6 | 37 | 32 | 21 | 10 | 6 |
| INF. MORT. RATE.... | 2.1 | - | - | 1.8 | 8.9 | 2.0 | 2.0 | 1.8 | 1.5 | 11.0 |
| 5,000 GRAMS OR MORE | | | | | | | | | | |
| LIVE BIRTHS..... | 6,203 | - | - | 100 | 102 | 2,352 | 1,613 | 1,188 | 748 | 100 |
| INFANT DEATHS..... | 29 | - | - | 4 | - | 13 | 5 | 2 | 2 | 3 |
| INF. MORT. RATE.... | 4.8 | - | - | 40.6 | - | 5.6 | 3.1 | 1.7 | 2.7 | 31.1 |
| NOT STATED | | | | | | | | | | |
| LIVE BIRTHS..... | 2,020 | - | - | - | - | - | - | - | - | 2,020 |
| INFANT DEATHS..... | 374 | - | - | - | - | - | - | - | - | 374 |
| INF. MORT. RATE.... | 185.0 | - | - | - | - | - | - | - | - | 185.0 |

SEE FOOTNOTES AT END OF TABLE.

DOCUMENTATION TABLE 3

LIVE BIRTHS, INFANT DEATHS, AND INFANT MORTALITY RATES BY BIRTHWEIGHT, RACE OF MOTHER, AND GESTATIONAL AGE:
UNITED STATES, 1998 BIRTH COHORT DATA

(INFANT DEATHS WEIGHTED)
(RATES ARE PER 1000 LIVE BIRTHS)

| BIRTHWEIGHT | GESTATION | | | | | | | | | |
|-----------------------|-----------|--------------|----------------|----------------|-------------|----------------|-------------|-------------|---------------------|---------------|
| | TOTAL | <28 WEEKS | 28-31 WEEKS | 32-35 WEEKS | 36 WEEKS | 37-39 WEEKS | 40 WEEKS | 41 WEEKS | 42 WEEKS OR MORE | NOT STATED |
| WHITE | | | | | | | | | | |
| TOTAL | | | | | | | | | | |
| LIVE BIRTHS..... | 3,118,727 | 17,020 | 31,415 | 152,717 | 123,132 | 1,470,983 | 693,703 | 364,840 | 234,996 | 29,921 |
| INFANT DEATHS..... | 18,460 | 6,960 | 1,410 | 1,781 | 727 | 4,054 | 1,411 | 863 | 675 | 578 |
| INF. MORT. RATE.... | 5.9 | 408.9 | 44.9 | 11.7 | 5.9 | 2.8 | 2.0 | 2.4 | 2.9 | 19.3 |
| LESS THAN 2,500 GRAMS | | | | | | | | | | |
| LIVE BIRTHS..... | 203,886 | 16,409 | 23,760 | 70,440 | 23,561 | 51,698 | 7,697 | 3,541 | 4,325 | 2,455 |
| INFANT DEATHS..... | 11,387 | 6,946 | 1,357 | 1,308 | 348 | 796 | 151 | 108 | 104 | 268 |
| INF. MORT. RATE.... | 55.8 | 423.3 | 57.1 | 18.6 | 14.8 | 15.4 | 19.6 | 30.5 | 24.0 | 109.3 |
| LESS THAN 500 GRAMS | | | | | | | | | | |
| LIVE BIRTHS..... | 3,502 | 3,249 | 129 | 7 | 2 | 7 | 2 | - | - | 106 |
| INFANT DEATHS..... | 3,049 | 2,879 | 80 | 6 | 1 | 7 | - | - | - | 75 |
| INF. MORT. RATE.... | 870.6 | 886.1 | 622.1 | 884.3 | 500.0 | 1025.3 | - | - | - | 708.5 |
| 500-749 GRAMS | | | | | | | | | | |
| LIVE BIRTHS..... | 6,510 | 5,414 | 821 | 90 | 7 | 10 | - | 2 | 6 | 160 |
| INFANT DEATHS..... | 3,231 | 2,890 | 215 | 33 | 5 | 1 | - | - | 4 | 84 |
| INF. MORT. RATE.... | 496.4 | 533.8 | 261.3 | 362.4 | 727.8 | 105.6 | - | - | 669.9 | 526.5 |
| 750-999 GRAMS | | | | | | | | | | |
| LIVE BIRTHS..... | 7,360 | 4,362 | 2,373 | 337 | 27 | 81 | 34 | 15 | 13 | 118 |
| INFANT DEATHS..... | 1,222 | 880 | 249 | 48 | 4 | 5 | 5 | 3 | 2 | 26 |
| INF. MORT. RATE.... | 166.0 | 201.7 | 105.1 | 142.3 | 151.7 | 63.2 | 149.6 | 200.7 | 156.9 | 218.4 |
| 1,000-1,249 GRAMS | | | | | | | | | | |
| LIVE BIRTHS..... | 8,670 | 1,934 | 4,680 | 1,438 | 108 | 227 | 60 | 32 | 53 | 138 |
| INFANT DEATHS..... | 613 | 189 | 272 | 90 | 15 | 21 | 5 | 2 | 3 | 17 |
| INF. MORT. RATE.... | 70.8 | 97.6 | 58.2 | 62.4 | 141.3 | 90.8 | 87.1 | 63.5 | 57.5 | 120.3 |
| 1,250-1,499 GRAMS | | | | | | | | | | |
| LIVE BIRTHS..... | 10,252 | 493 | 5,381 | 3,269 | 280 | 436 | 91 | 56 | 87 | 159 |
| INFANT DEATHS..... | 507 | 46 | 201 | 169 | 24 | 39 | 3 | 4 | 6 | 16 |
| INF. MORT. RATE.... | 49.5 | 93.7 | 37.4 | 51.6 | 84.0 | 88.7 | 33.6 | 72.8 | 70.3 | 98.2 |
| 1,500-1,999 GRAMS | | | | | | | | | | |
| LIVE BIRTHS..... | 40,802 | 548 | 7,804 | 22,135 | 3,472 | 4,849 | 654 | 343 | 521 | 476 |
| INFANT DEATHS..... | 1,171 | 46 | 247 | 481 | 87 | 209 | 32 | 25 | 22 | 23 |
| INF. MORT. RATE.... | 28.7 | 83.9 | 31.6 | 21.7 | 25.0 | 43.0 | 48.5 | 74.0 | 43.1 | 48.3 |

SEE FOOTNOTES AT END OF TABLE.

DOCUMENTATION TABLE 3

LIVE BIRTHS, INFANT DEATHS, AND INFANT MORTALITY RATES BY BIRTHWEIGHT, RACE OF MOTHER, AND GESTATIONAL AGE:
UNITED STATES, 1998 BIRTH COHORT DATA

(INFANT DEATHS WEIGHTED)
(RATES ARE PER 1000 LIVE BIRTHS)

| BIRTHWEIGHT | GESTATION | | | | | | | | | |
|---------------------|-----------|--------------|----------------|----------------|-------------|----------------|-------------|-------------|---------------------|---------------|
| | TOTAL | <28 WEEKS | 28-31 WEEKS | 32-35 WEEKS | 36 WEEKS | 37-39 WEEKS | 40 WEEKS | 41 WEEKS | 42 WEEKS OR MORE | NOT STATED |
| WHITE | | | | | | | | | | |
| 2,000-2,499 GRAMS | | | | | | | | | | |
| LIVE BIRTHS..... | 126,790 | 409 | 2,572 | 43,164 | 19,665 | 46,088 | 6,856 | 3,093 | 3,645 | 1,298 |
| INFANT DEATHS..... | 1,593 | 16 | 93 | 482 | 213 | 515 | 106 | 73 | 66 | 28 |
| INF. MORT. RATE.... | 12.6 | 39.9 | 36.1 | 11.2 | 10.8 | 11.2 | 15.4 | 23.8 | 18.2 | 21.6 |
| 2,500-2,999 GRAMS | | | | | | | | | | |
| LIVE BIRTHS..... | 465,494 | 611 | 2,499 | 38,891 | 44,322 | 259,518 | 63,011 | 27,908 | 24,542 | 4,192 |
| INFANT DEATHS..... | 2,109 | 14 | 23 | 264 | 209 | 1,058 | 257 | 143 | 115 | 26 |
| INF. MORT. RATE.... | 4.5 | 23.4 | 9.1 | 6.8 | 4.7 | 4.1 | 4.1 | 5.1 | 4.7 | 6.1 |
| 3,000-3,499 GRAMS | | | | | | | | | | |
| LIVE BIRTHS..... | 1,140,741 | - | 3,291 | 26,963 | 37,200 | 607,353 | 252,252 | 120,192 | 83,191 | 10,299 |
| INFANT DEATHS..... | 2,676 | - | 20 | 145 | 116 | 1,352 | 476 | 277 | 255 | 36 |
| INF. MORT. RATE.... | 2.3 | - | 6.2 | 5.4 | 3.1 | 2.2 | 1.9 | 2.3 | 3.1 | 3.5 |
| 3,500-3,999 GRAMS | | | | | | | | | | |
| LIVE BIRTHS..... | 958,968 | - | 1,865 | 12,901 | 14,247 | 424,219 | 266,592 | 145,093 | 85,517 | 8,534 |
| INFANT DEATHS..... | 1,524 | - | 10 | 47 | 42 | 644 | 368 | 240 | 150 | 24 |
| INF. MORT. RATE.... | 1.6 | - | 5.4 | 3.6 | 2.9 | 1.5 | 1.4 | 1.7 | 1.8 | 2.8 |
| 4,000-4,499 GRAMS | | | | | | | | | | |
| LIVE BIRTHS..... | 294,403 | - | - | 2,980 | 3,181 | 109,817 | 88,369 | 56,500 | 30,872 | 2,684 |
| INFANT DEATHS..... | 442 | - | - | 14 | 6 | 167 | 126 | 77 | 43 | 9 |
| INF. MORT. RATE.... | 1.5 | - | - | 4.8 | 1.9 | 1.5 | 1.4 | 1.4 | 1.4 | 3.4 |
| 4,500-4,999 GRAMS | | | | | | | | | | |
| LIVE BIRTHS..... | 48,687 | - | - | 469 | 542 | 16,384 | 14,376 | 10,552 | 5,887 | 477 |
| INFANT DEATHS..... | 90 | - | - | - | 6 | 29 | 28 | 16 | 7 | 4 |
| INF. MORT. RATE.... | 1.9 | - | - | - | 11.2 | 1.7 | 2.0 | 1.5 | 1.2 | 8.9 |
| 5,000 GRAMS OR MORE | | | | | | | | | | |
| LIVE BIRTHS..... | 5,350 | - | - | 73 | 79 | 1,994 | 1,406 | 1,054 | 662 | 82 |
| INFANT DEATHS..... | 23 | - | - | 3 | - | 9 | 5 | 2 | 2 | 2 |
| INF. MORT. RATE.... | 4.4 | - | - | 41.6 | - | 4.6 | 3.6 | 1.9 | 3.1 | 25.1 |
| NOT STATED | | | | | | | | | | |
| LIVE BIRTHS..... | 1,198 | - | - | - | - | - | - | - | - | 1,198 |
| INFANT DEATHS..... | 208 | - | - | - | - | - | - | - | - | 208 |
| INF. MORT. RATE.... | 173.8 | - | - | - | - | - | - | - | - | 173.8 |

SEE FOOTNOTES AT END OF TABLE.

DOCUMENTATION TABLE 3

LIVE BIRTHS, INFANT DEATHS, AND INFANT MORTALITY RATES BY BIRTHWEIGHT, RACE OF MOTHER, AND GESTATIONAL AGE:
UNITED STATES, 1998 BIRTH COHORT DATA

(INFANT DEATHS WEIGHTED)
(RATES ARE PER 1000 LIVE BIRTHS)

| BIRTHWEIGHT | GESTATION | | | | | | | | | |
|-----------------------|-----------|--------------|----------------|----------------|-------------|----------------|-------------|-------------|---------------------|---------------|
| | TOTAL | <28 WEEKS | 28-31 WEEKS | 32-35 WEEKS | 36 WEEKS | 37-39 WEEKS | 40 WEEKS | 41 WEEKS | 42 WEEKS OR MORE | NOT STATED |
| BLACK | | | | | | | | | | |
| TOTAL | | | | | | | | | | |
| LIVE BIRTHS..... | 609,902 | 10,899 | 13,988 | 48,954 | 31,932 | 282,824 | 114,888 | 57,500 | 43,931 | 4,986 |
| INFANT DEATHS..... | 8,392 | 4,400 | 693 | 640 | 278 | 1,272 | 398 | 231 | 205 | 275 |
| INF. MORT. RATE.... | 13.8 | 403.7 | 49.6 | 13.1 | 8.7 | 4.5 | 3.5 | 4.0 | 4.7 | 55.1 |
| LESS THAN 2,500 GRAMS | | | | | | | | | | |
| LIVE BIRTHS..... | 79,772 | 10,477 | 10,501 | 24,093 | 8,138 | 19,342 | 3,140 | 1,486 | 1,759 | 836 |
| INFANT DEATHS..... | 6,165 | 4,393 | 669 | 487 | 140 | 263 | 43 | 27 | 31 | 110 |
| INF. MORT. RATE.... | 77.3 | 419.3 | 63.7 | 20.2 | 17.2 | 13.6 | 13.9 | 18.4 | 17.9 | 131.6 |
| LESS THAN 500 GRAMS | | | | | | | | | | |
| LIVE BIRTHS..... | 2,583 | 2,438 | 82 | 3 | - | 5 | 1 | - | - | 54 |
| INFANT DEATHS..... | 2,206 | 2,113 | 52 | 3 | - | - | 1 | - | - | 36 |
| INF. MORT. RATE.... | 854.1 | 866.9 | 639.7 | 1009.4 | - | - | 1000.0 | - | - | 668.5 |
| 500-749 GRAMS | | | | | | | | | | |
| LIVE BIRTHS..... | 4,127 | 3,577 | 444 | 30 | 10 | 3 | - | - | - | 63 |
| INFANT DEATHS..... | 1,903 | 1,714 | 143 | 6 | 4 | 1 | - | - | - | 34 |
| INF. MORT. RATE.... | 461.0 | 479.2 | 323.1 | 203.2 | 400.6 | 333.3 | - | - | - | 538.5 |
| 750-999 GRAMS | | | | | | | | | | |
| LIVE BIRTHS..... | 3,861 | 2,406 | 1,225 | 127 | 13 | 26 | 12 | 4 | 4 | 44 |
| INFANT DEATHS..... | 555 | 407 | 119 | 11 | 1 | 3 | 1 | - | 1 | 11 |
| INF. MORT. RATE.... | 143.6 | 169.1 | 97.3 | 87.7 | 78.7 | 118.1 | 85.2 | - | 263.9 | 256.7 |
| 1,000-1,249 GRAMS | | | | | | | | | | |
| LIVE BIRTHS..... | 4,017 | 1,076 | 2,107 | 598 | 38 | 84 | 35 | 15 | 25 | 39 |
| INFANT DEATHS..... | 283 | 94 | 130 | 39 | 4 | 5 | 1 | - | 2 | 7 |
| INF. MORT. RATE.... | 70.3 | 87.4 | 61.6 | 65.8 | 107.2 | 60.5 | 28.6 | - | 81.7 | 183.0 |
| 1,250-1,499 GRAMS | | | | | | | | | | |
| LIVE BIRTHS..... | 4,432 | 332 | 2,355 | 1,279 | 105 | 192 | 44 | 17 | 49 | 59 |
| INFANT DEATHS..... | 215 | 32 | 104 | 51 | 6 | 12 | 2 | 1 | 4 | 2 |
| INF. MORT. RATE.... | 48.4 | 97.7 | 44.2 | 39.6 | 57.9 | 63.5 | 46.6 | 58.8 | 82.6 | 34.3 |
| 1,500-1,999 GRAMS | | | | | | | | | | |
| LIVE BIRTHS..... | 15,383 | 400 | 2,937 | 7,960 | 1,264 | 1,953 | 298 | 170 | 240 | 161 |
| INFANT DEATHS..... | 439 | 23 | 95 | 178 | 33 | 72 | 13 | 8 | 6 | 9 |
| INF. MORT. RATE.... | 28.5 | 58.2 | 32.5 | 22.4 | 26.4 | 36.8 | 44.1 | 47.9 | 25.5 | 56.7 |

SEE FOOTNOTES AT END OF TABLE.

DOCUMENTATION TABLE 3

LIVE BIRTHS, INFANT DEATHS, AND INFANT MORTALITY RATES BY BIRTHWEIGHT, RACE OF MOTHER, AND GESTATIONAL AGE:
UNITED STATES, 1998 BIRTH COHORT DATA

(INFANT DEATHS WEIGHTED)
(RATES ARE PER 1000 LIVE BIRTHS)

| BIRTHWEIGHT | GESTATION | | | | | | | | | |
|---------------------|-----------|--------------|----------------|----------------|-------------|----------------|-------------|-------------|---------------------|---------------|
| | TOTAL | <28 WEEKS | 28-31 WEEKS | 32-35 WEEKS | 36 WEEKS | 37-39 WEEKS | 40 WEEKS | 41 WEEKS | 42 WEEKS OR MORE | NOT STATED |
| BLACK | | | | | | | | | | |
| 2,000-2,499 GRAMS | | | | | | | | | | |
| LIVE BIRTHS..... | 45,369 | 248 | 1,351 | 14,096 | 6,708 | 17,079 | 2,750 | 1,280 | 1,441 | 416 |
| INFANT DEATHS..... | 566 | 9 | 24 | 199 | 91 | 170 | 25 | 18 | 18 | 10 |
| INF. MORT. RATE.... | 12.5 | 36.9 | 18.1 | 14.1 | 13.6 | 10.0 | 9.2 | 14.2 | 12.6 | 25.0 |
| 2,500-2,999 GRAMS | | | | | | | | | | |
| LIVE BIRTHS..... | 141,146 | 422 | 1,514 | 12,093 | 11,927 | 77,695 | 19,564 | 8,533 | 8,304 | 1,094 |
| INFANT DEATHS..... | 805 | 7 | 14 | 95 | 76 | 409 | 86 | 49 | 56 | 13 |
| INF. MORT. RATE.... | 5.7 | 17.0 | 9.4 | 7.9 | 6.4 | 5.3 | 4.4 | 5.7 | 6.7 | 12.2 |
| 3,000-3,499 GRAMS | | | | | | | | | | |
| LIVE BIRTHS..... | 230,937 | - | 1,421 | 8,688 | 8,410 | 119,135 | 49,680 | 23,724 | 18,267 | 1,612 |
| INFANT DEATHS..... | 815 | - | 9 | 39 | 46 | 389 | 157 | 90 | 72 | 12 |
| INF. MORT. RATE.... | 3.5 | - | 6.5 | 4.5 | 5.4 | 3.3 | 3.2 | 3.8 | 3.9 | 7.6 |
| 3,500-3,999 GRAMS | | | | | | | | | | |
| LIVE BIRTHS..... | 125,007 | - | 552 | 3,337 | 2,838 | 54,158 | 33,319 | 17,886 | 12,050 | 867 |
| INFANT DEATHS..... | 371 | - | 1 | 9 | 14 | 173 | 84 | 44 | 38 | 8 |
| INF. MORT. RATE.... | 3.0 | - | 1.8 | 2.7 | 5.0 | 3.2 | 2.5 | 2.4 | 3.1 | 9.4 |
| 4,000-4,499 GRAMS | | | | | | | | | | |
| LIVE BIRTHS..... | 27,972 | - | - | 628 | 509 | 10,633 | 7,929 | 5,059 | 2,993 | 221 |
| INFANT DEATHS..... | 84 | - | - | 7 | 2 | 28 | 23 | 17 | 6 | - |
| INF. MORT. RATE.... | 3.0 | - | - | 11.2 | 4.0 | 2.7 | 3.0 | 3.4 | 2.0 | - |
| 4,500-4,999 GRAMS | | | | | | | | | | |
| LIVE BIRTHS..... | 4,170 | - | - | 96 | 91 | 1,613 | 1,109 | 721 | 507 | 33 |
| INFANT DEATHS..... | 18 | - | - | 1 | - | 6 | 4 | 4 | 2 | 1 |
| INF. MORT. RATE.... | 4.4 | - | - | 10.7 | - | 3.8 | 3.7 | 5.7 | 4.0 | 30.3 |
| 5,000 GRAMS OR MORE | | | | | | | | | | |
| LIVE BIRTHS..... | 584 | - | - | 19 | 19 | 248 | 147 | 91 | 51 | 9 |
| INFANT DEATHS..... | 5 | - | - | 1 | - | 3 | - | - | - | 1 |
| INF. MORT. RATE.... | 8.7 | - | - | 53.7 | - | 12.2 | - | - | - | 117.3 |
| NOT STATED | | | | | | | | | | |
| LIVE BIRTHS..... | 314 | - | - | - | - | - | - | - | - | 314 |
| INFANT DEATHS..... | 129 | - | - | - | - | - | - | - | - | 129 |
| INF. MORT. RATE.... | 410.7 | - | - | - | - | - | - | - | - | 410.7 |

1/ INCLUDES RACES OTHER THAN WHITE AND BLACK

- DATA NOT AVAILABLE.

DOCUMENTATION TABLE 4

LIVE BIRTHS, INFANT DEATHS, AND INFANT MORTALITY RATES BY BIRTHWEIGHT, RACE OF MOTHER, AND AGE AT DEATH:
 UNITED STATES, 1998 BIRTH COHORT DATA
 (INFANT DEATHS WEIGHTED)

(INFANT DEATHS ARE UNDER 1 YEAR. NEONATAL DEATHS ARE UNDER 28 DAYS; EARLY NEONATAL, 0-6 DAYS; LATE NEONATAL,
 7-27 DAYS; AND POSTNEONATAL, 28 DAYS THROUGH 11 MONTHS)

(RATES ARE PER 1000 LIVE BIRTHS)

| BIRTHWEIGHT AND RACE OF MOTHER | LIVE BIRTHS | INFANT | TOTAL NEONATAL | EARLY NEONATAL | LATE NEONATAL | POST- NEONATAL |
|--------------------------------|--------------------|--------|-------------------|-------------------|------------------|-------------------|
| ALL RACES1/ — | | | | | | |
| TOTAL (ALL BIRTHWEIGHTS)..... | NUMBER.. 3,941,553 | 28,197 | 18,874 | 15,039 | 3,836 | 9,323 |
| | RATE.. | 7.2 | 4.8 | 3.8 | 1.0 | 2.4 |
| LESS THAN 2,500 GRAMS..... | NUMBER.. 299,209 | 18,352 | 15,066 | 12,622 | 2,444 | 3,286 |
| | RATE.. | 61.3 | 50.4 | 42.2 | 8.2 | 11.0 |
| LESS THAN 500 GRAMS..... | NUMBER.. 6,349 | 5,480 | 5,397 | 5,236 | 161 | 83 |
| | RATE.. | 863.1 | 850.0 | 824.7 | 25.4 | 13.1 |
| 500-749 GRAMS..... | NUMBER.. 11,041 | 5,336 | 4,671 | 3,821 | 851 | 665 |
| | RATE.. | 483.3 | 423.1 | 346.1 | 77.0 | 60.2 |
| 750-999 GRAMS..... | NUMBER.. 11,716 | 1,865 | 1,438 | 972 | 466 | 428 |
| | RATE.. | 159.2 | 122.7 | 83.0 | 39.7 | 36.5 |
| 1,000-1,249 GRAMS..... | NUMBER.. 13,238 | 936 | 686 | 497 | 189 | 250 |
| | RATE.. | 70.7 | 51.8 | 37.5 | 14.3 | 18.9 |
| 1,250-1,499 GRAMS..... | NUMBER.. 15,389 | 756 | 553 | 407 | 146 | 202 |
| | RATE.. | 49.1 | 36.0 | 26.5 | 9.5 | 13.1 |
| 1,500-1,999 GRAMS..... | NUMBER.. 59,014 | 1,705 | 1,099 | 827 | 272 | 606 |
| | RATE.. | 28.9 | 18.6 | 14.0 | 4.6 | 10.3 |
| 2,000-2,499 GRAMS..... | NUMBER.. 182,462 | 2,274 | 1,223 | 862 | 360 | 1,051 |
| | RATE.. | 12.5 | 6.7 | 4.7 | 2.0 | 5.8 |
| 2,500-2,999 GRAMS..... | NUMBER.. 650,006 | 3,090 | 1,198 | 721 | 476 | 1,893 |
| | RATE.. | 4.8 | 1.8 | 1.1 | .7 | 2.9 |
| 3,000-3,499 GRAMS..... | NUMBER.. 1,458,017 | 3,684 | 1,269 | 732 | 537 | 2,415 |
| | RATE.. | 2.5 | .9 | .5 | .4 | 1.7 |
| 3,500-3,999 GRAMS..... | NUMBER.. 1,136,056 | 1,993 | 694 | 422 | 272 | 1,299 |
| | RATE.. | 1.8 | .6 | .4 | .2 | 1.1 |

DOCUMENTATION TABLE 4

LIVE BIRTHS, INFANT DEATHS, AND INFANT MORTALITY RATES BY BIRTHWEIGHT, RACE OF MOTHER, AND AGE AT DEATH:
 UNITED STATES, 1998 BIRTH COHORT DATA
 (INFANT DEATHS WEIGHTED)

(INFANT DEATHS ARE UNDER 1 YEAR. NEONATAL DEATHS ARE UNDER 28 DAYS; EARLY NEONATAL, 0-6 DAYS; LATE NEONATAL,
 7-27 DAYS; AND POSTNEONATAL, 28 DAYS THROUGH 11 MONTHS)

(RATES ARE PER 1000 LIVE BIRTHS)-Continued

| BIRTHWEIGHT AND RACE OF MOTHER | LIVE BIRTHS | INFANT | TOTAL NEONATAL | EARLY NEONATAL | LATE NEONATAL | POST- NEONATAL |
|--------------------------------|-------------------|--------|-------------------|-------------------|------------------|-------------------|
| ALL RACES1/ — | | | | | | |
| 4,000-4,499 GRAMS..... | NUMBER... 335,215 | 561 | 213 | 130 | 83 | 348 |
| | RATE... .. | 1.7 | .6 | .4 | .2 | 1.0 |
| 4,500-4,999 GRAMS..... | NUMBER... 54,827 | 114 | 64 | 54 | 10 | 50 |
| | RATE... .. | 2.1 | 1.2 | 1.0 | .2 | .9 |
| 5,000 GRAMS OR MORE..... | NUMBER... 6,203 | 29 | 20 | 17 | 3 | 9 |
| | RATE... .. | 4.8 | 3.3 | 2.8 | .5 | 1.5 |
| NOT STATED..... | NUMBER... 2,020 | 374 | 350 | 340 | 10 | 23 |
| | RATE... .. | 185.0 | 173.5 | 168.5 | 5.0 | 11.6 |

DOCUMENTATION TABLE 4

LIVE BIRTHS, INFANT DEATHS, AND INFANT MORTALITY RATES BY BIRTHWEIGHT, RACE OF MOTHER, AND AGE AT DEATH:
 UNITED STATES, 1998 BIRTH COHORT DATA
 (INFANT DEATHS WEIGHTED)

(INFANT DEATHS ARE UNDER 1 YEAR. NEONATAL DEATHS ARE UNDER 28 DAYS; EARLY NEONATAL, 0-6 DAYS; LATE NEONATAL,
 7-27 DAYS; AND POSTNEONATAL, 28 DAYS THROUGH 11 MONTHS)

(RATES ARE PER 1000 LIVE BIRTHS)-Continued

| BIRTHWEIGHT AND RACE OF MOTHER | LIVE BIRTHS | INFANT | TOTAL NEONATAL | EARLY NEONATAL | LATE NEONATAL | POST-NEONATAL |
|--------------------------------|--------------------|--------|----------------|----------------|---------------|---------------|
| WHITE | | | | | | |
| TOTAL (ALL BIRTHWEIGHTS)..... | NUMBER.. 3,118,727 | 18,460 | 12,328 | 9,724 | 2,604 | 6,132 |
| | RATE.. | 5.9 | 4.0 | 3.1 | .8 | 2.0 |
| LESS THAN 2,500 GRAMS..... | NUMBER.. 203,886 | 11,387 | 9,479 | 7,921 | 1,559 | 1,907 |
| | RATE.. | 55.8 | 46.5 | 38.8 | 7.6 | 9.4 |
| LESS THAN 500 GRAMS..... | NUMBER.. 3,502 | 3,049 | 3,005 | 2,913 | 92 | 44 |
| | RATE.. | 870.6 | 858.1 | 831.9 | 26.2 | 12.4 |
| 500-749 GRAMS..... | NUMBER.. 6,510 | 3,231 | 2,889 | 2,403 | 486 | 342 |
| | RATE.. | 496.4 | 443.8 | 369.1 | 74.6 | 52.6 |
| 750-999 GRAMS..... | NUMBER.. 7,360 | 1,222 | 988 | 673 | 314 | 234 |
| | RATE.. | 166.0 | 134.2 | 91.5 | 42.7 | 31.8 |
| 1,000-1,249 GRAMS..... | NUMBER.. 8,670 | 613 | 479 | 352 | 127 | 134 |
| | RATE.. | 70.8 | 55.3 | 40.6 | 14.7 | 15.5 |
| 1,250-1,499 GRAMS..... | NUMBER.. 10,252 | 507 | 389 | 297 | 92 | 118 |
| | RATE.. | 49.5 | 38.0 | 29.0 | 9.0 | 11.5 |
| 1,500-1,999 GRAMS..... | NUMBER.. 40,802 | 1,171 | 805 | 621 | 184 | 367 |
| | RATE.. | 28.7 | 19.7 | 15.2 | 4.5 | 9.0 |
| 2,000-2,499 GRAMS..... | NUMBER.. 126,790 | 1,593 | 924 | 661 | 264 | 668 |
| | RATE.. | 12.6 | 7.3 | 5.2 | 2.1 | 5.3 |
| 2,500-2,999 GRAMS..... | NUMBER.. 465,494 | 2,109 | 869 | 544 | 325 | 1,239 |
| | RATE.. | 4.5 | 1.9 | 1.2 | .7 | 2.7 |
| 3,000-3,499 GRAMS..... | NUMBER.. 1,140,741 | 2,676 | 977 | 568 | 409 | 1,699 |
| | RATE.. | 2.3 | .9 | .5 | .4 | 1.5 |
| 3,500-3,999 GRAMS..... | NUMBER.. 958,968 | 1,524 | 568 | 344 | 224 | 956 |
| | RATE.. | 1.6 | .6 | .4 | .2 | 1.0 |

DOCUMENTATION TABLE 4

LIVE BIRTHS, INFANT DEATHS, AND INFANT MORTALITY RATES BY BIRTHWEIGHT, RACE OF MOTHER, AND AGE AT DEATH:
 UNITED STATES, 1998 BIRTH COHORT DATA
 (INFANT DEATHS WEIGHTED)

(INFANT DEATHS ARE UNDER 1 YEAR. NEONATAL DEATHS ARE UNDER 28 DAYS; EARLY NEONATAL, 0-6 DAYS; LATE NEONATAL,
 7-27 DAYS; AND POSTNEONATAL, 28 DAYS THROUGH 11 MONTHS)

(RATES ARE PER 1000 LIVE BIRTHS)-Continued

| BIRTHWEIGHT AND RACE OF MOTHER | LIVE BIRTHS | INFANT | TOTAL NEONATAL | EARLY NEONATAL | LATE NEONATAL | POST- NEONATAL |
|----------------------------------|-------------|--------|-------------------|-------------------|------------------|-------------------|
| WHITE | | | | | | |
| 4,000-4,499 GRAMS.....NUMBER.. | 294,403 | 442 | 177 | 106 | 71 | 265 |
| RATE.. | | 1.5 | .6 | .4 | .2 | .9 |
| 4,500-4,999 GRAMS.....NUMBER.. | 48,687 | 90 | 47 | 39 | 8 | 43 |
| RATE.. | | 1.9 | 1.0 | .8 | .2 | .9 |
| 5,000 GRAMS OR MORE.....NUMBER.. | 5,350 | 23 | 15 | 12 | 3 | 8 |
| RATE.. | | 4.4 | 2.9 | 2.3 | .6 | 1.5 |
| NOT STATED.....NUMBER.. | 1,198 | 208 | 195 | 190 | 5 | 13 |
| RATE.. | | 173.8 | 162.8 | 158.6 | 4.2 | 11.0 |

DOCUMENTATION TABLE 4

LIVE BIRTHS, INFANT DEATHS, AND INFANT MORTALITY RATES BY BIRTHWEIGHT, RACE OF MOTHER, AND AGE AT DEATH:
 UNITED STATES, 1998 BIRTH COHORT DATA
 (INFANT DEATHS WEIGHTED)

(INFANT DEATHS ARE UNDER 1 YEAR. NEONATAL DEATHS ARE UNDER 28 DAYS; EARLY NEONATAL, 0-6 DAYS; LATE NEONATAL,
 7-27 DAYS; AND POSTNEONATAL, 28 DAYS THROUGH 11 MONTHS)

(RATES ARE PER 1000 LIVE BIRTHS)-Continued

| BIRTHWEIGHT AND RACE OF MOTHER | LIVE BIRTHS | INFANT | TOTAL NEONATAL | EARLY NEONATAL | LATE NEONATAL | POST-NEONATAL |
|---------------------------------------|-------------|--------|----------------|----------------|---------------|---------------|
| BLACK | | | | | | |
| TOTAL (ALL BIRTHWEIGHTS).....NUMBER.. | 609,902 | 8,392 | 5,677 | 4,629 | 1,048 | 2,715 |
| RATE.. | | 13.8 | 9.3 | 7.6 | 1.7 | 4.5 |
| LESS THAN 2,500 GRAMS.....NUMBER.. | 79,772 | 6,165 | 4,934 | 4,148 | 785 | 1,231 |
| RATE.. | | 77.3 | 61.8 | 52.0 | 9.8 | 15.4 |
| LESS THAN 500 GRAMS.....NUMBER.. | 2,583 | 2,206 | 2,172 | 2,106 | 65 | 34 |
| RATE.. | | 854.1 | 840.7 | 815.4 | 25.3 | 13.3 |
| 500-749 GRAMS.....NUMBER.. | 4,127 | 1,903 | 1,606 | 1,271 | 335 | 296 |
| RATE.. | | 461.0 | 389.3 | 308.0 | 81.2 | 71.8 |
| 750-999 GRAMS.....NUMBER.. | 3,861 | 555 | 378 | 249 | 129 | 176 |
| RATE.. | | 143.6 | 98.0 | 64.6 | 33.4 | 45.7 |
| 1,000-1,249 GRAMS.....NUMBER.. | 4,017 | 283 | 172 | 118 | 54 | 110 |
| RATE.. | | 70.3 | 42.9 | 29.3 | 13.6 | 27.5 |
| 1,250-1,499 GRAMS.....NUMBER.. | 4,432 | 215 | 141 | 90 | 50 | 74 |
| RATE.. | | 48.4 | 31.7 | 20.4 | 11.3 | 16.7 |
| 1,500-1,999 GRAMS.....NUMBER.. | 15,383 | 439 | 229 | 156 | 73 | 210 |
| RATE.. | | 28.5 | 14.9 | 10.1 | 4.7 | 13.7 |
| 2,000-2,499 GRAMS.....NUMBER.. | 45,369 | 566 | 236 | 157 | 79 | 330 |
| RATE.. | | 12.5 | 5.2 | 3.5 | 1.7 | 7.3 |
| 2,500-2,999 GRAMS.....NUMBER.. | 141,146 | 805 | 250 | 140 | 110 | 555 |
| RATE.. | | 5.7 | 1.8 | 1.0 | .8 | 3.9 |
| 3,000-3,499 GRAMS.....NUMBER.. | 230,937 | 815 | 228 | 121 | 107 | 587 |
| RATE.. | | 3.5 | 1.0 | .5 | .5 | 2.5 |
| 3,500-3,999 GRAMS.....NUMBER.. | 125,007 | 371 | 97 | 60 | 37 | 274 |
| RATE.. | | 3.0 | .8 | .5 | .3 | 2.2 |

DOCUMENTATION TABLE 4

LIVE BIRTHS, INFANT DEATHS, AND INFANT MORTALITY RATES BY BIRTHWEIGHT, RACE OF MOTHER, AND AGE AT DEATH:
 UNITED STATES, 1998 BIRTH COHORT DATA
 (INFANT DEATHS WEIGHTED)

(INFANT DEATHS ARE UNDER 1 YEAR. NEONATAL DEATHS ARE UNDER 28 DAYS; EARLY NEONATAL, 0-6 DAYS; LATE NEONATAL,
 7-27 DAYS; AND POSTNEONATAL, 28 DAYS THROUGH 11 MONTHS)

(RATES ARE PER 1000 LIVE BIRTHS)-Continued

| BIRTHWEIGHT AND RACE OF MOTHER | LIVE BIRTHS | INFANT | TOTAL NEONATAL | EARLY NEONATAL | LATE NEONATAL | POST- NEONATAL |
|--------------------------------|-----------------|--------|-------------------|-------------------|------------------|-------------------|
| BLACK | | | | | | |
| 4,000-4,499 GRAMS..... | NUMBER.. 27,972 | 84 | 25 | 17 | 8 | 59 |
| | RATE.. | 3.0 | .9 | .6 | .3 | 2.1 |
| 4,500-4,999 GRAMS..... | NUMBER.. 4,170 | 18 | 14 | 13 | 1 | 4 |
| | RATE.. | 4.4 | 3.4 | 3.2 | .2 | 1.0 |
| 5,000 GRAMS OR MORE..... | NUMBER.. 584 | 5 | 5 | 5 | - | - |
| | RATE.. | 8.7 | 8.7 | 8.7 | - | - |
| NOT STATED..... | NUMBER.. 314 | 129 | 124 | 124 | - | 5 |
| | RATE.. | 410.7 | 394.3 | 394.3 | - | 16.3 |

1/ INCLUDES RACES OTHER THAN WHITE AND BLACK

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DOCUMENTATION TABLE 5

LIVE BIRTHS BY BIRTHWEIGHT AND RACE OF MOTHER AND INFANT DEATHS AND INFANT MORTALITY RATES BY AGE AT DEATH, BIRTHWEIGHT, AND RACE OF MOTHER FOR 10 MAJOR CAUSES OF INFANT DEATH: UNITED STATES, 1998 BIRTH COHORT DATA

(INFANT DEATHS WEIGHTED)

(INFANT DEATHS ARE UNDER 1 YEAR. NEONATAL DEATHS ARE UNDER 28 DAYS; EARLY NEONATAL, 0-6 DAYS; LATE NEONATAL, 7-27 DAYS; AND POSTNEONATAL, 28 DAYS THROUGH 11 MONTHS)

(RATES ARE PER 100,000 LIVE BIRTHS)

| CAUSE OF DEATH, BIRTHWEIGHT, AND RACE OF MOTHER | LIVE BIRTHS | INFANT DEATHS | TOTAL NEONATAL | EARLY NEONATAL | LATE NEONATAL | POST-NEONATAL |
|---|---------------------|---------------|----------------|----------------|---------------|---------------|
| ALL RACES 1/, ALL BIRTHWEIGHTS | | | | | | |
| ALL CAUSES..... | NUMBER... 3,941,553 | 28,197 | 18,874 | 15,039 | 3,836 | 9,323 |
| | RATE.. | 715.4 | 478.9 | 381.5 | 97.3 | 236.5 |
| CONGENITAL ANOMALIES (740-759)..... | NUMBER... 6,134 | 4,538 | 3,469 | 1,069 | 1,597 | |
| | RATE.. | 155.6 | 115.1 | 88.0 | 27.1 | 40.5 |
| PREMATURITY (765)..... | NUMBER... 4,070 | 4,018 | 3,930 | 88 | 52 | |
| | RATE.. | 103.3 | 101.9 | 99.7 | 2.2 | 1.3 |
| SUDDEN INFANT DEATH SYNDROME (798.0)..... | NUMBER... 2,081 | 176 | 21 | 154 | 1,905 | |
| | RATE.. | 52.8 | 4.5 | .5 | 3.9 | 48.3 |
| MATERNAL COMPLICATIONS (761)..... | NUMBER... 1,340 | 1,334 | 1,318 | 16 | 6 | |
| | RATE.. | 34.0 | 33.8 | 33.4 | .4 | .2 |
| RESPIRATORY DISTRESS SYNDROME (769)..... | NUMBER... 1,313 | 1,226 | 961 | 264 | 87 | |
| | RATE.. | 33.3 | 31.1 | 24.4 | 6.7 | 2.2 |
| COMPLICATIONS OF PLACENTA, ETC. (762)..... | NUMBER... 955 | 940 | 907 | 33 | 15 | |
| | RATE.. | 24.2 | 23.8 | 23.0 | .8 | .4 |
| INFECTIONS (771)..... | NUMBER... 811 | 764 | 345 | 418 | 48 | |
| | RATE.. | 20.6 | 19.4 | 8.8 | 10.6 | 1.2 |
| ACCIDENTS (E800-E949)..... | NUMBER... 713 | 81 | 39 | 42 | 632 | |
| | RATE.. | 18.1 | 2.1 | 1.0 | 1.1 | 16.0 |
| HYPOXIA AND ASPHYXIA (768)..... | NUMBER... 459 | 418 | 349 | 69 | 41 | |
| | RATE.. | 11.6 | 10.6 | 8.9 | 1.8 | 1.0 |
| PNEUMONIA AND INFLUENZA (480-487)..... | NUMBER... 428 | 88 | 26 | 63 | 340 | |
| | RATE.. | 10.9 | 2.2 | .7 | 1.6 | 8.6 |
| ALL OTHER CAUSES..... | NUMBER... 9,893 | 5,292 | 3,674 | 1,618 | 4,601 | |
| | RATE.. | 251.0 | 134.3 | 93.2 | 41.0 | 116.7 |

DOCUMENTATION TABLE 5

LIVE BIRTHS BY BIRTHWEIGHT AND RACE OF MOTHER AND INFANT DEATHS AND INFANT MORTALITY RATES BY AGE AT DEATH, BIRTHWEIGHT, AND RACE OF MOTHER FOR 10 MAJOR CAUSES OF INFANT DEATH: UNITED STATES, 1998 BIRTH COHORT DATA

(INFANT DEATHS WEIGHTED)

(INFANT DEATHS ARE UNDER 1 YEAR. NEONATAL DEATHS ARE UNDER 28 DAYS; EARLY NEONATAL, 0-6 DAYS; LATE NEONATAL, 7-27 DAYS; AND POSTNEONATAL, 28 DAYS THROUGH 11 MONTHS)

(RATES ARE PER 100,000 LIVE BIRTHS)

| CAUSE OF DEATH, BIRTHWEIGHT, AND RACE OF MOTHER | LIVE BIRTHS | INFANT DEATHS | TOTAL NEONATAL | EARLY NEONATAL | LATE NEONATAL | POST-NEONATAL |
|---|-------------------|---------------|----------------|----------------|---------------|---------------|
| ALL RACES 1/, | | | | | | |
| LESS THAN 2,500 GRAMS | | | | | | |
| ALL CAUSES..... | NUMBER... 299,209 | 18,352 | 15,066 | 12,622 | 2,444 | 3,286 |
| | RATE.. | 6,133.5 | 5,035.4 | 4,218.4 | 817.0 | 1,098.2 |
| CONGENITAL ANOMALIES (740-759)..... | NUMBER... 3,546 | 3,546 | 2,936 | 2,440 | 496 | 610 |
| | RATE.. | 1,185.2 | 981.3 | 815.6 | 165.8 | 203.8 |
| PREMATURITY (765)..... | NUMBER... 3,892 | 3,892 | 3,844 | 3,757 | 87 | 49 |
| | RATE.. | 1,300.8 | 1,284.6 | 1,255.5 | 29.0 | 16.3 |
| SUDDEN INFANT DEATH SYNDROME (798.0)..... | NUMBER... 408 | 408 | 34 | 3 | 31 | 374 |
| | RATE.. | 136.3 | 11.5 | 1.0 | 10.5 | 124.8 |
| MATERNAL COMPLICATIONS (761)..... | NUMBER... 1,250 | 1,250 | 1,245 | 1,231 | 14 | 5 |
| | RATE.. | 417.7 | 416.0 | 411.3 | 4.7 | 1.7 |
| RESPIRATORY DISTRESS SYNDROME (769)..... | NUMBER... 1,239 | 1,239 | 1,176 | 926 | 250 | 63 |
| | RATE.. | 414.2 | 393.1 | 309.5 | 83.7 | 21.0 |
| COMPLICATIONS OF PLACENTA, ETC. (762)..... | NUMBER... 811 | 811 | 799 | 774 | 25 | 11 |
| | RATE.. | 270.9 | 267.2 | 258.7 | 8.4 | 3.8 |
| INFECTIONS (771)..... | NUMBER... 676 | 676 | 644 | 293 | 351 | 31 |
| | RATE.. | 225.8 | 215.3 | 98.0 | 117.3 | 10.5 |
| ACCIDENTS (E800-E949)..... | NUMBER... 133 | 133 | 24 | 14 | 10 | 108 |
| | RATE.. | 44.3 | 8.1 | 4.8 | 3.4 | 36.2 |
| HYPOXIA AND ASPHYXIA (768)..... | NUMBER... 218 | 218 | 209 | 188 | 21 | 9 |
| | RATE.. | 72.9 | 69.8 | 62.7 | 7.1 | 3.1 |
| PNEUMONIA AND INFLUENZA (480-487)..... | NUMBER... 192 | 192 | 54 | 20 | 34 | 138 |
| | RATE.. | 64.1 | 18.0 | 6.5 | 11.5 | 46.1 |
| ALL OTHER CAUSES..... | NUMBER... 5,988 | 5,988 | 4,101 | 2,976 | 1,124 | 1,887 |
| | RATE.. | 2,001.3 | 1,370.5 | 994.7 | 375.7 | 630.8 |

DOCUMENTATION TABLE 5

LIVE BIRTHS BY BIRTHWEIGHT AND RACE OF MOTHER AND INFANT DEATHS AND INFANT MORTALITY RATES BY AGE AT DEATH, BIRTHWEIGHT, AND RACE OF MOTHER FOR 10 MAJOR CAUSES OF INFANT DEATH: UNITED STATES, 1998 BIRTH COHORT DATA

(INFANT DEATHS WEIGHTED)

(INFANT DEATHS ARE UNDER 1 YEAR. NEONATAL DEATHS ARE UNDER 28 DAYS; EARLY NEONATAL, 0-6 DAYS; LATE NEONATAL, 7-27 DAYS; AND POSTNEONATAL, 28 DAYS THROUGH 11 MONTHS)

(RATES ARE PER 100,000 LIVE BIRTHS)

| CAUSE OF DEATH, BIRTHWEIGHT, AND RACE OF MOTHER | LIVE BIRTHS | INFANT DEATHS | TOTAL NEONATAL | EARLY NEONATAL | LATE NEONATAL | POST-NEONATAL |
|---|---------------------|---------------|----------------|----------------|---------------|---------------|
| ALL RACES 1/, 2,500 GRAMS OR MORE | | | | | | |
| ALL CAUSES..... | NUMBER... 3,640,324 | 9,472 | 3,458 | 2,076 | 1,381 | 6,014 |
| | RATE.. | 260.2 | 95.0 | 57.0 | 37.9 | 165.2 |
| CONGENITAL ANOMALIES (740-759)..... | NUMBER... 2,549 | 1,567 | 996 | 571 | 982 | |
| | RATE.. | 70.0 | 43.1 | 27.4 | 15.7 | 27.0 |
| PREMATURITY (765)..... | NUMBER... 55 | 55 | 54 | 1 | - | - |
| | RATE.. | 1.5 | 1.5 | 1.5 | .0 | - |
| SUDDEN INFANT DEATH SYNDROME (798.0)..... | NUMBER... 1,672 | 140 | 17 | 123 | 1,532 | |
| | RATE.. | 45.9 | 3.9 | .5 | 3.4 | 42.1 |
| MATERNAL COMPLICATIONS (761)..... | NUMBER... 32 | 31 | 29 | 2 | 1 | |
| | RATE.. | .9 | .8 | .8 | .1 | .0 |
| RESPIRATORY DISTRESS SYNDROME (769)..... | NUMBER... 67 | 42 | 28 | 14 | 24 | |
| | RATE.. | 1.8 | 1.2 | .8 | .4 | .7 |
| COMPLICATIONS OF PLACENTA, ETC. (762)..... | NUMBER... 105 | 101 | 92 | 8 | 4 | |
| | RATE.. | 2.9 | 2.8 | 2.5 | .2 | .1 |
| INFECTIONS (771)..... | NUMBER... 133 | 116 | 51 | 65 | 16 | |
| | RATE.. | 3.6 | 3.2 | 1.4 | 1.8 | .4 |
| ACCIDENTS (E800-E949)..... | NUMBER... 580 | 57 | 24 | 32 | 523 | |
| | RATE.. | 15.9 | 1.6 | .7 | .9 | 14.4 |
| HYPOXIA AND ASPHYXIA (768)..... | NUMBER... 230 | 200 | 152 | 48 | 29 | |
| | RATE.. | 6.3 | 5.5 | 4.2 | 1.3 | .8 |
| PNEUMONIA AND INFLUENZA (480-487)..... | NUMBER... 235 | 34 | 6 | 28 | 201 | |
| | RATE.. | 6.5 | .9 | .2 | .8 | 5.5 |
| ALL OTHER CAUSES..... | NUMBER... 3,814 | 1,113 | 625 | 488 | 2,701 | |
| | RATE.. | 104.8 | 30.6 | 17.2 | 13.4 | 74.2 |

DOCUMENTATION TABLE 5

LIVE BIRTHS BY BIRTHWEIGHT AND RACE OF MOTHER AND INFANT DEATHS AND INFANT MORTALITY RATES BY AGE AT DEATH, BIRTHWEIGHT, AND RACE OF MOTHER FOR 10 MAJOR CAUSES OF INFANT DEATH: UNITED STATES, 1998 BIRTH COHORT DATA

(INFANT DEATHS WEIGHTED)

(INFANT DEATHS ARE UNDER 1 YEAR. NEONATAL DEATHS ARE UNDER 28 DAYS; EARLY NEONATAL, 0-6 DAYS; LATE NEONATAL, 7-27 DAYS; AND POSTNEONATAL, 28 DAYS THROUGH 11 MONTHS)

(RATES ARE PER 100,000 LIVE BIRTHS)

| CAUSE OF DEATH, BIRTHWEIGHT, AND RACE OF MOTHER | LIVE BIRTHS | INFANT DEATHS | TOTAL NEONATAL | EARLY NEONATAL | LATE NEONATAL | POST-NEONATAL |
|---|-----------------|---------------|----------------|----------------|---------------|---------------|
| ALL RACES 1/, NOT STATED BIRTHWEIGHT | | | | | | |
| ALL CAUSES..... | NUMBER... 2,020 | 374 | 350 | 340 | 10 | 23 |
| | RATE.. | 18,504.1 | 17,348.3 | 16,849.9 | 498.4 | 1,155.8 |
| CONGENITAL ANOMALIES (740-759)..... | NUMBER... 39 | 34 | 32 | 2 | 5 | |
| | RATE.. | 1,944.1 | 1,694.9 | 1,595.9 | 99.0 | 249.1 |
| PREMATURITY (765)..... | NUMBER... 122 | 119 | 119 | - | 3 | |
| | RATE.. | 6,045.3 | 5,894.3 | 5,894.3 | - | 151.1 |
| SUDDEN INFANT DEATH SYNDROME (798.0)..... | NUMBER... 1 | 1 | 1 | - | - | |
| | RATE.. | 51.1 | 51.1 | 51.1 | - | - |
| MATERNAL COMPLICATIONS (761)..... | NUMBER... 58 | 58 | 58 | - | - | |
| | RATE.. | 2,881.9 | 2,881.9 | 2,881.9 | - | - |
| RESPIRATORY DISTRESS SYNDROME (769)..... | NUMBER... 7 | 7 | 7 | - | - | |
| | RATE.. | 350.6 | 350.6 | 350.6 | - | - |
| COMPLICATIONS OF PLACENTA, ETC. (762)..... | NUMBER... 40 | 40 | 40 | - | - | |
| | RATE.. | 1,980.8 | 1,980.8 | 1,980.8 | - | - |
| INFECTIONS (771)..... | NUMBER... 3 | 3 | 1 | 2 | - | |
| | RATE.. | 148.7 | 148.7 | 49.7 | 99.0 | - |
| ACCIDENTS (E800-E949)..... | NUMBER... - | - | - | - | - | |
| | RATE.. | - | - | - | - | - |
| HYPOXIA AND ASPHYXIA (768)..... | NUMBER... 11 | 9 | 9 | - | 2 | |
| | RATE.. | 554.0 | 453.4 | 453.4 | - | 100.6 |
| PNEUMONIA AND INFLUENZA (480-487)..... | NUMBER... 1 | - | - | - | 1 | |
| | RATE.. | 50.8 | - | - | - | 50.8 |
| ALL OTHER CAUSES..... | NUMBER... 91 | 79 | 73 | 6 | 12 | |
| | RATE.. | 4,496.8 | 3,892.6 | 3,592.2 | 300.4 | 604.2 |

DOCUMENTATION TABLE 5

LIVE BIRTHS BY BIRTHWEIGHT AND RACE OF MOTHER AND INFANT DEATHS AND INFANT MORTALITY RATES BY AGE AT DEATH, BIRTHWEIGHT, AND RACE OF MOTHER FOR 10 MAJOR CAUSES OF INFANT DEATH: UNITED STATES, 1998 BIRTH COHORT DATA

(INFANT DEATHS WEIGHTED)

(INFANT DEATHS ARE UNDER 1 YEAR. NEONATAL DEATHS ARE UNDER 28 DAYS; EARLY NEONATAL, 0-6 DAYS; LATE NEONATAL, 7-27 DAYS; AND POSTNEONATAL, 28 DAYS THROUGH 11 MONTHS)

(RATES ARE PER 100,000 LIVE BIRTHS)

| CAUSE OF DEATH, BIRTHWEIGHT, AND RACE OF MOTHER | LIVE BIRTHS | INFANT DEATHS | TOTAL NEONATAL | EARLY NEONATAL | LATE NEONATAL | POST-NEONATAL |
|---|---------------------|---------------|----------------|----------------|---------------|---------------|
| WHITE, ALL BIRTHWEIGHTS | | | | | | |
| ALL CAUSES..... | NUMBER... 3,118,727 | 18,460 | 12,328 | 9,724 | 2,604 | 6,132 |
| | RATE.. | 591.9 | 395.3 | 311.8 | 83.5 | 196.6 |
| CONGENITAL ANOMALIES (740-759)..... | NUMBER... 4,715 | 3,530 | 2,726 | 803 | 1,186 | |
| | RATE.. | 151.2 | 113.2 | 87.4 | 25.8 | 38.0 |
| PREMATURITY (765)..... | NUMBER... 2,207 | 2,179 | 2,126 | 53 | 28 | |
| | RATE.. | 70.8 | 69.9 | 68.2 | 1.7 | .9 |
| SUDDEN INFANT DEATH SYNDROME (798.0)..... | NUMBER... 1,372 | 124 | 13 | 111 | 1,248 | |
| | RATE.. | 44.0 | 4.0 | .4 | 3.6 | 40.0 |
| MATERNAL COMPLICATIONS (761)..... | NUMBER... 835 | 830 | 821 | 9 | 5 | |
| | RATE.. | 26.8 | 26.6 | 26.3 | .3 | .2 |
| RESPIRATORY DISTRESS SYNDROME (769)..... | NUMBER... 830 | 778 | 610 | 169 | 52 | |
| | RATE.. | 26.6 | 25.0 | 19.5 | 5.4 | 1.7 |
| COMPLICATIONS OF PLACENTA, ETC. (762)..... | NUMBER... 624 | 614 | 590 | 23 | 10 | |
| | RATE.. | 20.0 | 19.7 | 18.9 | .7 | .3 |
| INFECTIONS (771)..... | NUMBER... 529 | 498 | 230 | 268 | 30 | |
| | RATE.. | 17.0 | 16.0 | 7.4 | 8.6 | 1.0 |
| ACCIDENTS (E800-E949)..... | NUMBER... 475 | 66 | 31 | 35 | 409 | |
| | RATE.. | 15.2 | 2.1 | 1.0 | 1.1 | 13.1 |
| HYPOXIA AND ASPHYXIA (768)..... | NUMBER... 321 | 292 | 241 | 51 | 28 | |
| | RATE.. | 10.3 | 9.4 | 7.7 | 1.6 | .9 |
| PNEUMONIA AND INFLUENZA (480-487)..... | NUMBER... 261 | 62 | 20 | 42 | 199 | |
| | RATE.. | 8.4 | 2.0 | .6 | 1.4 | 6.4 |
| ALL OTHER CAUSES..... | NUMBER... 6,291 | 3,355 | 2,317 | 1,039 | 2,936 | |
| | RATE.. | 201.7 | 107.6 | 74.3 | 33.3 | 94.1 |

DOCUMENTATION TABLE 5

LIVE BIRTHS BY BIRTHWEIGHT AND RACE OF MOTHER AND INFANT DEATHS AND INFANT MORTALITY RATES BY AGE AT DEATH, BIRTHWEIGHT, AND RACE OF MOTHER FOR 10 MAJOR CAUSES OF INFANT DEATH: UNITED STATES, 1998 BIRTH COHORT DATA

(INFANT DEATHS WEIGHTED)

(INFANT DEATHS ARE UNDER 1 YEAR. NEONATAL DEATHS ARE UNDER 28 DAYS; EARLY NEONATAL, 0-6 DAYS; LATE NEONATAL, 7-27 DAYS; AND POSTNEONATAL, 28 DAYS THROUGH 11 MONTHS)

(RATES ARE PER 100,000 LIVE BIRTHS)

| CAUSE OF DEATH, BIRTHWEIGHT, AND RACE OF MOTHER | LIVE BIRTHS | INFANT DEATHS | TOTAL NEONATAL | EARLY NEONATAL | LATE NEONATAL | POST-NEONATAL |
|---|-------------|---------------|----------------|----------------|---------------|---------------|
| WHITE, LESS THAN 2,500 GRAMS | | | | | | |
| ALL CAUSES..... | 203,886 | 11,387 | 9,479 | 7,921 | 1,559 | 1,907 |
| | RATE.. | 5,584.9 | 4,649.4 | 3,884.8 | 764.6 | 935.5 |
| CONGENITAL ANOMALIES (740-759)..... | | 2,684 | 2,269 | 1,910 | 359 | 415 |
| | RATE.. | 1,316.4 | 1,112.8 | 936.8 | 175.9 | 203.6 |
| PREMATURITY (765)..... | | 2,101 | 2,074 | 2,022 | 53 | 26 |
| | RATE.. | 1,030.4 | 1,017.5 | 991.7 | 25.8 | 12.9 |
| SUDDEN INFANT DEATH SYNDROME (798.0)..... | | 229 | 26 | - | 26 | 203 |
| | RATE.. | 112.4 | 12.9 | - | 12.9 | 99.5 |
| MATERNAL COMPLICATIONS (761)..... | | 785 | 780 | 772 | 8 | 5 |
| | RATE.. | 385.3 | 382.8 | 378.9 | 3.9 | 2.5 |
| RESPIRATORY DISTRESS SYNDROME (769)..... | | 776 | 740 | 583 | 158 | 36 |
| | RATE.. | 380.5 | 363.1 | 285.8 | 77.3 | 17.4 |
| COMPLICATIONS OF PLACENTA, ETC. (762)..... | | 514 | 508 | 489 | 18 | 6 |
| | RATE.. | 252.0 | 249.0 | 240.0 | 8.9 | 3.0 |
| INFECTIONS (771)..... | | 424 | 405 | 186 | 219 | 18 |
| | RATE.. | 207.7 | 198.7 | 91.3 | 107.4 | 9.0 |
| ACCIDENTS (E800-E949)..... | | 83 | 19 | 11 | 8 | 64 |
| | RATE.. | 40.7 | 9.5 | 5.5 | 3.9 | 31.2 |
| HYPOXIA AND ASPHYXIA (768)..... | | 133 | 129 | 116 | 13 | 4 |
| | RATE.. | 65.2 | 63.2 | 56.7 | 6.4 | 2.0 |
| PNEUMONIA AND INFLUENZA (480-487)..... | | 110 | 37 | 14 | 22 | 73 |
| | RATE.. | 53.8 | 18.0 | 7.1 | 10.9 | 35.8 |
| ALL OTHER CAUSES..... | | 3,549 | 2,492 | 1,817 | 675 | 1,057 |
| | RATE.. | 1,740.6 | 1,222.1 | 891.0 | 331.2 | 518.4 |

DOCUMENTATION TABLE 5

LIVE BIRTHS BY BIRTHWEIGHT AND RACE OF MOTHER AND INFANT DEATHS AND INFANT MORTALITY RATES BY AGE AT DEATH, BIRTHWEIGHT, AND RACE OF MOTHER FOR 10 MAJOR CAUSES OF INFANT DEATH: UNITED STATES, 1998 BIRTH COHORT DATA

(INFANT DEATHS WEIGHTED)

(INFANT DEATHS ARE UNDER 1 YEAR. NEONATAL DEATHS ARE UNDER 28 DAYS; EARLY NEONATAL, 0-6 DAYS; LATE NEONATAL, 7-27 DAYS; AND POSTNEONATAL, 28 DAYS THROUGH 11 MONTHS)

(RATES ARE PER 100,000 LIVE BIRTHS)

| CAUSE OF DEATH, BIRTHWEIGHT, AND RACE OF MOTHER | LIVE BIRTHS | INFANT DEATHS | TOTAL NEONATAL | EARLY NEONATAL | LATE NEONATAL | POST-NEONATAL |
|---|---------------------|---------------|----------------|----------------|---------------|---------------|
| WHITE, 2,500 GRAMS OR MORE | | | | | | |
| ALL CAUSES..... | NUMBER... 2,913,643 | 6,865 | 2,654 | 1,614 | 1,040 | 4,211 |
| | RATE.. | 235.6 | 91.1 | 55.4 | 35.7 | 144.5 |
| CONGENITAL ANOMALIES (740-759)..... | NUMBER... .. | 2,002 | 1,235 | 791 | 444 | 767 |
| | RATE.. | 68.7 | 42.4 | 27.2 | 15.2 | 26.3 |
| PREMATURITY (765)..... | NUMBER... .. | 38 | 38 | 38 | - | - |
| | RATE.. | 1.3 | 1.3 | 1.3 | - | - |
| SUDDEN INFANT DEATH SYNDROME (798.0)..... | NUMBER... .. | 1,143 | 98 | 13 | 85 | 1,045 |
| | RATE.. | 39.2 | 3.4 | .5 | 2.9 | 35.9 |
| MATERNAL COMPLICATIONS (761)..... | NUMBER... .. | 22 | 22 | 21 | 1 | - |
| | RATE.. | .7 | .7 | .7 | .0 | - |
| RESPIRATORY DISTRESS SYNDROME (769)..... | NUMBER... .. | 51 | 35 | 24 | 11 | 16 |
| | RATE.. | 1.8 | 1.2 | .8 | .4 | .6 |
| COMPLICATIONS OF PLACENTA, ETC. (762)..... | NUMBER... .. | 83 | 79 | 74 | 5 | 4 |
| | RATE.. | 2.9 | 2.7 | 2.5 | .2 | .1 |
| INFECTIONS (771)..... | NUMBER... .. | 104 | 92 | 43 | 49 | 12 |
| | RATE.. | 3.6 | 3.2 | 1.5 | 1.7 | .4 |
| ACCIDENTS (E800-E949)..... | NUMBER... .. | 392 | 47 | 19 | 27 | 345 |
| | RATE.. | 13.4 | 1.6 | .7 | .9 | 11.8 |
| HYPOXIA AND ASPHYXIA (768)..... | NUMBER... .. | 180 | 157 | 118 | 38 | 23 |
| | RATE.. | 6.2 | 5.4 | 4.1 | 1.3 | .8 |
| PNEUMONIA AND INFLUENZA (480-487)..... | NUMBER... .. | 150 | 25 | 5 | 20 | 125 |
| | RATE.. | 5.2 | .9 | .2 | .7 | 4.3 |
| ALL OTHER CAUSES..... | NUMBER... .. | 2,700 | 827 | 467 | 360 | 1,873 |
| | RATE.. | 92.7 | 28.4 | 16.0 | 12.3 | 64.3 |

DOCUMENTATION TABLE 5

LIVE BIRTHS BY BIRTHWEIGHT AND RACE OF MOTHER AND INFANT DEATHS AND INFANT MORTALITY RATES BY AGE AT DEATH, BIRTHWEIGHT, AND RACE OF MOTHER FOR 10 MAJOR CAUSES OF INFANT DEATH: UNITED STATES, 1998 BIRTH COHORT DATA

(INFANT DEATHS WEIGHTED)

(INFANT DEATHS ARE UNDER 1 YEAR. NEONATAL DEATHS ARE UNDER 28 DAYS; EARLY NEONATAL, 0-6 DAYS; LATE NEONATAL, 7-27 DAYS; AND POSTNEONATAL, 28 DAYS THROUGH 11 MONTHS)

(RATES ARE PER 100,000 LIVE BIRTHS)

| CAUSE OF DEATH, BIRTHWEIGHT, AND RACE OF MOTHER | LIVE BIRTHS | INFANT DEATHS | TOTAL NEONATAL | EARLY NEONATAL | LATE NEONATAL | POST-NEONATAL |
|---|-------------|---------------|----------------|----------------|---------------|---------------|
| WHITE, NOT STATED BIRTHWEIGHT | | | | | | |
| ALL CAUSES..... | 1,198 | 208 | 195 | 190 | 5 | 13 |
|NUMBER... | | | | | | |
|RATE.. | | 17,379.9 | 16,278.9 | 15,859.1 | 419.8 | 1,101.0 |
| CONGENITAL ANOMALIES (740-759)..... | | 29 | 26 | 25 | 1 | 3 |
|NUMBER... | | | | | | |
|RATE.. | | 2,434.8 | 2,182.2 | 2,098.7 | 83.5 | 252.6 |
| PREMATURITY (765)..... | | 68 | 66 | 66 | - | 2 |
|NUMBER... | | | | | | |
|RATE.. | | 5,711.9 | 5,543.4 | 5,543.4 | - | 168.5 |
| SUDDEN INFANT DEATH SYNDROME (798.0)..... | | - | - | - | - | - |
|NUMBER... | | | | | | |
|RATE.. | | - | - | - | - | - |
| MATERNAL COMPLICATIONS (761)..... | | 28 | 28 | 28 | - | - |
|NUMBER... | | | | | | |
|RATE.. | | 2,304.0 | 2,304.0 | 2,304.0 | - | - |
| RESPIRATORY DISTRESS SYNDROME (769)..... | | 3 | 3 | 3 | - | - |
|NUMBER... | | | | | | |
|RATE.. | | 255.2 | 255.2 | 255.2 | - | - |
| COMPLICATIONS OF PLACENTA, ETC. (762)..... | | 27 | 27 | 27 | - | - |
|NUMBER... | | | | | | |
|RATE.. | | 2,243.8 | 2,243.8 | 2,243.8 | - | - |
| INFECTIONS (771)..... | | 1 | 1 | 1 | - | - |
|NUMBER... | | | | | | |
|RATE.. | | 83.7 | 83.7 | 83.7 | - | - |
| ACCIDENTS (E800-E949)..... | | - | - | - | - | - |
|NUMBER... | | | | | | |
|RATE.. | | - | - | - | - | - |
| HYPOXIA AND ASPHYXIA (768)..... | | 8 | 7 | 7 | - | 1 |
|NUMBER... | | | | | | |
|RATE.. | | 678.1 | 594.6 | 594.6 | - | 83.5 |
| PNEUMONIA AND INFLUENZA (480-487)..... | | 1 | - | - | - | 1 |
|NUMBER... | | | | | | |
|RATE.. | | 85.7 | - | - | - | 85.7 |
| ALL OTHER CAUSES..... | | 43 | 37 | 33 | 4 | 6 |
|NUMBER... | | | | | | |
|RATE.. | | 3,582.5 | 3,071.9 | 2,735.6 | 336.3 | 510.6 |

DOCUMENTATION TABLE 5

LIVE BIRTHS BY BIRTHWEIGHT AND RACE OF MOTHER AND INFANT DEATHS AND INFANT MORTALITY RATES BY AGE AT DEATH, BIRTHWEIGHT, AND RACE OF MOTHER FOR 10 MAJOR CAUSES OF INFANT DEATH: UNITED STATES, 1998 BIRTH COHORT DATA

(INFANT DEATHS WEIGHTED)

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(RATES ARE PER 100,000 LIVE BIRTHS)

| CAUSE OF DEATH, BIRTHWEIGHT, AND RACE OF MOTHER | LIVE BIRTHS | INFANT DEATHS | TOTAL NEONATAL | EARLY NEONATAL | LATE NEONATAL | POST-NEONATAL |
|---|-------------|---------------|----------------|----------------|---------------|---------------|
| BLACK, ALL BIRTHWEIGHTS | | | | | | |
| ALL CAUSES..... | 609,902 | 8,392 | 5,677 | 4,629 | 1,048 | 2,715 |
| | | 1,376.0 | 930.8 | 759.0 | 171.9 | 445.2 |
| CONGENITAL ANOMALIES (740-759)..... | | 1,091 | 766 | 567 | 198 | 326 |
| | | 178.9 | 125.6 | 93.0 | 32.5 | 53.4 |
| PREMATURITY (765)..... | | 1,686 | 1,662 | 1,630 | 32 | 23 |
| | | 276.4 | 272.5 | 267.2 | 5.3 | 3.8 |
| SUDDEN INFANT DEATH SYNDROME (798.0)..... | | 613 | 39 | 6 | 33 | 574 |
| | | 100.6 | 6.4 | 1.0 | 5.4 | 94.1 |
| MATERNAL COMPLICATIONS (761)..... | | 444 | 443 | 438 | 5 | 1 |
| | | 72.7 | 72.6 | 71.8 | .8 | .2 |
| RESPIRATORY DISTRESS SYNDROME (769)..... | | 436 | 402 | 315 | 88 | 33 |
| | | 71.5 | 66.0 | 51.6 | 14.4 | 5.5 |
| COMPLICATIONS OF PLACENTA, ETC. (762)..... | | 299 | 294 | 285 | 9 | 5 |
| | | 49.0 | 48.1 | 46.7 | 1.5 | .8 |
| INFECTIONS (771)..... | | 248 | 231 | 101 | 131 | 16 |
| | | 40.6 | 38.0 | 16.5 | 21.5 | 2.7 |
| ACCIDENTS (E800-E949)..... | | 209 | 11 | 7 | 4 | 198 |
| | | 34.2 | 1.8 | 1.2 | .7 | 32.4 |
| HYPOXIA AND ASPHYXIA (768)..... | | 113 | 103 | 86 | 17 | 10 |
| | | 18.6 | 16.9 | 14.1 | 2.8 | 1.7 |
| PNEUMONIA AND INFLUENZA (480-487)..... | | 132 | 22 | 5 | 17 | 109 |
| | | 21.6 | 3.6 | .8 | 2.8 | 18.0 |
| ALL OTHER CAUSES..... | | 3,122 | 1,703 | 1,190 | 513 | 1,419 |
| | | 511.9 | 279.3 | 195.1 | 84.2 | 232.6 |

DOCUMENTATION TABLE 5

LIVE BIRTHS BY BIRTHWEIGHT AND RACE OF MOTHER AND INFANT DEATHS AND INFANT MORTALITY RATES BY AGE AT DEATH, BIRTHWEIGHT, AND RACE OF MOTHER FOR 10 MAJOR CAUSES OF INFANT DEATH: UNITED STATES, 1998 BIRTH COHORT DATA

(INFANT DEATHS WEIGHTED)

(INFANT DEATHS ARE UNDER 1 YEAR. NEONATAL DEATHS ARE UNDER 28 DAYS; EARLY NEONATAL, 0-6 DAYS; LATE NEONATAL, 7-27 DAYS; AND POSTNEONATAL, 28 DAYS THROUGH 11 MONTHS)

(RATES ARE PER 100,000 LIVE BIRTHS)

| CAUSE OF DEATH, BIRTHWEIGHT, AND RACE OF MOTHER | LIVE BIRTHS | INFANT DEATHS | TOTAL NEONATAL | EARLY NEONATAL | LATE NEONATAL | POST-NEONATAL |
|---|-------------|---------------|----------------|----------------|---------------|---------------|
| BLACK, LESS THAN 2,500 GRAMS | | | | | | |
| ALL CAUSES..... | 79,772 | 6,165 | 4,934 | 4,148 | 785 | 1,231 |
| | | 7,728.0 | 6,184.6 | 5,200.0 | 984.6 | 1,543.4 |
| CONGENITAL ANOMALIES (740-759)..... | | 677 | 519 | 407 | 112 | 158 |
| | | 848.4 | 650.1 | 509.9 | 140.2 | 198.3 |
| PREMATURITY (765)..... | | 1,629 | 1,606 | 1,574 | 32 | 22 |
| | | 2,041.6 | 2,013.5 | 1,973.2 | 40.4 | 28.0 |
| SUDDEN INFANT DEATH SYNDROME (798.0)..... | | 171 | 7 | 2 | 5 | 164 |
| | | 213.9 | 8.9 | 2.6 | 6.3 | 205.0 |
| MATERNAL COMPLICATIONS (761)..... | | 411 | 411 | 407 | 4 | - |
| | | 515.3 | 515.3 | 510.2 | 5.0 | - |
| RESPIRATORY DISTRESS SYNDROME (769)..... | | 417 | 391 | 306 | 85 | 25 |
| | | 522.1 | 490.3 | 384.1 | 106.2 | 31.8 |
| COMPLICATIONS OF PLACENTA, ETC. (762)..... | | 271 | 266 | 259 | 7 | 5 |
| | | 340.1 | 333.7 | 324.9 | 8.9 | 6.4 |
| INFECTIONS (771)..... | | 225 | 212 | 95 | 118 | 12 |
| | | 281.5 | 266.2 | 118.5 | 147.7 | 15.2 |
| ACCIDENTS (E800-E949)..... | | 47 | 4 | 3 | 1 | 43 |
| | | 58.4 | 5.1 | 3.8 | 1.3 | 53.3 |
| HYPOXIA AND ASPHYXIA (768)..... | | 69 | 65 | 57 | 8 | 4 |
| | | 86.4 | 81.3 | 71.2 | 10.1 | 5.1 |
| PNEUMONIA AND INFLUENZA (480-487)..... | | 68 | 14 | 4 | 10 | 54 |
| | | 85.2 | 17.8 | 5.2 | 12.6 | 67.3 |
| ALL OTHER CAUSES..... | | 2,182 | 1,438 | 1,034 | 404 | 744 |
| | | 2,735.3 | 1,802.4 | 1,296.5 | 505.9 | 932.9 |

DOCUMENTATION TABLE 5

LIVE BIRTHS BY BIRTHWEIGHT AND RACE OF MOTHER AND INFANT DEATHS AND INFANT MORTALITY RATES BY AGE AT DEATH, BIRTHWEIGHT, AND RACE OF MOTHER FOR 10 MAJOR CAUSES OF INFANT DEATH: UNITED STATES, 1998 BIRTH COHORT DATA

(INFANT DEATHS WEIGHTED)

(INFANT DEATHS ARE UNDER 1 YEAR. NEONATAL DEATHS ARE UNDER 28 DAYS; EARLY NEONATAL, 0-6 DAYS; LATE NEONATAL, 7-27 DAYS; AND POSTNEONATAL, 28 DAYS THROUGH 11 MONTHS)

(RATES ARE PER 100,000 LIVE BIRTHS)

| CAUSE OF DEATH, BIRTHWEIGHT, AND RACE OF MOTHER | LIVE BIRTHS | INFANT DEATHS | TOTAL NEONATAL | EARLY NEONATAL | LATE NEONATAL | POST-NEONATAL |
|---|-------------|---------------|----------------|----------------|---------------|---------------|
| BLACK, 2,500 GRAMS OR MORE | | | | | | |
| ALL CAUSES..... | 529,816 | 2,099 | 620 | 357 | 263 | 1,479 |
| | RATE.. | 396.1 | 117.0 | 67.4 | 49.6 | 279.1 |
| CONGENITAL ANOMALIES (740-759)..... | | 410 | 243 | 157 | 87 | 166 |
| | RATE.. | 77.3 | 45.9 | 29.5 | 16.3 | 31.4 |
| PREMATURITY (765)..... | | 11 | 11 | 11 | - | - |
| | RATE.. | 2.2 | 2.2 | 2.2 | - | - |
| SUDDEN INFANT DEATH SYNDROME (798.0)..... | | 442 | 31 | 3 | 28 | 411 |
| | RATE.. | 83.4 | 5.9 | .6 | 5.3 | 77.5 |
| MATERNAL COMPLICATIONS (761)..... | | 7 | 6 | 5 | 1 | 1 |
| | RATE.. | 1.3 | 1.2 | 1.0 | .2 | .2 |
| RESPIRATORY DISTRESS SYNDROME (769)..... | | 15 | 7 | 4 | 3 | 8 |
| | RATE.. | 2.9 | 1.4 | .8 | .6 | 1.5 |
| COMPLICATIONS OF PLACENTA, ETC. (762)..... | | 15 | 15 | 13 | 2 | - |
| | RATE.. | 2.9 | 2.9 | 2.5 | .4 | - |
| INFECTIONS (771)..... | | 23 | 19 | 6 | 13 | 4 |
| | RATE.. | 4.4 | 3.6 | 1.1 | 2.5 | .8 |
| ACCIDENTS (E800-E949)..... | | 162 | 7 | 4 | 3 | 155 |
| | RATE.. | 30.6 | 1.3 | .8 | .6 | 29.3 |
| HYPOXIA AND ASPHYXIA (768)..... | | 41 | 36 | 27 | 9 | 5 |
| | RATE.. | 7.8 | 6.9 | 5.2 | 1.7 | 1.0 |
| PNEUMONIA AND INFLUENZA (480-487)..... | | 64 | 8 | 1 | 7 | 56 |
| | RATE.. | 12.0 | 1.5 | .2 | 1.3 | 10.5 |
| ALL OTHER CAUSES..... | | 908 | 235 | 125 | 110 | 673 |
| | RATE.. | 171.3 | 44.4 | 23.6 | 20.7 | 126.9 |

DOCUMENTATION TABLE 5

LIVE BIRTHS BY BIRTHWEIGHT AND RACE OF MOTHER AND INFANT DEATHS AND INFANT MORTALITY RATES BY AGE AT DEATH, BIRTHWEIGHT, AND RACE OF MOTHER FOR 10 MAJOR CAUSES OF INFANT DEATH: UNITED STATES, 1998 BIRTH COHORT DATA

(INFANT DEATHS WEIGHTED)

(INFANT DEATHS ARE UNDER 1 YEAR. NEONATAL DEATHS ARE UNDER 28 DAYS; EARLY NEONATAL, 0-6 DAYS; LATE NEONATAL, 7-27 DAYS; AND POSTNEONATAL, 28 DAYS THROUGH 11 MONTHS)

(RATES ARE PER 100,000 LIVE BIRTHS)

| CAUSE OF DEATH, BIRTHWEIGHT, AND RACE OF MOTHER | LIVE BIRTHS | INFANT DEATHS | TOTAL NEONATAL | EARLY NEONATAL | LATE NEONATAL | POST-NEONATAL |
|---|-------------|---------------|----------------|----------------|---------------|---------------|
| BLACK, NOT STATED BIRTHWEIGHT | | | | | | |
| ALL CAUSES..... | 314 | 129 | 124 | 124 | - | 5 |
|NUMBER... | | | | | | |
|RATE.. | | 41,065.1 | 39,431.2 | 39,431.2 | - | 1,633.9 |
| CONGENITAL ANOMALIES (740-759)..... | | 5 | 4 | 4 | - | 1 |
|NUMBER... | | | | | | |
|RATE.. | | 1,613.2 | 1,292.7 | 1,292.7 | - | 320.4 |
| PREMATURITY (765)..... | | 46 | 45 | 45 | - | 1 |
|NUMBER... | | | | | | |
|RATE.. | | 14,502.4 | 14,173.7 | 14,173.7 | - | 328.7 |
| SUDDEN INFANT DEATH SYNDROME (798.0)..... | | 1 | 1 | 1 | - | - |
|NUMBER... | | | | | | |
|RATE.. | | 328.5 | 328.5 | 328.5 | - | - |
| MATERNAL COMPLICATIONS (761)..... | | 26 | 26 | 26 | - | - |
|NUMBER... | | | | | | |
|RATE.. | | 8,133.5 | 8,133.5 | 8,133.5 | - | - |
| RESPIRATORY DISTRESS SYNDROME (769)..... | | 4 | 4 | 4 | - | - |
|NUMBER... | | | | | | |
|RATE.. | | 1,282.0 | 1,282.0 | 1,282.0 | - | - |
| COMPLICATIONS OF PLACENTA, ETC. (762)..... | | 12 | 12 | 12 | - | - |
|NUMBER... | | | | | | |
|RATE.. | | 3,857.2 | 3,857.2 | 3,857.2 | - | - |
| INFECTIONS (771)..... | | - | - | - | - | - |
|NUMBER... | | | | | | |
|RATE.. | | - | - | - | - | - |
| ACCIDENTS (E800-E949)..... | | - | - | - | - | - |
|NUMBER... | | | | | | |
|RATE.. | | - | - | - | - | - |
| HYPOXIA AND ASPHYXIA (768)..... | | 3 | 2 | 2 | - | 1 |
|NUMBER... | | | | | | |
|RATE.. | | 976.7 | 648.1 | 648.1 | - | 328.7 |
| PNEUMONIA AND INFLUENZA (480-487)..... | | - | - | - | - | - |
|NUMBER... | | | | | | |
|RATE.. | | - | - | - | - | - |
| ALL OTHER CAUSES..... | | 33 | 31 | 31 | - | 2 |
|NUMBER... | | | | | | |
|RATE.. | | 10,371.5 | 9,715.5 | 9,715.5 | - | 656.0 |

1/ INCLUDES RACES OTHER THAN WHITE AND BLACK

-

DOCUMENTATION TABLE 6

UNLINKED INFANT DEATHS BY RACE, AGE AT DEATH, AND STATE OF RESIDENCE:
UNITED STATES, PUERTO RICO, VIRGIN ISLANDS, GUAM -- 1998 BIRTH COHORT DATA

(INFANT DEATHS ARE UNDER 1 YEAR. NEONATAL DEATHS ARE UNDER 28 DAYS; EARLY NEONATAL, 0-6 DAYS; LATE NEONATAL, 7-27 DAYS; AND POSTNEONATAL, 28 DAYS THROUGH 11 MONTHS)

(DATA IN THIS TABLE IS FOR INFANT DEATHS IN 1998 THAT ARE NOT INCLUDED IN THE LINKED FILE BECAUSE THEY WERE NOT LINKED WITH THEIR CORRESPONDING BIRTH CERTIFICATES.

SEE METHODOLOGY SECTION.

RESIDENCE IS OF INFANT DECEDENT; RACE IS FROM DEATH CERTIFICATE.)

| Area and Race of Child 1/ | Infant | Total NeoNatal | Early NeoNatal | Late NeoNatal | Post- NeoNatal |
|---------------------------|--------|-------------------|-------------------|------------------|-------------------|
| United States 2/..... | 478 | 342 | 306 | 36 | 136 |
| WHITE..... | 326 | 228 | 206 | 22 | 98 |
| BLACK..... | 133 | 101 | 88 | 13 | 32 |
| Alabama | 1 | 1 | - | 1 | - |
| WHITE..... | 1 | 1 | - | 1 | - |
| BLACK..... | - | - | - | - | - |
| Alaska | 1 | - | - | - | 1 |
| WHITE..... | 1 | - | - | - | 1 |
| BLACK..... | - | - | - | - | - |
| Arizona | 11 | 4 | 4 | - | 7 |
| WHITE..... | 9 | 4 | 4 | - | 5 |
| BLACK..... | 1 | - | - | - | 1 |
| Arkansas | 9 | 5 | 4 | 1 | 4 |
| WHITE..... | 9 | 5 | 4 | 1 | 4 |
| BLACK..... | - | - | - | - | - |
| California | 111 | 97 | 85 | 12 | 14 |
| WHITE..... | 79 | 67 | 56 | 11 | 12 |
| BLACK..... | 26 | 24 | 24 | - | 2 |
| Colorado | 1 | - | - | - | 1 |
| WHITE..... | 1 | - | - | - | 1 |
| BLACK..... | - | - | - | - | - |
| Connecticut | 3 | 1 | 1 | - | 2 |
| WHITE..... | 3 | 1 | 1 | - | 2 |
| BLACK..... | - | - | - | - | - |
| Delaware | - | - | - | - | - |
| WHITE..... | - | - | - | - | - |
| BLACK..... | - | - | - | - | - |
| District of Columbia | 1 | - | - | - | 1 |
| WHITE..... | - | - | - | - | - |
| BLACK..... | 1 | - | - | - | 1 |
| Florida | 2 | - | - | - | 2 |
| WHITE..... | 1 | - | - | - | 1 |
| BLACK..... | 1 | - | - | - | 1 |
| Georgia | - | - | - | - | - |
| WHITE..... | - | - | - | - | - |
| BLACK..... | - | - | - | - | - |
| Hawaii | - | - | - | - | - |
| WHITE..... | - | - | - | - | - |
| BLACK..... | - | - | - | - | - |
| Idaho | 3 | 1 | 1 | - | 2 |
| WHITE..... | 3 | 1 | 1 | - | 2 |
| BLACK..... | - | - | - | - | - |
| Illinois | 22 | 13 | 9 | 4 | 9 |
| WHITE..... | 11 | 7 | 6 | 1 | 4 |
| BLACK..... | 9 | 5 | 2 | 3 | 4 |
| Indiana | 11 | 10 | 8 | 2 | 1 |
| WHITE..... | 6 | 5 | 5 | - | 1 |
| BLACK..... | 4 | 4 | 2 | 2 | - |
| Iowa | - | - | - | - | - |
| WHITE..... | - | - | - | - | - |
| BLACK..... | - | - | - | - | - |

DOCUMENTATION TABLE 6

UNLINKED INFANT DEATHS BY RACE, AGE AT DEATH, AND STATE OF RESIDENCE:
UNITED STATES, PUERTO RICO, VIRGIN ISLANDS, GUAM -- 1998 BIRTH COHORT DATA

(INFANT DEATHS ARE UNDER 1 YEAR. NEONATAL DEATHS ARE UNDER 28 DAYS; EARLY NEONATAL,
0-6 DAYS; LATE NEONATAL, 7-27 DAYS; AND POSTNEONATAL, 28 DAYS THROUGH 11 MONTHS)

(DATA IN THIS TABLE IS FOR INFANT DEATHS IN 1998 THAT ARE NOT INCLUDED IN THE LINKED
FILE BECAUSE THEY WERE NOT LINKED WITH THEIR CORRESPONDING BIRTH CERTIFICATES.

SEE METHODOLOGY SECTION.

RESIDENCE IS OF INFANT DECEDENT; RACE IS FROM DEATH CERTIFICATE.)

| Area and Race of Child 1/ | Infant | Total NeoNatal | Early NeoNatal | Late NeoNatal | Post- NeoNatal |
|---------------------------|--------|-------------------|-------------------|------------------|-------------------|
| Kansas | 3 | 1 | 1 | - | 2 |
| WHITE..... | 3 | 1 | 1 | - | 2 |
| BLACK..... | - | - | - | - | - |
| Kentucky | 8 | 7 | 7 | - | 1 |
| WHITE..... | 6 | 5 | 5 | - | 1 |
| BLACK..... | 2 | 2 | 2 | - | - |
| Louisiana | 12 | 7 | 7 | - | 5 |
| WHITE..... | 4 | 2 | 2 | - | 2 |
| BLACK..... | 8 | 5 | 5 | - | 3 |
| Maine | 2 | 2 | 2 | - | - |
| WHITE..... | 2 | 2 | 2 | - | - |
| BLACK..... | - | - | - | - | - |
| Maryland | 7 | 2 | 2 | - | 5 |
| WHITE..... | 3 | - | - | - | 3 |
| BLACK..... | 4 | 2 | 2 | - | 2 |
| Massachusetts | 9 | 8 | 7 | 1 | 1 |
| WHITE..... | 6 | 6 | 5 | 1 | - |
| BLACK..... | 3 | 2 | 2 | - | 1 |
| Michigan | 13 | 10 | 9 | 1 | 3 |
| WHITE..... | 5 | 2 | 2 | - | 3 |
| BLACK..... | 8 | 8 | 7 | 1 | - |
| Minnesota | - | - | - | - | - |
| WHITE..... | - | - | - | - | - |
| BLACK..... | - | - | - | - | - |
| Mississippi | 2 | - | - | - | 2 |
| WHITE..... | 2 | - | - | - | 2 |
| BLACK..... | - | - | - | - | - |
| Missouri | 8 | 8 | 8 | - | - |
| WHITE..... | 3 | 3 | 3 | - | - |
| BLACK..... | 5 | 5 | 5 | - | - |
| Montana | 2 | - | - | - | 2 |
| WHITE..... | 2 | - | - | - | 2 |
| BLACK..... | - | - | - | - | - |
| Nebraska | - | - | - | - | - |
| WHITE..... | - | - | - | - | - |
| BLACK..... | - | - | - | - | - |
| Nevada | 8 | 4 | 3 | 1 | 4 |
| WHITE..... | 7 | 4 | 3 | 1 | 3 |
| BLACK..... | 1 | - | - | - | 1 |
| New Hampshire | - | - | - | - | - |
| WHITE..... | - | - | - | - | - |
| BLACK..... | - | - | - | - | - |
| New Jersey | 14 | 11 | 11 | - | 3 |
| WHITE..... | 7 | 6 | 6 | - | 1 |
| BLACK..... | 7 | 5 | 5 | - | 2 |
| New Mexico | 10 | 8 | 7 | 1 | 2 |
| WHITE..... | 5 | 4 | 3 | 1 | 1 |
| BLACK..... | 2 | 2 | 2 | - | - |

DOCUMENTATION TABLE 6

UNLINKED INFANT DEATHS BY RACE, AGE AT DEATH, AND STATE OF RESIDENCE:
UNITED STATES, PUERTO RICO, VIRGIN ISLANDS, GUAM -- 1998 BIRTH COHORT DATA

(INFANT DEATHS ARE UNDER 1 YEAR. NEONATAL DEATHS ARE UNDER 28 DAYS; EARLY NEONATAL,
0-6 DAYS; LATE NEONATAL, 7-27 DAYS; AND POSTNEONATAL, 28 DAYS THROUGH 11 MONTHS)

(DATA IN THIS TABLE IS FOR INFANT DEATHS IN 1998 THAT ARE NOT INCLUDED IN THE LINKED
FILE BECAUSE THEY WERE NOT LINKED WITH THEIR CORRESPONDING BIRTH CERTIFICATES.

SEE METHODOLOGY SECTION.

RESIDENCE IS OF INFANT DECEDENT; RACE IS FROM DEATH CERTIFICATE.)

| Area and Race of Child 1/ | Infant | Total NeoNatal | Early NeoNatal | Late NeoNatal | Post- NeoNatal |
|---------------------------|--------|-------------------|-------------------|------------------|-------------------|
| New York State | 16 | 7 | 6 | 1 | 9 |
| WHITE..... | 12 | 5 | 5 | - | 7 |
| BLACK..... | 4 | 2 | 1 | 1 | 2 |
| New York City | - | - | - | - | - |
| WHITE..... | - | - | - | - | - |
| BLACK..... | - | - | - | - | - |
| North Carolina | 18 | 8 | 8 | - | 10 |
| WHITE..... | 8 | 5 | 5 | - | 3 |
| BLACK..... | 10 | 3 | 3 | - | 7 |
| North Dakota | 3 | - | - | - | 3 |
| WHITE..... | 2 | - | - | - | 2 |
| BLACK..... | - | - | - | - | - |
| Ohio | - | - | - | - | - |
| WHITE..... | - | - | - | - | - |
| BLACK..... | - | - | - | - | - |
| Oklahoma | 59 | 43 | 40 | 3 | 16 |
| WHITE..... | 45 | 31 | 29 | 2 | 14 |
| BLACK..... | 14 | 12 | 11 | 1 | 2 |
| Oregon | 31 | 26 | 23 | 3 | 5 |
| WHITE..... | 21 | 18 | 17 | 1 | 3 |
| BLACK..... | 6 | 6 | 4 | 2 | - |
| Pennsylvania | 1 | - | - | - | 1 |
| WHITE..... | 1 | - | - | - | 1 |
| BLACK..... | - | - | - | - | - |
| Rhode Island | 15 | 12 | 11 | 1 | 3 |
| WHITE..... | 8 | 6 | 6 | - | 2 |
| BLACK..... | 6 | 5 | 4 | 1 | 1 |
| South Carolina | - | - | - | - | - |
| WHITE..... | - | - | - | - | - |
| BLACK..... | - | - | - | - | - |
| South Dakota | - | - | - | - | - |
| WHITE..... | - | - | - | - | - |
| BLACK..... | - | - | - | - | - |
| Tennessee | - | - | - | - | - |
| WHITE..... | - | - | - | - | - |
| BLACK..... | - | - | - | - | - |
| Texas | - | - | - | - | - |
| WHITE..... | - | - | - | - | - |
| BLACK..... | - | - | - | - | - |
| Utah | 46 | 36 | 32 | 4 | 10 |
| WHITE..... | 37 | 29 | 27 | 2 | 8 |
| BLACK..... | 9 | 7 | 5 | 2 | 2 |
| Vermont | 1 | 1 | 1 | - | - |
| WHITE..... | 1 | 1 | 1 | - | - |
| BLACK..... | - | - | - | - | - |
| Virginia | - | - | - | - | - |
| WHITE..... | - | - | - | - | - |
| BLACK..... | - | - | - | - | - |

DOCUMENTATION TABLE 6

UNLINKED INFANT DEATHS BY RACE, AGE AT DEATH, AND STATE OF RESIDENCE:
UNITED STATES, PUERTO RICO, VIRGIN ISLANDS, GUAM -- 1998 BIRTH COHORT DATA

(INFANT DEATHS ARE UNDER 1 YEAR. NEONATAL DEATHS ARE UNDER 28 DAYS; EARLY NEONATAL, 0-6 DAYS; LATE NEONATAL, 7-27 DAYS; AND POSTNEONATAL, 28 DAYS THROUGH 11 MONTHS)

(DATA IN THIS TABLE IS FOR INFANT DEATHS IN 1998 THAT ARE NOT INCLUDED IN THE LINKED FILE BECAUSE THEY WERE NOT LINKED WITH THEIR CORRESPONDING BIRTH CERTIFICATES.

SEE METHODOLOGY SECTION.

RESIDENCE IS OF INFANT DECEDENT; RACE IS FROM DEATH CERTIFICATE.)

| Area and Race of Child 1/ | Infant | Total NeoNatal | Early NeoNatal | Late NeoNatal | Post- NeoNatal |
|---------------------------|--------|-------------------|-------------------|------------------|-------------------|
| Washington | 7 | 5 | 5 | - | 2 |
| WHITE..... | 5 | 3 | 3 | - | 2 |
| BLACK..... | 2 | 2 | 2 | - | - |
| West Virginia | 4 | 3 | 3 | - | 1 |
| WHITE..... | 4 | 3 | 3 | - | 1 |
| BLACK..... | - | - | - | - | - |
| Wisconsin | 3 | 1 | 1 | - | 2 |
| WHITE..... | 3 | 1 | 1 | - | 2 |
| BLACK..... | - | - | - | - | - |
| Wyoming | - | - | - | - | - |
| WHITE..... | - | - | - | - | - |
| BLACK..... | - | - | - | - | - |
| Puerto Rico 3/ | - | - | - | - | - |
| WHITE..... | - | - | - | - | - |
| BLACK..... | - | - | - | - | - |
| Virgin Islands 3/ | 4 | 4 | 4 | - | - |
| WHITE..... | 4 | 4 | 4 | - | - |
| BLACK..... | - | - | - | - | - |
| Guam 3/ | 3 | 1 | 1 | - | 2 |
| WHITE..... | 1 | - | - | - | 1 |
| BLACK..... | 2 | 1 | 1 | - | 1 |

/1 Totals for geographic areas include races other than white and black.

/2 Excludes data for Foreign Residents, Puerto Rico, Virgin Islands, and Guam.

/3 Data from the Puerto Rico, Virgin Islands, and Guam file.

TECHNICAL APPENDIX FROM

**VITAL STATISTICS OF THE
UNITED STATES**

1998

NATALITY

**U.S. DEPARTMENT OF
HEALTH AND HUMAN SERVICES**

**CENTERS FOR DISEASE CONTROL AND PREVENTION
NATIONAL CENTER FOR HEALTH STATISTICS**

Hyattsville, Maryland: March 2000

VITAL STATISTICS OF THE UNITED STATES: NATALITY, 1998
TECHNICAL APPENDIX

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A copy of the technical appendix may be obtained by contacting the National Center for Health Statistics, Reproductive Statistics Branch at 301-458-4111.

VITAL STATISTICS OF THE UNITED STATES: NATALITY, 1998
TECHNICAL APPENDIX

For a list of reports published by the National Center for Health Statistics contact:

Data Dissemination Branch
National Center for Health Statistics
Centers for Disease Control and Prevention
6525 Belcrest Road, Room 1064
Hyattsville, MD 20782-2003
(301) 458-4636
Internet: www.cdc.gov/nchswww/

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Definition of live birth

Every product of conception that gives a sign of life after birth, regardless of the length of the pregnancy, is considered a live birth. This concept is included in the definition set forth by the World Health Organization (1):

Live birth is the complete expulsion or extraction from its mother of a product of conception, irrespective of the duration of pregnancy, which, after such separation, breathes or shows any other evidence of life, such as beating of the heart, pulsation of the umbilical cord, or definite movement of voluntary muscles, whether or not the umbilical cord has been cut or the placenta is attached; each product of such a birth is considered liveborn.

This definition distinguishes in precise terms a live birth from a fetal death (see the section on fetal deaths in the Technical Appendix of volume II, *Vital Statistics of the United States*). In the interest of comparable natality statistics, both the Statistical Commission of the United Nations and the National Center for Health Statistics (NCHS) have adopted this definition (2,3).

History of birth-registration area

The national birth-registration area was proposed in 1850 and established in 1915. By 1933 all 48 States and the District of Columbia were participating in the registration system. The organized territories of Hawaii and Alaska were admitted in 1929 and 1950, respectively; data from these areas were prepared separately until they became States--Alaska in 1959 and Hawaii in 1960. Currently the birth-registration system of the United States covers the 50 States, the District of Columbia, the independent registration area of New York City, Puerto Rico, the U.S. Virgin Islands, Guam, American Samoa, and the Commonwealth of the Northern Mariana Islands. However, in the statistical tabulations, "United States" refers only to the aggregate of the 50 States (including New York City) and the District of Columbia.

The original birth-registration area of 1915 consisted of 10 States and the District of Columbia. The growth of this area is indicated in table 4-1. This table also presents for each year through 1932 the estimated midyear population of the United States and of those States included in the registration system.

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Because of the growth of the area for which data have been collected and tabulated, a national series of geographically comparable data before 1933 can be obtained only by estimation. Annual estimates of births have been prepared by P. K. Whelpton for 1909-34 (4). These estimates include adjustments for underregistration and for States that were not part of the birth-registration area before 1933.

Sources of data

Nativity statistics

Since 1985 natality statistics for all States and the District of Columbia have been based on information from the total file of records. The information is received on computer data tapes coded by the States and provided to NCHS through the Vital Statistics Cooperative Program. NCHS receives these tapes from the registration offices of all States, the District of Columbia, and New York City. Information for Puerto Rico is also received on computer tapes through the Vital Statistics Cooperative Program. Information for the Virgin Islands and Guam is obtained from microfilm copies of original birth certificates and is based on the total file of records for all years. Data from American Samoa first became available in 1997. Data from the Commonwealth of the Northern Mariana Islands (referred to as Northern Marianas) first became available in 1998. Similar to data from the Virgin Islands and Guam, the data are obtained from microfilm copies of original birth certificates and are based on the total file of records.

Birth statistics for years prior to 1951 and for 1955 are based on the total file of birth records. Statistics for 1951-54, 1956-66, and 1968-71 are based on 50-percent samples except for data for Guam and the Virgin Islands, which are based on all records filed. During the processing of the 1967 data the sampling rate was reduced from 50 percent to 20 percent. For details of this procedure and its consequences for the 1967 data see pages 3-9 to 3-11 in volume I of *Vital Statistics of the United States, 1967*. From 1972 to 1984 statistics are based on all records filed in the States submitting computer tapes and on a 50-percent sample of records in all other States.

Information for years prior to 1970 for Puerto Rico, the Virgin Islands, and Guam is published in the annual vital statistics reports of the Department of Health of the Commonwealth of Puerto Rico, the Department of Public Health of the Virgin Islands, the Department of Public Health and Social Services of the Government of Guam, and in selected *Vital Statistics of the United States* annual reports.

U.S. natality data are limited to births occurring within the United States, including those occurring to U.S. residents and nonresidents. Births to nonresidents of the United States have been excluded from all tabulations by place of residence beginning in 1970 (for further discussion see "Classification by occurrence and residence"). Births occurring to U.S. citizens outside the United States are not included in any tabulations in this report. Similarly the data for Puerto Rico, the Virgin Islands, Guam, and American Samoa are limited to births registered in these areas.

Standard Certificate of Live Birth

The U.S. Standard Certificate of Live Birth, issued by the Public Health Service, has served for many years as the principal means of attaining uniformity in the content of the documents used to collect information on births in the United States. It has been modified in each State to the extent required by the particular State's needs or by special provisions of the State's vital statistics law. However, most State certificates conform closely in content to the standard certificate.

The first standard certificate of birth was developed in 1900. Since then, it has been revised periodically by the national vital statistics agency through consultation with State health officers and registrars; Federal agencies concerned with vital statistics; national, State, and county medical societies; and others working in public health, social welfare, demography, and insurance. This procedure has assured careful evaluation of each item for its current and future usefulness for legal, medical, demographic, and research purposes. New items have been added when necessary, and old

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items have been modified to ensure better reporting or, in some cases, dropped when their usefulness appeared to be limited.

1989 revision--Effective January 1, 1989, a revised U.S. Standard Certificate of Live Birth (figure 4-A) replaced the 1978 revision. This revision provided a wide variety of new information on maternal and infant health characteristics, representing a significant departure from previous versions in both content and format. The most significant format change was the use of check boxes to obtain detailed medical and health information about the mother and child. It has been demonstrated that this format produces higher quality and more complete information than do open-ended items.

The reformatted items included "Medical Risk Factors for This Pregnancy," which combines the former items "Complications of Pregnancy" and "Concurrent Illnesses or Conditions Affecting the Pregnancy." "Complications of Labor and/or Delivery" and "Congenital Anomalies of Child" also have been revised from the open-ended format. For each of these items at least 15 specific conditions have been identified.

Several new items were added to the revised certificate. Included are items to obtain information on tobacco and alcohol use during pregnancy, weight gain during pregnancy, obstetric procedures, method of delivery, and abnormal conditions of the newborn. These items can be used to monitor the health practices of the mother that can affect pregnancy and the use of technology in childbirth, and to identify babies with specific abnormal conditions. When combined with other socioeconomic and health data, these items provide a wealth of information relevant to the etiology of low birth weight and other adverse pregnancy outcomes.

Another modification was the addition of a Hispanic identifier for the mother and father. Although NCHS had recommended that States add items to identify the Hispanic or ethnic origin of the newborn's parents, concurrent with the 1978 revision of the U.S. Standard Certificate of Live Birth and reported data from the cooperating States since that year, the item was new to the U.S. Standard Certificate for 1989.

The 1989 revised certificate also provided more detail than previously requested on the birth attendant and place of birth. This permits a more in-depth analysis of the number and characteristics of births by attendant and type of facility and a comparison of differences in outcome. For further discussion see individual sections for each item.

Classification of data

One of the principal values of vital statistics data is realized through the presentation of rates that are computed by relating the vital events of a class to the population of a similarly defined class. Vital statistics and population statistics, therefore, must 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 to classify geographic and personal items for live births are set forth in "Vital Statistics Classification and Coding Instructions for Live Birth Records, 1998," *NCHS Instruction Manual*, Part 3a. The classification of certain important items is discussed in the following pages. See table A for a listing of items and the percent of records that were not stated for each State, Puerto Rico, Virgin Islands, Guam, American Samoa, and the Northern Marianas.

Classification by occurrence and residence

Births to U.S. residents occurring outside this country are not reallocated to the United States. In tabulations by place of residence, births occurring within the United States to U.S. citizens and to resident aliens are allocated to the usual place of residence of the mother in the United States, as reported on the birth certificate. Beginning in 1970 births to nonresidents of the United States occurring in the United States are excluded from these tabulations. From 1966 to 1969 births occurring in the United States to mothers who were nonresidents of the United States were considered as births to residents of the exact place of occurrence; in 1964 and 1965 all such births were allocated to "balance of county" of

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occurrence even if the birth occurred in a city. The change in coding beginning in 1970 to exclude births to nonresidents of the United States from residence data significantly affects the comparability of data with years before 1970 only for Texas.

For the total United States the tabulations by place of residence and by place of occurrence are not identical. Births to nonresidents of the United States are included in data by place of occurrence but excluded from data by place of residence, as previously indicated. See table B for the number of births by residence and occurrence for the 50 States and the District of Columbia for 1998.

Residence error--A nationwide test of birth-registration completeness in 1950 provided measures of residence error for natality statistics. According to this test, errors in residence reporting for the country as a whole tend to overstate the number of births to residents of urban areas and to understate the number of births to residents of other areas. This tendency has assumed special importance because of a concomitant development--the increased utilization of hospitals in cities by residents of nearby places--with the result that a number of births are erroneously reported as having occurred to residents of urban areas. Another factor that contributes to this overstatement of urban births is the customary procedure of using "city" addresses for persons living outside the city limits.

Incomplete residence--Beginning in 1973 where only the State of residence is reported with no city or county specified and the State named is different from the State of occurrence, the birth is allocated to the largest city of the State of residence. Before 1973 such births were allocated to the exact place of occurrence.

Geographic classification

The rules followed in the classification of geographic areas for live births are contained in the instruction manual mentioned previously. The geographic code structure for 1998 is given in another manual, "Vital Records Geographic Classification, 1994," *NCHS Instruction Manual*, Part 8.

United States--In the statistical tabulations, "United States" refers only to the aggregate of the 50 States and the District of Columbia. Alaska has been included in the U.S. tabulations since 1959 and Hawaii since 1960.

Metropolitan statistical areas--The metropolitan statistical areas and primary metropolitan statistical areas (MSA's and PMSA's) used in this report are those established by the U.S. Office of Management and Budget as of April 1, 1990, and used by the U.S. Bureau of the Census (5) except in the New England States.

Except in the New England States, an MSA has either a city with a population of at least 50,000, or a Bureau of the Census urbanized area of at least 50,000 and a total MSA population of at least 100,000. A PMSA consists of a large urbanized county, or cluster of counties, that demonstrates very strong internal economic and social links and has a population over 1 million. When PMSA's are defined, the large area of which they are component parts is designated a Consolidated Metropolitan Statistical Area (CMSA) (6).

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

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

Population-size groups--Beginning in 1994 vital statistics data for cities and certain other urban places have been classified according to the population enumerated in the 1990 Census of Population. Data are available for individual cities and other urban places of 100,000 or more population. Data for the remaining areas not separately identified are shown in the tables under the heading "Balance of area" or "Balance of county." Classification of areas for 1982-93 was determined by the population enumerated in the 1980 Census of Population. As a result of changes in the enumerated population between 1980 and 1990, some urban places identified in previous reports are no longer included, and a number of other urban places have been added.

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

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

Race or national origin

Beginning with the 1989 data year birth data are tabulated primarily by race of mother. In 1988 and prior years the race or national origin shown in tabulations was that of the newborn child. However, beginning with the 1992 issue of *Vital Statistics of the United States, Volume I, Natality*, trend data for years beginning with 1980 have been retabulated by race of mother. The race of the child was determined for statistical purposes by an algorithm based on the race of the mother and father as reported on the birth certificate. When the parents were of the same race, the race of the child was the same as the race of the parents. When the parents were of different races and one parent was white, the child was assigned to the race of the other parent. When the parents were of different races and neither parent was white, the child was assigned to the race of the father, with one exception--if either parent was Hawaiian, the child was assigned to Hawaiian. If race was missing for one parent, the child was assigned the race of the parent for whom it was reported. When information on race was missing for both parents, the race of the child was considered not stated and the birth was allocated according to rules discussed on page 4 of the Technical Appendix, volume I, *Vital Statistics of the United States*, 1988. In 1989 the criteria for reporting the race of the parents did not change and continues to reflect the response of the informant (usually the mother).

The most important factor influencing the decision to tabulate births by race of the mother was the decennial revision of the U.S. Standard Certificate of Live Birth in 1989. This revision included many more health questions that are directly associated with the mother, including alcohol and tobacco use, weight gain during pregnancy, medical risk factors, obstetric procedures, complications of labor and/or delivery, and method of delivery. Additionally, many of the other items that have been on the birth certificate for more than two decades also relate directly to the mother, for example, marital status, education level, and receipt of prenatal care. It is more appropriate to use the race of the mother than the race of the child in tabulating these items.

A second factor has been the increasing incidence of interracial parentage. In 1998, 5.3 percent of births were to parents of different races, more than double the percent in 1977 (2.0 percent). More than half of these births were to white mothers and fathers of another race (55 percent in 1998). There have been two major consequences of the increasing interracial parentage. One is the effect on birth rates by race. The number of white births under the former procedures has been arbitrarily limited to infants whose parents were both white (or one parent if the race of only one parent was reported). At the same time, the number of births of other races has been arbitrarily increased to include all births to white mothers and fathers of other races. Thus, prior to 1989, if race of mother had been used, birth rates per 1,000 white women in a given age group would have been higher, while comparable rates for black women and women of other races would have been lower. The other consequence of increasing interracial parentage is the impact on the racial differential in various characteristics of births, particularly in cases where there is generally a large racial disparity, such as the incidence of low birthweight. In this instance, the racial differential is larger when the data are tabulated by race of mother rather than by race of child. The same effect has been noted for characteristics such as nonmarital childbearing, preterm births, late or no prenatal care, and low educational attainment of mother.

The third factor influencing the change is the growing proportion of births with race of father not stated, 14 percent in 1998. Although this proportion has stabilized and declined slightly in the 1990's, it is still higher than in 1978, 11

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percent. The high proportion of records with the father's race not reported reflects the increase in the proportion of births to unmarried women; in many cases no information is reported on the father. These births were already assigned the race of the mother because there is no alternative. Tabulating births by race of mother provides a more uniform approach, rather than a necessarily arbitrary combination of parental races.

The change in the tabulation of births by race presents some problems when analyzing birth data by race, particularly trend data. The problem is likely to be acute for races other than white and black.

The categories for race or national origin are "White," "Black," "American Indian" (including Aleuts and Eskimos), "Chinese," "Japanese," "Hawaiian," "Filipino," and "Other Asian or Pacific Islander" (including Asian Indian). Before 1992 there was also an "other" category, which is now combined with the "Not stated" category. Before 1978 the category "Other Asian or Pacific Islander" was not identified separately but included with "Other" races. The separation of this category from "other" allows identification of the category "Asian or Pacific Islander" by combining the new category "Other Asian or Pacific Islander" with Chinese, Japanese, Hawaiian, and Filipino.

Beginning in 1992, NCHS contracted with seven States with the highest API populations to code births to additional API subgroups. The API subgroups include births to Vietnamese, Asian Indian, Korean, Samoan, Guamanian, and other API women. The seven States included in this reporting area are: California, Hawaii, Illinois, New Jersey, New York, Texas, and Washington. At least two-thirds of the U.S. population of each of these additional API groups lived in the seven-State reporting area(8). The data are available on the detailed natality tapes and CD-ROMs beginning with the 1992 data year. An analytic report based on the 1992 data year is also available upon request(9). In 1996, Minnesota became the eighth State to provide this information and in 1998, Virginia became the ninth State.

The category "White" comprises births reported as white and births where race is reported as Hispanic. Before 1964 all births for which race or national origin was not stated were classified as white. Beginning in 1964 changes in the procedures for allocating race when race or national origin is not stated have changed the composition of this category. (See discussion on "Race or national origin not stated.")

If the race or national origin of an Asian parent is ill-defined or not clearly identifiable with one of the categories used in the classification (for example, if "Oriental" is entered), an attempt is made to determine the specific race or national origin from the entry for place of birth. If the birthplace is China, Japan, or the Philippines, the race of the parent is assigned to that category. When race cannot be determined from birthplace, it is assigned to the category "Other Asian or Pacific Islander."

Race or national origin not stated--If the race of the mother is not defined or not identifiable with one of the categories used in the classification (0.8 percent of births in 1998) and the race of the father is known, the race of the father is assigned to the mother. Where information for both parents is missing, the race of the mother is allocated electronically according to the specific race of the mother on the preceding record with a known race of mother. Data for both parents were missing for only 0.4 percent of birth certificates for 1998. Nearly all statistics by race or national origin for the United States as a whole in 1962 and 1963 are affected by a lack of information for New Jersey, which did not report the race of the parents in those years. Birth rates by race for those years are computed on a population base that excluded New Jersey. For the method of estimating the U.S. population by age, sex, and race excluding New Jersey in 1962 and 1963, see page 4-8 in the Technical Appendix of volume I, *Vital Statistics of the United States*, 1963.

Age of mother

Beginning in 1989 an item on the birth certificate asks for "Date of Birth." In previous years, "Age (at time of this birth)" was requested. Not all States have revised this item for 1989, and therefore the age of mother either is derived from the reported month and year of birth or coded as stated on the certificate. In 1998 the mother's age was reported directly by five States (Kentucky, Nevada, North Dakota, Virginia, and Wyoming) and American Samoa. From 1964 to 1996, the age of mother was edited for 10-49 years. When the age of mother was computed to be under 10 years or 50 years or over, it was considered not stated and was assigned as described below. Beginning in 1997, age of mother is edited for ages 10-54 years. When the age of mother is computed to be under 10 years or 55 years or over, it is considered not stated and was assigned as described below. A review and verification of unedited birth data for 1996 showed that the vast majority

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of births reported as occurring to women aged 50 years and older were to women aged 50-54 years. The numbers of births to women 50-54 years are too small for computing age-specific birth rates. These births have been included with births to women 45-49 for computing birth rates.

Age-specific birth rates are based on populations of women by age, prepared by the U.S. Bureau of the Census. In census years the decennial census counts are used. In intercensal years, estimates of the population of women by age are published by the U.S. Bureau of the Census in *Current Population Reports*.

The 1990 Census of Population derived age in completed years as of April 1, 1990, from the responses to questions on age at last birthday and month and year of birth, with the latter given preference. In the 1960, 1970, and the 1980 Census of Population, age was also derived from month and year of birth. "Age in completed years" was asked in censuses before 1960. This was nearly the equivalent of the former birth certificate question, which the 1950 test of matched birth and census records confirms by showing a high degree of consistency in reporting age in these two sources (10).

Median age of mother--Median age is the value that divides an age distribution into two equal parts, one-half of the values being less and one-half being greater. Median ages of mothers for 1960 to the present have been computed from birth rates for 5-year age groups rather than from birth frequencies. This method eliminates the effects of changes in the age composition of the childbearing population over time. Changes in the median ages from year to year can thus be attributed solely to changes in the age-specific birth rates.

Not stated date of birth of mother-- In 1998 age of mother was not reported on 0.02 percent of the records. Beginning in 1964 birth records with date of birth of mother and/or age of mother not stated have had age imputed according to the age of mother from the previous birth record of the same race and total-birth order (total of fetal deaths and live births). (See "Computer Edits for Natality Data, Effective 1993" NCHS Instruction Manual, Part 12, page 9.) In 1963 birth records with age not stated were allocated according to the age appearing on the record previously processed for a mother of identical race and parity (number of live births). For 1960-62 not stated ages were distributed in proportion to the known ages for each racial group. Before 1960 this was done for age-specific birth rates but not for the birth frequency tables, which showed a separate category for age not stated.

Age of father

Age of father is derived from the reported date of birth or coded as stated on the birth certificate. If the age is under 10 years, it is considered not stated and grouped with those cases for which age is not stated on the certificate. Information on age of father is often missing on birth certificates of children born to unmarried mothers, greatly inflating the number of "not stated" in all tabulations by age of father. In computing birth rates by age of father, births tabulated as age of father not stated are distributed in the same proportions as births with known age within each 5-year-age classification of the mother. This procedure is followed because, while father's age is missing in 15 percent of the birth certificates in 1998, one third of these were on records where the mother is a teenager. This distribution procedure is done separately by race. The resulting distributions are summed to form a composite frequency distribution that is the basis for computing birth rates by age of father. This procedure avoids the distortion in rates that would result if the relationship between age of mother and age of father were disregarded.

Live-birth order and parity

Live-birth order and parity classifications refer to the total number of live births the mother has had including the 1998 birth. Fetal deaths are excluded.

Live-birth order indicates what number the present birth represents; for example, a baby born to a mother who has had two previous live births (even if one or both are not now living) has a live-birth order of three. Parity indicates how many live births a mother has had. Before delivery a mother having her first baby has a parity of zero and a mother having her third baby has a parity of two. After delivery the mother of a baby who is a first live birth has a parity of one and the mother of a baby who is a third live birth has a parity of three.

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Live-birth order and parity are determined from two items on the birth certificate, "Live births now living" and "Live births now dead."

Not stated birth order--Before 1969 if both of these items were blank, the birth was considered a first birth. Beginning in 1969, births for which the pregnancy history items were not completed have been tabulated as live-birth order not stated. As a result of this revised procedure, 22,686 births in 1969 that would have been assigned to the "First birth order" category under the old rules were assigned to the "Not stated" category.

All births tabulated in the "Not stated birth order" category are excluded from the computation of percents. In computing birth rates by live-birth order, births tabulated as birth order not stated are distributed in the same proportion as births of known live-birth order.

Date of last live birth

The date of last live birth was added to the U.S. Standard Certificate of Live Birth in 1968 for the purpose of providing information on child spacing. The interval since the last live birth is the difference between the date of last live birth and the date of present birth. For an interval to be computed, both the month and year of the last live birth must be valid. This interval is computed only for events to mothers who have had at least one previous live birth. Births for which the interval since last live birth is not stated are excluded from the computation of percents and means.

Zero interval--An interval of zero months since the last live birth indicates the second born of a set of twins, the second or third born of a set of triplets, and so forth. Births with an interval of zero months are excluded from the computation of mean intervals.

Beginning in 1995, NCHS ceased to collect information on the date of last live birth and thus the information on interval is only available from birth certificate data from 1968-94.

Educational attainment

Data on the educational attainment of both parents were collected beginning in 1968 and tabulated for publication in 1969 for the first time.

The educational attainment of either parent is defined as "the number of years of school completed." Only those years completed in "regular" schools are counted, that is, a formal educational system of public schools or the equivalent in accredited private or parochial schools. Business or trade schools, such as beauty and barber schools, are not considered "regular" schools for the purposes of this item. No attempt has been made to convert years of school completed in foreign school systems, ungraded school systems, and so forth, to equivalent grades in the American school system. Such entries are included in the category "not stated."

Persons who have completed only a partial year in high school or college are tabulated as having completed the highest preceding grade. For those certificates on which a specific degree is stated, years of school completed is coded to the level at which the degree is most commonly attained; for example, persons reporting B.A., A.B., or B.S. degrees are considered to have completed 16 years of school.

Education not stated--The category "Not stated" includes all records in reporting areas for which there is no information on years of school completed as well as all records for which the information provided is not compatible with coding specifications.

Births tabulated as education not stated are excluded from the computations of percents.

Beginning in 1995, NCHS ceased to collect information on the educational attainment of the father and thus the information is available from birth certificate data only for 1969-94.

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Marital status

National estimates of births to unmarried women are based on two methods of determining marital status. For 1994 through 1996, birth certificates in 45 states and the District of Columbia included a question about the mother's marital status. Beginning in 1997, California added a direct question to their birth certificate; thus **by** 1997, all but four States (Connecticut, Michigan, Nevada, and New York) included a direct question on their birth certificates. Nevada asks for the mother's marital status through the electronic birth registration process but this item is not included on certified or paper copies of the birth certificate. Beginning June 15, 1998, Connecticut discontinued inferring the mother's marital status and added a direct question on mother's marital status to the State's birth certificate.

In the two States (Michigan and New York) which used inferential procedures to compile birth statistics by marital status in 1998, a birth is inferred as nonmarital if either of these factors is present: a paternity acknowledgment was received or the father's name is missing. In recent years, a number of States have extended their efforts to identify the fathers when the parents are not married in order to enforce child support obligations. The presence of a paternity acknowledgment therefore is the most reliable indicator that the birth is nonmarital in the States not reporting this information directly; this is now the key indicator in the nonreporting States. The inferential procedures in effect since 1980 represent a substantial departure from the method used before 1980 to prepare national estimates of births to unmarried women, which assumed that the incidence of births to unmarried women in States with no direct question on marital status was the same as the incidence in reporting States in the same geographic division (12). Inferential procedures in current use, however, are quite different from those in use during the 1980's, when there was heavy reliance on a comparison of the surnames of the parents and the child to infer the mother's marital status. The procedures now in use depend, as noted above, on very reliable indicators, namely a paternity affidavit or missing information on the father.

A review of Connecticut's birth data for 1998 indicates that during the first 6 months of 1998, when the inferential procedures were still in use, the proportion of births to unmarried women was somewhat higher (33 percent) than in the last 6 months when marital status was based on a direct question (29 percent). The inferential procedures in effect in Connecticut relied principally on a comparison of the surnames of the parents and child. It appears that the inferential procedures resulted in some overestimation of the number of births to unmarried women. It is estimated that if the Connecticut reporting procedures had not changed, the number of nonmarital births would have been about 1,000 higher. Because Connecticut accounts for about 1 percent of U.S. births, the reporting changes had no impact on data for the Nation.

The procedures for reporting marital status in California, Nevada, New York City changed beginning January 1, 1997. The methods used to determine marital status and the impact of the procedures on the data were discussed in detail in a previous report (13).

The use of inferential marital status data together with information from a direct question represents an attempt to use related information on the birth certificate to improve the quality of national data as well as to provide data for the individual nonreporting States. An evaluation of this method and its validity for California (the largest nonreporting State until 1997) has been published (14). Because of the continued substantial increases in nonmarital childbearing throughout the 1980's, the data have been intensively evaluated by the Division of Vital Statistics, NCHS. The results of this evaluation show that trends in birth rates for unmarried women for rates computed on the basis of estimated data and on the basis of inferred data are essentially the same.

The mother's marital status was not reported in 1998 on 0.04 percent of the birth records. Marital status was imputed as "married" for these records.

When births to unmarried women are reported as second or higher order births, it is not known whether the mother was married or unmarried when the previous deliveries occurred, because her marital status at the time of these earlier births is not available from the birth record.

Rates for 1940 and 1950 are based on decennial census counts. Rates for 1955-97 are based on a smoothed series of population estimates (12). Because of sampling error, the original U.S. Bureau of the Census population estimates by marital status fluctuate erratically from year to year; therefore, they have been smoothed so that the rates do not show

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similar variations. These rates differ from those published in volumes of *Vital Statistics of the United States* before 1969, which were based on the original estimates provided annually by the U.S. Bureau of the Census. Birth rates by marital status for 1971-79 have been revised and differ from rates published before 1980 in volumes of *Vital Statistics of the United States* (see "Computation of rates and other measures").

Place of delivery and attendant at birth

The 1989 revision of the U.S. Standard Certificate of Live Birth included separate categories for freestanding birthing centers, the mother's residence, and clinic or doctor's office as the place of birth. Prior to 1989, place of birth was classified simply as either "In hospital" or "Not in hospital." Births occurring in hospitals, institutions, clinics, centers, or homes were included in the category "In hospital." In this context the word "homes" does not refer to the mother's residence but to an institution, such as a home for unmarried women. Birthing centers were included in either category, depending on each State's assessment of the facility. Beginning in 1989 births occurring in clinics and in birthing centers not attached to a hospital are classified as "Not in hospital." This change in classification may account in part for the lower proportion of "In hospital" births compared with previous years. (The change in classification of clinics should have minor impact because comparatively few births occur in these facilities, but the effect of any change in classification of freestanding birthing centers is unknown.)

Beginning in 1975 the attendant at birth and place of delivery items were coded independently, primarily to permit the identification of the person in attendance at hospital deliveries. The 1989 certificate includes separate classifications for doctor of medicine (MD), doctor of osteopathy (DO), certified nurse midwife (CNM), other midwife, and other attendants. In earlier certificates births attended by certified nurse midwives were grouped with those attended by lay midwives. The new certificate also facilitates the identification of home births, births in freestanding birthing centers, and births in clinics or physician offices.

Data for the "In hospital" category for 1975-88 include all births in clinics or maternity centers, regardless of the attendant. Data for 1975-77 published before 1980 included clinic and center births in the category "In hospital" only when the attendant was a physician. Data shown for 1975-77 published after 1980 will, therefore, differ from data published before 1980. As a result of this change, for 1975 an additional 12,352 births are now classified as occurring in hospitals, raising the percent of births occurring in hospitals from 98.7 to 99.1. Similarly, for 1976 the number of births occurring in hospitals increased by 14,133 and the percent in hospitals raised from 98.6 to 99.1; for 1977 the increase is 15,937 and the percent in hospitals raised from 98.5 to 99.0. For 1974 and earlier the "In hospital" category includes all births in hospitals or institutions and births in clinics, centers, or maternity homes only when attended by physicians.

The "Not in hospital" category includes births for which no information is reported on place of birth. Before 1975 births for which the stated place of birth was a "doctor's office" and delivery was by a physician were included in the category "In hospital." Beginning in 1975 these births were tabulated as "Not in hospital" and included with births delivered by physicians in this category. Although the actual number of such births is unknown, the effect of the change is minimal. In 1974, 0.3 percent of all births were delivered by physicians outside of hospitals; in 1975 this proportion was 0.4 percent.

Babies born on the way to or on arrival at the hospital are classified as having been born in the hospital. This may account for some of the hospital births not delivered by physicians or midwives.

Beginning in 1993, all in-hospital births occurring in Illinois where the attendant was classified as an "other" midwife were changed to certified nurse-midwife. This was necessary because almost all of these births were delivered by midwives certified by the American College of Nurse Midwives but because Illinois does not certify midwives, many of these births were classified as "other" midwives.

Birthweight

Birthweight is reported in some areas in pounds and ounces rather than in grams. However, the metric system has been used in tabulating and presenting the statistics to facilitate comparison with data published by other groups. The

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categories for birthweight were changed in 1979 to be consistent with the recommendations in the *Ninth Revision of the International Classification of Diseases (ICD-9)*. The categories in gram intervals and their equivalents in pounds and ounces are as follows:

Less than 500 grams = 1 lb 1 oz or less
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

The ICD-9 defines low birthweight as less than 2,500 grams. This is a shift of 1 gram from the previous criterion of 2,500 grams or less, which was recommended by the American Academy of Pediatrics in 1935 and adopted in 1948 by the World Health Organization in the *Sixth Revision of the International Lists of Diseases and Causes of Death*.

After data classified by pounds and ounces are converted to grams, median weights are computed and rounded before publication. To establish the continuity of class intervals needed to convert pounds and ounces to grams, the end points of these intervals are assumed to be half an ounce less at the lower end and half an ounce more at the upper end. For example, 2 lb 4 oz-3 lb 4 oz is interpreted as 2 lb 3 ½ oz-3 lb 4 ½ oz.

Births for which birthweight is not reported are excluded from the computation of percents and medians.

Period of gestation

The period of gestation is defined as beginning with the first day of the last normal menstrual period (LMP) and ending with the day of the birth. The LMP is used as the initial date because it can be more accurately determined than the date of conception, which usually occurs 2 weeks after the LMP.

Births occurring before 37 completed weeks of gestation are considered to be “preterm” or “premature” for purposes of classification. At 37-41 weeks gestation, births are considered to be “term,” and at 42 completed weeks and over, “postterm.” These distinctions are according to the ICD-9 definitions.

The 1989 revision of the U.S. Standard Certificate of Live Birth included a new item, “clinical estimate of gestation,” that is being compared with length of gestation computed from the LMP date when the latter appears to be inconsistent with birthweight. This is done for normal weight births of apparently short gestations and very low birthweight births reported to be full term. The clinical estimate also was used if the date of the LMP was not reported. The period of gestation for 5.1 percent of the births in 1998 was based on the clinical estimate of gestation. For 97 percent of these records the clinical estimate was used because the LMP date was not reported. For the remaining 3 percent the clinical estimate was used because it was compatible with the reported birth weight, whereas the LMP-computed gestation was not. In cases where the reported birthweight was inconsistent with both the LMP-computed gestation and the clinical estimate of gestation, the LMP-computed gestation was used if it was within 5 weeks of the clinical estimate and birth weight was reclassified as “not stated.” This was necessary for about 350 births, less than 0.01 percent of all birth records in 1998. If the reported birthweight was inconsistent with both the LMP-computed gestation and the clinical estimate of gestation, gestation and birthweight were classified as “not stated” if the LMP-computed gestation was not within 5 weeks of the clinical estimate. These changes result in only a very small discontinuity in the data. For further information on the use of the clinical estimate of gestation see “Computer Edits for Natality Data, Effective 1993,” *NCHS Instruction Manual*, Part 12, pages 34-36.

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Before 1981 the period of gestation was computed only when there was a valid month, day, and year of LMP. However, length of gestation could not be determined from a substantial number of live-birth certificates each year because the day of LMP was missing. Beginning in 1981 weeks of gestation have been imputed for records with missing day of LMP when there is a valid month and year. Each such record is assigned the gestational period in weeks of the preceding record that has a complete LMP date with the same computed months of gestation and the same 500-gram birthweight interval. The effect of the imputation procedure is to increase slightly the proportion of preterm births and to lower the proportion of births at 39, 40, 41, and 42 weeks of gestation. A more complete discussion of this procedure and its implications is presented in a previous report (15).

Because of postconception bleeding or menstrual irregularities, the presumed date of LMP may be in error. In these instances the computed gestational period may be longer or shorter than the true gestational period, but the extent of such errors is unknown.

Month of pregnancy prenatal care began

For those records in which the name of the month is entered for this item, instead of first, second, third, and so forth, the month of pregnancy in which prenatal care began is determined from the month named and the month last normal menses began. For these births, if the item "Date last normal menses began" is not stated, the month of pregnancy in which prenatal care began is tabulated as not stated.

Number of prenatal visits

Tabulations of the number of prenatal visits were presented for the first time in 1972. Beginning in 1989 these data were collected from the birth certificates of all States. Percent distributions and the median number of prenatal visits exclude births to mothers who had no prenatal care.

Apgar score

The 1- and 5-minute Apgar scores were added to the U.S. Standard Certificate of Live Birth in 1978 to evaluate the condition of the newborn infant at 1 and 5 minutes after birth. The Apgar score is a useful measure of the need for resuscitation and a predictor of the infant's chances of surviving the first year of life. It is a summary measure of the infant's condition based on heart rate, respiratory effort, muscle tone, reflex irritability, and color. Each of these factors is given a score of 0, 1, or 2; the sum of these 5 values is the Apgar score, which ranges from 0 to 10. A score of 10 is optimum, and a low score raises some doubts about the survival and subsequent health of the infant. Beginning in 1995, NCHS only collected information on the 5-minute Apgar score. In 1998 the reporting area for the 5-minute Apgar score was comprised of 48 States and the District of Columbia, accounting for 78 percent of all births in the United States. California and Texas did not have information on Apgar scores on their birth certificate.

Tobacco and alcohol use during pregnancy

The checkbox format allows for classification of a mother as a smoker or drinker during pregnancy and for reporting the average number of cigarettes smoked per day or drinks consumed per week. When smoking and/or drinking status is not reported or is inconsistent with the quantity of cigarettes or drinks reported, the status is changed to be consistent with the amount reported. For example, if the drinking status is reported as "no" but one or more average drinks a week are reported, the mother is classified as a drinker. If the number of cigarettes smoked per day is reported as one or more, the mother is considered a smoker. When one (or a fraction of one) drink a week is recorded, the mother is classified as a drinker. For records on which the number of drinks or number of cigarettes is reported as a span, for example, 10-15, the

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lower number is used. The number of drinkers and number of drinks reported on birth certificates are believed to underestimate actual alcohol use.

Data on tobacco use were collected by 46 States, the District of Columbia, and New York City in 1998. This reporting area accounted for 81 percent of all births in the U.S. in 1998. Information was not available for California, Indiana, South Dakota, and the remainder of New York State. Information on alcohol use was included on the certificates of 48 States and the District of Columbia, accounting for 87 percent of all U.S. births in 1998. California and South Dakota did not include items on alcohol use on their birth certificates.

Weight gained during pregnancy

Weight gain is reported in pounds. A loss of weight is reported as zero gain. Computations of median weight gain were based on ungrouped data. This item was included on the certificates of 49 States and the District of Columbia; California did not report this information. This reporting area excluding California accounted for 87 percent of all births in the United States in 1998.

Medical risk factors for this pregnancy

In 1998 an item on medical risk factors was included on the birth certificates of all States and the District of Columbia, but 2 States did not report all of the 16 risk factors. Texas did not report genital herpes or uterine bleeding, and Kansas did not report Rh sensitization.

The format allows for the designation of more than one risk factor and includes a choice of "None." Accordingly, if the item is not completed, it is classified as "Not stated."

The following definitions are adapted and abbreviated from a set of definitions compiled by a committee of Federal and State health statistics officials for the Association for Vital Records and Health Statistics (16).

Definitions of medical terms

Anemia--Hemoglobin level of less than 10.0 g/dL during pregnancy or a hematocrit of less than 30 percent during pregnancy.

Cardiac disease--Disease of the heart.

Acute or chronic lung disease--Disease of the lungs during pregnancy.

Diabetes--Metabolic disorder characterized by excessive discharge of urine and persistent thirst; includes juvenile onset, adult onset, and gestational diabetes during pregnancy.

Genital herpes--Infection of the skin of the genital area by herpes simplex virus.

Hydramnios/oligohydramnios--Any noticeable excess (hydramnios) or lack (oligohydramnios) of amniotic fluid.

Hemoglobinopathy--A blood disorder caused by alteration in the genetically determined molecular structure of hemoglobin (for example, sickle cell anemia).

Hypertension, chronic--Blood pressure persistently greater than 140/90, diagnosed prior to onset of pregnancy or before the 20th week of gestation.

Hypertension, pregnancy-associated--An increase in blood pressure of at least 30 mm Hg systolic or 15 mm Hg diastolic on two measurements taken 6 hours apart after the 20th week of gestation.

Eclampsia--The occurrence of convulsions and/or coma unrelated to other cerebral conditions in women with signs and symptoms of pre-eclampsia.

Incompetent cervix--Characterized by painless dilation of the cervix in the second trimester or early in the third trimester of pregnancy, with prolapse of membranes through the cervix and ballooning of the membranes into the vagina, followed by rupture of membranes and subsequent expulsion of the fetus.

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Previous infant 4,000+ grams--The birthweight of a previous live-born child was over 4,000 grams (8 lbs 13 oz).
Previous preterm or small-for-gestational-age infant--Previous birth of an infant prior to term (before 37 completed weeks of gestation) or of an infant weighing less than the 10th percentile for gestational age using a standard weight-for-age chart.

Renal disease--Kidney disease.

Rh sensitization--The process or state of becoming sensitized to the Rh factor as when an Rh-negative woman is pregnant with an Rh-positive fetus.

Uterine bleeding--Any clinically significant bleeding during the pregnancy, taking into consideration the stage of pregnancy; any second or third trimester bleeding of the uterus prior to the onset of labor.

Obstetric procedures

This item includes six specific obstetric procedures. Birth records with "Obstetric procedures" left blank are considered "not stated." Data on obstetric procedures were reported by all States and the District of Columbia in 1998.

The following definitions are adapted and abbreviated from a set of definitions compiled by a committee of Federal and State health statistics officials for the National Association for Public Health Statistics and Information Systems (NAPHSIS), formerly the Association for Vital Records and Health Statistics (16).

Definitions of medical terms

Amniocentesis--Surgical transabdominal perforation of the uterus to obtain amniotic fluid to be used in the detection of genetic disorders, fetal abnormalities, and fetal lung maturity.

Electronic fetal monitoring--Monitoring with external devices applied to the maternal abdomen or with internal devices with an electrode attached to the fetal scalp and a catheter through the cervix into the uterus, to detect and record fetal heart tones and uterine contractions.

Induction of labor--The initiation of uterine contractions before the spontaneous onset of labor by medical and/or surgical means for the purpose of delivery.

Stimulation of labor--Augmentation of previously established labor by use of oxytocin.

Tocolysis--Use of medications to inhibit preterm uterine contractions to extend the length of pregnancy and therefore avoid a preterm birth.

Ultrasound--Visualization of the fetus and placenta by means of sound waves.

Complications of labor and/or delivery

The checkbox format allows for the selection of 15 specific complications and for the designation of more than 1 complication where appropriate. A choice of "None" is also included. Accordingly, if the item is not completed, it is classified as "not stated."

All States and the District of Columbia included this item on their birth certificates in 1998. However, Texas did not report all of the complications. Texas did not report anesthetic complications or fetal distress.

The following definitions are adapted and abbreviated from a set of definitions compiled by a committee of Federal and State health statistics officials (16).

Definitions of medical terms

Febrile--A fever greater than 100 degrees F. or 38 C. occurring during labor and/or delivery.

Meconium, moderate/heavy--Meconium consists of undigested debris from swallowed amniotic fluid, various

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products of secretion, excretion, and shedding by the gastrointestinal tract; moderate to heavy amounts of meconium in the amniotic fluid noted during labor and/or delivery.

Premature rupture of membranes (more than 12 hours)--Rupture of the membranes at any time during pregnancy and more than 12 hours before the onset of labor.

Abruptio placenta--Premature separation of a normally implanted placenta from the uterus.

Placenta previa--Implantation of the placenta over or near the internal opening of the cervix.

Other excessive bleeding--The loss of a significant amount of blood from conditions other than abruptio placenta or placenta previa.

Seizures during labor--Maternal seizures occurring during labor from any cause.

Precipitous labor (less than 3 hours)--Extremely rapid labor and delivery lasting less than 3 hours.

Prolonged labor (more than 20 hours)--Abnormally slow progress of labor lasting more than 20 hours.

Dysfunctional labor--Failure to progress in a normal pattern of labor.

Breech/malpresentation--At birth, the presentation of the fetal buttocks rather than the head, or other malpresentation.

Cephalopelvic disproportion--The relationship of the size, presentation, and position of the fetal head to the maternal pelvis prevents dilation of the cervix and/or descent of the fetal head.

Cord prolapse--Premature expulsion of the umbilical cord in labor before the fetus is delivered.

Anesthetic complications--Any complication during labor and/or delivery brought on by an anesthetic agent or agents.

Fetal distress--Signs indicating fetal hypoxia (deficiency in amount of oxygen reaching fetal tissues).

Abnormal conditions of the newborn

This item provides information on eight specific abnormal conditions. More than one abnormal condition may be reported for a given birth or "None" may be selected. If the item is not completed it is tabulated as "not stated." This item was included on the birth certificates of all States and the District of Columbia in 1998. However, four areas did not include all conditions. Nebraska and Texas did not report birth injury, New York City did not report assisted ventilation less than 30 minutes or assisted ventilation of 30 minutes or more, and Wisconsin did not report fetal alcohol syndrome.

The following definitions are adapted and abbreviated from a set of definitions compiled by a committee of Federal and State health statistics (16).

Definitions of medical terms

Anemia--Hemoglobin level of less than 13.0 g/dL or a hematocrit of less than 39 percent.

Birth injury--Impairment of the infant's body function or structure due to adverse influences that occurred at birth.

Fetal alcohol syndrome--A syndrome of altered prenatal growth and development occurring in infants born of women who consumed excessive amounts of alcohol during pregnancy.

Hyaline membrane disease/RDS--A disorder primarily of prematurity, manifested clinically by respiratory distress and pathologically by pulmonary hyaline membranes and incomplete expansion of the lungs at birth.

Meconium aspiration syndrome--Aspiration of meconium by the fetus or newborn, affecting the lower respiratory system.

Assisted ventilation (less than 30 minutes)--A mechanical method of assisting respiration for newborns with respiratory failure.

Assisted ventilation (30 minutes or more)--Newborn placed on assisted ventilation for 30 minutes or longer.

Seizures--A seizure of any etiology.

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Congenital anomalies of child

The data provided in this item relate to 21 specific anomalies or anomaly groups. It is well documented that congenital anomalies, except for the most visible and most severe, are incompletely reported on birth certificates. The completeness of reporting specific anomalies depends on how easily they are recognized in the short time between birth and birth-registration. Forty-nine States and the District of Columbia included this item on their birth certificates (New Mexico did not). This reporting area included 99 percent of all births in the United States in 1998. The format allows for the identification of more than one anomaly including a choice of "None" should no anomalies be evident. The category "not stated" includes birth records for which the item is not completed.

The following definitions are adapted and abbreviated from a set of definitions compiled by a committee of Federal and State health statistics officials (16).

Definitions of medical terms

Anencephalus--Absence of the cerebral hemispheres.

Spina bifida/meningocele--Developmental anomaly characterized by defective closure of the bony encasement of the spinal cord, through which the cord and meninges may or may not protrude.

Hydrocephalus--Excessive accumulation of cerebrospinal fluid within the ventricles of the brain with consequent enlargement of the cranium.

Microcephalus--A significantly small head.

Other central nervous system anomalies--Other specified anomalies of the brain, spinal cord, and nervous system.

Heart malformations--Congenital anomalies of the heart.

Other circulatory/respiratory anomalies--Other specified anomalies of the circulatory and respiratory systems.

Rectal atresia/stenosis--Congenital absence, closure, or narrowing of the rectum.

Tracheo-esophageal fistula/Esophageal atresia--An abnormal passage between the trachea and the esophagus; esophageal atresia is the congenital absence or closure of the esophagus.

Omphalocele/gastroschisis--An omphalocele is a protrusion of variable amounts of abdominal viscera from a midline defect at the base of the umbilicus. In gastroschisis, the abdominal viscera protrude through an abdominal wall defect, usually on the right side of the umbilical cord insertion.

Other gastrointestinal anomalies--Other specified congenital anomalies of the gastrointestinal system.

Malformed genitalia--Congenital anomalies of the reproductive organs.

Renal agenesis--One or both kidneys are completely absent.

Other urogenital anomalies--Other specified congenital anomalies of the organs concerned in the production and excretion of urine, together with organs of reproduction.

Cleft lip/palate--Cleft lip is a fissure of elongated opening of the lip; cleft palate is a fissure in the roof of the mouth. These are failures of embryonic development.

Polydactyly/syndactyly/adactyly--Polydactyly is the presence of more than five digits on either hands and/or feet; syndactyly is having fused or webbed fingers and/or toes; adactyly is the absence of fingers and/or toes.

Club foot--Deformities of the foot, which is twisted out of shape or position.

Diaphragmatic hernia--Herniation of the abdominal contents through the diaphragm into the thoracic cavity usually resulting in respiratory distress.

Other musculoskeletal/integumental anomalies--Other specified congenital anomalies of the muscles, skeleton, or skin.

Down's syndrome--The most common chromosomal defect with most cases resulting from an extra chromosome (trisomy 21).

Other chromosomal anomalies--All other chromosomal aberrations.

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Method of delivery

The birth certificate contains a checkbox item on method of delivery. The choices include vaginal delivery, with the additional options of forceps, vacuum, and vaginal birth after previous cesarean section (VBAC), as well as a choice of primary or repeat cesarean. When only forceps, vacuum, or VBAC is checked, a vaginal birth is assumed. In 1998 this information was collected from the birth certificates of all States and the District of Columbia.

Several rates are computed for method of delivery. The overall cesarean section rate or total cesarean rate is computed as the proportion of all births that were delivered by cesarean section. The primary cesarean rate is a measure that relates the number of women having a primary cesarean birth to all women giving birth who have never had a cesarean delivery. The denominator for this rate is the sum of women with a vaginal birth excluding VBACs and women with a primary cesarean birth. The rate for vaginal birth after previous cesarean (VBAC) delivery is computed by relating all VBAC deliveries to the sum of VBAC and repeat cesarean deliveries, that is, to women with a previous cesarean section. VBAC rates for first births exist because the rates are computed on the basis of previous pregnancies, not just live births.

Hispanic parentage

The 1989 revision of the U.S. Standard Certificate of Live Births includes items to identify the Hispanic origin of the parents. Concurrent with the 1978 revision of the U.S. Certificate of Live Birth, NCHS recommended that items to identify the Hispanic or ethnic origin of the newborn's parents be included on birth certificates and has tabulated and evaluated these data from the reporting States. All 50 States and the District of Columbia reported Hispanic origin of the parents for 1998. In 1989 Louisiana, New Hampshire, and Oklahoma did not report this information; in 1990 New Hampshire and Oklahoma did not report, and in 1991-92 New Hampshire did not report Hispanic origin.

In computing birth and fertility rates for the Hispanic population, births with origin of mother not stated are included with non-Hispanic births rather than being distributed. Thus, rates for the Hispanic population are underestimates of the true rates to the extent that the births with origin of mother not stated (1.2 percent in 1998) were actually to Hispanic mothers. The population with origin not stated was imputed. The effect on the rates is believed to be small.

Quality of data

Although vital statistics data are useful for a variety of administrative and scientific purposes, they cannot be correctly interpreted unless various qualifying factors and methods of classification are taken into account. The factors to be considered depend on the specific purposes for which the data are to be used. It is not feasible to discuss all the pertinent factors in the use of vital statistics tabulations, but some of the more important ones should be mentioned.

Most of the factors limiting the use of data arise from imperfections in the original records or from the impracticability of tabulating these data in very detailed categories. These limitations should not be ignored, but their existence does not lessen the value of the data for most general purposes.

Completeness of registration

An estimated 99 percent of all births occurring in the United States in 1998 were registered; for white births registration was 99.4 percent complete and for all other births, 98.6 percent complete. These estimates are based on the results of the 1964-68 test of birth-registration completeness according to place of delivery (in or out of hospital) and race and on the 1989 proportions of births in these categories. The primary purpose of the test was to obtain current measures of registration completeness for births in and out of hospital by race on a national basis. Data for States were not available

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as they had been from the previous birth-registration tests in 1940 and 1950. A detailed discussion of the method and results of the 1964-68 birth-registration test is available (17).

The 1964-68 test has provided an opportunity to revise the estimates of birth-registration completeness for the years since the previous test in 1950 to reflect the improvement in registration. This has been done using registration completeness figures from the two tests by place of delivery and race. Estimates of registration completeness for four groups (based on place of delivery and race) for 1951-65 were computed by interpolation between the test results. (It was assumed that the data from the more recent test are for 1966, the midpoint of the test period.) The results of the 1964-68 test are assumed to prevail for 1966 and later years. These estimates were used with the proportions of births registered in these categories to obtain revised numbers of births adjusted for underregistration for each year. The overall percent of birth-registration completeness by race was then computed. Data adjusted for underregistration for 1951-59 have been revised to be consistent with the 1964-68 test results and differ slightly from data shown in annual reports for years before 1969. For these years the published number of births and birth rates for both racial groups have been revised slightly downward because the 1964-68 test indicated that previous adjustments to registered births were slightly inflated. Because registration completeness figures by age of mother and by live-birth order are not available from the 1964-68 test, it must be assumed that the relationships among these variables have not changed since 1950.

*Discontinuation of adjustment for underregistration, 1960--*Adjustment for underregistration of births was discontinued in 1960 when birth registration for the United States was estimated to be 99.1 percent complete. This removed a bias introduced into age-specific rates when adjusted births classified by age were used. Age-specific rates are calculated by dividing the number of births to an age group of mothers by the population of women in that age group. Tests have shown that population figures are likely to be understated through census undercounts; these errors compensate for underregistration of births. Adjustment for underregistration of births, therefore, removes the compensating effect of under enumeration, biasing the age-specific rates more than when uncorrected birth and population data are used. (For further details see page 4-11 in the Technical Appendix of volume I, Vital Statistics of the United States, 1963.)

The age-specific rates used in the cohort fertility tables are an exception to the above statement. These rates are computed from births corrected for underregistration and population estimates adjusted for under enumeration and misstatement of age. Adjusted birth and population estimates are used for the cohort rates because they are an integral part of a series of rates, estimated with a consistent methodology. It was considered desirable to maintain consistency with respect to the cohort rates, even though it means that they will not be precisely comparable with other rates shown for 5-year age groups.

Completeness of reporting

Interpretation of these data must include evaluation of item completeness. The percent "not stated" is one measure of the quality of the data. Completeness of reporting varies among items and States. See table A for the percent of birth records on which specified items were not stated.

Quality control procedures

States in the Vital Statistics Cooperative Program are required to have an error rate of less than 2.0 percent for each item for 3 consecutive data months during the initial qualifying period. Once a State is qualified, NCHS monitors the quality of data received. This was achieved through independent verification of a sample of records for some States as well as comparing the State data with data from previous years. In addition, there is verification at the State level before NCHS is sent the data.

After the coding is completed, counts of the taped records are balanced against control totals for each shipment of records from a registration area. Impossible codes are eliminated during the editing processes on the computer and corrected on the basis of reference to the source record or adjusted by arbitrary code assignment. All subsequent operations involved in tabulation and table preparation are verified during computer processing or by statistical clerks.

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Random variation and significance testing for natality data

The number of births reported for an area is essentially a complete count, since more than 99% of all births are registered. While this number is not subject to sampling error, it may be affected by nonsampling errors such as mistakes in recording the mother's residence or age during the registration process.

When the number of births is used for analytic purposes the number of events that actually occurred can be thought of as one in a large series of possible results that could have occurred under the same circumstances. When considered in this way, the number of births is subject to random variation. The probable range of values may be estimated from the actual figures according to certain statistical assumptions.

The confidence interval is the range of values for the number of births, birth rates, or percent of births that you could expect in 95 out of 100 cases. The confidence limits are the end points of this range of values (the highest and lowest values). Confidence limits tell you how much the number of events or rates could vary under similar circumstances.

Confidence limits for numbers, rates, and percents can be estimated from the actual number of events. Procedures differ for rates and percents and also differ depending on the number of births on which these statistics are based. Below are detailed procedures and examples for each type of case.

95-percent confidence limits for numbers less than 100

When the number of births is less than 100 and the rate is small, the data are assumed to follow a Poisson probability distribution. Confidence limits are estimated using the following formulas:

$$\text{Lower limit} = B \times L$$

$$\text{Upper limit} = B \times U$$

where:

B = the number of births

L = the value in Table C that corresponds to the number B

U = the value in Table C that corresponds to the number B

Example

Suppose the number of first births to American Indian women 40-44 years of age was 47. The confidence limits for this number would be:

$$\begin{aligned} \text{Lower limit} &= B \times L \\ &= 47 \times 0.73476 \\ &= 35 \end{aligned}$$

$$\begin{aligned} \text{Upper limit} &= B \times U \\ &= 47 \times 1.32979 \\ &= 63 \end{aligned}$$

This means that the chances are 95 out of 100 that the actual number of first births to American Indian women 40-44 years of age would lie between 35 and 63.

95-percent confidence limits for numbers of 100 or more

When the number of events is greater than 100, the data are assumed to be approximately normally distributed. Formulas for 95-percent confidence limits are:

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$$\text{Lower limit} = B - (1.96 \times \sqrt{B})$$

$$\text{Upper limit} = B + (1.96 \times \sqrt{B})$$

where:

B = the number of births

Example

Suppose the number of first births to white women 40-44 years of age was 14,108. The 95-percent confidence limits for this number would be:

$$\begin{aligned} \text{Lower limit} &= 14,108 - [1.96 \times \sqrt{14,108}] \\ &= 14,108 - 233 \\ &= 13,875 \end{aligned}$$

$$\begin{aligned} \text{Upper limit} &= 14,108 + [1.96 \times \sqrt{14,108}] \\ &= 14,108 + 233 \\ &= 14,341 \end{aligned}$$

This means that the chances are 95 out of 100 that the actual number of first births to white women 40-44 years of age would lie between 13,875 and 14,341.

Computing confidence intervals for rates

The same statistical assumptions can be used to estimate the variability in birth rates. Again, one formula is used for rates based on numbers of events less than 100, and another formula for rates based on numbers of 100 or greater. For our purposes, assume that the denominators of these rates (the population estimates) have no error. While this assumption is technically correct only for denominators based on the census which occurs every 10 years, the error in intercensal population estimates is usually small, difficult to measure, and therefore not considered.

95-percent confidence limits for rates based on less than 100 events

When the number of events in the numerator is less than 20, an asterisk is shown in place of the rate because there were too few births to compute a statistically reliable rate. When the number of events in the numerator is greater than 20 but less than 100, the confidence interval for a rate can be estimated using the two formulas which follow and the values in Table IV.

$$\text{Lower limit} = R \times L$$

$$\text{Upper limit} = R \times U$$

where:

R = the birth rate

L = the value in Table C that corresponds to the number B in the numerator of the rate

U = the value in Table C that corresponds to the number B in the numerator of the rate

Example

Suppose that the first birth rate for American Indian women 40-44 years of age was 0.54 per thousand, based on 47 births in the numerator. Using Table C:

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$$\begin{aligned} \text{Lower limit} &= 0.54 \times 0.73476 = .40 \\ \text{Upper limit} &= 0.54 \times 1.32979 = .72 \end{aligned}$$

This means that the chances are 95 out of 100 that the actual first birth rate for American Indian women 40-44 year of age lies between .40 and .72.

95-percent confidence limits for rates when the numerator is 100 or more

In this case, use the following formula for the birth rate R based on the number of births B:

$$\begin{aligned} \text{Lower limit} &= R - [1.96 \times \sqrt{R/B}] \\ \text{Upper limit} &= R + [1.96 \times \sqrt{R/B}] \end{aligned}$$

where:

- R = the birth rate
- B = the number of births

Example

Suppose the first birth rate for white women 40-44 years of age was 1.55 per thousand, based on 14,108 births in the numerator. Therefore, the 95-percent confidence interval would be:

$$\begin{aligned} \text{Lower limit} &= 1.55 - [1.96 \times \sqrt{1.55 / 14,108}] \\ &= 1.55 - .026 \\ &= 1.52 \end{aligned}$$

$$\begin{aligned} \text{Upper limit} &= 1.55 + [1.96 \times \sqrt{1.55 / 14,108}] \\ &= 1.55 + .026 \\ &= 1.58 \end{aligned}$$

This means that the chances are 95 out of 100 that the actual first birth rate for white women 40-44 years of age lies between 1.52 and 1.58.

Computing 95-percent confidence intervals for percents

In many instances we need to compute the confidence intervals for percents. Percents derive from a binomial distribution. As with birth rates, an asterisk will be shown for any percent which is based on fewer than 20 births in the numerator. We easily compute a 95-percent confidence interval for a percent when the following conditions are met:

$$\begin{aligned} B \times p &\geq 5 \quad \text{and} \\ B \times q &\geq 5 \end{aligned}$$

where:

- B = number of births in the denominator
- p = percent divided by 100
- q = 1 - p

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For natality data, these conditions will be met except for very rare events in small subgroups. If the conditions are *not* met, the variation in the percent will be so large as to render the confidence intervals meaningless. When these conditions are met the 95-percent confidence interval can be computed using the normal approximation of the binomial. The 95-percent confidence intervals are computed by the following formulas:

$$\begin{aligned} \text{Lower limit} &= p - [1.96 \times (\sqrt{p \times q/B})] \\ \text{Upper limit} &= p + [1.96 \times (\sqrt{p \times q/B})] \end{aligned}$$

where:

$$\begin{aligned} B &= \text{number of births in the denominator} \\ p &= \text{percent divided by 100} \\ q &= 1 - p \end{aligned}$$

Example

Suppose the percent of births to Hispanic women in Alabama that were to unmarried women was 23.0 percent. This was based on 310 births in the numerator and 1,345 births in the denominator. First we test to make sure we can use the normal approximation of the binomial:

$$\begin{aligned} &1,345 \times .230 = 309 \\ &1,345 \times (1 - .230) \\ = &1,345 \times .770 = 1,036 \end{aligned}$$

Both 309 and 1,036 are greater than 5 so we can proceed. The 95-percent confidence interval would be:

$$\begin{aligned} \text{Lower limit} &= .23 - [1.96 \times (\sqrt{.23 \times .77/1,345})] \\ &= .23 - .022 \\ &= .208 \text{ or } 20.8 \text{ percent} \\ \\ \text{Upper limit} &= .23 + [1.96 \times (\sqrt{.23 \times .77/1,345})] \\ &= .23 + .022 \\ &= .252 \text{ or } 25.2 \text{ percent} \end{aligned}$$

This means that the chances are 95 out of 100 that the actual percent of births in Alabama to Hispanic women that are to unmarried women lies between 20.8 and 25.2 percent.

Significance testing

One of the rates is based on fewer than 100 cases

To compare two rates, when one or both of those rates are based on less than 100 cases, you first compute the confidence intervals for both rates. Then you check to see if those intervals overlap. If they **do** overlap, the difference is not statistically significant at the 95-percent level. If they **do not** overlap, the difference is indeed “statistically significant.”

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Example

Is the first birth rate for American Indian women 40-44 years of age (.54 per 1,000) significantly lower than the comparable rate for white women (1.55)? The rate for American Indian women is based on 47 events whereas the rate for white women is based on 14,108 events. The rate for American Indian women is based on less than 100 events; therefore, the first step is to compute the confidence intervals for both rates.

| | Lower Limit | Upper Limit |
|-----------------------|-------------|-------------|
| American Indian women | 0.40 | 0.72 |
| White women | 1.52 | 1.58 |

These two confidence intervals do not overlap. Therefore, the first birth rate for American women 40-44 is significantly lower (at the 95-percent confidence level) than the comparable rate for white women.

Both rates are based on 100 or more events

When both rates are based on 100 or more events, the difference between the two rates is considered statistically significant if it exceeds the statistic in the formula below. This statistic equals 1.96 times the standard error for the difference between two rates.

$$1.96 \sqrt{\frac{R_1^2}{N_1} \% \frac{R_2^2}{N_2}}$$

where:

- R₁ = the first rate
- R₂ = the second rate
- N₁ = the first number of births
- N₂ = the second number of births

If the difference is greater than this statistic, then the difference would occur by chance less than 5 times out of 100. If the difference is less than this statistic, the difference might occur by chance more than 5 times out of 100. We say that the difference is not statistically significant at the 95-percent confidence level.

Example

Is the first birth rate for black women 40-44 years of age (1.08 per 1,000) significantly lower than the comparable rate for white women (1.55)? Both rates are based on more than 100 births (1,535 for black women and 14,108 for white women). The difference between the rates is 1.55 - 1.08 = .47. The statistic is then calculated as follows:

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$$1.96 \sqrt{\frac{1.08^2}{1,535} \% \frac{1.55^2}{14,108}}$$

$$\begin{aligned} &= 1.96 \times /[(1.166/1,535 + 2.403/14,108)] \\ &= 1.96 \times /(.00076+0.00017) \\ &= 1.96 \times /.00093 \\ &= 1.96 \times .03 \\ &= .06 \end{aligned}$$

The difference between the rates (.47) is greater than this statistic (.06). Therefore, the difference is statistically significant at the 95-percent confidence level.

Testing differences between two percents

When testing the difference between two percents, both percents must meet the following conditions:

$$\begin{aligned} B \times p &\geq 5 \quad \text{and} \\ B \times q &\geq 5 \end{aligned}$$

where:

$$\begin{aligned} B &= \text{number of births in the denominator} \\ p &= \text{percent divided by 100} \\ q &= 1 - p \end{aligned}$$

When both percents meet these conditions then the difference between the two percents is considered statistically significant if it exceeds the statistic in the formula below. This statistic equals 1.96 times the standard error for the difference between two percents.

$$1.96 \sqrt{p(1-p) \left(\frac{1}{B_1} \% \frac{1}{B_2} \right)}$$

where:

$$\begin{aligned} B_1 &= \text{the number of births in the denominator for the first percent} \\ B_2 &= \text{the number of births in the denominator for the second percent} \\ p &= \end{aligned}$$

$$\frac{B_1 p_1 \% B_2 p_2}{B_1 \% B_2}$$

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p_1 = the first percent divided by 100
 p_2 = the second percent divided by 100

Example

Is the percent of births to Hispanic women that were to unmarried women higher in Alaska (28.8 percent) than in Alabama (23.0). The number in the denominator was 1,345 in Alabama and 593 in Alaska. The necessary conditions are met for both percents (calculations not shown). The difference between the two percents is $.288 - .230 = .058$. The statistic is then calculated as follows:

$$\begin{aligned} & 1.96 \sqrt{(.2477) (.7523) (.0024)} \\ & = 1.96 \times \sqrt{.000447} \\ & = 1.96 \times .021 \\ & = .042 \end{aligned}$$

The difference between the percents (.058) is greater than this statistic (.042). Therefore, the difference is statistically significant at the 95-percent confidence level.

Computation of rates and other measures

Population bases

The rates shown in this report were computed on the basis of population statistics prepared by the U.S. Bureau of the Census. Rates for 1940, 1950, 1960, 1970, 1980, and 1990 are based on the population enumerated as of April 1 in the censuses of those years. Rates for all other years are based on the estimated midyear (July 1) population for the respective years. Birth rates for the United States, individual States, and metropolitan areas are based on the total resident populations of the respective areas. Except as noted these populations exclude the Armed Forces abroad but include the Armed Forces stationed in each area. The resident population of the birth- and death-registration States for 1900-32 and for the United States for 1900-98 is shown in table 4-1. In addition, the population including Armed Forces abroad is shown for the United States. Table D shows the sources for these populations.

In both the 1980 and 1990 censuses, a substantial number of persons did not specify a racial group that could be classified as any of the White, Black, American Indian, Eskimo, Aleut, Asian, or Pacific Islander categories on the census form (18). In 1980 the number of persons of "other" race was 6,758,319; in 1990 it was 9,804,847. In both censuses, the large majority of these persons were of Hispanic origin (based on response to a separate question on the form), and many wrote in their Hispanic origin, or Hispanic origin type (for example, Mexican, Puerto Rican) as their race. In both 1980 and 1990, persons of unspecified race were allocated to one of the four tabulated racial groups (white, black, American Indian, Asian or Pacific Islander), based on their response to the Hispanic origin question. These four race categories conform with the 1979 edition of OMB Directive 15 which mandates that race data must

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contain at least these 4 categories. These categories are also more consistent with the race categories in vital statistics.

In the allocation of unspecified race was carried out using cross-tabulations of age, sex, race, type of Hispanic origin, and county of residence. Persons of Hispanic origin and unspecified race were allocated to either white or black, based on their Hispanic origin type. Persons of "other" race and Mexican origin were categorically assumed to be white, while persons in other Hispanic categories were distributed to white and black pro rata within the county-age-sex group. For "other-not-specified" persons who were not Hispanic, race was allocated to white, black, or Asian and Pacific Islander, based on proportions gleaned from sample data. The 20-percent sample (respondents who were enumerated on the longer census form) provided a highly detailed coding of race, which allowed identification of otherwise unidentifiable responses with a specified race category. Allocation proportions were thus established at the State level, which were used to distribute the non-Hispanic persons of "other" race in the 100-percent tabulations.

In 1990 the race modification procedure was carried out using individual census records. Persons whose race could not be specified were assigned to a racial category using a pool of "race donors," which was derived from persons of specified race and the identical response to the Hispanic origin question within the auspices of the same Census District Office. As in 1980, the underlying assumption was that the Hispanic origin response was the major criterion for allocating race. Unlike 1980, persons of Hispanic origin, including Mexican, could be assigned to any racial group, rather than white or black only, and the non-Hispanic component of "other" race was allocated primarily on the basis of geography (District Office), rather than detailed characteristic.

The means by which respondent's age was determined were fundamentally different in the two censuses; therefore, the problems that necessitated the modification were different. In 1980 respondents reported year of birth and quarter of birth (within year) on the census form. When census results were tabulated, persons born in the first quarter of the year (before April 1) had age equal to 1980 minus year of birth, while persons born in the last three quarters had age equal to 1979 minus year of birth.

In 1990 the quarter year of birth was not reported on the census form, so that direct determination of age from year of birth was impossible. In 1990 census publications age is based on respondents' direct reports of age at last birthday. This definition proved inadequate for postcensal estimates, because it was apparent that many respondents had reported their age at time of either completion of the census form or interview by an enumerator, which could occur several months after the April 1 reference data. As a result, age was biased upward. Modification was based on a respecification of age, for most individual respondents, by year of birth, with allocation to first quarter (persons aged 1990 minus year of birth) and last three quarters (aged 1989 minus year of birth) based on a historical series of registered births by month. This process partially restored the 1980 logic for assignment of age. It was not considered necessary to correct for age overstatement and heaping in 1990, because the availability of age and year of birth on the census form provided elimination of spurious year-of-birth reports in the census data before modification occurred.

Populations for 1998--The population of the United States by age, sex, race, and Hispanic origin is shown in the Census Bureau report United States population estimates, by age, sex, race, and Hispanic origin: 1990 to 1998. Washington, DC: U.S. Bureau of the Census, <http://www.census.gov/population/www/estimates/uspop.html> Internet release, June 4, 1999.

Populations for 1997--The population of the United States by age, sex, race, and Hispanic origin is shown in the Census Bureau report United States population estimates, by age, sex, race, and Hispanic origin: 1990 to 1997. PPL-91R. U.S. Bureau of the Census. Rounded populations are consistent with U.S. Bureau of the Census file NESTV97. Washington: U.S. Department of Commerce. 1998.

Populations for 1996--The population of the United States by age, sex, race, and Hispanic origin is shown in the Census Bureau report, United States population estimates by age, sex, race and Hispanic origin: 1990 to 1996. U.S. Bureau of the Census. PPL-57. Washington: U.S. Department of Commerce. 1997.

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Populations for 1995--The population of the United States by age, sex, race, and Hispanic origin is shown in the Census Bureau report, United States population estimates by age, sex, race and Hispanic origin: 1990 to 1995. U.S. Bureau of the Census. Census file RESDO795, PPL-41. Washington: U.S. Department of Commerce. 1996.

Populations for 1994--The population of the United States by age, sex, race, and Hispanic origin is shown in the Census Bureau report, United States population estimates by age, sex, race and Hispanic origin: 1990 to 1994. U.S. Bureau of the Census. PPL-21. Washington: U.S. Department of Commerce. 1995.

Populations for 1993--The population of the United States by age, sex, race and Hispanic origin is tabulated from Census file RESO793.

Populations for 1992--The population of the United States by age, sex, race and Hispanic origin is tabulated from census file RESPO792.

Populations for 1991--The population of the United States by age, race, and sex is shown in *Current Population Reports*, Series P-25, Number 1095. Monthly population figures were published in *Current Population Reports*, Series P-25, Number 1097.

Populations for 1990--The population of the United States by age, race, and sex, and the population for each State is shown in *Current Population Reports*, Series P-25, Number 1095. The figures have been modified as described above. Monthly population figures were published in *Current Population Reports*, Series P-25, Number 1094.

Population estimates for 1981-89--Birth rates for 1981-89 (except those for cohorts of women) have been revised, based on revised population estimates that are consistent with the 1990 census levels, and thus may differ from rates published in volumes of *Vital Statistics of the United States* for these years. The 1990 census counted approximately 1.5 million fewer persons than had earlier been estimated for April 1, 1990. The revised estimates for the United States by age, race, and sex were published by the U.S. Bureau of the Census in *Current Population Reports*, Series P-25, Number 1095. Population estimates by month are based on data published in *Current Population Reports*, Series P-25, Number 1094 and unpublished data. Unpublished revised estimates for States were obtained from the U.S. Bureau of the Census.

Populations for 1980--The population of the United States by age, race, and sex, and the population for each State are shown in tables 4-2 and 4-3 of volume I, *Vital Statistics of the United States*, 1980. The figures by race have been modified as described above. Monthly population figures were published in *Current Population Reports*, Series P-25, Number 899.

Population estimates for 1971-79--Birth rates for 1971-79 (except those for cohorts of women) have been revised, based on revised population estimates that are consistent with the 1980 census levels, and thus may differ from rates published in volumes of *Vital Statistics of the United States* for these years. The 1980 census counted approximately 5.5 million more persons than had earlier been estimated for April 1, 1980 (19). The revised estimates for the United States by age, race, and sex were published by the U.S. Bureau of the Census in *Current Population Reports*, Series P-25, Number 917. Population estimates by month are based on data published in *Current Population Reports*, Series P-25, Number 899. Unpublished revised estimates for States were obtained from the U.S. Bureau of the Census.

Population estimates for 1961-69--Birth rates for 1961-69 are based on revised estimates of the population and thus may differ slightly from rates published before 1976. The revised estimates used in computing these rates were published in *Current Population Reports*, Series P-25, Number 519. The rates for 1961-64 are based on revised estimates of the population published in *Current Population Reports*, Series P-25, Numbers 321 and 324 and may differ slightly from rates published in those years.

Population estimates for 1951-59--Final intercensal estimates of the population by age, race, and sex and total population by State for 1951-59 are shown in tables 4-4 and 4-5 of volume I, *Vital Statistics of the United States*, 1966. Beginning with 1963 these final estimates have been used to compute birth rates for 1951-59 in all issues of *Vital Statistics of the United States*.

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Net census undercounts and overcounts

The U.S. Bureau of the Census has conducted extensive research to evaluate the coverage of the U.S. population (including undercount, overcount, and misstatement of age, race, and sex) in the last five decennial censuses 1950, 1960, 1970, 1980, and 1990. These studies provide estimates of the national population, that were not enumerated or over enumerated in the respective censuses, by age, race, and sex (19-21). The report for 1990 (22) includes estimates of net under enumeration and over enumeration for age, sex, and racial subgroups of the national population, modified for race consistency with previous population counts as described in the section "Population bases."

These studies indicate that there are differential coverages in the censuses among the population subgroups; that is, some age, race, and sex groups are more completely enumerated than others. To the extent that these estimates of overcounts or undercounts are valid, that they are substantial, and that they vary among subgroups and geographic areas, census miscounts can have consequences for vital statistics measures (20). However, the effects of undercounts in the census are reduced to the extent that there is underregistration of births. If these two factors are of equal magnitude, rates based on unadjusted populations are more accurate than those based on adjusted populations because the births have not been adjusted for underregistration.

The impact of net census miscounts on vital statistics measures includes the effects on levels of the rates and effects on differentials among groups.

If adjustments were made for persons who were not counted in the census of population, the size of the denominators would generally increase and the rates would be smaller than without an adjustment. Adjusted rates for 1990 can be computed by multiplying the reported rates by ratios of the 1990 census-level population adjusted for the estimated net census miscounts, which are shown in table E. A ratio of less than 1.0 indicates a net census undercount and would result in a corresponding decrease in the rate. A ratio in excess of 1.0 indicates a net census overcount and would result in a corresponding increase in the rate.

Enumeration of white females in the childbearing ages was at least 97 percent complete for all ages. Among black women, the undercount ranged up to 5 percent. Generally, females in the childbearing ages were more completely enumerated than males for similar race-age groups.

If vital statistics measures were calculated with adjustments for net census miscounts for each of these subgroups, the resulting rates would have been differentially changed from their original levels; that is, rates for those groups with the greatest estimated overcounts or undercounts would show the greatest relative changes due to these adjustments. Thus the racial differential in fertility between the white and the "All other" population can be affected by such adjustments.

Cohort fertility tables

The various fertility measures shown for cohorts of women are computed from births adjusted for underregistration and population estimates corrected for under enumeration and misstatement of age. Data published after 1974 use revised population estimates prepared by the U.S. Bureau of the Census and have been expanded to include data for the two major racial groups. Heuser has prepared a detailed description of the methods used in deriving these measures as well as more detailed data for earlier years (23).

Parity distribution--The percent distribution of women by parity (number of children ever born alive to mother) is derived from cumulative birth rates by order of birth. The percent of zero-parity women is found by subtracting the cumulative first birth rate from 1,000 and dividing by 10. The proportions of women at parities one through six are found from the following formula:

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Percent at N parity = (cum. rate, order N) - (cum. rate, order N + 1)/10

The percent of women at seventh and higher parities is found by dividing the cumulative rate for seventh-order births by 10.

Birth probabilities--birth probabilities indicate the likelihood that a woman of a certain parity and age at the beginning of the year will have a child during the year. Birth probabilities differ from central birth rates in that the denominator for birth probabilities is specific for parity as well as for age.

Age-sex-adjusted birth rates

The age-sex-adjusted birth rates are computed by the direct method. The age distribution of women aged 10-49 years as enumerated in 1940 and the total population of the United States for that year are used as the standard populations. The age-sex-adjusted birth rates show differences in the level of fertility independent of differences in the age and sex composition of the population. It is important not to confuse these adjusted rates with the crude rates shown in other tables.

Total fertility rate

The total fertility rate is the sum of the birth rates by age of mother (in 5-year age groups) multiplied by 5. It is an age-adjusted rate because it is based on the assumption that there are the same number of women in each age group. The rate of 2,058.5 in 1998, for example, means that if a hypothetical group of 1,000 women were to have the same birth rates in each age group that were observed in the actual childbearing population in 1998, they would have a total of 2,058.5 children by the time they reached the end of the reproductive period (taken here to be age 55 years), assuming that all of the women survived to that age.

Intrinsic vital rates

The intrinsic vital rates are calculated from a stable population. A stable population is that hypothetical population, closed to external migration, that would become fixed in age-sex structure after repeated applications of a constant set of age-sex specific birth and death rates. For the mathematical derivation of intrinsic vital rates, see pages 4-13 and 4-14 in the Technical Appendix of volume I, Vital Statistics of the United States, 1962. The technique of calculating intrinsic vital rates is described by Barclay (24).

Seasonal adjustment of rates

The seasonally adjusted birth and fertility rates are computed from the X-11 variant of Census Method II (25). This method of seasonal adjustment used since 1964 differs slightly from the U.S. Bureau of Labor Statistics (BLS) Seasonal Factor Method, which was used for Vital Statistics of the United States, 1964. The fundamental technique is the same in that it is an adaptation of the ratio-to-moving-average method. Before 1964 the method of seasonal adjustment was based on the X-9 variant and other variants of Census Method II. A comparison of the Census Method II with the BLS Seasonal Factor Method shows the differences in the seasonal patterns of births to be negligible.

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Computation of percents, medians, and means

Percent distributions, medians, and means are computed using only events for which the characteristic is reported. The "Not stated" category is subtracted from the total before computation of these measures. The asterisk (*) indicates that the numerator and/or denominator number is less than 20.

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References

1. World Health Organization. Official records; no 28 (Third World Health Assembly 3.6). Geneva: World Health Organization, 16-17. 1950.
2. National Office of Vital Statistics. International recommendations on definitions of live birth and fetal deaths. Washington: Public Health Service. 1950.
3. Statistical Office of the United Nations. Principles for vital statistics system: Recommendations for the improvement and standardization of vital statistics. Doc. ST/STAT/SER.M/19. New York: United Nations. 1953.
4. National Office of Vital Statistics. Births and birth rates in the entire United States, 1909 to 1948. Vital Statistics--Special reports; vol 33 no 8. Washington: Public Health Service. 1950.
5. U.S. Bureau of the Census. Population of metropolitan areas and component geography: 1990 and 1980 (6-30-90 definitions). 1990 CPH-L-10. Washington: U.S. Department of Commerce. 1991.
6. U.S. Department of Commerce. Metropolitan statistical area classification. Federal Register; vol 45 no 2. Washington: U.S. Government Printing Office, 956-62. 1980.
7. U.S. Office of Management and Budget. Standard metropolitan statistical areas. Rev. ed. Washington: U.S. Government Printing Office, 89-90. 1975.
8. U.S. Bureau of the Census. 1990 Census of Population. General population characteristics; (1990 CP-1-1). Washington: U.S. Department of Commerce. 1992.
9. Martin JA. Birth characteristics for Asian or Pacific Islander subgroups, 1992. Monthly vital statistics report; vol 43 no 10, suppl. Hyattsville, Maryland: National Center for Health Statistics. 1995.
10. Schachter J. Matched record comparison of birth certificate and census information in the United States, 1950. Vital statistics--Special Reports; vol 47 no 12. Washington: Public Health Service. 1962.
11. Ventura SJ, Martin JA, Curtin SC, Mathews TJ. Report of final natality statistics, 1996. Monthly vital statistics report; vol 46 no 11, suppl. Hyattsville, Maryland: National Center for Health Statistics. 1998.
12. Ventura SJ. Births to unmarried mothers, United States, 1980-92. National Center for Health Statistics. Vital Health Stat 21(53). 1995.
13. Ventura SJ, Martin JA, Curtin SC, Mathews TJ. Births: Final data for 1997. National vital statistics reports; vol 47 no 18. Hyattsville, Maryland: National Center for Health Statistics. 1999.
14. Berkov B. An evaluation of California's inferred birth statistics for unmarried women. National Center for Health Statistics. Vital Health Stat 2(97). 1985.
15. Taffel S, Johnson D, Heuser R. A method for imputing length of gestation on birth certificates. National Center for Health Statistics. Vital Health Stat 2(93). 1982.
16. Brockert JE, Stockbauer JW, Senner JW, et al. Recommended standard medical definitions for the U.S. Standard Certificate of Live Birth, 1989 revision. Paper presented at annual meeting of the Association for the Vital Record and Health Statistics. June 1990.
17. U.S. Bureau of the Census. Test of birth-registration completeness, 1964 to 1968. 1970 census of population and housing; PHC (E)-2. Evaluation and Research Program. Washington: U.S. Department of Commerce. 1973.
18. U.S. Bureau of the Census. U.S. population estimates, by age, sex, race, and Hispanic origin, 1980-91. Current population reports; series P-25, no 1095. Washington: U.S. Department of Commerce. 1993.
19. U.S. Bureau of the Census. Coverage of the national population in the 1980 census by age, sex, and race. Preliminary estimates by demographic analysis. Current population reports; series P-23, no 115. Washington: U.S. Department of Commerce. 1982.
20. U.S. Bureau of the Census. Estimates of coverage of the population by sex, race, and age--Demographic analysis. 1970 census of population and housing; PHC (E)-4. Evaluation and Research Program. Washington: U.S. Department of Commerce. 1974.
21. U.S. Bureau of the Census. Developmental estimates of the coverage of the population of States in the 1970 census-demographic analysis. Current population reports; series P-23, no 65. Washington: U.S. Department of

VITAL STATISTICS OF THE UNITED STATES: NATALITY, 1998
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- Commerce. 1977.
22. Robinson JG, Ahmed B, Das Gupta P, et al. Estimation of population coverage in the 1990 United States census based on demographic analysis. *JASA* 88(423):1061-71. 1993.
 23. Heuser R. Fertility tables for birth cohorts by color: United States, 1917-73. Washington: National Center for Health Statistics. 1976.
 24. Barclay GW. Techniques of population analysis. New York: John Wiley & Sons, Inc., 216-22. 1958.
 25. U.S. Bureau of the Census. The X-11 variant of the Census Method II Seasonal Adjustment Program. Technical paper; no 15, 1967 rev. Washington: U.S. Department of Commerce. 1967.

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**U.S. STANDARD
CERTIFICATE OF LIVE BIRTH**

LOCAL FILE NUMBER

BIRTH NUMBER

CHILD

| | | | |
|--|-------------------------------------|---|--------------------|
| 1. CHILD'S NAME (First, Middle, Last) | | 2. DATE OF BIRTH (Month, Day, Year) | 3. TIME OF BIRTH |
| 4. SEX | 5. CITY, TOWN, OR LOCATION OF BIRTH | | 6. COUNTY OF BIRTH |
| 7. PLACE OF BIRTH: <input type="checkbox"/> Hospital <input type="checkbox"/> Freestanding Birthing Center <input type="checkbox"/> Clinic/Doctor's Office <input type="checkbox"/> Residence <input type="checkbox"/> Other (Specify) _____ | | 8. FACILITY NAME (If not institution, give street and number) | |

**CERTIFIER/
ATTENDANT**

DEATH UNDER
ONE YEAR OF
AGE
Enter State File
Number of death
certificate for
this child

| | | |
|--|------------------------------------|---|
| 9. I certify that this child was born alive at the place and time and on the date stated. Signature _____ | 10. DATE SIGNED (Month, Day, Year) | 11. ATTENDANT'S NAME AND TITLE (If other than certifier) (Type/Print) Name _____ <input type="checkbox"/> M.D. <input type="checkbox"/> D.O. <input type="checkbox"/> C.N.M. <input type="checkbox"/> Other Midwife <input type="checkbox"/> Other (Specify) _____ |
| 12. CERTIFIER'S NAME AND TITLE (Type/Print) Name _____ <input type="checkbox"/> M.D. <input type="checkbox"/> D.O. <input type="checkbox"/> Hospital Admin. <input type="checkbox"/> C.N.M. <input type="checkbox"/> Other Midwife <input type="checkbox"/> Other (Specify) _____ | | 13. ATTENDANT'S MAILING ADDRESS (Street and Number or Rural Route Number, City or Town, State, Zip Code) |

MOTHER

| | | | |
|---|----------------------|--|--|
| 14. REGISTRAR'S SIGNATURE _____ | | 15. DATE FILED BY REGISTRAR (Month, Day, Year) | |
| 16a. MOTHER'S NAME (First, Middle, Last) | | 16b. MAIDEN SURNAME | 17. DATE OF BIRTH (Month, Day, Year) |
| 18. BIRTHPLACE (State or Foreign Country) | 19a. RESIDENCE—STATE | 19b. COUNTY | 19c. CITY, TOWN, OR LOCATION |
| 19d. STREET AND NUMBER | | 19e. INSIDE CITY LIMITS? (Yes or no) | 20. MOTHER'S MAILING ADDRESS (If same as residence, enter Zip Code on _____) |

FATHER

| | | |
|---|--------------------------------------|---|
| 21. FATHER'S NAME (First, Middle, Last) | 22. DATE OF BIRTH (Month, Day, Year) | 23. BIRTHPLACE (State or Foreign Country) |
|---|--------------------------------------|---|

INFORMANT

| |
|---|
| 24. I certify that the personal information provided on this certificate is correct to the best of my knowledge and belief. Signature of Parent or Other Informant _____ |
|---|

INFORMATION FOR MEDICAL AND HEALTH USE ONLY

MOTHER

FATHER

| | | | | | |
|--|--|--|---|---|--|
| 25. OF HISPANIC ORIGIN? (Specify No or Yes—If yes, specify Cuban, Mexican, Puerto Rican, etc.) | | 26. RACE—American Indian, Black, White, etc. (Specify below) | | 27. EDUCATION (Specify only highest grade completed) | |
| 25a. <input type="checkbox"/> No <input type="checkbox"/> Yes Specify: _____ | | 26a. _____ | | 27a. _____ | |
| 25b. <input type="checkbox"/> No <input type="checkbox"/> Yes Specify: _____ | | 26b. _____ | | 27b. _____ | |
| 28. PREGNANCY HISTORY (Complete each section) | | | 29. MOTHER MARRIED? (At birth, conception, or any time between) (Yes or no) | | 30. DATE LAST NORMAL MENSTRUATION BEGAN (Month, Day, Year) |
| LIVE BIRTHS (Do not include this child) | | OTHER TERMINATIONS (Spontaneous and induced at any time after conception) | | 31. MONTH OF PREGNANCY PRENATAL CARE BEGAN—First, Second, Third, etc. (Specify) | |
| 28a. Now Living Number _____ <input type="checkbox"/> None | 28b. Now Dead Number _____ <input type="checkbox"/> None | 28d. _____ <input type="checkbox"/> None | | 32. PRENATAL VISITS—Total Number (If none, so state) | |
| 28c. DATE OF LAST LIVE BIRTH (Month, Year) | | 28e. DATE OF LAST OTHER TERMINATION (Month, Year) | | 33. BIRTH WEIGHT (Specify unit) | |
| 36. APGAR SCORE | | 37a. MOTHER TRANSFERRED PRIOR TO DELIVERY? <input type="checkbox"/> No <input type="checkbox"/> Yes If Yes, enter name of facility transferred from: _____ | | | |
| 36a. 1 Minute | 36b. 5 Minutes | 37b. INFANT TRANSFERRED? <input type="checkbox"/> No <input type="checkbox"/> Yes If Yes, enter name of facility transferred to: _____ | | | |

MULTIPLE BIRTHS
Enter State File
Number for Mate(s)
LIVE BIRTH(S)

FETAL DEATH(S)

38a. MEDICAL RISK FACTORS FOR THIS PREGNANCY
(Check all that apply)

| | | |
|--|----|--------------------------|
| Anemia (Hct. <30/Hgb. <10) | 01 | <input type="checkbox"/> |
| Cardiac disease | 02 | <input type="checkbox"/> |
| Acute or chronic lung disease | 03 | <input type="checkbox"/> |
| Diabetes | 04 | <input type="checkbox"/> |
| Genital herpes | 05 | <input type="checkbox"/> |
| Hydramnios/Oligohydramnios | 06 | <input type="checkbox"/> |
| Hemoglobinopathy | 07 | <input type="checkbox"/> |
| Hypertension, chronic | 08 | <input type="checkbox"/> |
| Hypertension, pregnancy-associated | 09 | <input type="checkbox"/> |
| Eclampsia | 10 | <input type="checkbox"/> |
| Incompetent cervix | 11 | <input type="checkbox"/> |
| Previous infant 4000+ grams | 12 | <input type="checkbox"/> |
| Previous preterm or small-for-gestational-age infant | 13 | <input type="checkbox"/> |
| Renal disease | 14 | <input type="checkbox"/> |
| Rh sensitization | 15 | <input type="checkbox"/> |
| Uterine bleeding | 16 | <input type="checkbox"/> |
| None | 00 | <input type="checkbox"/> |
| Other _____ | 17 | <input type="checkbox"/> |

(Specify)

38b. OTHER RISK FACTORS FOR THIS PREGNANCY
(Complete all items)

Tobacco use during pregnancy Yes No
Average number cigarettes per day _____

Alcohol use during pregnancy Yes No
Average number drinks per week _____

Weight gained during pregnancy _____ lbs.

39. OBSTETRIC PROCEDURES
(Check all that apply)

| | | |
|-----------------------------|----|--------------------------|
| Amniocentesis | 01 | <input type="checkbox"/> |
| Electronic fetal monitoring | 02 | <input type="checkbox"/> |
| Induction of labor | 03 | <input type="checkbox"/> |
| Stimulation of labor | 04 | <input type="checkbox"/> |
| Tocolysis | 05 | <input type="checkbox"/> |
| Ultrasound | 06 | <input type="checkbox"/> |
| None | 00 | <input type="checkbox"/> |
| Other _____ | 07 | <input type="checkbox"/> |

(Specify)

40. COMPLICATIONS OF LABOR AND/OR DELIVERY
(Check all that apply)

| | | |
|---|----|--------------------------|
| Febrile (>100°F. or 38°C.) | 01 | <input type="checkbox"/> |
| Meconium, moderate/heavy | 02 | <input type="checkbox"/> |
| Premature rupture of membrane (>12 hours) | 03 | <input type="checkbox"/> |
| Abruptio placenta | 04 | <input type="checkbox"/> |
| Placenta previa | 05 | <input type="checkbox"/> |
| Other excessive bleeding | 06 | <input type="checkbox"/> |
| Seizures during labor | 07 | <input type="checkbox"/> |
| Precipitous labor (<3 hours) | 08 | <input type="checkbox"/> |
| Prolonged labor (>20 hours) | 09 | <input type="checkbox"/> |
| Dysfunctional labor | 10 | <input type="checkbox"/> |
| Breech/Malpresentation | 11 | <input type="checkbox"/> |
| Cephalopelvic disproportion | 12 | <input type="checkbox"/> |
| Cord prolapse | 13 | <input type="checkbox"/> |
| Anesthetic complications | 14 | <input type="checkbox"/> |
| Fetal distress | 15 | <input type="checkbox"/> |
| None | 00 | <input type="checkbox"/> |
| Other _____ | 16 | <input type="checkbox"/> |

(Specify)

41. METHOD OF DELIVERY (Check all that apply)

| | | |
|--|----|--------------------------|
| Vaginal | 01 | <input type="checkbox"/> |
| Vaginal birth after previous C-section | 02 | <input type="checkbox"/> |
| Primary C-section | 03 | <input type="checkbox"/> |
| Repeat C-section | 04 | <input type="checkbox"/> |
| Forceps | 05 | <input type="checkbox"/> |
| Vacuum | 06 | <input type="checkbox"/> |

42. ABNORMAL CONDITIONS OF THE NEWBORN
(Check all that apply)

| | | |
|------------------------------|----|--------------------------|
| Anemia (Hct. <39/Hgb. <13) | 01 | <input type="checkbox"/> |
| Birth injury | 02 | <input type="checkbox"/> |
| Fetal alcohol syndrome | 03 | <input type="checkbox"/> |
| Hyaline membrane disease/RDS | 04 | <input type="checkbox"/> |
| Meconium aspiration syndrome | 05 | <input type="checkbox"/> |
| Assisted ventilation <30 min | 06 | <input type="checkbox"/> |
| Assisted ventilation ≥30 min | 07 | <input type="checkbox"/> |
| Seizures | 08 | <input type="checkbox"/> |
| None | 00 | <input type="checkbox"/> |
| Other _____ | 09 | <input type="checkbox"/> |

(Specify)

43. CONGENITAL ANOMALIES OF CHILD
(Check all that apply)

| | | |
|--|----|--------------------------|
| Anencephalus | 01 | <input type="checkbox"/> |
| Spina bifida/Meningocele | 02 | <input type="checkbox"/> |
| Hydrocephalus | 03 | <input type="checkbox"/> |
| Microcephalus | 04 | <input type="checkbox"/> |
| Other central nervous system anomalies (Specify) _____ | 05 | <input type="checkbox"/> |
| Heart malformations | 06 | <input type="checkbox"/> |
| Other circulatory/respiratory anomalies (Specify) _____ | 07 | <input type="checkbox"/> |
| Rectal atresia/stenosis | 08 | <input type="checkbox"/> |
| Tracheo-esophageal fistula/ Esophageal atresia | 09 | <input type="checkbox"/> |
| Omphalocele/ Gastroschisis | 10 | <input type="checkbox"/> |
| Other gastrointestinal anomalies (Specify) _____ | 11 | <input type="checkbox"/> |
| Malformed genitalia | 12 | <input type="checkbox"/> |
| Renal agenesis | 13 | <input type="checkbox"/> |
| Other urogenital anomalies (Specify) _____ | 14 | <input type="checkbox"/> |
| Cleft lip/palate | 15 | <input type="checkbox"/> |
| Polydactyly/Syndactyly/Adactyly | 16 | <input type="checkbox"/> |
| Club foot | 17 | <input type="checkbox"/> |
| Diaphragmatic hernia | 18 | <input type="checkbox"/> |
| Other musculoskeletal/integumental anomalies (Specify) _____ | 19 | <input type="checkbox"/> |
| Down's syndrome | 20 | <input type="checkbox"/> |
| Other chromosomal anomalies (Specify) _____ | 21 | <input type="checkbox"/> |
| None | 00 | <input type="checkbox"/> |
| Other _____ | 22 | <input type="checkbox"/> |

(Specify)

Table A. Percent of birth records on which specified items were not stated: United States each State, and Territory, 1998

(Page 1 of 2)

[By place of residence]

| Area | Number of births | Place of birth | Attendant at birth | Mother's birth-place | Father's age | Father's race | Hispanic Origin | | Educational attainment Mother | Live-birth order | Length of Gestation | Month prenatal care began | Number of prenatal visits |
|-----------------------------|------------------|----------------|--------------------|----------------------|--------------|---------------|-----------------|--------|-------------------------------|------------------|---------------------|---------------------------|---------------------------|
| | | | | | | | Mother | Father | | | | | |
| Total of reporting areas 1/ | 3,941,553 | 0.0 | 0.0 | 0.3 | 14.4 | 14.8 | 1.2 | 15.3 | 1.5 | 0.7 | 1.0 | 2.8 | 3.6 |
| Alabama | 62,074 | - | - | 0.0 | 23.8 | 23.8 | .0 | 23.8 | 0.3 | 0.0 | 0.1 | 0.3 | 0.3 |
| Alaska | 9,926 | .0 | .0 | .2 | 12.9 | 14.7 | .5 | 13.7 | 2.0 | .2 | .3 | 1.7 | 1.5 |
| Arizona | 78,243 | - | .0 | .3 | 21.5 | 23.3 | 1.3 | 23.6 | 2.0 | .4 | .2 | 2.1 | 3.6 |
| Arkansas | 36,865 | .0 | .0 | .4 | 20.6 | 21.8 | .1 | 21.0 | .9 | .2 | .3 | 2.4 | 3.3 |
| California | 521,661 | .0 | .1 | .3 | 7.4 | 6.8 | .7 | 6.3 | 1.7 | .1 | 2/ 5.4 | 1.6 | 2.9 |
| Colorado | 59,577 | - | - | .2 | 9.6 | 10.2 | .0 | 10.3 | 1.4 | .0 | .0 | .7 | .9 |
| Connecticut | 43,820 | .0 | .0 | .4 | 9.4 | 10.8 | 5.3 | 14.4 | 3.9 | 8.3 | .1 | 5.4 | 9.0 |
| Delaware | 10,578 | .0 | .0 | .3 | 30.7 | 31.6 | .3 | 30.7 | .7 | .3 | .1 | .9 | 1.1 |
| District of Columbia | 7,686 | - | - | .0 | 44.9 | 51.3 | .5 | 44.7 | 9.0 | .2 | .4 | 15.3 | 18.6 |
| Florida | 195,637 | .0 | - | .2 | 17.6 | 17.7 | .1 | 19.1 | .4 | .0 | .1 | .8 | 1.7 |
| Georgia | 122,368 | .0 | .0 | .2 | 18.0 | 18.4 | .8 | 18.6 | 2.0 | .3 | .1 | 2.9 | 2.7 |
| Hawaii | 17,583 | - | .0 | .1 | 8.4 | 8.6 | .1 | 8.4 | .4 | .0 | 10.4 | 5.3 | 6.1 |
| Idaho | 19,391 | .0 | .0 | .3 | 8.6 | 11.2 | 1.5 | 11.4 | 4.2 | 1.3 | .6 | 2.2 | 2.6 |
| Illinois | 182,588 | .0 | .0 | .1 | 15.5 | 16.8 | .0 | 16.8 | .8 | .2 | .2 | 1.8 | 2.2 |
| Indiana | 85,122 | .3 | .1 | .2 | 13.5 | 13.7 | .4 | 13.7 | .9 | .4 | .1 | 1.5 | 2.6 |
| Iowa | 37,282 | .0 | .0 | .4 | 12.1 | 14.2 | 1.1 | 15.0 | 1.5 | .1 | .1 | 1.3 | 3.9 |
| Kansas | 38,422 | .0 | .0 | .1 | 10.6 | 10.7 | 1.0 | 12.1 | .4 | .0 | .1 | .6 | .8 |
| Kentucky | 54,329 | .0 | .1 | .0 | 22.0 | 22.7 | .1 | 23.7 | .2 | .1 | .1 | 1.1 | 1.3 |
| Louisiana | 66,888 | - | .0 | .0 | 22.3 | 22.5 | .2 | 22.5 | .1 | .0 | .0 | .3 | .5 |
| Maine | 13,733 | - | .0 | - | 10.0 | 10.0 | 4.3 | 18.7 | .8 | .3 | .1 | .5 | .5 |
| Maryland | 71,972 | .0 | .0 | .7 | 8.4 | 10.1 | .6 | 6.8 | 2.0 | 1.6 | .5 | 4.7 | 8.2 |
| Massachusetts | 81,411 | .0 | .0 | .0 | 7.8 | 7.6 | .4 | 6.8 | .3 | .2 | .2 | .9 | .3 |
| Michigan | 133,666 | .0 | .2 | .1 | 16.0 | 18.0 | 5.4 | 22.5 | 1.4 | .6 | .1 | 3.9 | 5.4 |
| Minnesota | 65,202 | .0 | .0 | .0 | 8.9 | 11.3 | 5.2 | 15.4 | 2.2 | .5 | 1.0 | 5.6 | 5.0 |
| Mississippi | 42,939 | .0 | .0 | .1 | 24.2 | 24.0 | .1 | 24.3 | .2 | .1 | .2 | .6 | 1.1 |
| Missouri | 75,358 | .0 | .0 | .2 | 18.3 | 18.3 | .1 | 18.5 | .8 | .3 | .2 | 1.4 | 2.0 |
| Montana | 10,795 | .0 | .1 | - | 10.2 | 11.5 | 2.0 | 13.4 | .4 | .0 | .1 | .5 | .5 |
| Nebraska | 23,534 | .0 | .0 | .0 | 12.2 | 12.8 | 2.2 | 14.4 | .1 | .0 | .0 | .3 | .6 |
| Nevada | 28,699 | - | .0 | .8 | 22.4 | 23.3 | .7 | 22.0 | 3.2 | 1.1 | 1.1 | 6.2 | 10.0 |
| New Hampshire | 14,429 | - | - | .0 | 7.2 | 9.1 | 3.5 | 11.6 | .8 | 2.8 | .2 | 1.7 | 1.8 |
| New Jersey | 114,550 | .1 | .1 | .2 | 8.9 | 11.1 | .4 | 9.4 | 2.3 | .2 | .2 | 5.0 | 6.0 |
| New Mexico | 27,318 | .0 | .0 | 2.8 | 27.5 | 26.8 | .0 | 26.8 | 5.1 | .5 | .7 | 5.7 | 5.5 |
| New York | 258,207 | .1 | .1 | .4 | 15.7 | 16.1 | 6.2 | 20.8 | 1.7 | .1 | .2 | 10.0 | 6.7 |
| North Carolina | 111,688 | .0 | .0 | .0 | 17.2 | 17.2 | .0 | 17.1 | .2 | .0 | .1 | .5 | .5 |
| North Dakota | 7,932 | - | - | .0 | 7.9 | 9.4 | 3.1 | 12.3 | .2 | - | .1 | .6 | .3 |
| Ohio | 152,794 | .0 | .0 | .2 | 15.2 | 16.0 | .4 | 15.8 | .5 | .2 | .0 | .5 | 1.5 |
| Oklahoma | 49,461 | .0 | .1 | .1 | 17.0 | 18.9 | 1.1 | 18.8 | 2.0 | 12.2 | 3.2 | 10.9 | 12.8 |
| Oregon | 45,273 | - | - | .1 | 11.6 | 4.6 | .2 | 4.9 | 1.2 | .1 | .0 | .4 | .5 |
| Pennsylvania | 145,899 | .0 | .0 | .8 | 5.7 | 4.3 | .6 | 3.8 | 2.3 | .4 | .2 | 3.2 | 4.8 |
| Rhode Island | 12,599 | - | - | .3 | 13.6 | 14.2 | 12.8 | 23.1 | 2.9 | 2.2 | 2.6 | 8.8 | 9.8 |
| South Carolina | 53,877 | - | .0 | .3 | 28.8 | 28.9 | .1 | 28.8 | 4.6 | .1 | .2 | 1.5 | 1.6 |
| South Dakota | 10,288 | .0 | - | .0 | 11.8 | 12.1 | .1 | 13.3 | .2 | - | .0 | .4 | .4 |
| Tennessee | 77,396 | .0 | .0 | .0 | 16.1 | 16.2 | .0 | 16.3 | .2 | .0 | .2 | 1.1 | .9 |
| Texas | 342,283 | .0 | .0 | .4 | 15.3 | 15.4 | .3 | 15.4 | 1.3 | 1.2 | .6 | 2.0 | 5.2 |
| Utah | 45,165 | .0 | .0 | .2 | 9.7 | 10.8 | .3 | 9.3 | .9 | .2 | .1 | 2.9 | 3.0 |
| Vermont | 6,582 | .0 | - | .1 | 9.1 | 15.3 | 2.6 | 16.4 | 2.5 | .4 | .2 | 3.6 | 1.2 |
| Virginia | 94,351 | .0 | .1 | .1 | 17.8 | 18.6 | .1 | 18.5 | .5 | 1.1 | .3 | .6 | 1.2 |
| Washington | 79,663 | .0 | .0 | .8 | 11.8 | 12.0 | 3.2 | 12.3 | 10.6 | 4.5 | 1.0 | 9.7 | 13.1 |
| West Virgin | 20,747 | .1 | .0 | .1 | 13.3 | 14.2 | .2 | 14.6 | .5 | .2 | .5 | 4.3 | 3.2 |
| Wisconsin | 67,450 | - | - | .0 | 28.4 | 28.4 | .0 | 28.4 | .1 | .0 | .0 | .2 | .3 |
| Wyoming | 6,252 | .0 | - | .0 | 13.6 | 14.0 | .1 | 13.9 | .4 | .0 | .1 | .5 | .5 |
| Puerto Rico | 60,412 | - | .1 | - | 2.9 | 3.4 | ... | ... | .2 | .0 | .1 | .2 | .1 |
| Virgin Islands | 1,800 | .1 | .6 | - | 21.6 | 24.3 | 3.2 | 26.4 | 1.7 | .9 | .8 | .6 | 1.7 |
| Guam | 4,318 | .1 | .5 | .1 | 23.6 | 24.9 | .4 | 23.3 | .6 | .6 | .2 | .8 | 1.2 |
| American Samoa | 1,688 | .1 | - | 5.9 | 34.2 | 34.8 | ... | ... | ... | - | ... | ... | ... |
| Northern Marianas | 1,462 | .2 | 1.0 | 0.3 | 9.6 | 24.4 | ... | ... | 25.0 | 23.1 | 26.3 | 56.5 | 25.0 |

See footnotes at end of table.

Table A. Percent of birth records on which specified items were not stated: United States each State, and Territory, 1998

(Page 2 of 2)
[By place of residence]

| Area | Number of births | Birth weight | 5-minute Apgar score * | Medical risk factors | Tobacco use | Alcohol use | Weight gain | Obstetric procedures | Complications of labor and/or delivery | * Method of delivery | Abnormal conditions of newborn | Congenital anomalies |
|-----------------------------|------------------|--------------|------------------------|----------------------|-------------|-------------|-------------|----------------------|--|----------------------|--------------------------------|----------------------|
| Total of reporting areas 1/ | 3,941,553 | 0.1 | 0.6 | 1.4 | 1.5 | 1.5 | 8.3 | 0.9 | 1.2 | 0.9 | 2.4 | 1.7 |
| Alabama | 62,074 | 0.0 | 0.2 | 3/ 0.0 | 0.0 | 0.1 | 3.1 | 0.0 | 0.0 | 0.3 | 0.0 | 0.1 |
| Alaska | 9,926 | .2 | .6 | .3 | .6 | .6 | 1.6 | .3 | .3 | .4 | .4 | .3 |
| Arizona | 78,243 | .1 | .6 | .0 | 1.8 | 2.0 | 11.3 | .0 | .0 | .2 | .0 | .4 |
| Arkansas | 36,865 | .1 | 3.6 | .5 | .9 | 1.0 | 9.5 | .4 | .5 | .7 | .4 | .4 |
| California | 521,661 | .0 | ... | .0 | ... | ... | ... | .0 | .0 | .0 | .0 | .0 |
| Colorado | 59,577 | .0 | .3 | .0 | .1 | .1 | 3.4 | .0 | .0 | .0 | .0 | .1 |
| Connecticut | 43,820 | .0 | 1.5 | 11.8 | 8.1 | 7.4 | 18.6 | 10.4 | 12.2 | 4.5 | 18.9 | 20.1 |
| Delaware | 10,578 | .0 | .4 | .0 | .2 | .2 | 1.9 | .0 | .0 | .0 | .1 | .1 |
| District of Columbia | 7,686 | .1 | 1.1 | .0 | .1 | .1 | 16.4 | .0 | .0 | .0 | .0 | .0 |
| Florida | 195,637 | .1 | .2 | .0 | .1 | .1 | 4.4 | .0 | .0 | .6 | .0 | .0 |
| Georgia | 122,368 | .0 | .5 | .4 | .4 | .4 | 5.6 | .0 | .0 | .3 | .0 | .0 |
| Hawaii | 17,583 | 2.8 | 7.2 | 16.2 | .1 | .1 | 13.8 | 9.7 | 7.3 | 16.5 | 17.2 | 18.9 |
| Idaho | 19,391 | .3 | .6 | 1.0 | .7 | 1.0 | 10.2 | .9 | .9 | .3 | .7 | .7 |
| Illinois | 182,588 | .1 | .3 | .1 | 1.0 | .2 | 3.9 | .0 | .1 | .4 | .1 | .1 |
| Indiana | 85,122 | .5 | .5 | .1 | ... | .4 | 3.2 | .1 | .2 | .4 | .6 | .6 |
| Iowa | 37,282 | .1 | .3 | .2 | 3.3 | 3.8 | 6.9 | .1 | .3 | .4 | .3 | .4 |
| Kansas | 38,422 | .0 | .4 | 3/ .5 | .5 | .5 | .7 | .4 | .4 | 2.9 | .4 | .4 |
| Kentucky | 54,329 | .1 | .4 | 6.1 | 4.5 | 4.5 | 8.6 | 3.9 | 6.5 | 4.1 | 11.3 | 10.3 |
| Louisiana | 66,888 | .1 | .3 | .0 | .1 | .1 | 6.8 | .0 | .1 | .1 | .1 | .0 |
| Maine | 13,733 | .1 | .2 | .1 | 1.1 | 1.4 | 1.8 | .0 | .1 | .2 | .1 | .2 |
| Maryland | 71,972 | .1 | .5 | .0 | .5 | .7 | 8.3 | .0 | .0 | .2 | .0 | .0 |
| Massachusetts | 81,411 | .2 | .3 | .6 | .3 | .3 | 1.1 | .6 | .6 | .4 | 1.0 | 1.0 |
| Michigan | 133,666 | .3 | .4 | .1 | 1.8 | 1.5 | 9.4 | .1 | .1 | .6 | .1 | .1 |
| Minnesota | 65,202 | .1 | .8 | 8.3 | 7.2 | 7.3 | 18.1 | 6.5 | 7.6 | 4.5 | 8.2 | 8.5 |
| Mississippi | 42,939 | .0 | .4 | .1 | .2 | .2 | 4.6 | .1 | .1 | .2 | .1 | .1 |
| Missouri | 75,358 | .0 | .5 | .1 | .4 | .4 | 3.0 | .1 | .1 | .7 | .1 | .1 |
| Montana | 10,795 | .0 | .4 | .1 | .8 | 1.5 | 1.4 | .1 | .1 | .5 | .2 | .1 |
| Nebraska | 23,534 | .0 | .2 | .0 | .9 | .9 | 1.3 | .0 | .0 | .2 | 6/ .0 | .0 |
| Nevada | 28,699 | .1 | 1.7 | 10.7 | 2.2 | 2.5 | 11.8 | .5 | 6.6 | 1.5 | 12.4 | 12.5 |
| New Hampshire | 14,429 | .1 | .3 | .0 | .2 | .3 | 5.5 | .0 | .0 | .2 | .1 | .1 |
| New Jersey | 114,550 | .1 | .2 | 2.3 | 1.0 | 1.0 | 6.1 | .1 | 1.6 | .5 | 26.2 | 1.7 |
| New Mexico | 27,318 | 1.6 | 4.0 | .1 | 2.0 | 2.1 | 11.3 | .0 | .0 | .4 | .1 | ... |
| New York | 258,207 | .1 | .2 | 1.1 | 4/ 4.3 | .2 | 9.6 | .2 | .4 | .3 | 7/ 0.9 | 1.0 |
| North Carolina | 111,688 | .0 | .3 | .0 | .1 | .1 | 2.3 | .0 | .0 | .4 | .0 | .4 |
| North Dakota | 7,932 | .1 | .4 | .1 | .6 | .7 | 1.3 | .1 | .1 | 1.0 | .1 | .1 |
| Ohio | 152,794 | .1 | .2 | .0 | .3 | .1 | 2.6 | .0 | .0 | .4 | .0 | .0 |
| Oklahoma | 49,461 | .6 | 5.5 | 34.0 | 23.9 | 24.2 | 34.6 | 30.2 | 33.0 | 26.9 | 39.5 | 40.3 |
| Oregon | 45,273 | .0 | .4 | .5 | .7 | .7 | 3.0 | .0 | .0 | .2 | .0 | .0 |
| Pennsylvania | 145,899 | .1 | .3 | .1 | .9 | .6 | 8.3 | .0 | .1 | .1 | .6 | .5 |
| Rhode Island | 12,599 | .4 | .7 | 8.4 | 2.7 | 2.9 | 12.0 | 8.3 | 8.4 | .7 | 18.9 | 19.3 |
| South Carolina | 53,877 | .0 | .4 | .0 | .1 | .1 | 2.6 | .0 | .0 | .5 | .0 | .0 |
| South Dakota | 10,288 | .0 | .3 | .0 | ... | ... | 1.4 | .0 | .0 | .2 | .0 | .0 |
| Tennessee | 77,396 | .0 | .3 | .0 | .2 | .2 | 6.1 | .0 | .1 | .4 | .1 | .0 |
| Texas | 342,283 | .1 | ... | 5/ 1.3 | .4 | .5 | 19.6 | .1 | 8/ .1 | .7 | 6/ .2 | .3 |
| Utah | 45,165 | .0 | .3 | .1 | .5 | .4 | 4.1 | .0 | .0 | .0 | .2 | .4 |
| Vermont | 6,582 | .2 | .2 | .1 | .9 | .5 | 2.0 | .1 | .1 | .0 | .2 | .2 |
| Virginia | 94,351 | .3 | .4 | .0 | .1 | .1 | 4.8 | .0 | .0 | .4 | .1 | .1 |
| Washington | 79,663 | .3 | .4 | 5.5 | 5.2 | 15.1 | 23.7 | 7.1 | 9.3 | .4 | 11.0 | 10.4 |
| West Virginia | 20,747 | .1 | .2 | .0 | .8 | 2.4 | 9.0 | .0 | .0 | .2 | .0 | .0 |
| Wisconsin | 67,450 | .0 | .4 | .1 | .1 | .1 | 1.6 | .0 | .1 | .0 | 9/ .1 | .1 |
| Wyoming | 6,252 | .0 | .4 | .0 | 1.1 | 1.1 | 2.1 | .0 | .0 | .2 | .0 | .0 |
| Puerto Rico | 60,412 | .0 | .2 | .0 | .0 | .0 | .1 | .0 | .1 | .0 | .1 | .1 |
| Virgin Islands | 1,800 | .1 | 2.9 | 6.4 | 2.3 | 2.3 | 9.8 | 2.5 | 7.4 | 3.0 | 8.7 | 6.8 |
| Guam | 4,318 | .1 | 1.3 | 5.4 | 1.1 | 1.3 | 4.0 | 1.9 | 2.9 | 1.3 | 5.7 | 5.5 |
| American Samoa | 1,688 | - | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Northern Marianas | 1,462 | 12.3 | 21.5 | ... | ... | ... | ... | ... | ... | 43.6 | ... | ... |

0.0 Quantity more than zero but less than 0.05.

--Data not available.

1/ Excludes data for Puerto Rico, Virgin Islands, Guam, American Samoa, and the Commonwealth of the Northern Marianas.

2/ California reports date last normal menses began but does not report clinical estimate of gestation.

3/ Kansas does not report Rh sensitization.

4/ New York city (but not New York State) reports tobacco use.

5/ Texas does not report genital herpes and uterine bleeding.

6/ Nebraska and Texas do not report birth injury.

7/ New York city does not report assisted ventilation less than 30 minutes and assisted ventilation of 30 minutes or more.

8/ Texas does not report anesthetic complications and fetal distress.

9/ Wisconsin does not report fetal alcohol syndrome.

Table B. Births by State of Occurrence and Residence for Births Occurring in the 50 States and the District of Columbia, 1998

| Area | Occurrence | Residence |
|----------------------|------------|-----------|
| United States | 3,945,192 | 3,941,553 |
| Alabama | 61,209 | 62,074 |
| Alaska | 9,832 | 9,926 |
| Arizona | 78,076 | 78,243 |
| Arkansas | 35,763 | 36,865 |
| California | 522,290 | 521,661 |
| Colorado | 59,816 | 59,577 |
| Connecticut | 43,669 | 43,820 |
| Delaware | 11,023 | 10,578 |
| District of Columbia | 15,138 | 7,686 |
| Florida | 195,734 | 195,637 |
| Georgia | 123,262 | 122,368 |
| Hawaii | 17,619 | 17,583 |
| Idaho | 18,959 | 19,391 |
| Illinois | 179,462 | 182,588 |
| Indiana | 85,176 | 85,122 |
| Iowa | 37,433 | 37,282 |
| Kansas | 37,450 | 38,422 |
| Kentucky | 52,880 | 54,329 |
| Louisiana | 67,100 | 66,888 |
| Maine | 13,530 | 13,733 |
| Maryland | 67,408 | 71,972 |
| Massachusetts | 82,216 | 81,411 |
| Michigan | 132,443 | 133,666 |
| Minnesota | 65,094 | 65,202 |
| Mississippi | 41,942 | 42,939 |
| Missouri | 77,701 | 75,358 |
| Montana | 10,742 | 10,795 |
| Nebraska | 23,915 | 23,534 |
| Nevada | 28,218 | 28,699 |
| New Hampshire | 13,933 | 14,429 |
| New Jersey | 111,709 | 114,550 |
| New Mexico | 26,960 | 27,318 |
| New York State only | 135,408 | 138,296 |
| New York City only | 124,240 | 119,911 |
| North Carolina | 112,785 | 111,688 |
| North Dakota | 9,156 | 7,932 |
| Ohio | 153,400 | 152,794 |
| Oklahoma | 48,449 | 49,461 |
| Oregon | 46,278 | 45,273 |
| Pennsylvania | 146,465 | 145,899 |
| Rhode Island | 13,489 | 12,599 |
| South Carolina | 51,701 | 53,877 |
| South Dakota | 10,391 | 10,288 |
| Tennessee | 82,412 | 77,396 |
| Texas | 346,101 | 342,283 |
| Utah | 46,128 | 45,165 |
| Vermont | 6,257 | 6,582 |
| Virginia | 92,021 | 94,351 |
| Washington | 78,980 | 79,663 |
| West Virginia | 21,574 | 20,747 |
| Wisconsin | 66,421 | 67,450 |
| Wyoming | 5,834 | 6,252 |
| Foreign Residents | - | 3,639 |
| Puerto Rico | - | 21 |
| Virgin Islands | - | 19 |
| Guam | - | 4 |
| American Samoa | - | - |
| Northern Marianas | - | - |
| Canada | - | 111 |
| Cuba | - | 2 |
| Mexico | - | 2,818 |
| Remainder of world | - | 664 |

- Quantity zero.

Table C. Lower and upper 95 percent confidence limit factors for a birth rate based on a Poisson variable of 1-99 births

| Number of births | L | U | Number of births | L | U |
|------------------|---------|---------|------------------|---------|---------|
| 1 | 0.02532 | 5.57164 | 51 | 0.74457 | 1.31482 |
| 2 | 0.12110 | 3.61234 | 52 | 0.74685 | 1.31137 |
| 3 | 0.20622 | 2.92242 | 53 | 0.74907 | 1.30802 |
| 4 | 0.27247 | 2.56040 | 54 | 0.75123 | 1.30478 |
| 5 | 0.32470 | 2.33367 | 55 | 0.75334 | 1.30164 |
| 6 | 0.36698 | 2.17658 | 56 | 0.75539 | 1.29858 |
| 7 | 0.40205 | 2.06038 | 57 | 0.75739 | 1.29562 |
| 8 | 0.43173 | 1.97040 | 58 | 0.75934 | 1.29273 |
| 9 | 0.45726 | 1.89831 | 59 | 0.76125 | 1.28993 |
| 10 | 0.47954 | 1.83904 | 60 | 0.76311 | 1.28720 |
| 11 | 0.49920 | 1.78928 | 61 | 0.76492 | 1.28454 |
| 12 | 0.51671 | 1.74680 | 62 | 0.76669 | 1.28195 |
| 13 | 0.53246 | 1.71003 | 63 | 0.76843 | 1.27943 |
| 14 | 0.54671 | 1.67783 | 64 | 0.77012 | 1.27698 |
| 15 | 0.55969 | 1.64935 | 65 | 0.77178 | 1.27458 |
| 16 | 0.57159 | 1.62394 | 66 | 0.77340 | 1.27225 |
| 17 | 0.58254 | 1.60110 | 67 | 0.77499 | 1.26996 |
| 18 | 0.59266 | 1.58043 | 68 | 0.77654 | 1.26774 |
| 19 | 0.60207 | 1.56162 | 69 | 0.77806 | 1.26556 |
| 20 | 0.61083 | 1.54442 | 70 | 0.77955 | 1.26344 |
| 21 | 0.61902 | 1.52861 | 71 | 0.78101 | 1.26136 |
| 22 | 0.62669 | 1.51401 | 72 | 0.78244 | 1.25933 |
| 23 | 0.63391 | 1.50049 | 73 | 0.78384 | 1.25735 |
| 24 | 0.64072 | 1.48792 | 74 | 0.78522 | 1.25541 |
| 25 | 0.64715 | 1.47620 | 75 | 0.78656 | 1.25351 |
| 26 | 0.65323 | 1.46523 | 76 | 0.78789 | 1.25165 |
| 27 | 0.65901 | 1.45495 | 77 | 0.78918 | 1.24983 |
| 28 | 0.66449 | 1.44528 | 78 | 0.79046 | 1.24805 |
| 29 | 0.66972 | 1.43617 | 79 | 0.79171 | 1.24630 |
| 30 | 0.67470 | 1.42756 | 80 | 0.79294 | 1.24459 |
| 31 | 0.67945 | 1.41942 | 81 | 0.79414 | 1.24291 |
| 32 | 0.68400 | 1.41170 | 82 | 0.79533 | 1.24126 |
| 33 | 0.68835 | 1.40437 | 83 | 0.79649 | 1.23965 |
| 34 | 0.69253 | 1.39740 | 84 | 0.79764 | 1.23807 |
| 35 | 0.69654 | 1.39076 | 85 | 0.79876 | 1.23652 |
| 36 | 0.70039 | 1.38442 | 86 | 0.79987 | 1.23499 |
| 37 | 0.70409 | 1.37837 | 87 | 0.80096 | 1.23350 |
| 38 | 0.70766 | 1.37258 | 88 | 0.80203 | 1.23203 |
| 39 | 0.71110 | 1.36703 | 89 | 0.80308 | 1.23059 |
| 40 | 0.71441 | 1.36172 | 90 | 0.80412 | 1.22917 |
| 41 | 0.71762 | 1.35661 | 91 | 0.80514 | 1.22778 |
| 42 | 0.72071 | 1.35171 | 92 | 0.80614 | 1.22641 |
| 43 | 0.72370 | 1.34699 | 93 | 0.80713 | 1.22507 |
| 44 | 0.72660 | 1.34245 | 94 | 0.80810 | 1.22375 |
| 45 | 0.72941 | 1.33808 | 95 | 0.80906 | 1.22245 |
| 46 | 0.73213 | 1.33386 | 96 | 0.81000 | 1.22117 |
| 47 | 0.73476 | 1.32979 | 97 | 0.81093 | 1.21992 |
| 48 | 0.73732 | 1.32585 | 98 | 0.81185 | 1.21868 |
| 49 | 0.73981 | 1.32205 | 99 | 0.81275 | 1.21746 |
| 50 | 0.74222 | 1.31838 | | | |

Table D. Sources for resident population and population including Armed Forces abroad: Birth- and death-registration States, 1900-1932, and United States, 1900-1998.

| Year | Source |
|----------------|--|
| 1998----- | U.S. Bureau of the Census, United States population estimates, by age, sex, race, and Hispanic origin: 1990 to 1998. Washington: U.S. Bureau of the Census. Internet release, June 4, 1999. Http://www.census.gov/population/www/estimates/uspop.html . |
| 1997----- | U.S. Bureau of the Census, United States population estimates, by age, sex, race, and Hispanic origin: 1990 to 1997. PPL-91R. Rounded populations consistent with U.S. Bureau of the Census file NESTV97. Washington:U.S. Department of Commerce. 1998. |
| 1996----- | U.S. Bureau of the Census, United States population estimates, by age, sex, race, and Hispanic origin: 1990 to 1996. PPL-57. Washington:U.S. Department of Commerce. 1997. |
| 1995----- | U.S. Bureau of the Census, United States population estimates, by age, sex, race, and Hispanic origin: 1990 to 1995. Census file RESD0795, PPL-41. Washington:U.S. Department of Commerce. 1996. |
| 1994----- | U.S. Bureau of the Census, United States population estimates, by age, sex, race, and Hispanic origin: 1990 to 1994. PPL-21. Washington:U.S. Department of Commerce. 1995. |
| 1993----- | U.S. Bureau of the Census, United States population estimates, by age, sex, race, and Hispanic origin: 1993. Census file RESO793. Washington:U.S. Department of Commerce. 1995. |
| 1992----- | U.S. Bureau of the Census, United States population estimates, by age, sex, race, and Hispanic origin: 1992. Census file RESPO792. Washington:U.S. Department of Commerce. 1994. |
| 1991----- | U.S. Bureau of the Census, Unpublished data consistent with Current Population Reports, Series P-25, No. 1095, Feb. 1993. |
| 1990----- | U.S. Bureau of the Census, Unpublished data from the 1990 census. 1990 CPH-L-74 and unpublished data consistent with Current Population Reports, Series P-25, No. 1095, Feb. 1993. |
| 1989----- | U.S. Bureau of the Census, Current Population Reports, Series P-25, No. 1057, Mar. 1990. |
| 1988----- | U.S. Bureau of the Census, Current Population Reports, Series P-25, No. 1045, Jan. 1990. |
| 1986-87----- | U.S. Bureau of the Census, Current Population Reports, Series P-25, No. 1022, Mar. 1988. |
| 1985----- | U.S. Bureau of the Census, Current Population Reports, Series P-25, No. 1000, Feb. 1987. |
| 1984----- | U.S. Bureau of the Census, Current Population Reports, Series P-25, No. 985, Apr. 1986. |
| 1983----- | U.S. Bureau of the Census, Current Population Reports, Series P-25, No. 965, Mar. 1985. |
| 1982----- | U.S. Bureau of the Census, Current Population Reports, Series P-25, No. 949, May 1984. |
| 1981----- | U.S. Bureau of the Census, Current Population Reports, Series P-25, No. 929, May 1983. |
| 1980----- | U.S. Bureau of the Census, U.S. Census of Population: 1980, Number of Inhabitants, PC80-1-A1, United States Summary, 1983. |
| 1971-79----- | U.S. Bureau of the Census, Current Population Reports, Series P-25, No. 917, July 1982. |
| 1970----- | U.S. Bureau of the Census, U.S. Census of Population: 1970, Number of Inhabitants, Final Report PC(1)-A1, United States Summary, 1971. |
| 1961-69----- | U.S. Bureau of the Census, Current Population Reports, Series P-25, No. 519, April 1974. |
| 1960----- | U.S. Bureau of the Census, U.S. Census of Population: 1960, Number of Inhabitants, PC(1)-A1, United States Summary, 1964. |
| 1951-59----- | U.S. Bureau of the Census, Current Population Reports, Series P-25, No. 310, June 30, 1965. |
| 1940-50----- | U.S. Bureau of the Census, Current Population Reports, Series P-25, No. 499, May 1973. |
| 1930-39----- | U.S. Bureau of the Census, Current Population Reports, Series P-25, No. 499, May 1973, and National Office of Vital Statistics, Vital Statistics Rates in the United States, 1900-1940, 1947. |
| 1920-29----- | National Office of Vital Statistics, Vital Statistics Rates in the United States, 1900-1940, 1947. |
| 1917-19----- | Same as for 1930-39. |
| 1900-1916----- | Same as for 1920-29. |

Table E. Ratio of census-level resident population to resident population adjusted for estimated net census undercount
by age, sex, and race: April 1, 1990

| Age | Total | | | White | | | Black | | |
|-------------------|------------|--------|--------|------------|--------|--------|------------|--------|--------|
| | Both sexes | Male | Female | Both sexes | Male | Female | Both sexes | Male | Female |
| All ages | 0.9815 | 0.9721 | 0.9906 | 0.9802 | 0.9728 | 0.9873 | 0.9432 | 0.9151 | 0.9699 |
| 10-14 | 0.9882 | 0.9891 | 0.9873 | 0.9830 | 0.9841 | 0.9818 | 0.9591 | 0.9586 | 0.9595 |
| 15-19 | 1.0166 | 1.0198 | 1.0133 | 1.0094 | 1.0128 | 1.0059 | 0.9988 | 1.0016 | 0.9959 |
| 20-24 | 1.0002 | 0.9987 | 1.0017 | 0.9975 | 0.9985 | 0.9966 | 0.9593 | 0.9432 | 0.9753 |
| 25-29 | 0.9591 | 0.9439 | 0.9748 | 0.9558 | 0.9441 | 0.9681 | 0.9123 | 0.8732 | 0.9510 |
| 30-34 | 0.9687 | 0.9487 | 0.9892 | 0.9669 | 0.9518 | 0.9828 | 0.9129 | 0.8599 | 0.9651 |
| 35-39 | 0.9790 | 0.9628 | 0.9954 | 0.9764 | 0.9643 | 0.9888 | 0.9303 | 0.8808 | 0.9778 |
| 40-44 | 0.9901 | 0.9758 | 1.0044 | 0.9875 | 0.9764 | 0.9988 | 0.9410 | 0.8943 | 0.9850 |
| 45-49 | 0.9775 | 0.9633 | 0.9916 | 0.9762 | 0.9648 | 0.9877 | 0.9302 | 0.8807 | 0.9762 |
| 50-54 | ... | 0.9623 | ... | ... | 0.9651 | ... | ... | 0.8802 | ... |
| 55 years and over | ... | 0.9758 | ... | ... | 0.9783 | ... | ... | 0.9294 | ... |
| 15-44 | ... | ... | 0.9954 | ... | ... | 0.9890 | ... | ... | 0.9739 |
| 15-54 | ... | 0.9710 | ... | ... | 0.9710 | ... | ... | 0.9046 | ... |

... Category not applicable.

Table 4-1. Population of Birth- and Death-Registration States, 1990-1932, and United States, 1900-1998

(Population enumerated as of April 1 for 1940, 1950, 1960, 1970, 1980 and 1990 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 |
| 1998 | 270,509,187 | 270,298,524 | 1950 | 151,132,000 | 150,697,361 | ... | ... | ... | ... |
| 1997 | 267,901,000 | 267,636,061 | 1949 | 149,188,000 | 148,665,000 | ... | ... | ... | ... |
| 1996 | 265,556,890 | 265,283,783 | 1948 | 146,631,000 | 146,093,000 | ... | ... | ... | ... |
| 1995 | 263,033,968 | 262,755,270 | 1947 | 144,126,000 | 143,446,000 | ... | ... | ... | ... |
| 1994 | 260,659,690 | 260,340,990 | 1946 | 141,389,000 | 140,054,000 | ... | ... | ... | ... |
| 1993 | 258,119,768 | 257,783,004 | 1945 | 139,928,000 | 132,481,000 | ... | ... | ... | ... |
| 1992 | 255,457,501 | 255,077,536 | 1944 | 138,397,000 | 132,885,000 | ... | ... | ... | ... |
| 1991 | 252,688,000 | 252,177,000 | 1943 | 136,739,000 | 134,245,000 | ... | ... | ... | ... |
| 1990 | 249,225,000 | 248,709,873 | 1942 | 134,860,000 | 133,920,000 | ... | ... | ... | ... |
| 1989 | 247,342,000 | 246,819,000 | 1941 | 133,402,000 | 133,121,000 | ... | ... | ... | ... |
| 1988 | 245,021,000 | 244,499,000 | 1940 | 131,820,000 | 131,669,275 | ... | ... | ... | ... |
| 1987 | 242,804,000 | 242,289,000 | 1939 | 131,028,000 | 130,879,718 | ... | ... | ... | ... |
| 1986 | 240,651,000 | 240,133,000 | 1938 | 129,969,000 | 129,824,939 | ... | ... | ... | ... |
| 1985 | 238,466,000 | 237,924,000 | 1937 | 128,961,000 | 128,824,829 | ... | ... | ... | ... |
| 1984 | 236,348,000 | 235,825,000 | 1936 | 128,181,000 | 128,053,180 | ... | ... | ... | ... |
| 1983 | 234,307,000 | 233,792,000 | 1935 | 127,362,000 | 127,250,232 | ... | ... | ... | ... |
| 1982 | 232,188,000 | 231,664,000 | 1934 | 126,485,000 | 126,373,773 | ... | ... | ... | ... |
| 1981 | 229,966,000 | 229,466,000 | 1933 | 125,690,000 | 125,578,763 | ... | ... | ... | ... |
| 1980 | 227,061,000 | 226,545,805 | 1932 | 124,949,000 | 124,840,471 | 47 | 118,903,899 | 47 | 118,903,899 |
| 1979 | 225,055,000 | 224,567,000 | 1931 | 124,149,000 | 124,039,648 | 46 | 117,455,229 | 47 | 118,148,987 |
| 1978 | 222,585,000 | 222,095,000 | 1930 | 123,188,000 | 123,076,741 | 46 | 116,544,946 | 47 | 117,238,278 |
| 1977 | 220,239,000 | 219,760,000 | 1929 | --- | 121,769,939 | 46 | 115,317,450 | 46 | 115,317,450 |
| 1976 | 218,035,000 | 217,563,000 | 1928 | --- | 120,501,115 | 44 | 113,636,160 | 44 | 113,636,160 |
| 1975 | 215,973,000 | 215,465,000 | 1927 | --- | 119,038,062 | 40 | 104,320,830 | 42 | 107,084,532 |
| 1974 | 213,854,000 | 213,342,000 | 1926 | --- | 117,399,225 | 35 | 90,400,590 | 41 | 103,822,683 |
| 1973 | 211,909,000 | 211,357,000 | 1925 | --- | 115,831,963 | 33 | 88,294,564 | 40 | 102,031,555 |
| 1972 | 209,896,000 | 209,284,000 | 1924 | --- | 114,113,463 | 33 | 87,000,295 | 39 | 99,318,098 |
| 1971 | 207,661,000 | 206,827,000 | 1923 | --- | 111,949,945 | 30 | 81,072,123 | 38 | 96,788,197 |
| 1970 | 204,270,000 | 203,211,926 | 1922 | --- | 110,054,778 | 30 | 79,560,746 | 37 | 92,702,901 |
| 1969 | 202,677,000 | 201,385,000 | 1921 | --- | 108,541,489 | 27 | 70,807,090 | 34 | 87,814,447 |
| 1968 | 200,706,000 | 199,399,000 | 1920 | --- | 106,466,420 | 23 | 63,597,307 | 34 | 86,079,263 |
| 1967 | 198,712,000 | 197,457,000 | 1919 | 105,063,000 | 104,512,110 | 22 | 61,212,076 | 33 | 83,157,982 |
| 1966 | 196,560,000 | 195,576,000 | 1918 | 104,550,000 | 103,202,801 | 20 | 55,153,782 | 30 | 79,008,412 |
| 1965 | 194,303,000 | 193,526,000 | 1917 | 103,414,000 | 103,265,913 | 20 | 55,197,952 | 27 | 70,234,775 |
| 1964 | 191,889,000 | 191,141,000 | 1916 | --- | 101,965,984 | 11 | 32,944,013 | 26 | 66,971,177 |
| 1963 | 189,242,000 | 188,483,000 | 1915 | --- | 100,549,013 | 10 | 31,096,697 | 24 | 61,894,847 |
| 1962 | 186,538,000 | 185,771,000 | 1914 | --- | 99,117,567 | ... | ... | 24 | 60,963,309 |
| 1961 | 183,691,000 | 182,992,000 | 1913 | --- | 97,226,814 | ... | ... | 23 | 58,156,740 |
| 1960 | 179,933,000 | 179,323,175 | 1912 | --- | 95,331,300 | ... | ... | 22 | 54,847,700 |
| 1959 | 177,264,000 | 176,513,000 | 1911 | --- | 93,867,814 | ... | ... | 22 | 53,929,644 |
| 1958 | 174,141,000 | 173,320,000 | 1910 | --- | 92,406,536 | ... | ... | 20 | 47,470,437 |
| 1957 | 171,274,000 | 170,371,000 | 1909 | --- | 90,491,525 | ... | ... | 18 | 44,223,513 |
| 1956 | 168,221,000 | 167,306,000 | 1908 | --- | 88,708,976 | ... | ... | 17 | 38,634,759 |
| 1955 | 165,275,000 | 164,308,000 | 1907 | --- | 87,000,271 | ... | ... | 15 | 34,552,837 |
| 1954 | 162,391,000 | 161,164,000 | 1906 | --- | 85,436,556 | ... | ... | 15 | 33,782,288 |
| 1953 | 159,565,000 | 158,242,000 | 1905 | --- | 83,819,666 | ... | ... | 10 | 21,767,980 |
| 1952 | 156,954,000 | 155,687,000 | 1904 | --- | 82,164,974 | ... | ... | 10 | 21,332,076 |
| 1951 | 154,287,000 | 153,310,000 | 1903 | --- | 80,632,152 | ... | ... | 10 | 20,943,222 |
| | | | 1902 | --- | 79,160,196 | ... | ... | 10 | 20,582,907 |
| | | | 1901 | --- | 77,585,128 | ... | ... | 10 | 20,237,453 |
| | | | 1900 | --- | 76,094,134 | ... | ... | 10 | 19,965,446 |

... Category not applicable

1/Alaska included beginning 1959 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: Published and unpublished data from the U.S. Bureau of the Census; see text.

Table 4-2. Estimated Population of the United States, by Age, Race, and Sex: July 1, 1998

[Figures include Armed Forces stationed in the United States but exclude those stationed outside the United States.]

| Age | All races | | | White | | | Black | | | American Indian | | | Asian or Pacific Islander | | |
|-------------|-------------|-------------|-------------|-------------|-------------|-------------|------------|------------|------------|-----------------|------------|------------|---------------------------|-----------|-----------|
| | Both sexes | Male | Female | Both sexes | Male | Female | Both sexes | Male | Female | Both sexes | Male | Female | Both sexes | Male | Female |
| All ages | 270,298,524 | 132,046,327 | 138,252,197 | 223,000,729 | 109,489,380 | 113,511,349 | 47,297,795 | 22,556,947 | 24,740,848 | 34,430,569 | 16,340,144 | 18,090,425 | 2,359,946 | 1,168,063 | 1,191,883 |
| Under 1 | 3,776,389 | 1,929,312 | 1,847,077 | 2,993,441 | 1,532,601 | 1,460,840 | 782,948 | 396,711 | 386,237 | 560,713 | 284,257 | 276,456 | 40,887 | 20,523 | 20,364 |
| 1-4 years | 15,189,749 | 7,766,906 | 7,422,843 | 12,058,700 | 6,179,436 | 5,879,264 | 3,131,049 | 1,587,470 | 1,543,579 | 2,266,865 | 1,149,017 | 1,117,848 | 158,834 | 80,347 | 78,487 |
| 5-9 years | 19,920,862 | 10,195,027 | 9,725,835 | 15,686,897 | 8,038,094 | 7,648,803 | 4,233,965 | 2,156,933 | 2,077,032 | 3,170,130 | 1,609,577 | 1,560,553 | 224,191 | 113,894 | 110,297 |
| 10-14 years | 19,241,808 | 9,854,788 | 9,387,020 | 15,202,008 | 7,799,351 | 7,402,657 | 4,039,800 | 2,055,437 | 1,984,363 | 2,992,945 | 1,520,299 | 1,472,646 | 243,014 | 123,463 | 119,551 |
| 15-19 years | 19,539,327 | 10,045,566 | 9,493,761 | 15,492,233 | 7,991,575 | 7,500,658 | 4,047,094 | 2,053,991 | 1,993,103 | 3,024,366 | 1,537,293 | 1,487,073 | 228,853 | 115,032 | 113,821 |
| 15-17 years | 11,743,251 | 6,049,165 | 5,694,086 | 9,301,764 | 4,803,090 | 4,498,674 | 2,441,487 | 1,246,075 | 1,195,412 | 1,803,798 | 922,334 | 881,464 | 143,997 | 72,700 | 71,297 |
| 18-19 years | 7,796,076 | 3,996,401 | 3,799,675 | 6,190,469 | 3,188,485 | 3,001,984 | 1,605,607 | 807,916 | 797,691 | 1,220,568 | 614,959 | 605,609 | 84,856 | 42,332 | 42,524 |
| 20-24 years | 17,674,134 | 8,996,110 | 8,678,024 | 14,093,581 | 7,224,785 | 6,868,796 | 3,580,553 | 1,771,325 | 1,809,228 | 2,633,203 | 1,300,285 | 1,332,918 | 188,975 | 95,301 | 93,674 |
| 25-29 years | 18,588,114 | 9,246,888 | 9,341,226 | 14,867,714 | 7,473,057 | 7,394,657 | 3,720,400 | 1,773,831 | 1,946,569 | 2,622,710 | 1,253,815 | 1,368,895 | 192,668 | 99,429 | 93,239 |
| 30-34 years | 20,186,296 | 10,006,893 | 10,179,403 | 16,347,087 | 8,201,666 | 8,145,421 | 3,839,209 | 1,805,227 | 2,033,982 | 2,727,967 | 1,279,155 | 1,448,812 | 181,362 | 91,972 | 89,390 |
| 35-39 years | 22,625,784 | 11,256,018 | 11,369,766 | 18,626,277 | 9,364,283 | 9,261,994 | 3,999,507 | 1,891,735 | 2,107,772 | 2,883,922 | 1,354,291 | 1,529,631 | 184,914 | 92,388 | 92,526 |
| 40-44 years | 21,894,075 | 10,844,698 | 11,049,377 | 18,177,682 | 9,098,379 | 9,079,303 | 3,716,393 | 1,746,319 | 1,970,074 | 2,676,120 | 1,251,755 | 1,424,365 | 169,796 | 82,912 | 86,884 |
| 45-49 years | 18,859,365 | 9,252,354 | 9,607,011 | 15,830,743 | 7,858,712 | 7,972,031 | 3,028,622 | 1,393,642 | 1,634,980 | 2,153,894 | 984,132 | 1,169,762 | 138,416 | 67,158 | 71,258 |
| 50-54 years | 15,725,519 | 7,647,607 | 8,077,912 | 13,473,817 | 6,624,094 | 6,849,723 | 2,251,702 | 1,023,513 | 1,228,189 | 1,587,413 | 711,774 | 875,639 | 108,289 | 52,080 | 56,209 |
| 55-59 years | 12,406,909 | 5,956,213 | 6,450,696 | 10,672,553 | 5,180,801 | 5,491,752 | 1,734,356 | 775,412 | 958,944 | 1,249,295 | 546,840 | 702,455 | 80,560 | 38,082 | 42,478 |
| 60-64 years | 10,269,061 | 4,849,497 | 5,419,564 | 8,853,308 | 4,231,745 | 4,621,563 | 1,415,753 | 617,752 | 798,001 | 1,028,261 | 439,816 | 588,445 | 62,606 | 29,241 | 33,365 |
| 65-69 years | 9,593,497 | 4,392,568 | 5,200,929 | 8,340,929 | 3,857,225 | 4,483,704 | 1,252,568 | 535,343 | 717,225 | 936,144 | 400,002 | 536,142 | 49,192 | 22,202 | 26,990 |
| 70-74 years | 8,801,796 | 3,857,005 | 4,944,791 | 7,821,943 | 3,452,264 | 4,369,679 | 979,853 | 404,741 | 575,112 | 729,672 | 299,327 | 430,345 | 39,937 | 17,868 | 22,069 |
| 75-79 years | 7,218,007 | 2,997,107 | 4,220,900 | 6,487,580 | 2,705,650 | 3,781,930 | 730,427 | 291,457 | 438,970 | 553,805 | 216,180 | 337,625 | 30,116 | 12,799 | 17,317 |
| 80-84 years | 4,734,182 | 1,764,311 | 2,969,871 | 4,308,395 | 1,609,889 | 2,698,506 | 425,787 | 154,422 | 271,365 | 326,973 | 112,476 | 214,497 | 18,396 | 7,374 | 11,022 |
| 85 years + | 4,053,650 | 1,187,459 | 2,866,191 | 3,665,841 | 1,065,773 | 2,600,068 | 387,809 | 121,686 | 266,123 | 306,171 | 89,853 | 216,318 | 18,940 | 5,998 | 12,942 |

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

Table 4-3. Estimated Total Population and Female Population Aged 15-44 Years: United States, Each Division and State, Puerto Rico, Virgin Islands, Guam, American Samoa, and the Northern Marianas: July 1, 1998

[Figures include Armed Forces stationed in each area and exclude those stationed outside the United States.]

| Area | Total | Female 15-44 years | Area | Total | Female 15-44 years |
|-----------------------|------------|-----------------------|----------------------|------------|-----------------------|
| United States | 270298524 | 60111557 | | | |
| Geographic divisions: | | | South Atlantic | | |
| New England | 13,429,862 | 3,012,806 | Delaware | 743,603 | 172,819 |
| Middle Atlantic | 38,291,763 | 8,382,361 | Maryland | 5,134,808 | 1,196,880 |
| East North Central | 44,194,756 | 9,863,754 | District of Columbia | 523,124 | 126,426 |
| West North Central | 18,694,626 | 4,088,137 | Virginia | 6,791,345 | 1,597,037 |
| South Atlantic | 48,944,678 | 10,864,320 | West Virginia | 1,811,156 | 386,346 |
| East South Central | 16,471,211 | 3,718,882 | North Carolina | 7,546,493 | 1,677,166 |
| West South Central | 30,013,597 | 6,755,599 | South Carolina | 3,835,962 | 879,477 |
| Mountain | 16,813,233 | 3,681,878 | Georgia | 7,642,207 | 1,820,738 |
| Pacific | 43,444,798 | 9,743,820 | Florida | 14,915,980 | 3,007,431 |
| New England | | | East South Central | | |
| Maine | 1,244,250 | 276,187 | Kentucky | 3,936,499 | 882,559 |
| New Hampshire | 1,185,048 | 275,914 | Tennessee | 5,430,621 | 1,225,736 |
| Vermont | 590,883 | 133,989 | Alabama | 4,351,999 | 981,633 |
| Massachusetts | 6,147,132 | 1,392,583 | Mississippi | 2,752,092 | 628,954 |
| Rhode Island | 988,480 | 218,934 | West South Central | | |
| Connecticut | 3,274,069 | 715,199 | Arkansas | 2,538,303 | 545,749 |
| Middle Atlantic | | | Louisiana | 4,368,967 | 1,002,566 |
| New York | 18,175,301 | 4,038,534 | Oklahoma | 3,346,713 | 717,052 |
| New Jersey | 8,115,011 | 1,781,092 | Texas | 19,759,614 | 4,490,232 |
| Pennsylvania | 12,001,451 | 2,562,735 | Mountain | | |
| East North Central | | | Montana | 880,453 | 182,845 |
| Ohio | 11,209,493 | 2,497,235 | Idaho | 1,228,684 | 268,122 |
| Indiana | 5,899,195 | 1,324,439 | Wyoming | 480,907 | 102,643 |
| Illinois | 12,045,326 | 2,675,096 | Colorado | 3,970,971 | 886,746 |
| Michigan | 9,817,242 | 2,213,708 | New Mexico | 1,736,931 | 378,533 |
| Wisconsin | 5,223,500 | 1,153,276 | Arizona | 4,668,631 | 1,000,352 |
| West North Central | | | Utah | 2,099,758 | 494,186 |
| Minnesota | 4,725,419 | 1,054,458 | Nevada | 1,746,898 | 368,451 |
| Iowa | 2,862,447 | 607,088 | Pacific | | |
| Missouri | 5,438,559 | 1,198,407 | Washington | 5,689,263 | 1,279,008 |
| North Dakota | 638,244 | 136,091 | Oregon | 3,281,974 | 699,329 |
| South Dakota | 738,171 | 158,153 | California | 32,666,550 | 7,377,208 |
| Nebraska | 1,662,719 | 361,056 | Alaska | 614,010 | 135,809 |
| Kansas | 2,629,067 | 572,884 | Hawaii | 1,193,001 | 252,466 |
| | | | Territories | | |
| | | | Puerto Rico | 3,857,070 | 904,668 |
| | | | Virgin Islands | 118,382 | 29,315 |
| | | | Guam | 149,101 | 31,057 |
| | | | American Samoa | 62,093 | 13,547 |
| | | | Northern Marianas | 66,611 | 22,483 |

Source: Published and unpublished data from the Bureau of the Census; see text.

1997 ADDENDUM TO "TECHNICAL APPENDIX" OF VITAL STATISTICS OF THE UNITED STATES: MORTALITY, 1995

To assist the users of the mortality public-use data tapes and CD-ROMs, provided is a copy of the "Technical Appendix" of the Vital Statistics of the United States: Mortality, 1995. This technical appendix provides certain qualifications that are essential to using, analyzing, and interpreting the data on those tapes and CD-ROMs. Certain modifications to the technical appendix are essential to make it applicable to the mortality file for the 1997 data year. Those modifications include the following:

I. Sources of data

State-coded medical data

1996
Utah

For 1997, of the States in the VSCP, 42 States submitted precoded medical data for all death certificates in the form of electronic data files. Of these 42 States, Maine, Montana, and North Dakota contracted with a private company to provide NCHS with precoded medical data. The remaining eight VSCP States, New York City, and the District of Columbia submitted copies of the original certificates from which NCHS coded the medical data.

For 1997, approximately 29 percent of the Nation's death records were multiple-cause coded using SuperMICAR and 71 percent using MICAR. This represents data from 22 States which was coded by SuperMICAR and data from 28 States, the District of Columbia, and New York City which was coded by MICAR.

All States submitted precoded demographic data for all death certificates in the form of electronic data files in 1997.

Data for Puerto Rico, the Virgin Islands, and Guam have been included on the mortality public-use data tapes since 1994. Data for American Samoa are included for the first time for 1997.

II. Classification of data

A. Race

Death certificates for some States have a checkbox for "multi-racial".

Some States are mandated by law to code "multi-racial" as a separate category. For these States, death records with an entry of "multi-racial" but without a specified racial entry or entries were assigned to the specified race of the previous record. States not mandated to code "multi-racial" may code "multi-racial" in the same way as mandated States or may code "multi-racial" to "Other entries." For death records where race is coded to "Other entries", if origin is Hispanic and the place of birth is Puerto Rico, Cuba or Mexico, the race is assigned as White. Otherwise, except for Puerto Rico, death records with race coded to "Other entries" were assigned to the specified race of the previous record with known race. For Puerto Rico, if race is coded to "Other entries", race is assigned to "Other races."

B. Hispanic origin

For 1997, data by Hispanic origin include, for the first time, all 50 States and the District of Columbia .

Infant mortality--Infant mortality data by Hispanic origin are based on deaths to residents of the entire United States.

Infant mortality rates by Hispanic origin are biased because of inconsistencies in reporting Hispanic or ethnic origin between the birth and death certificates for the same infant. Estimates of reporting bias may be made by comparing rates based on the linked file of infant deaths and live births 1/ with those where the Hispanic or ethnic origin of infant death is based on information from the death certificate 2/. Infant mortality rates by Hispanic origin are less subject to reporting bias when based on linked files of infant deaths and live births(1).

C. Educational attainment

Deaths by educational attainment have been included on the public-use data tapes since 1989. It is recommended for 1997 that analyses of educational attainment data include deaths to residents of 46 States and the District of Columbia whose data were approximately 80 percent or more complete on a place-of-occurrence basis. Although data for Kentucky are included on the data tape, they would be excluded from analyses because more than 20 percent of their death certificates were classified to "unknown educational attainment." Data for Georgia, Rhode Island, and South Dakota were excluded from the data tape because their death certificates did not include an educational attainment item.

Death rates for educational attainment are based on population estimates derived from the U.S. Bureau of the Census' Current Population

Survey (CPS) and adjusted to resident population control totals. As a result, the rates are subject to the variability of the denominator as well as the numerator. Computation of the relative standard errors, 95-percent confidence intervals, and statistical tests are discussed in the Technical notes of the National Vital Statistics Reports(2).

Death rates for educational attainment may be biased for the following three reasons: 1) because of inconsistencies in reporting between the death certificates and the CPS for decedents; 2) because of a change in the basic item used to collect data about education in the CPS; and 3) because of possible under-enumeration of the population estimates (there have been no studies evaluating this potential bias).

In the National Longitudinal Mortality Survey (NLMS) a total of 9,257 death certificates were compared with responses to educational attainment questions from a total of 12 CPS's conducted by the U.S. Bureau of the Census for data year 1989 3/. Based on the results of this study and after proportionally allocating the "unknown education" on the death certificate, the ratio of CPS deaths having reported less than a high school education (grades 0-11) to death certificate deaths having reported less than high school education was about 1.37. This indicates that the number of deaths and death rates for decedents having less than high school education are biased downward in the vital statistics data by about 37 percent. Similarly, the corresponding ratios for having completed high school (grade 12) and having completed more than high school (grades 13 and more) are 0.70 and 0.87 respectively.

In the CPS, the item used to collect education information was changed in 1992 from:

23a) What is the highest grade or year of regular school ... has ever attended?;

23b) Did ... complete that grade (year?); Yes, No

to:

23) What is the highest level of school ... has completed or the highest degree ... has received?

Based on a Bureau of the Census study 4/, the ratio of population estimates derived from the "old" educational attainment definition for less than a high school education (grades 0-11) to population estimates derived from the "new" definition for less than high school education was about 0.99. This indicates that the death rates for decedents having less than high school education are biased upward in the vital

statistics data by about 1 percent. Similarly, the corresponding ratios for having completed high school (grade 12) and having completed more than high school (grades 13 and more) were 1.15 and 0.93 respectively.

Accounting for both the inconsistency in reporting between the death certificates and the CPS for decedents and the change in the definition of education population estimates may be accomplished simultaneously by combining the above ratios. The combined ratio for less than high school is about 1.36 ($1.37 \times .99$), for high school about 0.81 (0.70×1.15), and for more than high school about 0.81 ($0.87 \times .93$). These ratios may vary by age, sex, race/Hispanic origin, cause of death, and geographic area.

D. Occupation and industry

For 1997, the occupation and industry mortality data were included for the following 16 reporting States:

| | |
|------------|----------------|
| Colorado | North Carolina |
| Georgia | Ohio |
| Idaho | Rhode Island |
| Kansas | South Carolina |
| Kentucky | Utah |
| Nevada | Vermont |
| New Jersey | West Virginia |
| New Mexico | Wisconsin |

E. Quality of data

California death confirmations--Selected causes of death considered to be of public health concern are routinely confirmed by the States according to agreed upon procedures between the State vital statistics programs and the National Center for Health Statistics 5/,6/,7/. For 1997, the State of California did not confirm deaths from the following causes (number of deaths shown in parentheses after cause):

Giardiasis (1); Brucellosis (1); Leprosy (1); Whooping cough (1); Tetanus (1); Schistosomiasis (1); Other cestode infection (8); Congenital rubella (1).

III. Population bases for computing rates

The population used for computing death rates (furnished by the U.S. Bureau of the Census) represents the population residing in the specified area. Population estimates used for computing rates by age, sex, race, Hispanic origin, and non-Hispanic origin for the United States for 1997 are based on population estimates as of July 1, 1997 8/ (available upon request). The estimates are based on demographic analysis and, therefore, are not subject to sampling variability.

Population estimates used for computing death rates by specified Hispanic origin, race for non-Hispanic origin, age, and sex for the United States are as of July 1, 1997 9/ (available upon request). The estimates for Mexicans, Puerto Ricans, Cubans, and Other Hispanics are based on the CPS adjusted to resident population control totals and, therefore, are subject to sampling error (see Technical Appendix from Vital Statistics of the United States: Mortality, 1995).

Population estimates used for computing death rates by marital status, age, race, and sex for the United States 9/ are as of July 1, 1997 and are available upon request. Population estimates used for computing death rates by marital status, age, Hispanic origin, race for non- Hispanic origin, and sex for the United States 9/ are as of July 1, 1997 and are also available upon request. The population estimates for never married, married, widowed, and divorced and for Mexicans, Puerto Ricans, Cubans, and Other Hispanics are based on the CPS adjusted to resident population control totals and, therefore, are subject to sampling error (see Technical Appendix from Vital Statistics of the United States: Mortality, 1995).

Population estimates used for computing death rates by educational attainment, age, and sex for the total of 46 States and the District of Columbia are presented in table IV of the Technical notes of the "Report of Final Mortality Statistics" 2/. These estimates are based on the CPS adjusted to resident population control for the 46 States and the District of Columbia.

Population estimates for each State, Puerto Rico, Virgin Islands, Guam, and American Samoa 10-14/ are presented in table V of the Technical notes of the "Report of Final Mortality Statistics" 2/. These estimates are based on demographic analysis, and therefore, are not subject to sampling variability.

All population estimates for 1997 are based on the 1990 census level counts that were modified by age, race, and sex to be consistent with the U.S. Office of Management and Budget categories and historical categories for death data 15/.

References

1. MacDorman MF, Atkinson JO. Infant mortality statistics from the 1996 period linked birth/infant death data set. Monthly vital statistics report; vol 46 no 12, supp. Hyattsville, Maryland: National Center for Health Statistics. 1998.
2. Hoyert DL, Kochanek KD, Murphy SL. Deaths: Final data for 1997. National vital statistics reports; in press. Hyattsville, Maryland: National Center for Health Statistics.
3. Sorlie PD, Johnson NJ. Validity of education information on the death certificate. *Epidemiology* 7(4): 437-439. 1996.
4. Kominski R, Adams A. Educational attainment in the United States: March 1993 and 1992. U.S. Bureau of the Census. Current Population Reports: Series P20-476. Washington: U.S. Government Printing Office. 1994.
5. National Center for Health Statistics. Vital statistics, instructions for classifying the underlying cause of death. NCHS instruction manual; part 2a. Hyattsville, Maryland: Public Health Service. Published annually.
6. National Center for Health Statistics. Vital statistics, instructions for classifying multiple causes of death. NCHS instruction manual; part 2b. Hyattsville, Maryland: Public Health Service. Published annually.
7. National Center for Health Statistics. Vital statistics, nonindexed terms, standard abbreviations, and State geographic codes used in mortality data classification. NCHS instruction manual; part 2e. Hyattsville, Maryland: Public Health Service. Published annually.
8. U.S. Bureau of the Census. U.S. population estimates, by age, sex, race, and Hispanic origin: 1990 to 1997. PPL-91R. Washington, DC. 1998.
9. U.S. Bureau of the Census. Population estimates based on unpublished tabulations prepared by the Housing and Household Economics Statistics Division.
10. U.S. Bureau of the Census. Estimates of the population of states by age and sex: 1990 to 1997. PPL-109. Product Announcement CB98-122. Washington, DC. Released July 21, 1998.
11. U.S. Bureau of the Census. Unpublished Census file PRICO.WK4.
12. U.S. Bureau of the Census. Unpublished Census file USVI.WK4.

13. U.S. Bureau of the Census. Unpublished Census file GUAM.WK4.
14. U.S. Bureau of the Census. Unpublished Census file ASAMOA.WK4.
15. U.S. Bureau of the Census: Unpublished data from the 1990 census, by age, sex, race and Hispanic origin. 1990.

TECHNICAL APPENDIX FROM

**VITAL STATISTICS OF
UNITED STATES**

1995

MORTALITY

**U.S. DEPARTMENT OF
HEALTH AND HUMAN SERVICES**

PUBLIC HEALTH SERVICE

**CENTERS FOR DISEASE CONTROL AND PREVENTION
NATIONAL CENTER FOR HEALTH STATISTICS**

Hyattsville, Maryland: April 1999

VITAL STATISTICS OF THE UNITED STATES: MORTALITY, 1995
TECHNICAL APPENDIX

ACKNOWLEDGMENTS

The technical appendix preparation was coordinated by Sherry L. Murphy in the Division of Vital Statistics under the general direction of Harry M. Rosenberg, Chief of the Mortality Statistics Branch. The vital statistics computer file on which it is based were prepared by staff from the Division of Vital Statistics, Division of Data Processing, Division of Data Services, and the Office of Research and Methodology.

The Division of Vital Statistics, Mary Anne Freedman, Director, and James A. Weed, Deputy Director, managed the Vital Statistics Cooperative Program, through which the vital registration offices of all States, the District of Columbia, New York City, Puerto Rico, Virgin Islands, and Guam provided the data to the National Center for Health Statistics. This Division also processed computer edits, designed and programmed the tabulations, reviewed the data, and prepared documentation for this publication. The following staff provided overall direction: Ronald F. Chamblee, George A. Gay, Nicholas F. Pace, and Harry M. Rosenberg. Important contributors were Robert N. Anderson, Judy M. Barnes, Thomas D. Dunn, Donna E. Glenn, Brenda A. Green, Donna L. Hoyert, Christina K. Jarman, Millie B. Johnson, David W. Justice, Virginia J. Justice, Kenneth D. Kochanek, Julia L. Kowaleski, Jeffrey D. Maurer, Sherry L. Murphy, Gail A. Parr, Adrienne L. Rouse, Charles E. Royer, Jordan Sacks, George C. Tolson, Mary M. Trotter, Mary H. Wilder, JoAnn Wiley, and Francine D. Winter.

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A copy of the technical appendix may be obtained by contacting the National Center for Health Statistics, Mortality Statistics Branch at 301-436-8884.

VITAL STATISTICS OF THE UNITED STATES: MORTALITY, 1995
TECHNICAL APPENDIX

For a list of reports published by the National Center for Health Statistics contact:

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VITAL STATISTICS OF THE UNITED STATES: MORTALITY, 1995
TECHNICAL APPENDIX

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Sources of data

Death statistics

Mortality statistics for 1995 are, as for all previous years except 1972, based on information from records of all deaths occurring in the United States.

The death-registration system of the United States encompasses the 50 States, the District of Columbia, New York City (which is independent of New York State for the purpose of death registration), Puerto Rico, the Virgin Islands, Guam, American Samoa, and the Commonwealth of the Northern Mariana Islands. In statistical tabulations, United States refers only to the aggregate of the 50 States (including New York City) and the District of Columbia. Data for Guam, Puerto Rico, and the Virgin Islands are presented separately from data for the United States. No data are included for American Samoa or the Commonwealth of the Northern Marianas.

The Virgin Islands was admitted to the registration area for deaths in 1924; Puerto Rico, in 1932; and Guam, in 1970. Tabulations of death statistics for Puerto Rico and the Virgin Islands were regularly shown in *Vital Statistics of the United States* from the year of their admission through 1971 except for the years 1967-69, and tabulations for Guam were included for 1970 and 1971. Death statistics for Puerto Rico, the Virgin Islands, and Guam were not included in *Vital Statistics of the United States* for 1972 but have been included each year since 1973. Information for 1972 for these three areas was published in the respective annual vital statistics reports of the Department of Health of the Commonwealth of Puerto Rico, the Department of Health of the Virgin Islands, and the Department of Public Health and Social Services of the Government of Guam.

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

Beginning with 1971 an increasing number of States have provided NCHS, via the Vital Statistics Cooperative Program (VSCP), with electronic files of data coded according to NCHS specifications. The year in which State-coded demographic data were first transmitted in electronic data files to NCHS is shown below for each of the States, New York City, the District of Columbia, Puerto Rico, and the Virgin Islands, all of which now furnish demographic or nonmedical data in electronic data files.

| | | |
|----------------|----------------|---------------------------------|
| 1971 | 1972 | 1973 |
| Florida | Maine | Colorado |
| | Missouri | Michigan |
| | New Hampshire | New York (except New York City) |
| | Rhode Island | |
| | Vermont | |
| 1974 | 1975 | 1976 |
| Illinois | Louisiana | Alabama |
| Iowa | Maryland | Kentucky |
| Kansas | North Carolina | Minnesota |
| Montana | Oklahoma | Nevada |
| Nebraska | Tennessee | Texas |
| Oregon | Virginia | West Virginia |
| South Carolina | Wisconsin | |

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1977
Alaska
Idaho
Massachusetts
New York City
Ohio
Puerto Rico

1978
Indiana
Utah
Washington

1979
Connecticut
Hawaii
Mississippi
New Jersey
Pennsylvania
Wyoming

1980
Arkansas
New Mexico
South Dakota

1982
North Dakota

1985
Arizona
California
Delaware
Georgia
District of Columbia

1994
Virgin Islands

For Guam, mortality statistics for 1995 are based on information obtained directly by NCHS from copies of the original certificates received from the registration office.

In 1974 States began coding medical (cause-of-death) data in electronic data files according to NCHS specifications. The year in which State-coded medical data were first transmitted to NCHS is shown below for the 41 States now furnishing such data. In 1995 Maine, Montana, North Dakota, and Wyoming contracted with a private company to provide precoded medical data to NCHS. Kansas provided the medical data for Alaska. The remaining 9 VSCP States, New York City, the District of Columbia, Puerto Rico, the Virgin Islands, and Guam submitted copies of the original certificates from which NCHS coded the medical data.

1974
Iowa
Michigan

1975
Louisiana
Nebraska
North Carolina
Virginia
Wisconsin

1980
Colorado
Kansas
Massachusetts
Mississippi
New Hampshire
Pennsylvania
South Carolina

1981
Maine

1983
Minnesota

1984
Maryland
New York (except New York City)
Vermont

1986
California
Florida
Texas

1988
Alaska
Delaware
Idaho
North Dakota
Wyoming

1989
Georgia
Indiana
Washington

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1991
Arkansas

1992
Montana

1993
Alabama
Connecticut
Hawaii
Nevada
Oregon
South Dakota

1994
Oklahoma
Rhode Island

1995
New Mexico

For 1995 and previous years except 1972, NCHS coded the medical information from copies of the original certificates received from the registration offices for all deaths occurring in those States that were not furnishing NCHS with medical data coded according to NCHS specifications. For 1981 and 1982, these procedures were modified because of a coding and processing backlog resulting from personnel and budgetary restrictions. To produce the mortality files on a timely basis with reduced resources, NCHS used State-coded underlying cause-of-death information supplied by 19 States for 50 percent of the records; for the other 50 percent of the records for these States as well as for 100 percent of the records for the remaining 21 registration areas, NCHS coded the medical information. Mortality statistics for 1972 were based on information obtained from a 50-percent sample of death records instead of from all records as in other years. The sample resulted from personnel and budgetary restrictions. Sampling variation associated with the 50-percent sample is described in "Estimates of errors arising from 50-percent sample for 1972" under "Quality control procedures".

Standard certificate

For many years, the U.S. Standard Certificate of Death, issued by the Department of Health and Human Services, has been used as the principal means to attain uniformity in the contents of documents used to collect information on these events. It has been modified by each State to the extent required by the particular needs of the State or by special provisions of the State vital statistics law. However, the certificates of most States conform closely in content and arrangement to the standards.

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

The current version of the U.S. Standard Certificate of Death was recommended for State use beginning on January 1, 1989. The U.S. Standard Certificate of Death is shown in figure 7-A (1).

History

The first death statistics published by the Federal Government concerned events in 1850 and were based on statistics collected during the decennial census of that year. In 1880 a national "registration area" was created for deaths. Originally, this area consisted of Massachusetts, New Jersey, the District of Columbia, and several large cities that had efficient systems for death registration. The death-registration area continued to expand until 1933,

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when it included for the first time the entire United States. Tables showing data for death-registration States include the District of Columbia for all years; registration cities in nonregistration States are not included. For more details on the history of the death-registration area, see *U.S. Vital Statistics System: Major Activities and Developments, 1950-95* (2).

Classification of data

Vital statistics data is presented in terms of both frequencies and rates which are classified according to demographic variables such as geographic area, age, sex, and race. Since the calculation of rates requires population data, both vital statistics and population data must be classified and tabulated in comparable groups. The general rules used in the classification of geographic and personal items for deaths for 1995 are set forth in the NCHS instruction manual, Part 4 (3). A discussion of the classification of certain important items is presented below.

Classification by occurrence and residence

Tabulations for the United States and specified geographic areas are classified 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 States and the District of Columbia, with deaths of nonresidents assigned to place of death. For the United States (50 States and the District of Columbia), deaths of nonresidents refers to deaths that occur in the 50 States and the District of Columbia of nonresident aliens; nationals residing abroad; and residents of Puerto Rico, the Virgin Islands, Guam, and other territories of the United States. Similarly, for Puerto Rico and for the Virgin Islands, deaths of nonresidents refers to deaths that occurred to a resident of any place other than Puerto Rico and the Virgin Islands, respectively. For Guam, however, deaths of nonresidents refers to deaths that occurred to a resident of any place other than Guam or the United States. Beginning with 1970, deaths of nonresidents are not included in tables by place of residence.

Deaths by place of occurrence, on the other hand, include deaths of both residents and nonresidents of the United States. Consequently, for each year beginning with 1970, the total number of deaths in the United States by place of occurrence was somewhat greater than the total by place of residence. For 1995 this difference amounted to 3,119 deaths.

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

Residence error--Results of a 1960 study showed that the classification of residence information on the death certificates corresponded closely to the residence classification of the census records for the decedents whose records were matched (4).

A recent review of infant mortality rates for major urban areas suggests that the problem of residence error persists in vital statistics data despite the presence of an item on the U.S. Standard certificates of birth and death that asks whether residence was inside or outside city limits. Full resolution of this problem may require the application of automated systems for assigning addresses to geopolitical units.

Geographic classification

The rules followed in the classification of geographic areas for deaths are contained in NCHS instruction manual, Part 4 (3). The geographic codes assigned by NCHS on birth and death records are given in another instruction manual (5). Beginning with 1994 data, the geographic codes were modified to reflect results of the 1990 census. For 1982-93 codes are based on the results of the 1980 census and for 1970-81 on the 1970 census.

Metropolitan statistical areas--The Metropolitan statistical areas (MSA's) and Primary metropolitan statistical areas (PMSA's) are those established by the U.S. Office of Management and Budget as of April 1, 1990, and used by the U.S. Bureau of the Census (6), except in the New England States.

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Outside the New England States, an MSA has either a city with a population of at least 50,000 or a U.S. Bureau of the Census urbanized area of at least 50,000 and a total MSA population of at least 100,000. A PMSA consists of a large urbanized county or cluster of counties that demonstrate very strong internal economic and social links and has a population over one million. When PMSA's are defined, the larger area of which they are component parts is designated a Consolidated Metropolitan Statistical Area (CMSA) (7).

In the New England States, the U.S. Office of Management and Budget uses towns and cities rather than counties as geographic components of MSA's and PMSA's. However, NCHS cannot use this classification for these States because its data are not coded to identify all towns. Instead, NCHS uses New England County Metropolitan Areas (NECMA's). Made up of county units, these areas are established by the U.S. Office of Management and Budget (8).

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

Population-size groups--Beginning with the 1994 data year, vital statistics data for cities and certain other urban places were classified according to the population enumerated in the 1990 Census of Population. Data are available for individual cities and other urban places of 10,000 or more population. As a result of changes in the enumerated population between 1980 and 1990, some urban places are no longer identified separately and other urban places have been added. Data for the remaining areas not separately identified appear under the heading "balance of area" or "balance of county." For the years 1982-93 classification of areas was determined by the population enumerated in the 1980 Census of Population and for the years 1970-81 in the 1970 Census of Population.

Urban places other than incorporated cities include the following:

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

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

State or country of birth

Mortality statistics by State or country of birth became available beginning with 1979. State or country of birth of a decedent is assigned to 1 of the 50 States or the District of Columbia; or to Puerto Rico, the Virgin Islands, or Guam--if specified on the death certificate. The place of birth is also tabulated for Canada, Cuba, Mexico, and for the remainder of the world. Deaths for which information on State or country of birth was unknown, not stated, or not classifiable accounted for a small proportion of all deaths in 1995, about 0.6 percent.

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

Age

The age recorded on the death record is the age at last birthday, the same as the age classification used by the U.S. Bureau of the Census. For 1995 data, 463 resident death records (0.02 percent) contained not-stated age. For computation of age-specific and age-adjusted death rates, deaths with age not stated are excluded. For life table computation, deaths with age not stated are distributed proportionately.

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Race

For vital statistics in the United States in 1995, deaths are classified by race--white, black, American Indian, Chinese, Hawaiian, Japanese, Filipino, and Other Asian or Pacific Islander. Beginning with 1992 data, an expanded code structure was used for seven States showing five additional Asian or Pacific Islander groups. These groups are Asian Indian, Korean, Samoan, Vietnamese, and Guamanian. These groups are coded only for deaths occurring in California, Hawaii, Illinois, New Jersey, New York, Texas, and Washington. In 1990, at least two-thirds of the U.S. population of each of these groups lived in this seven-State reporting area: Asian Indian, Korean, and Vietnamese, 63-66 percent; Guamanian, 74 percent; and Samoan, 84 percent (9). This additional race detail is available on the mortality public-use data tapes (10,11) and in tabular form. Beginning with 1992 data, all records coded as "other races" (0.02 percent of the total deaths in 1995) were assigned to the specified race of the previous record rather than to a separate category called "other races." Mortality data for Filipino and Other Asian or Pacific Islander were shown for the first time in 1979.

The white category includes, in addition to persons reported as white, those reported in the race item on the death certificate as Hispanic, Mexican, Puerto Rican, Cuban, and all other Caucasians. The American Indian category includes North, Central, and South American Indian, 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 nonwhite 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 used since 1969. Before 1969 if the entry for race was a mixture of black and any other race except Hawaiian, the entry was coded to black.

Race not stated--For 1995 the number of death records for which race was unknown, not stated, or not classifiable was 1,954 or 0.1 percent of the total deaths. Beginning in 1992 death records with race not stated were assigned to the specified race of the previous record with known race. From 1965 to 1991 death records with race entry not stated were assigned to a racial designation as follows: If the preceding record was coded white, the code assignment was made to white; if the code was other than white, the assignment was 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 and death in the beginning of 1962. The item was restored during the latter part of 1962. However, the certificate revision without the race item was used for most of 1962 as well as 1963. Therefore, figures by race for 1962 and 1963 exclude New Jersey. For 1964, 6.8 percent of the death records used for residents of New Jersey did not contain the race item.

Adjustments made in vital statistics to account for 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.

Quality of race data--A number of studies have been conducted on the reliability of race reported on the death certificate. These studies compare race reported on the death certificate with that reported on another data collection instrument such as the census or a survey. Race information on the death certificate is reported by the funeral director as provided by an informant, often the surviving next of kin, or, in the absence of an informant, on the basis of observation. In contrast, race on the census or the Current Population Survey (CPS) is self-reported or reported by a member of the household and, therefore, may be considered more valid. A high level of agreement between the death certificate and the census or survey report is essential to ensure unbiased death rates by race.

In one study a sample of approximately 340,000 death certificates was compared with census records for a 4-month period in 1960 (12). Percent agreement was 99.8 percent for white decedents, and 98.2 percent for black decedents; but less for the smaller minority groups (table A); the net difference in the number of deaths between the census records and death certificates can be expressed as a ratio of the census to the death certificate. A ratio of 1.0 for both white and black decedents (table A) indicates that the number of deaths for these race groups was essentially the same for these two sources. In another study, the National Longitudinal Mortality Study (NLMS), a total of 29,713 death certificates were compared with responses to the race questions from a total of 12 CPS's conducted by the U.S. Bureau of the Census for the years 1979-85 (13). The ratio between the two sources for white and black decedents was 1.0 as in the earlier study, however, the ratio for American Indian was 1.22 indicating that 22 percent more decedents were identified as American Indian in the census source as compared to the death certificate. The ratio for Asians was 1.12 (table A). In 1986 the National Mortality Followback Survey, conducted

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by NCHS, listed a question about the race of decedents 25 years old and over. The total sample was 18,733 decedents (14). The rates of agreement were similar to those observed in the other studies.

All of these studies show that persons self-reported as American Indian or Asian on census and survey records (and by informants in the Followback Survey) were sometimes reported as white on the death certificate. The net effect of misclassification is an underestimation of deaths and death rates for the smaller minority races.

Hispanic deaths

Mortality statistics for the Hispanic population are based on information for those States and the District of Columbia that included items on the death certificate to identify Hispanic or ethnic origin of decedents. Data for 1995 were obtained from the District of Columbia and all States except Oklahoma, which was excluded because its death certificate did not include an item to identify Hispanic or ethnic origin.

Hispanic mortality data were published for the first time in 1984. Generally, the reporting States used items similar to one of two basic formats recommended by NCHS. The first format is directed specifically toward the Hispanic population and appears on the U.S. Standard Certificate of Death as follows:

! WAS DECEDENT OF HISPANIC ORIGIN?
(Specify No or Yes--If Yes, specify Cuban, Mexican, Puerto Rican, etc.)
 No ___ Yes
Specify:

The second format is a more general ancestry item and appears as follows:

! ANCESTRY--Mexican, Puerto Rican, Cuban, African, English, Irish, German, Hmong, etc., (*specify*)

Death rates --Death rates for the total Hispanic population and race for non-Hispanic origin utilize demographically-derived population estimates produced by the Bureau of the Census (15). By comparison, population estimates for Mexicans, Puerto Ricans, Cubans, and Other Hispanics are based in part on the Current Population Survey (15). Rates using the latter, therefore, are subject to sampling variation as well as random variation (see "Random variation and sampling errors").

The 49 States and the District of Columbia accounted for about 99.6 percent of the Hispanic population in the United States in 1990. This included about 99.5 percent of the Mexican population, 99.8 percent of the Puerto Rican population, 99.9 percent of the Cuban population, and 99.7 percent of the "Other Hispanic" population (9). For qualifications regarding infant mortality of the Hispanic-origin population, see "Infant deaths."

In 1994 New York City instituted the use of a revised death certificate where the race and ethnic items were to be completed by the funeral director. Previously these items were completed by the physician or medical examiner. In 1995 of the 70,752 deaths occurring in New York City, only 3 percent were coded to Unknown origin. Similarly, 4 percent were coded to unknown origin in 1994 whereas 23 percent were coded to Unknown origin in 1993. Between 1993 and 1994 the number of deaths occurring in New York City decreased 69 percent for Other and unknown Hispanic and 83 percent for Unknown origin. As a result of increased specificity in reporting ethnic origin, the number of deaths increased substantially in 1994 for Non-Hispanic and for each of the specified Hispanic subgroups.

Quality of data on Hispanic deaths--The NLMS examined the reliability of Hispanic origin reported on 43,520 death certificates with that reported on a total of 12 CPS's conducted by the U.S. Bureau of the Census for the years 1979-85 (13). The ratio of deaths for CPS divided by deaths for death certificate was 1.07 percent indicating net underreporting of Hispanic origin on death certificates as compared with self-reports on the surveys. The sample was too small to assess the reliability of specified Hispanic groups.

Marital status

Mortality statistics by marital status have been published annually since 1979. They were previously published in *Vital Statistics of the United States* for 1949-51 and 1959-61. Several reports analyzing mortality by marital

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status have been published, including the special study based on 1959-61 data (16). Reference to earlier reports is given in the appendix of part B of the 1959-61 special study.

Mortality statistics by marital status are tabulated separately for never married, married, widowed, and divorced. Deaths for which the marriage is specified as being annulled are classified as never married. Marital status specified as separated or common-law marriage is classified as married. Of the 2,267,097 resident deaths 15 years of age and over in 1995, 9,705 certificates (0.4 percent) had marital status not stated.

Death rates -- Death rates for marital status use population estimates produced by the Bureau of the Census based on the Current Population Survey (15). Because these population estimates are subject to sampling variation, death rates based on them are subject to both sampling variation as well as random variation (see "Random variation and sampling errors").

Educational attainment

Beginning with the 1989 data year, mortality data on educational attainment have been tabulated from information reported on the death certificate using the following item:

- ! DECEDENT'S EDUCATION (*Specify only highest grade completed*)
Elementary/Secondary (0-12)
College (1-4 or 5+)

For 1995, mortality data on educational attainment were reported by 46 States and the District of Columbia. Georgia, Oklahoma, Rhode Island, and South Dakota did not include an educational attainment item on their death certificate.

Selected mortality tables on educational attainment are based on deaths to residents of 45 States and the District of Columbia whose data were approximately 80 percent or more complete on a place-of-occurrence basis. In addition to the four States mentioned previously, data for Kentucky are excluded from these tables because more than 20 percent of their death certificates were classified to "unknown educational attainment."

Injury at work

Deaths for "Injury at work" were included on the 1993 public-use data tapes for the first time. These data were obtained from the following item that appears on the U.S. Standard Certificate of Death:

- ! INJURY AT WORK?
(*Yes or no*)

All States have this item on their death certificates.

Occupation and industry

Deaths by occupation and industry are included on the 1995 public-use data tapes and CD-ROM. These data have been included since 1985 and were obtained from the following items that appear on the U.S. Standard Certificate of Death:

- ! DECEDENT'S USUAL OCCUPATION
(*Give kind of work done during most of working life.*
Do not use retired.)

- ! KIND OF BUSINESS/INDUSTRY

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For 1995, the occupation and industry mortality data were included for the following 19 reporting States:

| | |
|---------------|----------------|
| Colorado | New Mexico |
| Georgia | North Carolina |
| Idaho | Ohio |
| Indiana | Rhode Island |
| Kansas | South Carolina |
| Kentucky | Utah |
| Maine | Vermont |
| Nevada | West Virginia |
| New Hampshire | Wisconsin |
| New Jersey | |

Data for 1993-95 were coded using the revised NCHS Part 19 instruction manual (17) and the Bureau of the Census 1990 occupation and industry titles and three-digit codes, which are shown in the 1990 Census of Population and Housing (18).

Occupation and industry mortality data for 1984-92 were based on the 1980 Bureau of the Census occupation and industry classifications. For a listing of the changes between the 1980 and the 1990 classification systems, see Appendix D of the NCHS Part 19 instruction manual (17).

In addition to the codes shown in the Bureau of the Census publication (18), the following special codes were created:

| <u>Occupation</u> | <u>Industry</u> |
|---|------------------------|
| 913 Retired | 961 Own Home/At Home |
| 914 Housewife/ Homemaker | 970 Retired |
| 915 Student | 990 Blank, Unknown, NA |
| 916 Volunteer | |
| 917 Unemployed, never worked, disabled, child, infant | |
| 999 Blank, Unknown, NA | |

Place of death and status of decedent

Mortality statistics by type of place of death have been shown annually in *Vital Statistics of the United States* since 1979. Before that year they were published in 1958 (tables 1-30--1-32). In addition, mortality data also were available for the first time in 1979 for the status of decedent when death occurred in a hospital or medical center. The 1994 data were obtained from the following two items appearing on the revised U.S. Standard Certificate of Death (1):

! PLACE OF DEATH (*check only one*)

HOSPITAL: Inpatient ER/Outpatient DOA

OTHER: Nursing Home Residence Other (*specify*)

! FACILITY NAME (*If not institution, give street and number*)

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Before the 1989 revision of the Standard Certificate of Death, information on place of death and status of decedent could be determined if hospital or institution indicated Inpatient, Outpatient, ER, or DOA, and if the name of the hospital or institution, which was used to determine the kind of facility, appeared on the certificate. The change to a checkbox format in many States for this item may affect the comparability of data for 1989 and subsequent years with data for years before 1989.

Except for Oklahoma, all of the States (including New York City) and the District of Columbia have this item (or its equivalent) on their certificates. For all reporting States and the District of Columbia in the VSCP, NCHS accepts the State definition, classification, or code for hospitals, medical centers, nursing homes, or other institutions.

Effective with data for 1980, the coding of place of death and status of decedent was modified. A new coding category was added: "Dead on arrival--hospital, clinic, or medical center." Had the 1979 coding categories been used, these deaths would have been coded to "Place unknown."

California--For the first 5 months of data year 1989, California coded "Place of death" to "other" rather than "residence".

Mortality by month and date of death

Deaths by month have been tabulated regularly and are available for each year since 1900. Deaths from selected causes by date of death have been published each year since 1972 and are available for 1962.

Numbers of deaths by date of death are produced for the total number of deaths and for the numbers of deaths for the following three causes, for which the greatest interest in date of occurrence of death has been expressed: Motor vehicle accidents, Suicide, and Homicide and legal intervention.

These data show the frequency distribution of deaths for 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

Beginning with the 1995 data year, mortality data on autopsy are no longer collected due to budgetary constraints.

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" (19).

For each death the underlying cause is selected from an array of conditions reported in the medical certification section on the death certificate. This section provides a format for entering the cause of death sequentially. The conditions are translated into medical codes through use of the classification structure and the selection and modification rules contained in the applicable revision of the *International Classification of Diseases* (ICD), published by the World Health Organization (WHO). Selection rules provide guidance for systematically identifying the underlying cause of death. 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 conditions or more on the certificate into one classification category.

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

Tabulation lists--Beginning with data year 1979, the cause-of-death statistics published by NCHS have been classified according to the Ninth Revision of the *International Classification of Diseases* (ICD-9) (19).

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

The Each-Cause List is made up of each three-digit category of the WHO Detailed List to which deaths may be validly assigned and most four-digit subcategories. This list is used for the tabulation of data for the entire United States. The Each-Cause table in *Vital Statistics of the United States* does not show the four-digit or special five-digit subcategories provided for Motor vehicle accidents (E810-E825). The four-digit subcategories that identify persons injured and the five-digit subcategories that identify place of accident for deaths from nontransport accidents are tabulated separately.

The List of 282 Selected Causes of Death is constructed to be compatible with the recommended WHO lists for tabulating mortality data in ICD-9. This list is used for tabulating both State and national mortality data.

The List of 72 Selected Causes of Death was, in part, constructed by combining titles in the List of 282 Selected Causes of Death. It is used in tabulating data for the entire United States and each State and for Metropolitan statistical areas and for ranking leading causes of death excluding infants. (See "Cause-of-death ranking".)

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, and is used for ranking infant causes of death. (See "Cause-of-death ranking".)

The List of 34 Selected Causes of Death was created by combining titles in the List of 72 Selected Causes. This list is used for tabulating data by detailed geographic area.

Beginning with data for 1987, changes were made in these lists to accommodate the introduction in the United States of new categories *042-*044 for Human immunodeficiency virus (HIV) infection. The changes are described in the Technical Appendix from *Vital Statistics of the United States*, 1987. To facilitate data use, beginning with data for 1994, the categories for HIV infection (*042-*044) and Alzheimer's disease (ICD-9 No. 331.0) are included separately at the bottom of tables showing the List of 72 Selected Causes of Death and the List of 282 Selected Causes of Death. They are also subsumed in categories of the list.

Effect of ICD revisions--The International Classification of Diseases (ICD), used in the United States since 1900, has been revised approximately every 10 years so the disease classifications may be consistent with advances in medical science and with changes in diagnostic practice. Each revision of the ICD has produced some break in comparability of cause-of-death statistics. Cause-of-death statistics beginning with 1979 are classified by NCHS according to ICD-9 (19). For a discussion of each of the classifications used with death statistics since 1900, see *Vital Statistics of the United States*, 1979, Volume II, Mortality, Part A, section 7, pages 9-14.

Revisions of the ICD cause discontinuities in cause of death statistics because of changes in the classification or in the rules for selecting and modifying the underlying cause of death. To measure the discontinuity, dual coding studies have been carried out since the Fifth Revision of the ICD (1940). A dual coding study was undertaken between the Ninth and the Eighth Revisions (20). For additional information about these studies, see the Technical Appendix from *Vital Statistics of the United States*, 1979.

Significant coding changes under the Ninth Revision--Since the implementation of ICD-9 in the United States, effective with mortality data for 1979, several coding changes have been introduced that are described in detail in *Vital Statistics of the United States* for the years in which they were introduced. The more important changes are: In early 1983 a change that affected data from 1981 to 1986 was made in the coding of Acquired immunodeficiency syndrome and HIV infection. Also effective with data year 1981 was a coding change for Poliomyelitis. For data year 1982, the definition of child was changed (which affects the classification of deaths to a number of categories, including Child battering and other maltreatment), and guidelines for coding deaths to the category Child battering and other maltreatment (ICD-9 No. E967) were changed also. During the calendar year 1985, detailed instructions for coding Motor vehicle accidents involving all-terrain vehicles were implemented to ensure consistency in coding these accidents. Effective with data year 1986, "Primary" and "Invasive" tumors, unspecified, were classified as "Malignant"; these neoplasms had been classified to Neoplasms of unspecified nature (ICD-9 No. 239).

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Beginning with data for 1987, NCHS introduced new category numbers *042-*044 for classifying and coding HIV infection, formerly referred to as Human T-cell lymphotropic virus-III/lymphadenopathy associated virus (HTLV-III/LAV) infection. The asterisks appearing before the categories indicate these codes are not part of ICD-9. Also changed effective with data year 1987 were coding rules for the conditions "Dehydration" and "Disseminated intravascular coagulopathy." Effective with data year 1988, minor content changes were made to the classification for HIV infection. Detailed discussion of these changes may be found in the Technical Appendix from *Vital Statistics of the United States*, 1988.

Coding in 1995--The rules and instructions used in coding 1995 mortality medical data remained essentially the same as those used for the 1994 data.

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

A number of studies have been undertaken on the quality of medical certification on the death certificate. In general, these have been for relatively small samples and for limited geographic areas. A bibliography prepared by NCHS (21), covering 128 references over 23 years, indicates no definitive conclusions have been reached about the quality of medical certification on the death certificate. 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, Chapter XVI, Symptoms, signs, and ill-defined conditions (ICD-9 Nos. 780-799). Although deaths occur for which it is impossible to determine the underlying cause, this proportion indicates the care and consideration given to the certification by the medical certifier. This proportion also may be used as a rough measure of the specificity of the medical diagnoses made by the certifier in various areas. In 1995, 1.2 percent of all reported deaths in the United States were assigned to this category. The percent of deaths assigned to this category remained stable at 1.5 percent from 1981 to 1987, but has declined slightly since then.

Automated selection of underlying cause of death--Before data for 1968, mortality medical data were based on manual coding of an underlying cause of death for each certificate in accordance with WHO rules. Effective with data year 1968, NCHS converted to computerized coding of the underlying cause and manual coding of all causes (multiple causes) on the death certificate. In this system, called Automated Classification of Medical Entities (ACME) (22), the multiple cause codes serve as inputs to the computer software that employs WHO rules to select the underlying cause. The ACME system applies the same rules for selecting the underlying cause as would be applied manually 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 the international rules. The decision tables provide the comprehensive relationships among the conditions classified by ICD when applying the rules of selection and modification.

The decision tables were developed by NCHS staff on the basis of their experience in coding underlying causes of death under the earlier manual coding system and as a result of periodic independent validations. These tables periodically are updated to reflect additional new information on the relationship among medical conditions. For data year 1988, these tables were amended to incorporate minor changes to the previously mentioned classification for HIV infection (*042-*044) that originally had been implemented with data year 1987. Coding procedures for selecting the underlying cause of death by using the ACME computer program, as well as by using the ACME decision tables, are documented in NCHS instruction manuals (22,23,24).

Beginning with data year 1990, another computer system was implemented for automating cause-of-death coding. This system, called Mortality Medical Indexing, Classification, and Retrieval (MICAR) (25,26), automates coding multiple causes of death. Because MICAR automates multiple-cause coding rules, errors in recognizing terms, applying coding rules, and using the ICD index are eliminated. The use of the MICAR system ensures

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consistent application of multiple-cause coding rules, which is especially important for rules that are complex and infrequently applied. In addition, MICAR can provide more detailed information on the conditions reported on death certificates than is available through the ICD category structure (27). In the first year of implementation, only about 5 percent of the Nation's death records were coded using MICAR with subsequent processing through ACME. This percentage increased from 26 percent in 1991 to 35 percent in 1992, 59 percent in 1993, 72 percent in 1994, and 74 percent in 1995. States whose data were coded by MICAR in 1995 included Alabama, Arizona, Arkansas, Delaware, District of Columbia, Florida, Georgia, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maryland, Massachusetts, Missouri, Nebraska, Nevada, New Jersey, New York (excluding New York City), New York City, North Carolina, Ohio, Pennsylvania, South Carolina, South Dakota, Tennessee, Texas, Utah, Vermont, Virginia, Washington, and West Virginia. For these States, MICAR processed about 88 percent of the mortality records with an average system error rate of 0.17 on an underlying cause basis, and a rate of 0.32 on a multiple-cause basis. Records that MICAR was unable to process were coded manually and then processed using ACME.

Beginning with data year 1993, another computer system was implemented for automating cause-of-death coding. This system, called SuperMICAR, is an enhancement of the MICAR system, which allows for total literal entry of the multiple cause-of-death text as reported by the certifier. This information is automatically coded by the MICAR and ACME computer systems. In the first year of implementation, about 9 percent of the Nation's death records were coded using SuperMICAR with subsequent processing through MICAR and ACME. This percentage increased from 9 percent in 1993 to 12 percent in 1994, and 14 percent in 1995. States using SuperMICAR in 1995 included Colorado, Connecticut, Hawaii, Idaho, Michigan, Minnesota, New Hampshire, New Mexico, Oklahoma, Oregon, Rhode Island, and Wisconsin. In 1995, for these States, SuperMICAR processed about 75 percent of the mortality records with an average system error rate of 0.59 on an underlying cause basis, and a rate of 1.17 on a multiple-cause basis. Records that SuperMICAR was unable to process were coded manually and then processed using ACME.

Cause-of-death ranking--Cause-of-death ranking except for infants is based on numbers of deaths assigned to categories in the List of 72 Selected Causes of Death, Human immunodeficiency virus infection (*042-*044), and Alzheimer's disease (ICD-9 No. 331.0). Added to the list of rankable causes was HIV infection, effective with data year 1987 and Alzheimer's disease, effective with data year 1994. Cause-of-death ranking for infants is based on the List of 61 Selected Causes of Infant Death and HIV infection (added to the list of rankable causes of infant death effective with data year 1987).

The group titles Major cardiovascular diseases and Symptoms, signs, and ill-defined conditions from the List of 72 Selected Causes of Death are not ranked; Certain conditions originating in the perinatal period and Symptoms, signs, and ill-defined conditions from the List of 61 Selected Causes of Infant Death are not ranked. In addition, category titles beginning with the words "Other" or "All other" are not ranked to determine the leading causes of death. When one of the titles representing a subtotal is ranked (such as Tuberculosis), its component parts (in this case, Tuberculosis of respiratory system and Other tuberculosis) are not ranked.

Maternal deaths

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

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

Under the Eighth Revision, maternal deaths were assigned to the category "Complications of pregnancy, childbirth, and the puerperium" (*Eighth Revision International Classification of Diseases, Adapted for Use in the United States* (ICDA-8) Nos. 630-678). Although WHO did not define maternal mortality, an NCHS classification rule existed that limited the definition of a maternal death to a death that occurred within a year after termination of pregnancy from any "maternal cause," that is, any cause within the range of ICDA-8 Nos. 630-678. This rule

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

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

Race--Beginning with the 1989 data year, NCHS changed the method of tabulating live birth data by race from race of child, which was determined from the race of the parents, to race of mother. This resulted in a discontinuity in maternal mortality rates by race between 1989-95 and previous years; see "Change in tabulation of race data for live births," under "Infant deaths" in the Technical Appendix from *Vital Statistics of the United States*, 1990, or the series report, "Effect on Mortality Rates of the 1989 Change in Tabulating Race" (28).

Infant deaths

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

Rates--Infant mortality rates are the most commonly-used indices for measuring the risk of dying during the first year of life; they are calculated by dividing the number of infant deaths in a calendar year by the number of live births registered for the same period and are presented as rates per 1,000 or per 100,000 live births. Infant mortality rates use the number of live births in the denominator to approximate the population at risk of dying before the first birthday. This measure is an approximation because some live births will not have been exposed to a full year's risk of dying and some of the infants who die during a year will have been born in the previous year. The error introduced in the infant mortality rate by this inexactness is usually small, especially when the birth rate is relatively constant from year to year (29,30). Other sources of error in the infant mortality rate have been attributed to differences in applying the definitions for infant death and fetal death when registering the event (31,32,33).

In contrast to infant mortality rates based on live births, infant death rates are based on the estimated population under 1 year of age. Infant death rates, which appear in tabulations of age-specific death rates, are calculated by dividing the number of infant deaths in a calendar year by the estimated midyear population of persons under 1 year of age and are presented as rates per 100,000 population in this age group. Patterns and trends in the infant death rate may differ somewhat from those of the more commonly used "infant mortality rate," mainly because of differences in the nature of the denominator and in the time reference. Whereas the population denominator for the infant death rate is estimated using data on births, infant deaths, and migration for the 12-month period of July-June, the denominator for the infant mortality rate is a count of births occurring during the 12 months of January-December. The difference in the time reference can result in different trends between the two indices during periods when birth rates are moving up or down markedly.

The infant death rate also is subject to greater imprecision than is the infant mortality rate because of problems of enumerating and estimating the population under 1 year of age (32).

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Change in tabulation of race data for live births--Beginning with the 1989 data year, NCHS changed the method of tabulating live-birth data by race from race of child, which was determined from the race of the parents, to race of mother. As in previous years, race for infant and maternal deaths (the numerator of the rate) is tabulated by the race of the decedent. Because live births comprise the denominator of infant and maternal mortality rates, this change resulted in a discontinuity in rates between 1989-95 data, and that for previous years. For additional information, see the Technical Appendix from *Vital Statistics of the United States*, 1990, or the series report, "Effect on Mortality Rates of the 1989 Change in Tabulating Race" (28).

Comparison of race data from birth and death certificates--Regardless of whether vital events are tabulated by race of mother or by race of parents, studies in which race on the birth and death certificates for the same infant were compared find inconsistencies in reporting race between birth and death certificates (34).

These reporting inconsistencies can result in systematic biases in infant mortality rates by specified race, in particular, underestimates for specified races other than white or black. In the computation of race-specific infant mortality rates, the race item for the numerator comes from the death certificate, and for the denominator, from the birth certificate. Biases in the rates may arise because of possible inconsistencies in reporting race on these two vital records. Race of the mother and father is reported on the birth certificate by the mother at the time of delivery; whereas race of the deceased infant is reported on the death certificate by the funeral director based on observation or on information supplied by an informant, such as a parent. Previous studies have noted the race for an infant who died and was of a smaller minority race group is sometimes reported as white on the death certificate but is reported as the minority race group on the birth certificate, resulting, in the aggregate, in understatement of infant mortality for smaller race groups, for example, American Indian (34).

Estimates can be made of the degree of bias in race-specific infant mortality rates by comparing rates for which race is based on the death certificate of the infant with rates in which race is based on race of mother from the birth certificate. In table B these comparisons are made for the years 1995 and 1996 combined. A measure of reliability is the ratio of race reported on the linked file (race of mother from the birth certificate) to the race of the child reported on the death certificate. The ratio for white infants is 1.0; for black 0.97 indicating a good net correspondence in race from the two sources. However, for American Indians the ratio is 1.14 indicating that rates where race is based on the birth certificate are 14 percent higher than those based on the death certificate. Ratios among specific populations groups of Asian Americans varied greatly. Understatement was greatest for Japanese infants with a ratio of 2.04, indicating that infant mortality rates based on birth certificate information are over twice as high as those based on death certificates. The ratios for Filipinos were 1.68, and for Chinese, 1.21. The ratio for Hawaiians was 0.85, indicating a higher rate based on death certificates, possibly because on death records on which Hawaiian was reported in combination with another race, coding procedures always give preference to Hawaiian (35).

Hispanic origin--Infant mortality rates for the Hispanic-origin population are based on numbers of resident infant deaths reported to be of Hispanic origin (see "Hispanic origin") and numbers of resident live births by Hispanic origin of mother for the 49 States and the District of Columbia. Data for Oklahoma were excluded, because Oklahoma did not include an item on Hispanic origin on its death certificate. In computing infant mortality rates, deaths and live births of unknown origin are not distributed among the specified Hispanic and non-Hispanic groups. Because the percent of infant deaths of unknown origin for 1995 was 1.7 percent and the percent of live births of unknown origin was 1.5 percent, infant mortality rates by specified Hispanic origin and race for non-Hispanic origin may be slightly underestimated.

Small numbers of infant deaths for specific Hispanic-origin groups can result in infant mortality rates subject to relatively large random variation (see "Random variation and sampling errors").

Table C shows comparisons for infant mortality rates for Hispanic origin where Hispanic origin is based on death certificate identification of the infant or on birth certificate information on the Hispanic origin of the mother (the linked file) for 1996. For total Hispanic origin infants, the ratio was 1.05 indicating that rates are about 5 percent higher using the race of mother from the birth certificate (linked file). For Mexican and Cuban, the rates were about the same (ratios of 1.00 and 1.02, respectively), but rates for Puerto Rican infants were 12 percent higher when Hispanic origin was based on the birth certificate (35).

Tabulation list--Causes of death for infants are tabulated according to a list of causes that is different from the list of causes for the population of all ages, except for the Each Cause List. (See "Cause-of-death classification" under "Cause of death.")

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Quality of data

Completeness of registration

All States have adopted laws requiring the registration of births and deaths. It is believed that more than 99 percent of the births and deaths occurring in this country are registered.

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

Amended records for Alaska--Numbers of deaths for selected causes occurring in Alaska for 1995 are in error because NCHS did not receive changes resulting from amended records. An estimate of the effect of these omissions can be derived by comparing NCHS counts of records processed through the VSCP with counts prepared by Alaska as shown in table D. Differences are concentrated among selected causes of death, principally Symptoms, signs, and ill-defined conditions (ICD-9 Nos. 780-799) and external causes.

Quality control procedures

Demographic items on the death certificate--As previously indicated, for 1995 the mortality data for these items were obtained from two sources--photocopies of the original certificates furnished by Guam and electronic data records furnished by the 50 States, the District of Columbia, New York City, Puerto Rico, and the Virgin Islands. For Guam, which sent only copies of the original certificates, the demographic items were coded for 100 percent of the death certificates. The demographic coding for 100 percent of the certificates was independently verified.

For areas sending electronic data records, a sample of 70-80 records per month for each registration area is used to monitor quality of coding. Under this procedure, each sample record is independently coded by NCHS staff and compared to the State code assignments. NCHS/State differences are adjudicated to ascertain the source of the error and need for corrective action. The estimated average outgoing error rate for all demographic items in 1995 was 0.25 percent. The error rate is a combined measure of State coding, key entry and processing errors made in the process of preparing the statistical file. These types of errors are not necessarily randomly distributed in the file and may therefore escape detection through sample verification. To reduce some systematic errors other NCHS procedures such as detailed computer edits, tabular evaluation, and procedure review are used.

Medical items on the death certificate--The same procedures used for demographic data are used for the medical items. For the 41 States sending electronic files, the average outgoing error rate in 1995 was estimated at 2.8 percent for underlying cause data, and 5.5 percent for multiple cause-of-death data.

For the remaining 9 States, the District of Columbia, New York City, Puerto Rico, the Virgin Islands, and Guam, NCHS coded the medical items for all the death records. A 1-percent sample of the records was coded independently for quality control purposes. The estimated average error rate for underlying cause for these areas was 3.6 percent.

Other control procedures--After coding and data entry are completed, record counts are balanced against control totals for each shipment of records from a registration area. Editing procedures ensure that records with inconsistent or impossible codes are modified. Inconsistent codes are those, for example, indicating a 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 (36). Further, conditions specified on a list of infrequent or rare causes of death are confirmed by the certifier or a State health officer. 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 are based on a 50-percent sample of all deaths occurring in the 50 States and the District of Columbia. A description of the sample design and a table of the percent errors of the estimated numbers of deaths by size of estimate and total deaths in the area are shown in the Technical Appendix from *Vital Statistics of the United States, 1972*.

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Computation of rates and other measures

Population bases

Population bases from which death rates are computed are prepared by the U.S. Bureau of the Census. Rates for 1940, 1950, 1960, 1970, 1980, and 1990 are based on the population enumerated as of April 1 in the censuses for those years. Rates for all other years use the estimated midyear (July 1) population. Death rates for the United States, individual States, and metropolitan areas are based on the total resident populations of the respective areas. Except as noted, these populations exclude the Armed Forces abroad but include the Armed Forces stationed in each area.

The resident populations of the birth- and death-registration States for 1900-32, and of the United States for 1900-95 are shown in table E. In addition, the population including Armed Forces abroad is shown for the United States. Table F lists the sources for these populations.

Populations for 1995--Population estimates of the United States by age, race, and sex for 1995 are shown in table G (37). The 1995 estimates are consistent with those for 1990-94. Population estimates for each State by age for 1995 are shown in table H (38). Since these population estimates are based on demographic analysis, they are not subject to sampling variability.

In addition the following estimates are shown:

- ! Estimated population by 5-year age groups, specified Hispanic origin, race for non-Hispanic origin, and sex: Total of 49 States and the District of Columbia, 1995 (see table I) (15)
- ! Estimated population for ages 15 years and over by 5-year age groups, marital status, race, and sex: United States, 1995 (see table J) (15)
- ! Estimated population for ages 15 years and over, by 5-year age groups, marital status, Hispanic origin, race for non-Hispanic origin, and sex: Total of 49 States and the District of Columbia, 1995 (see table K) (15)

Population estimates by specified Hispanic origin and by marital status groups are based on the Bureau of the Census' Current Population Survey (a sample-based survey) adjusted to control totals. As a result, these estimates are subject to sampling variation (see "Random variation and sampling errors").

Population for 1990--In the 1980 and 1990 censuses, a substantial number of persons did not specify a racial group that could be classified as any of the white, black, American Indian, Eskimo, Aleut, Asian, or Pacific Islander categories on the census form (39). In 1980 the number of persons of "Other" race was 6,758,319; in 1990, it was 9,804,847. In both censuses the large majority of these persons were of Hispanic origin (based on responses to a separate question on the form), and many wrote in their Hispanic origin (for example, Mexican and Puerto Rican) as their race. In 1980 and 1990 persons of unspecified race were allocated to one of the four tabulated racial groups (white, black, American Indian, Asian or Pacific Islander) based on their response to the Hispanic origin question. These four race categories conform with OMB Directive 15 (the standards for recordkeeping, collection, and presentation of data on race and ethnicity in Federal statistical activities and program administrative reporting) (40) and are more consistent with the race categories in vital statistics.

In 1980 the allocation of unspecified race was determined using cross-tabulations of age, sex, race, specified Hispanic origin, and county of residence. Persons of Hispanic origin and unspecified race were allocated to either white or black based on their specific Hispanic origin. Persons of "Other" race and Mexican origin were categorically assumed to be white, while persons in other Hispanic categories were distributed to white and black pro rata within the county-age-sex group. For "Other race-not-specified" persons who were not Hispanic, race was allocated to white, black, or Asian or Pacific Islander based on proportions gleaned from sample data. The 20-percent sample (respondents who were enumerated on the longer census form) provided a highly detailed coding of race, which allowed identification of otherwise unidentifiable responses with a specified race category. Thus, allocation proportions were established at the State level and were used to distribute the non-Hispanic persons of "Other" race in the 100-percent tabulations.

In 1990 the race modification procedure was implemented using individual census records. Persons whose race could not be specified were assigned to a racial category using a pool of "race donors" that consisted of persons of

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specified race who had the identical responses to the Hispanic origin question and who were within the auspices of the same census district office. As in the 1980 census, it appeared that the underlying assumption made in the 1990 census was that the Hispanic origin response was the major criterion for allocating race. Unlike those responding to the 1980 census who could be assigned only to the racial group white or black, persons of Hispanic origin, including Mexicans, responding to the 1990 census could be assigned to any racial group. Also, in the 1990 census, the non-Hispanic component of "Other" race was allocated primarily on the basis of geography (district office), rather than detailed characteristic.

The means by which respondent's age was determined were fundamentally different for the two censuses; therefore, the problems that necessitated the modification were different. In 1980 respondents reported year of birth and quarter of birth (within year) on the census form. When census results were tabulated, persons born in the first quarter of the year (before April 1) had age equal to 1980 minus year of birth, while persons born in the last three quarters had age equal to 1979 minus year of birth.

In 1990 quarter year of birth was not reported on the census form, so direct determination of age from year of birth was not possible. In 1990 census publications, age is based on respondents' direct reports of age at last birthday. This definition proved inadequate for postcensal estimates as it was apparent that many respondents had reported their age at time of either completion of the census form or interview by an enumerator that could occur several months after the April 1 reference date. As a result, age was biased upward. For most respondents, modification was based on a respecification of age, by year of birth, with allocation to first quarter (persons aged 1990 minus year of birth) and last three quarters (aged 1989 minus year of birth) based on a historical series of registered births by month. This process partially restored the 1980 logic for assignment of age. It was not considered necessary to correct for age overstatement and heaping in 1990, because the availability of age and year of birth on the census form had provided for the elimination of spurious year-of-birth reports in the census data before modification occurred.

Population estimates for 1981-89--Death rates for 1981-89 are based on revised populations that are consistent with the 1990 census level (39). They are, therefore, not comparable with death rates published in *Vital Statistics of the United States* for 1981-89, and in other NCHS publications for those years. The 1990 census counted approximately 1.5 million fewer persons than had been estimated earlier for April 1, 1990.

Populations for 1980--Death rates for 1980 are based on the population enumerated as of April 1 in the 1980 census (41). The figures by race have been modified as described.

Population estimates for 1971-79--Death rates for 1971-79 used revised population estimates that are consistent with the 1980 census levels. The 1980 census enumerated approximately 5.5 million more persons than had been estimated for April 1, 1980 (42). These revised estimates for the United States by age, race, and sex are published by the U.S. Bureau of the Census in *Current Population Reports*, Series P-25, Number 917. Unpublished revised estimates for States were obtained from the U.S. Bureau of the Census. For Puerto Rico, the Virgin Islands, and Guam, revised estimates are published in *Current Population Reports*, Series P-25, Number 919.

Population estimates for 1961-69--Death rates for 1961-69 are based on revised estimates of the population and thus may differ slightly from rates published before 1976. Rates, life table values, and population estimates for each year during 1961-69 have been revised to reflect modified population bases as published in the U.S. Bureau of the Census, *Current Population Reports*, Series P-5, Number 519.

New Jersey--As previously indicated, data by race are not available for New Jersey for 1962 and 1963. Therefore, for 1962 and 1963, NCHS estimated a population by age, race, and sex that excluded 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 volumes.

Rates and ratios based on live births--Infant and maternal mortality rates are computed on the basis of the number of live births. Counts of live births are published annually in *Vital Statistics of the United States*.

Net census undercount

Errors can be introduced into the annual rates as a result of underenumeration of deaths and the misreporting of demographic characteristics. Errors in rates can also result from enumeration errors in the latest decennial census. This is because annual population estimates for the postcensal interval, which are used in the denominator for calculating death rates, are computed using the decennial census count as a base (39). Net census undercount

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results from the miscounting and misreporting of demographic characteristics such as age. Age-specific death rates are affected by the net census undercount and the misreporting of age on the death certificate (43). To the extent that the net undercount is substantial and that it varies among subgroups and geographic areas, it may have important consequences for vital statistics measures.

Because death rates based on a population adjusted for net census undercount may be more accurate than rates based on an unadjusted population, the possible impact of net census undercount on death rates must be considered. This can be done on a national basis using results of studies conducted by the U.S. Bureau of the Census on the completeness of coverage of the U.S. population (including underenumeration and misstatement of age, race, and sex). Such studies were conducted in the last five decennial censuses--1950, 1960, 1970, 1980, and 1990. From this work have come estimates of the national population that were not counted by age, race, and sex (44-47). The reports for 1990 (unpublished data from the U.S. Bureau of the Census) include estimates of net underenumeration and overenumeration for age, sex, and racial subgroups of the national population modified for race consistency with previous population counts as described in the section "Population bases." These studies indicate that, although coverage was improved over previous censuses, there was differential coverage among the population subgroups; that is, some age, race, and sex groups were more completely counted than others.

Because estimates of net census undercount are not available by age, race, and sex for individual States and counties, it is not feasible to adjust for net census undercount when presenting rates in routine tabulations. Nevertheless, it is important to be aware that net census undercounts can affect levels of observed vital rates.

Age, race, and sex--If adjustments were made for net census undercount, the size of denominators of the death rates generally would increase and the rates, therefore, would decrease. The adjusted rates for 1995 can be computed by multiplying the reported rates by ratios of the census-level resident population to the resident population adjusted for the estimated net census undercount (table L). A ratio of less than 1.0 indicates a net census undercount and, when applied, results in a corresponding decrease in the death rate. A ratio greater than 1.0--indicating a net census overcount--when multiplied by the reported rate results in an increase in the death rate.

Coverage ratios for all ages show that, in general, females were more completely enumerated than males and the white population more completely enumerated than the black population in the 1990 Census of Population. Underenumeration varied by age group for the total population, with the greatest differences found for persons aged 85 years and over. All other age groups were overcounted or undercounted by less than 4.0 percent. Among the age-sex-race groups, underenumeration was highest (13.3 percent) for black males aged 25-34 years. In contrast, white females in this age group were underenumerated by 2.5 percent.

If vital statistics measures were calculated with adjustments for net census undercounts for each population subgroup, the resulting rates would be differentially reduced from their original levels; that is, rates for those groups with the greatest estimated undercounts would show the greatest relative reductions due to these adjustments. Similar effects would be evident in the opposite direction for groups with overcounts. Consequently, the ratio of mortality between the rates for males and females and between the rates for the white population and the black population usually would be reduced.

Similarly, the differences between the death rates among subgroups of the population by cause of death would be affected by adjustments for net census undercounts. For example, in 1990 for the age group 35-39 years, the ratio of the unadjusted death rate for Homicide and legal intervention for black males to that for white males is 7.54, whereas the ratio of the death rates adjusted for net census undercount is 6.92. For Ischemic heart disease for males aged 40-44 years, the ratio of the death rate for the black population to that for the white population is 1.38 using the unadjusted rates, but it is 1.26 when adjusted for estimated underenumeration.

Summary measures--The effect of net census undercount on age-adjusted death rates and life table values depends on the underenumeration of each age group and on the distribution of deaths by age. Thus, the age-adjusted death rate in 1990 for All causes would decrease from 520.2 to 512.7 per 100,000 population if the age-specific death rates were corrected for net census undercount (table M). For Diseases of heart, the age-adjusted death rate for white males would decrease from 202.0 to 198.2 per 100,000 population, a decline of 2.0 percent. For black males, the change from an unadjusted rate of 275.9 to an adjusted rate of 256.7 would amount to a decrease of 7.0 percent. For HIV infection, the rate for black males would decrease from 44.2 to 39.0 and for white males from 15.0 to 14.4.

If death rates by age were adjusted, the corresponding life expectancy at birth computed from these rates would change. When calculating life expectancy, the impact of an undercount or overcount is greatest at the younger

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ages. In general, the effect of correcting the death rates is to increase the estimate of life expectancy at birth. For example, adjustment for net census undercount would increase life expectancy in 1990 by an estimated 0.2 years, from 75.4 years to 75.6 years for the total U.S. population.

Adjustment for differential underenumeration among race-sex groups would lead to greater changes in life expectancy for some groups than for others. For males and females, increases would be 0.3 and 0.1 years, respectively; for the black population and white population, 0.6 and 0.2 years, respectively. The largest increase would be for black males, 1.2 years, followed by white males (0.3 years), black females (0.2 years), and white females (0.2 years).

Age-adjusted death rates

Age-adjusted death rates are used to compare relative mortality risk across groups and over time. However, they should be viewed as constructs or indexes rather than as direct or actual measures of mortality risk. Statistically, they are weighted averages of the age-specific death rates, where the weights represent the fixed population proportions by age (48). Age-adjusted death rates were computed by the direct method, that is, by applying age-specific death rates for a given cause of death to the U.S. standard population (relative age distribution of 1940 enumerated population of the United States totaling 1,000,000 (30)). By using the same standard population, the rates for the total population and for each race-sex group were adjusted separately. It is important not to compare age-adjusted death rates with crude rates. The U.S. standard population and corresponding weights (w_i) are as follows:

| Age | Number | Weights (w_i) |
|------------------------|-----------|-------------------|
| All ages..... | 1,000,000 | 1.000000 |
| Under 1 year..... | 15,343 | 0.015343 |
| 1-4 years..... | 64,718 | 0.064718 |
| 5-14 years..... | 170,355 | 0.170355 |
| 15-24 years..... | 181,677 | 0.181677 |
| 25-34 years..... | 162,066 | 0.162066 |
| 35-44 years..... | 139,237 | 0.139237 |
| 45-54 years..... | 117,811 | 0.117811 |
| 55-64 years..... | 80,294 | 0.080294 |
| 65-74 years..... | 48,426 | 0.048426 |
| 75-84 years..... | 17,303 | 0.017303 |
| 85 years and over..... | 2,770 | 0.002770 |

Age-adjusted death rates by marital status are computed using the age groups 25 years and over. Therefore, the United States standard population aged 25 years and over and corresponding weights (w_i) are as follows:

| Age | Number | Weights (w_i) |
|------------------------|---------|-------------------|
| 25 years and over..... | 567,907 | 1.000000 |
| 25-34 years..... | 162,066 | 0.285374 |
| 35-44 years..... | 139,237 | 0.245176 |
| 45-54 years..... | 117,811 | 0.207448 |
| 55-64 years..... | 80,294 | 0.141386 |
| 65-74 years..... | 48,426 | 0.085271 |
| 75 years and over..... | 20,073 | 0.035346 |

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Life tables

U.S. abridged life tables are constructed by reference to a standard table (49). Life tables for the decennial period 1979-81 are used as the standard life tables in constructing the 1980-95 abridged life tables. Life table

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values for 1981-89 are based on revised intercensal estimates of the populations for those years. Therefore, these life table values may differ from life table values of those years published previously.

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 were first revised in *Vital Statistics of the United States, 1977*; before 1977, life table values for 1970-73 were constructed using the 1959-61 decennial life tables. In addition, life table values for 1951-59, 1961-69, and 1971-79 are based on revised intercensal estimates of the populations for those years. As such, these life table values may differ from life table values previously published.

The annual abridged life table series was initiated for selected race-sex groups in 1945. Because of the increased interest in the average length of life (e_0) for years prior to 1945, estimates were prepared for the following race and sex groups and data years (50).

| <i>Years</i> | <i>Race and sex groups</i> |
|--------------|----------------------------|
| 1900-45..... | Total |
| 1900-47..... | Male |
| 1900-47..... | Female |
| 1900-50..... | White |
| 1900-44..... | White, male |
| 1900-44..... | White, female |
| 1900-50..... | All other |
| 1900-44..... | All other, male |
| 1900-44..... | All other, female |

The geographic areas covered in life tables before 1929-31 were limited to the death-registration areas. Life tables for 1900-02 and 1909-11 were constructed using mortality data from the 1900 death-registration States--10 States and the District of Columbia, and for 1919-21, from the 1920 death-registration States--34 States and the District of Columbia. The tables for 1929-31 through 1958 cover the conterminous United States. Decennial life table values for the 3-year period 1959-61 were derived from data that include Alaska and Hawaii for each year. Data for each year include Alaska beginning in 1959 and Hawaii beginning in 1960. It is believed that the inclusion of these two States does not materially affect life table values.

Random variation and sampling errors

Deaths--The number of deaths reported for an area represent complete counts of such events (except for 1972 when the data were based on a 50-percent sample because of resource constraints). As such, they are not subject to sampling error, although they are subject to non-sampling errors in the registration process. However, when the figures are used for analytical purposes, such as the comparison of rates over time 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 (51). 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. When the number of events is large, the relative standard error 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 data. Such infrequent events may be assumed to follow a Poisson probability distribution. As a result, the numbers of deaths, death rates, and mortality rates are subject to random variation. Estimates of relative standard errors (RSE)--a measure of variability--, 95-percent confidence intervals, and tests of statistical significance under this assumption are shown below. Mortality data may also be subject to non-sampling errors.

Populations--Population estimates of the United States and for each State by age, race, total Hispanic origin, and sex for 1995 are based on demographic methods and, therefore, are not subject to sampling variability. However, population estimates by specified Hispanic origin (Mexicans, Puerto Ricans, Cubans, and Other Hispanics) and by specified marital status groups (never married, married, widowed, and divorced) are based on the Bureau of the Census' Current Population Survey (CPS) adjusted to control totals and, therefore, are subject to sampling variation. As a result, death rates based on the CPS-based population estimates are subject to both

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random variation of the deaths and sampling error of the population estimates. Estimates of relative standard errors, 95-percent confidence intervals, and tests of statistical significance under these assumptions are shown below. All population estimates may also be subject to non-sampling errors.

Computation of population-based death rates--Death rates for a single calendar year are computed by dividing the number of deaths for a class for that year by the population of a similarly-defined class for the same year and multiplying that result by 100,000 (or 1,000). Rates thus computed are per 100,000 (or 1,000) estimated population residing in selected areas of the United States. The 3-year average death rates are computed by dividing the total number of deaths for a class for a three-year period by the sum of the population estimates of a similarly defined class for the same period and multiplying that result by 100,000 (or 1,000).

Computation of live birth-based mortality rates--Maternal mortality rates and infant mortality rates are computed by dividing the number of deaths for a class for a specified year by the number of live births of a similarly defined class for that year and multiplying that result by 100,000 (or 1,000). Rates thus computed are per 100,000 (or 1,000) live births residing in selected areas of the United States. The 3-year average infant mortality rates for the three-year period are computed by dividing the total number of infant deaths for a class for that period by the sum of the live births of a similarly defined class for the three-year period and multiplying that result by 100,000 (or 1,000).

Relative Standard Errors and 95% Confidence Intervals--Formulas for computing approximate RSE's and confidence intervals (CI's) for crude, age-specific death rates, and age-adjusted death rates are shown below.

Beginning with 1989 data, an asterisk has been shown in place of a rate based on fewer than 20 deaths, which is the equivalent of an RSE of 22.94 percent or more. An RSE of this magnitude is considered statistically unreliable. That procedure has been used for mortality data except death rates based on CPS-based population estimates, for which sampling variation must be considered in addition to random variation. Formulas for computing RSE's for CPS population-based rates are presented below and an asterisk is shown in place of a rate when the RSE is 22.94 percent or more. RSE's for CPS population-based rates were introduced beginning with specified Hispanic-origin data for 1994 and subsequently for rates by marital status.

The formulas below are shown separately for rates based on demographically estimated populations, sample-based populations, and rates based on live births. Further, separate discussions are provided for rates based on less than 100 events, and rates based on 100 events or more. Specific examples are given to illustrate the use of the formulas.

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*The following formulas are used for demographically-estimated population-based death rates for all races, white, black, American Indian, Asian or Pacific Islander, all origins, total Hispanic, total non-Hispanic, non-Hispanic white, non-Hispanic black for **all** marital status groups combined:*

Age-specific and crude death rates--

$$RSE(R) = RSE(D) = 100\sqrt{\frac{1}{D}}$$

Approximate 95% Confidence Interval: 100 or more deaths

Lower: $R - 1.96 * S(R)$

Upper: $R + 1.96 * S(R)$

Approximate 95% Confidence Interval: 1-99 deaths

Lower: $R * L(1 - \alpha = .95, D)$

Upper: $R * U(1 - \alpha = .95, D)$

where

R = rate (deaths per 100,000 population)

D = total number of deaths upon which rate is based

$$S(R) = R * \frac{RSE(R)}{100} = \text{standard error of rate}$$

$L(1 - \alpha = .95, D)$ and $U(1 - \alpha = .95, D)$ are lower and upper 95% confidence limit factors and are shown in table N

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Age-adjusted death rates--

$$RSE(R'') = 100 \frac{\sqrt{\sum \left\{ w_i^2 R_i^2 \left(\frac{1}{D_i} \right) \right\}}}{R''}$$

Approximate 95% Confidence Interval: 100 or more deaths

Lower: $R'' - 1.96 * S(R'')$

Upper: $R'' + 1.96 * S(R'')$

Approximate 95% Confidence Interval: 1-99 deaths

Lower: $R'' * L(1 - \alpha = .95, D_{adj})$

Upper: $R'' * U(1 - \alpha = .95, D_{adj})$

where

R'' = age-adjusted rate (per 100,000 population) = $\sum w_i R_i$

w_i = i^{th} age-specific Standard Population such that $\sum (w_i) = 1.0$

R_i = age-specific rate (per 100,000) for the i^{th} age group

D_i = total number of deaths for the i^{th} age group upon which age-specific rate is based

$$S(R'') = R'' * \frac{RSE(R'')}{100} = \text{standard error of age-adjusted rate}$$

$L(1 - \alpha = .95, D_{adj})$ and $U(1 - \alpha = .95, D_{adj})$ are lower and upper 95% confidence limit factors and are shown in table N

$$D_{adj} = \frac{1}{\left(\frac{RSE(R'')}{100} \right)^2} \text{ adjusted number of deaths rounded to nearest integer}$$

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The following formulas are used for CPS population-based death rates for all races, white, black, American Indian, Asian or Pacific Islander, all origins, total Hispanic, total non-Hispanic, non-Hispanic white, non-Hispanic black by **specified** marital status group (never married, married, widowed, and divorced)

OR

for Mexican, Puerto Rican, Cuban, Other Hispanic for **all** marital status groups combined and by **specified** marital status group (never married, married, widowed, and divorced):

Age-specific and crude death rates--

$$RSE(R) = 100 \sqrt{\left(\frac{1}{D}\right) + f\left(a + \frac{b}{P}\right)}$$

Approximate 95% Confidence Interval: 100 or more deaths

Lower: $R - 1.96 * S(R)$

Upper: $R + 1.96 * S(R)$

Approximate 95% Confidence Interval: 1-99 deaths

$$\text{Lower: } R * L(1 - \alpha = .96, D) * \left(1 - 2.576 \sqrt{f\left(a + \frac{b}{P}\right)}\right)$$

$$\text{Upper: } R * U(1 - \alpha = .96, D) * \left(1 + 2.576 \sqrt{f\left(a + \frac{b}{P}\right)}\right)$$

where

R = rate (deaths per 100,000 population).

D = total number of deaths upon which rate is based

f = factor that depends on whether the population estimate is based on demographic analysis or CPS and the number of years used (see below)

a and b factors are CPS standard error parameters (see below)

P = total estimated population upon which rate is based (if rate is based on a 3-year average, then an approximate P would be three times the population for the most recent year)

$$S(R) = R * \frac{RSE(R)}{100} = \text{standard error of rate}$$

$L(1 - \alpha = .96, D)$ and $U(1 - \alpha = .96, D)$ are lower and upper 96% confidence limit factors and are shown in table N

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Age-adjusted death rates--

$$RSE(R'') = 100 \frac{\sqrt{\sum \left(w_i^2 * R_i^2 \left(\frac{1}{D_i} + f \left(a + \frac{b}{P_i} \right) \right) \right)}}{R''}$$

Approximate 95% Confidence Interval: 100 or more deaths

Lower: $R'' - 1.96 * S(R'')$

Upper: $R'' + 1.96 * S(R'')$

Approximate 95% Confidence Interval: 1-99 deaths

Lower: $R'' * L(1 - \alpha = .96, D_{adj}) * (1 - 2.576 * RSE(P_{adj}))$

Upper: $R'' * U(1 - \alpha = .96, D_{adj}) * (1 + 2.576 * RSE(P_{adj}))$

where

R'' = age-adjusted rate (per 100,000 population) = $\sum w_i R_i$

w_i = i^{th} age-specific Standard Population such that $\sum(w_i) = 1.0$

R_i = age-specific rate (per 100,000) for the i^{th} age group

D_i = total number of deaths for the i^{th} age group upon which age-specific rate is based

f = factor that depends on whether the population estimate is based on demographic analysis or CPS and the number of years used (see below)

a and b factors are CPS standard error parameters (see below)

P_i = total estimated population for the i^{th} age group upon which the rate is based (if rate is based on 3-year average, then combined P_i would be three times the population for the most recent year)

$$S(R'') = R'' * \frac{RSE(R'')}{100} = \text{standard error of age-adjusted rate}$$

$L(1 - \alpha = .96, D_{adj})$ and $U(1 - \alpha = .96, D_{adj})$ are lower and upper 96% confidence limit factors and are shown in table N

$P_{adj} = \sum(w_i * P_i)$ = adjusted estimated population rounded to nearest integer

$$RSE(P_{adj}) = \frac{\sqrt{\sum \left(w_i^2 * P_i^2 * f \left(a + \frac{b}{P_i} \right) \right)}}{P_{adj}}$$

$$D_{adj} = \text{smaller of } \sum(D_i) \text{ or } \frac{1}{RSE(R'')^2 - RSE(P_{adj})^2} = \begin{matrix} \text{adjusted number of deaths} \\ \text{rounded to the} \\ \text{nearest integer} \end{matrix}$$

If D_{adj} is negative, set D_{adj} to $\sum(D_i)$

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Shown below are the “*a*”, “*b*”, and “*f*” factors for various race, origin, and marital status classifications, by whether the population-based rate was based on a single year or 3-year average:

| <u><i>Race, origin, and marital status</i></u> | <u><i>Rate based on 1 year</i></u> | <u><i>Rate based on 3 years</i></u> |
|--|--|---|
| All races, white, American Indian, all origins, total Hispanic, total non-Hispanic, non-Hispanic white; by never married, married, widowed, divorced | <i>f</i> = 0.670 <i>a</i> = -0.000017 <i>b</i> = 4,786 | <i>f</i> = 0.440 <i>a</i> = -0.000017 <i>b</i> = 14,358 |
| Black, non-Hispanic black; by never married, married, widowed, divorced | <i>f</i> = 0.670 <i>a</i> = -0.000204 <i>b</i> = 6,865 | <i>f</i> = 0.440 <i>a</i> = -0.000204 <i>b</i> = 20,595 |
| Asian or Pacific Islander; by never married, married, widowed, divorced | <i>f</i> = 0.670 <i>a</i> = -0.000719 <i>b</i> = 6,865 | <i>f</i> = 0.440 <i>a</i> = -0.000719 <i>b</i> = 20,595 |
| Mexican, Puerto Rican, Cuban, Other Hispanic; all marital status groups combined, never married, married, widowed, divorced | <i>f</i> = 0.670 <i>a</i> = -0.000297 <i>b</i> = 6,865 | <i>f</i> = 0.440 <i>a</i> = -0.000297 <i>b</i> = 20,595 |

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The following formulas may be used for live birth-based mortality rates:

The formulas for the RSE and 95-percent CI's of an infant mortality rate (IMR) are as follows:

$$RSE(IMR) = 100 \sqrt{\frac{1}{D} + \frac{1}{B}}$$

Approximate 95% Confidence Interval: 100 or more infant deaths

Lower: $IMR - 1.96 * S(IMR)$

Upper: $IMR + 1.96 * S(IMR)$

Approximate 95% Confidence Interval: 1-99 infant deaths

Lower: $IMR * L(1 - \alpha = .95, D_{adj})$

Upper: $IMR * U(1 - \alpha = .95, D_{adj})$

where

IMR = infant mortality rate (infant deaths per 100,000 live births)

D = total number of infant deaths upon which rate is based

B = total number of live births upon which IMR is based

$$S(IMR) = IMR * \frac{RSE(IMR)}{100} = \text{standard error of infant mortality rate}$$

$L(1 - \alpha = .95, D_{adj})$ and $U(1 - \alpha = .95, D_{adj})$ are lower and upper 95% confidence limit factors and are shown in table N

$$D_{adj} = \frac{D * B}{D + B} = \begin{array}{l} \text{adjusted number of infant deaths that takes} \\ \text{into account the RSE of the number} \\ \text{of infant deaths and live births} \end{array}$$

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Statistical tests

For testing the equality of two rates, R_1 and R_2 , the z -test may be used (when both rates are based on 100 deaths or more) or the overlap of 95% CI's of the rates may be used (when either or both of the rates are based on less than 100 deaths).

The z -test is determined as follows:

$$z = \frac{R_1 - R_2}{\sqrt{R_1^2 \left(\frac{RSE(R_1)}{100} \right)^2 + R_2^2 \left(\frac{RSE(R_2)}{100} \right)^2}}$$

to define a significance test statistic. If $|z|$ is greater than or equal 1.96, then the difference would be considered statistically significant at the 0.05 level; and if $|z|$ is less than 1.96, the difference is not statistically significant.

As a hypothetical example, if the three-year average death rate for Mexicans, R_1 , is 36.4 (based on $D=120$ deaths and $P=330,000$ population for the three years combined) and the three-year rate for non-Hispanic whites, R_2 , is 13.8 (based on $D=180$ deaths and $P=1,300,000$ population for the three years combined), then using the formulas above the RSE's and z -test are computed as follows:

$$RSE(R_1) = 100 \sqrt{\frac{1}{120} + 0.440 * \left(-0.000297 + \frac{20,595}{330,000} \right)} = 18.88\%$$

$$RSE(R_2) = 100 \sqrt{\frac{1}{180}} = 7.45\%$$

and

$$z = \frac{36.4 - 13.8}{\sqrt{36.4^2 \left(\frac{18.88}{100} \right)^2 + 13.8^2 \left(\frac{7.45}{100} \right)^2}} = 3.25$$

Since $|z|$ is greater than 1.96, the difference between the two rates is statistically significant at the 0.05 level of significance.

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If either of two rates is based on less than 100 deaths, then one may determine if the 95% CI's overlap as an indication of a statistically significant or non-significant difference.

As a hypothetical example, if the three-year average death rate for Cubans, R_3 , is 26.7 (based on $D=40$ deaths and $P=150,000$ population for the three years combined) and the three-year rate for non-Hispanic blacks, R_4 , is 61.5 (based on $D=400$ deaths and $P=650,000$ population for the three years combined), then the 95% CI's are computed using information from the following formulas and table N:

95% CI for R_3

$$\text{Lower:} = 26.7 * 0.70266 \left(1 - 2.576 \sqrt{0.44 * \left(-0.000297 + \frac{20,595}{150,000} \right)} \right) = 6.9$$

$$\text{Upper:} = 26.7 * 1.37991 \left(1 + 2.576 \sqrt{0.44 * \left(-0.000297 + \frac{20,595}{150,000} \right)} \right) = 60.1$$

95% CI for R_4

$$RSE(R_4) = 100 \sqrt{\frac{1}{400}} = 5.00\%$$

$$\text{Lower} = 61.5 - \left(1.96 * 61.5 * \frac{5.00}{100} \right) = 55.5$$

$$\text{Upper} = 61.5 + \left(1.96 * 61.5 * \frac{5.00}{100} \right) = 67.5$$

Since the CI's overlap, the difference between R_3 and R_4 is not statistically significant.

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References

1. Tolson GC, Barnes JM, Gay GA, Kowaleski JL. The 1989 revision of the U.S. standard certificates and reports. National Center for Health Statistics. *Vital Health Stat* 4(28). 1991.
2. Hetzel AM. U.S. vital statistics system: major activities and developments, 1950-95. National Center for Health Statistics. 1997.
3. National Center for Health Statistics. Vital statistics, demographic classification, and coding instructions for death records, 1995. NCHS instruction manual; part 4. Hyattsville, Maryland: Public Health Service. 1995.
4. McCarthy MA. Comparison of the classification of place of residence on death certificates and matching census records: United States, May-August 1960. National Center for Health Statistics. *Vital and Health Stat* 2(30). 1969.
5. National Center for Health Statistics. Vital statistics, vital records geographic classification, 1994. NCHS instruction manual; part 8. Hyattsville, Maryland: Public Health Service. 1993.
6. U.S. Bureau of the Census. Population of metropolitan areas and component geography: 1990 and 1980 (6-30-93 definitions). CPH-L-145. Washington: U.S. Department of Commerce. 1993.
7. U.S. Department of Commerce. Metropolitan statistical areas classification. Federal register; vol 45 no 2. Washington: U.S. Government Printing Office, 956-62. 1980.
8. U.S. Office of Management and Budget. Standard metropolitan statistical areas, rev. ed. Washington: U.S. Government Printing Office, 89-90. 1975.
9. U.S. Bureau of the Census. 1990 Census of population. General population characteristics; (1990 CP-1-1). Washington: U.S. Department of Commerce. 1992.
10. National Center for Health Statistics. Public use data file documentation: Mortality detail 1995 data. Hyattsville, Maryland: Public Health Service. 1997.
11. National Center for Health Statistics. Public use data file documentation: Multiple cause of death for ICD-9 1995 data. Hyattsville, Maryland: Public Health Service. 1997.
12. Hambright TZ. Comparability of marital status, race, nativity, and country of origin on the death certificate and matching census record: United States, May-August 1960. National Center for Health Statistics. *Vital Health Stat* 2(34). 1969.
13. Sorlie PD, Rogot E, Johnson NJ. Validity of demographic characteristics on the death certificate. *Epidemiology* 3(2):181-4. 1992.
14. Poe GS, Powell-Griner E, McLaughlin JK, et al. Comparability of the death certificate and the 1986 national mortality followback survey. National Center for Health Statistics. *Vital Health Stat* 2(118). 1993.
15. U.S. Bureau of the Census. Population estimates based on unpublished tabulations prepared by the Housing and Household Economic Statistics Division. 1996.
16. Klebba AJ. Mortality from selected causes by marital status: United States, parts A and B. National Center for Health Statistics. *Vital Health Stat* 20(8a) and 20(8b). 1970.
17. National Center for Health Statistics. Industry and occupation coding for death certificates, 1993. NCHS instruction manual, Part 19. Hyattsville, Maryland: Public Health Service. 1992.
18. U.S. Bureau of the Census. Classified index of industries and occupations. 1990 Census of Population and Housing. Washington: U.S. Department of commerce. 1992.
19. World Health Organization. Manual of the International Statistical Classification of Diseases, Injuries, and Causes of Death, based on the recommendations of the Ninth Revision Conference, 1975. Geneva: World Health Organization. 1977.
20. National Center for Health Statistics. Estimates of selected comparability ratios based on dual coding of 1976 death certificates by the Eighth and Ninth Revisions of the International Classification of Diseases. Monthly vital statistics report; vol 28 no 11, suppl. Hyattsville, Maryland: Public Health Service. 1980.
21. Gittelsohn A, Royston PN. Annotated bibliography of cause-of-death validation studies, 1958-80. National Center for Health Statistics. *Vital Health Stat* 2(89). 1982.
22. National Center for Health Statistics. Vital statistics, ICD-9 ACME decision tables for classifying underlying causes of death, 1991. NCHS instruction manual; part 2c. Hyattsville, Maryland: Public Health Service. Published annually.

VITAL STATISTICS OF THE UNITED STATES: MORTALITY, 1995
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23. National Center for Health Statistics. Instructions for classifying multiple causes of death. NCHS instruction manual; part 2b. Hyattsville, Maryland: Public Health Service. Published annually.
24. National Center for Health Statistics. Nonindexed terms, standard abbreviations, and state geographic codes used in mortality data classification. NCHS instruction manual; part 2e. Hyattsville, Maryland: Public Health Service. Published annually.
25. National Center for Health Statistics. Vital statistics, data entry instructions for the mortality medical indexing, classification, and retrieval system (MICAR). NCHS instruction manual; part 2g. Hyattsville, Maryland: Public Health Service. Published annually.
26. National Center for Health Statistics. Vital statistics, dictionary of valid terms for the mortality medical indexing, classification, and retrieval system (MICAR). NCHS instruction manual; part 2h. Hyattsville, Maryland: Public Health Service. Published annually.
27. Harris KW, Rosenberg HM, Kochanek KD, et al. Evaluation of an automated multiple causes of death coding system. In: American Statistical Association. 1993 Proceedings of the social statistics section. Alexandria, Virginia: American Statistical Association. 262-5. 1993.
28. Hoyert DL. Effect on mortality rates of the 1989 change in tabulating race. National Center for Health Statistics. *Vital Health Stat* 20(25). 1994.
29. Guralnick L, Winter ED. A note on cohort infant mortality rates. *Public Health Rep* 80:692-4. 1965.
30. Grove RD, Hetzel AM. Vital statistics rates in the United States, 1940-60. National Center for Health Statistics. Washington: Public Health Service. 1968.
31. McCarthy B, Terry J, Rochat R, et al. The underregistration of neonatal deaths: Georgia 1974-77. *Am J Public Health* 70:977-82. 1980.
32. Linder FE, Grove RD. Vital statistics rates in the United States, 1900-40. Washington: National Office of Vital Statistics. 1947.
33. Chase HC, Weiner L, Garfinkel J. Vital signs present at birth. National Center for Health Statistics. *Vital and Health Stat* 2(46). 1972.
34. Frost F, Shy KK. Racial differences between linked birth and infant death records in Washington State. *Am J Public Health* 70:974-6. 1980.
35. MacDorman MF, Atkinson JO. Infant mortality statistics from the 1996 period linked birth/infant death data set. *Monthly vital statistics report*; vol 46 no 12, supp. Hyattsville, Maryland: National Center for Health Statistics. 1998.
36. National Center for Health Statistics. Vital statistics, computer edits for mortality data, effective 1989. NCHS instruction manual; part 11. Hyattsville, Maryland: Public Health Service. 1989.
37. U.S. Bureau of the Census. U.S. population estimates by age, sex, race, and Hispanic origin: July 1, 1995. Census file RESD0795. 1996.
38. U.S. Bureau of the Census. Estimates of the resident population of States by age and sex for July 1, 1995. Census file 95AG795. 1996.
39. U.S. Bureau of the Census. U.S. population estimates by age, sex, race, and Hispanic origin: 1980-91. Current population reports; series P-25, no 1095. Washington: U.S. Department of Commerce. 1993.
40. Executive Office of the President. Office of Management and Budget. Statistical Policy Directive No. 15. Race and ethnic standards for federal statistics and administrative reporting.
41. National Center for Health Statistics. Technical appendix. Vital statistics of the United States, 1980, vol II, mortality, part A. Washington: Public Health Service. 1985.
42. U.S. Bureau of the Census. Coverage of the national population in the 1980 census by age, sex, and race. Preliminary estimates by demographic analysis. Current population reports; series P-23, no 115. Washington: U.S. Department of Commerce. 1982.
43. Hambright TZ. Comparability of age on the death certificate and matching census records: United States, May-August 1960. National Center for Health Statistics. *Vital Health Stat* 2(29). 1968.
44. U.S. Bureau of the Census. Estimates of coverage of the population by sex, race, and age--demographic analysis: 1970 census of population and housing. PHC(E)-4. Washington: U.S. Department of Commerce. 1974.

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45. U.S. Bureau of the Census. Developmental estimates of the coverage of the population of States in the 1970 census--demographic analysis. Current population reports; series P-23, no 65. Washington: U.S. Department of Commerce. 1977.
46. Passel JS, Robinson JG. Revised demographic estimates of the coverage of the population by age, sex, and race in the 1980 Census. Unpublished memorandum, U.S. Bureau of the Census. Washington: U.S. Department of Commerce. 1985.
47. U.S. Bureau of the Census. Estimates of population of the United States by age, sex, and race: 1980 to 1985. Current population reports; series P-25, no 985. Washington: U.S. Department of Commerce. 1986.
48. Feinleib M, Zarate AO, eds. Reconsidering age adjustment procedures: Workshop proceedings. National Center for Health Statistics. Vital Health Stat 4(29). 1992.
49. Sirken MG. Comparison of two methods of constructing abridged life tables by reference to a "standard" table. National Center for Health Statistics. Vital Health Stat 2(4). 1966.
50. Greville TNE, Carlson GA. Estimated average length of life in the death-registration States. Vital statistics-Special reports. vol 33 no 9. National Center for Health Statistics. Washington: Public Health Service. 1951.
51. Chiang CL. Standard error of the age-adjusted death rate. Vital statistics-Special reports. vol 47 no 9. National Center for Health Statistics. Washington: Public Health Service. 1961.
52. Pearson, ES, Hartley, HO. Biometrika tables for statisticians, vol I. Cambridge University Press. 1966.

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Table A. Comparison of percent agreement and ratio of deaths for census or survey record to deaths by race for matching death certificate: 1960 and 1979-85

| Race | Census | | NLMS ¹ | |
|----------------------|-------------------|---------------------------------------|-------------------|--|
| | Percent agreement | Ratio census/ death certificate | Percent agreement | Ratio CPS ² / death certificate |
| White..... | 99.8 | 1.00 | 99.2 | 1.00 |
| Black..... | 98.2 | 1.00 | 98.2 | 1.00 |
| American Indian..... | 79.2 | 1.12 | 73.6 | 1.22 |
| Asian..... | --- | ... | 82.4 | 1.12 |
| Japanese..... | 97.0 | 1.04 | ... | ... |
| Chinese | 90.3 | 1.07 | ... | ... |
| Filipino | 72.6 | 1.28 | ... | ... |

--- Data not available.

... Category not applicable.

¹NLMS is defined as National Longitudinal Mortality Study.

²CPS is defined as Current Population Survey.

SOURCES: Hambright TZ. Comparability of marital status, race, nativity, and country of origin on the death certificate and matching census record: U.S., May-August 1960. National Center for Health Statistics. Vital Health Stat 2(34). 1969; Sorlie PD, Rogot E, Johnson NJ. Validity of demographic characteristics on the death certificate. Epidemiology 3(2):181-4. 1992.

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Table B. Infant mortality rates by race of infant from the death certificate and by race of mother from the birth certificate, and ratio of rates, 1995-96

[Rates per 1,000 live births in specified group]

| Race | Infant mortality rate | | Ratio birth/ death |
|---|--------------------------------|--------------------------------|--------------------------|
| | Race from death certificate | Race from birth certificate | |
| All races | 7.5 | 7.4 | 0.99 |
| White | 6.2 | 6.2 | 1.00 |
| Black | 14.9 | 14.4 | 0.97 |
| American Indian | 8.3 | 9.5 | 1.14 |
| Asian or Pacific Islander | 4.1 | 5.2 | 1.27 |
| Chinese | 2.9 | 3.5 | 1.21 |
| Japanese | 2.3 | 4.7 | 2.04 |
| Hawaiian | 7.2 | 6.1 | 0.85 |
| Filipino | 3.4 | 5.7 | 1.68 |
| Other Asian or Pacific Islander | 4.8 | 5.6 | 1.17 |

SOURCE: Rosenberg H, Maurer JD, Sorlie PD, Johnson NJ, MacDorman M, Hoyert DL, Spitzer JF, Scott C. Quality of death rates by race and Hispanic origin: a summary. National vital statistics reports (forthcoming).

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Table C. Infant mortality rates by Hispanic origin of infant from the death certificate and by race of mother from the birth certificate, and ratio of rates, 1996

[Rates per 1,000 live births in specified group]

| Race | Infant mortality rate | | Ratio linked file/ birth/death |
|---|---|--|-----------------------------------|
| | Hispanic origin from death certificate ¹ | Hispanic origin from birth certificate | |
| All origins ² | 7.3 | 7.4 | 1.01 |
| Total Hispanic | 5.9 | 6.2 | 1.05 |
| Mexican | 5.9 | 5.9 | 1.00 |
| Puerto Rican | 7.8 | 8.7 | 1.12 |
| Cuban | 5.1 | 5.2 | 1.02 |
| Other Hispanic ³ | 5.3 | 5.9 | 1.11 |
| Non-Hispanic total ⁴ | 7.6 | 7.7 | 1.01 |
| Non-Hispanic white | 6.1 | 6.2 | 1.02 |
| Non-Hispanic black | 14.7 | 14.4 | 0.98 |

¹ Data excludes Oklahoma which did not have a question on Hispanic origin on its death certificate.

² Includes Hispanic origin not stated.

³ Includes Central and South American and Other and unknown Hispanic.

⁴ Includes races other than white and black.

SOURCE: Rosenberg H, Maurer JD, Sorlie PD, Johnson NJ, MacDorman M, Hoyert DL, Spitler JF, Scott C. Quality of death rates by race and Hispanic origin: a summary. National vital statistics reports (forthcoming).

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Table D. Numbers of deaths and ratios of deaths for selected causes as tabulated by State of occurrence and NCHS, 1995

[Data by place of occurrence include deaths of nonresidents. Numbers after causes of death are category numbers of the Ninth Revision, International Classification of Diseases, 1975]

| Causes | Alaska | NCHS | Ratio AK/NCHS |
|--|--------|-------|------------------|
| All causes..... | 2,546 | 2,546 | 1.00 |
| Symptoms, signs, and ill-defined conditions.....780-799 | 42 | 43 | 0.98 |
| Accidents and adverse effects.....E800-E949 | 368 | 376 | 0.98 |
| Motor vehicle accidents.....E810-E825 | 105 | 96 | 1.09 |
| All other accidents and adverse effects....E800-E807,E826-E949 | 263 | 280 | 0.94 |
| Suicide.....E950-E959 | 118 | 105 | 1.12 |
| Homicide and legal intervention.....E960-E978 | 56 | 55 | 1.02 |
| All other external causes.....E980-E999 | 7 | 11 | 0.64 |

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Table E. Population of birth- and death-registration States, 1900-1932, and United States, 1900-1995

[Population enumerated as of April 1 for 1940, 1950, 1960, 1970, 1980, and 1990 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 |
| 1995 | 263,033,968 | 262,755,270 | 1947 | 144,126,000 | 143,446,000 | ... | ... | ... | ... |
| 1994 | 260,650,842 | 260,340,990 | 1946 | 141,389,000 | 140,054,000 | ... | ... | ... | ... |
| 1994 | 258,119,768 | 257,783,004 | 1945 | 139,928,000 | 132,481,000 | ... | ... | ... | ... |
| 1992 | 255,457,501 | 255,077,536 | 1944 | 138,397,000 | 132,885,000 | ... | ... | ... | ... |
| 1991 | 252,688,000 | 252,177,000 | 1943 | 136,739,000 | 134,245,000 | ... | ... | ... | ... |
| 1990 | 249,225,000 | 248,709,873 | 1942 | 134,860,000 | 133,920,000 | ... | ... | ... | ... |
| 1989 | 247,342,000 | 246,819,000 | 1941 | 133,402,000 | 133,121,000 | ... | ... | ... | ... |
| 1988 | 245,021,000 | 244,499,000 | 1940 | 131,820,000 | 131,669,275 | ... | ... | ... | ... |
| 1987 | 242,804,000 | 242,289,000 | 1939 | 131,028,000 | 130,879,718 | ... | ... | ... | ... |
| 1986 | 240,651,000 | 240,133,000 | 1938 | 129,969,000 | 129,824,939 | ... | ... | ... | ... |
| 1985 | 238,466,000 | 237,924,000 | 1937 | 128,961,000 | 128,824,829 | ... | ... | ... | ... |
| 1984 | 236,348,000 | 235,825,000 | 1936 | 128,181,000 | 128,053,180 | ... | ... | ... | ... |
| 1983 | 234,307,000 | 233,792,000 | 1935 | 127,362,000 | 127,250,232 | ... | ... | ... | ... |
| 1982 | 232,188,000 | 231,664,000 | 1934 | 126,485,000 | 126,373,773 | ... | ... | ... | ... |
| 1981 | 229,966,000 | 229,466,000 | 1933 | 125,690,000 | 125,578,763 | ... | ... | ... | ... |
| 1980 | 227,061,000 | 226,545,805 | 1932 | 124,949,000 | 124,840,471 | 47 | 118,903,899 | 47 | 118,903,899 |
| 1979 | 225,055,000 | 224,567,000 | 1931 | 124,149,000 | 124,039,648 | 46 | 117,455,229 | 47 | 118,148,987 |
| 1978 | 222,585,000 | 222,095,000 | 1930 | 123,188,000 | 123,076,741 | 46 | 116,544,946 | 47 | 117,238,278 |
| 1977 | 220,239,000 | 219,760,000 | 1929 | --- | 121,769,939 | 46 | 115,317,450 | 46 | 115,317,450 |
| 1976 | 218,035,000 | 217,563,000 | 1928 | --- | 120,501,115 | 44 | 113,636,160 | 44 | 113,636,160 |
| 1975 | 215,973,000 | 215,465,000 | 1927 | --- | 119,038,062 | 40 | 104,320,830 | 42 | 107,084,532 |
| 1974 | 213,854,000 | 213,342,000 | 1926 | --- | 117,399,225 | 35 | 90,400,590 | 41 | 103,822,683 |
| 1973 | 211,909,000 | 211,357,000 | 1925 | --- | 115,831,963 | 33 | 88,294,564 | 40 | 102,031,555 |
| 1972 | 209,896,000 | 209,284,000 | 1924 | --- | 114,113,463 | 33 | 87,000,295 | 39 | 99,318,098 |
| 1971 | 207,661,000 | 206,827,000 | 1923 | --- | 111,949,945 | 30 | 81,072,123 | 38 | 96,788,197 |
| 1970 | 204,270,000 | 203,211,926 | 1922 | --- | 110,054,778 | 30 | 79,560,746 | 37 | 92,702,901 |
| 1969 | 202,677,000 | 201,385,000 | 1921 | --- | 108,541,489 | 27 | 70,807,090 | 34 | 87,814,447 |
| 1968 | 200,706,000 | 199,399,000 | 1920 | --- | 106,466,420 | 23 | 63,597,307 | 34 | 86,079,263 |
| 1967 | 198,712,000 | 197,457,000 | 1919 | 105,063,000 | 104,512,110 | 22 | 61,212,076 | 33 | 83,157,982 |
| 1966 | 196,560,000 | 195,576,000 | 1918 | 104,550,000 | 103,202,801 | 20 | 55,153,782 | 30 | 79,008,412 |
| 1965 | 194,303,000 | 193,526,000 | 1917 | 103,414,000 | 103,265,913 | 20 | 55,197,952 | 27 | 70,234,775 |
| 1964 | 191,889,000 | 191,141,000 | 1916 | --- | 101,965,984 | 11 | 32,944,013 | 26 | 66,971,177 |
| 1963 | 189,242,000 | 188,483,000 | 1915 | --- | 100,549,013 | 10 | 31,096,697 | 24 | 61,894,847 |
| 1962 | 186,538,000 | 185,771,000 | 1914 | --- | 99,117,567 | ... | ... | 24 | 60,963,309 |
| 1961 | 183,691,000 | 182,992,000 | 1913 | --- | 97,226,814 | ... | ... | 23 | 58,156,740 |
| 1960 | 179,933,000 | 179,323,175 | 1912 | --- | 95,331,300 | ... | ... | 22 | 54,847,700 |
| 1959 | 177,264,000 | 176,513,000 | 1911 | --- | 93,867,814 | ... | ... | 22 | 53,929,644 |

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Table E. Population of birth- and death-registration States, 1900-1932, and United States, 1900-1995

[Population enumerated as of April 1 for 1940, 1950, 1960, 1970, 1980, and 1990 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 |
| 1958 | 174,141,000 | 172,320,000 | 1910 | --- | 92,406,536 | ... | ... | 20 | 47,470,437 |
| 1957 | 171,274,000 | 170,371,000 | 1909 | --- | 90,491,525 | ... | ... | 18 | 44,223,513 |
| 1956 | 168,221,000 | 167,306,000 | 1908 | --- | 88,708,976 | ... | ... | 17 | 38,634,759 |
| 1955 | 165,275,000 | 164,308,000 | 1907 | --- | 87,000,271 | ... | ... | 15 | 34,552,837 |
| 1954 | 162,391,000 | 161,164,000 | 1906 | --- | 85,436,556 | ... | ... | 15 | 33,782,288 |
| 1953 | 159,565,000 | 158,242,000 | 1905 | --- | 83,819,666 | ... | ... | 10 | 21,767,980 |
| 1952 | 156,954,000 | 155,687,000 | 1904 | --- | 82,164,974 | ... | ... | 10 | 21,332,076 |
| 1951 | 154,287,000 | 153,310,000 | 1903 | --- | 80,632,152 | ... | ... | 10 | 20,943,222 |
| 1950 | 151,132,000 | 150,697,361 | 1902 | --- | 79,160,196 | ... | ... | 10 | 20,582,907 |
| 1949 | 149,188,000 | 148,665,000 | 1901 | --- | 77,585,128 | ... | ... | 10 | 20,237,453 |
| 1948 | 146,631,000 | 146,093,000 | 1900 | --- | 76,094,134 | ... | ... | 10 | 19,965,446 |

--- Data not available.

... Category not applicable.

¹ Alaska included beginning 1959 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: Published and unpublished data from the U.S. Bureau of the Census; see text.

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Table F. Source for resident population and population including Armed Forces abroad:
Birth- and death-registration States, 1900-32, and United States, 1900-95

| Year | Source |
|-----------------|---|
| 1995 | U.S. Bureau of the Census, Electronic Data File, RESD0795, and unpublished data. |
| 1994 | U.S. Bureau of the Census, Electronic Data File, RESD0794, and unpublished data. |
| 1993 | U.S. Bureau of the Census, Electronic Data File, RESP0793, and unpublished data. |
| 1992 | U.S. Bureau of the Census, Electronic Data File, RESP0792, and unpublished data. |
| 1991 | U.S. Bureau of the Census, <i>Current Population Reports</i> , Series P-25, No. 1095, 1993. |
| 1990 | U.S. Bureau of the Census, Unpublished data from the 1990 census, 1990 CPH-L-74 and unpublished data consistent with <i>Current Population Reports</i> , Series P-25, No. 1095. |
| 1981-89 | U.S. Bureau of the Census, <i>Current Population Reports</i> , Series P-25, No. 1095, 1993. |
| 1980 | U.S. Bureau of the Census, <i>U.S. Census of Population: 1980, Number of Inhabitants</i> , PC-80-1A1, United States Summary, 1983. |
| 1971-79 | U.S. Bureau of the Census, <i>Current Population Reports</i> , Series P-25, No. 917, July 1982. |
| 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 | U.S. Bureau of the Census, <i>Current Population Reports</i> , Series P-25, No. 519, April 1974. |
| 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 National Office of Vital Statistics, <i>Vital Statistics Rates in the United States</i> , 1900-1940, 1947. |
| 1920-29 | National Office of Vital Statistics, <i>Vital Statistics Rates in the United States</i> , 1900-1940, 1947. |
| 1917-19 | Same as for 1930-39. |
| 1900-16 | Same as for 1920-29. |

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Table G. Estimated population of the United States, by 5-year age groups, race, and sex: July 1, 1995

[Figures include Armed forces stationed in the United States and exclude those stationed outside the United States]

| 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 | 262,755,270 | 128,313,798 | 134,441,472 | 218,085,421 | 106,993,635 | 111,091,786 | 44,669,849 | 21,320,163 | 23,349,686 | 33,141,148 | 15,721,074 | 17,420,074 |
| Under 1 year | 3,848,106 | 1,969,872 | 1,878,234 | 3,014,707 | 1,547,420 | 1,467,287 | 833,399 | 422,452 | 410,947 | 621,144 | 314,438 | 306,706 |
| 1-4 years | 15,743,042 | 8,055,333 | 7,687,709 | 12,436,458 | 6,376,721 | 6,059,737 | 3,306,584 | 1,678,612 | 1,627,972 | 2,478,716 | 1,255,910 | 1,222,806 |
| 5-9 years | 19,219,956 | 9,843,300 | 9,376,656 | 15,236,617 | 7,818,268 | 7,418,349 | 3,983,339 | 2,025,032 | 1,958,307 | 3,025,305 | 1,534,797 | 1,490,508 |
| 10-14 years | 18,914,532 | 9,685,241 | 9,229,291 | 15,039,772 | 7,720,711 | 7,319,061 | 3,874,760 | 1,964,530 | 1,910,230 | 2,876,972 | 1,459,558 | 1,417,414 |
| 15-19 years | 18,064,517 | 9,265,025 | 8,799,492 | 14,362,303 | 7,390,200 | 6,972,103 | 3,702,214 | 1,874,825 | 1,827,389 | 2,821,796 | 1,430,218 | 1,391,578 |
| 20-24 years | 17,882,118 | 9,087,045 | 8,795,073 | 14,317,137 | 7,323,846 | 6,993,291 | 3,564,981 | 1,763,199 | 1,801,782 | 2,637,568 | 1,299,324 | 1,338,244 |
| 25-29 years | 19,005,343 | 9,529,765 | 9,475,578 | 15,402,702 | 7,795,910 | 7,606,792 | 3,602,641 | 1,733,855 | 1,868,786 | 2,594,461 | 1,239,775 | 1,354,686 |
| 30-34 years | 21,867,796 | 10,902,150 | 10,965,646 | 17,984,412 | 9,062,225 | 8,922,187 | 3,883,384 | 1,839,925 | 2,043,459 | 2,825,366 | 1,325,134 | 1,500,232 |
| 35-39 years | 22,248,914 | 11,071,207 | 11,177,707 | 18,458,496 | 9,282,016 | 9,176,480 | 3,790,418 | 1,789,191 | 2,001,227 | 2,787,896 | 1,307,303 | 1,480,593 |
| 40-44 years | 20,218,805 | 9,990,476 | 10,228,329 | 16,929,523 | 8,460,555 | 8,468,968 | 3,289,282 | 1,529,921 | 1,759,361 | 2,390,339 | 1,108,770 | 1,281,569 |
| 45-49 years | 17,448,898 | 8,559,836 | 8,889,062 | 14,858,289 | 7,370,499 | 7,487,790 | 2,590,609 | 1,189,337 | 1,401,272 | 1,854,835 | 846,389 | 1,008,446 |
| 50-54 years | 13,629,862 | 6,621,815 | 7,008,047 | 11,725,262 | 5,754,226 | 5,971,036 | 1,904,600 | 867,589 | 1,037,011 | 1,380,983 | 619,729 | 761,254 |
| 55-59 years | 11,084,606 | 5,317,251 | 5,767,355 | 9,540,786 | 4,625,549 | 4,915,237 | 1,543,820 | 691,702 | 852,118 | 1,137,905 | 499,639 | 638,266 |
| 60-64 years | 10,046,478 | 4,726,807 | 5,319,671 | 8,723,606 | 4,152,335 | 4,571,271 | 1,322,872 | 574,472 | 748,400 | 988,458 | 425,295 | 563,163 |
| 65-69 years | 9,927,958 | 4,505,822 | 5,422,136 | 8,725,874 | 3,993,037 | 4,732,837 | 1,202,084 | 512,785 | 689,299 | 920,412 | 393,354 | 527,058 |
| 70-74 years | 8,831,205 | 3,836,272 | 4,994,933 | 7,918,213 | 3,461,716 | 4,456,497 | 912,992 | 374,556 | 538,436 | 696,791 | 280,476 | 416,315 |
| 75-79 years | 6,681,247 | 2,720,385 | 3,960,862 | 6,038,810 | 2,470,292 | 3,568,518 | 642,437 | 250,093 | 392,344 | 509,967 | 194,449 | 315,518 |
| 80-84 years | 4,463,733 | 1,609,321 | 2,854,412 | 4,069,152 | 1,469,402 | 2,599,750 | 394,581 | 139,919 | 254,662 | 318,168 | 107,311 | 210,857 |
| 85 years and over | 3,628,154 | 1,016,875 | 2,611,279 | 3,303,302 | 918,707 | 2,384,595 | 324,852 | 98,168 | 226,684 | 274,066 | 79,205 | 194,861 |

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

VITAL STATISTICS OF THE UNITED STATES: MORTALITY, 1995
TECHNICAL APPENDIX

Table H. Estimated population, by age, for the United States, each division and State, Puerto Rico, Virgin Islands, and Guam: July 1, 1995

[Figures include Armed Forces stationed in each area, and exclude Armed Forces stationed outside the United States]

| Division and State | Total | Under 5 years | 15-19 years | 20-44 years | 45-64 years | 65 years and over |
|---------------------------|-------------|---------------|-------------|-------------|-------------|-------------------|
| United States | 262,755,270 | 19,591,148 | 56,199,005 | 101,222,976 | 52,209,844 | 33,532,297 |
| Geographic divisions: | | | | | | |
| New England | 13,312,412 | 895,898 | 2,627,215 | 5,258,704 | 2,667,863 | 1,862,732 |
| Middle Atlantic | 38,153,221 | 2,721,237 | 7,634,671 | 14,472,477 | 7,894,731 | 5,430,105 |
| East North Central . . . | 43,456,141 | 3,128,414 | 9,409,884 | 16,616,553 | 8,729,381 | 5,571,909 |
| West North Central . . | 18,347,676 | 1,264,639 | 4,112,086 | 6,831,914 | 3,617,041 | 2,521,996 |
| South Atlantic | 46,995,266 | 3,325,490 | 9,509,928 | 18,160,132 | 9,555,646 | 6,444,070 |
| East South Central . . . | 16,066,495 | 1,135,805 | 3,461,262 | 6,101,786 | 3,339,026 | 2,028,616 |
| West South Central . . | 28,827,781 | 2,320,898 | 6,706,183 | 11,030,113 | 5,560,170 | 3,210,417 |
| Mountain | 15,645,168 | 1,244,762 | 3,684,177 | 5,897,743 | 3,051,888 | 1,766,598 |
| Pacific | 41,951,110 | 3,554,005 | 9,053,599 | 16,853,554 | 7,794,098 | 4,695,854 |
| New England: | | | | | | |
| Maine | 1,241,382 | 74,513 | 262,980 | 472,162 | 259,582 | 172,145 |
| New Hampshire | 1,148,253 | 76,269 | 245,451 | 467,324 | 222,709 | 136,500 |
| Vermont | 584,771 | 37,092 | 124,782 | 231,079 | 121,369 | 70,449 |
| Massachusetts | 6,073,550 | 412,862 | 1,156,540 | 2,444,165 | 1,199,376 | 860,607 |
| Rhode Island | 989,794 | 67,570 | 193,057 | 385,682 | 187,680 | 155,805 |
| Connecticut | 3,274,662 | 227,592 | 644,405 | 1,258,292 | 677,147 | 467,226 |
| Middle Atlantic: | | | | | | |
| New York | 18,136,081 | 1,359,704 | 3,631,631 | 6,990,701 | 3,730,227 | 2,423,818 |
| New Jersey | 7,945,298 | 577,194 | 1,577,326 | 3,037,472 | 1,663,133 | 1,090,173 |
| Pennsylvania | 12,071,842 | 784,339 | 2,425,714 | 4,444,304 | 2,501,371 | 1,916,114 |

VITAL STATISTICS OF THE UNITED STATES: MORTALITY, 1995
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Table H. Estimated population, by age, for the United States, each division and State, Puerto Rico, Virgin Islands, and Guam: July 1, 1995

[Figures include Armed Forces stationed in each area, and exclude Armed Forces stationed outside the United States]

| Division and State | Total | Under 5 years | 15-19 years | 20-44 years | 45-64 years | 65 years and over |
|--------------------------------|------------|---------------|-------------|-------------|-------------|-------------------|
| East North Central: | | | | | | |
| Ohio | 11,150,506 | 772,833 | 2,391,427 | 4,215,895 | 2,279,935 | 1,490,416 |
| Indiana | 5,803,471 | 407,943 | 1,245,848 | 2,230,373 | 1,186,217 | 733,090 |
| Illinois | 11,829,940 | 920,982 | 2,521,591 | 4,564,415 | 2,338,816 | 1,484,136 |
| Michigan | 9,549,353 | 682,697 | 2,099,165 | 3,672,566 | 1,913,132 | 1,181,793 |
| Wisconsin | 5,122,871 | 343,959 | 1,151,853 | 1,933,304 | 1,011,281 | 682,474 |
| West North Central: | | | | | | |
| Minnesota | 4,609,548 | 320,664 | 1,048,040 | 1,778,168 | 889,575 | 573,101 |
| Iowa | 2,841,764 | 183,794 | 622,313 | 1,023,882 | 579,737 | 432,038 |
| Missouri | 5,323,523 | 369,321 | 1,156,726 | 1,979,691 | 1,077,359 | 740,426 |
| North Dakota | 641,367 | 41,830 | 148,246 | 236,343 | 122,192 | 92,756 |
| South Dakota | 729,034 | 52,310 | 176,704 | 258,281 | 136,919 | 104,820 |
| Nebraska | 1,637,112 | 114,141 | 376,888 | 599,452 | 318,954 | 227,677 |
| Kansas | 2,565,328 | 182,579 | 583,169 | 956,097 | 492,305 | 351,178 |
| South Atlantic: | | | | | | |
| Delaware | 717,197 | 51,616 | 145,089 | 287,082 | 142,759 | 90,651 |
| Maryland | 5,042,438 | 368,055 | 1,023,354 | 2,051,902 | 1,027,382 | 571,745 |
| District of Columbia | 554,256 | 39,909 | 85,456 | 241,384 | 110,267 | 77,240 |
| Virginia | 6,618,358 | 463,688 | 1,324,642 | 2,733,999 | 1,358,594 | 737,435 |
| West Virginia | 1,828,140 | 106,460 | 371,332 | 656,509 | 414,624 | 279,215 |
| North Carolina | 7,195,138 | 513,888 | 1,476,269 | 2,824,410 | 1,481,113 | 899,458 |
| South Carolina | 3,673,287 | 262,833 | 787,894 | 1,430,888 | 751,769 | 439,903 |
| Georgia | 7,200,882 | 551,180 | 1,572,524 | 2,944,887 | 1,414,385 | 717,906 |
| Florida | 14,165,570 | 967,861 | 2,723,368 | 4,989,071 | 2,854,753 | 2,630,517 |

VITAL STATISTICS OF THE UNITED STATES: MORTALITY, 1995
TECHNICAL APPENDIX

Table H. Estimated population, by age, for the United States, each division and State, Puerto Rico, Virgin Islands, and Guam: July 1, 1995

[Figures include Armed Forces stationed in each area, and exclude Armed Forces stationed outside the United States]

| Division and State | Total | Under 5 years | 15-19 years | 20-44 years | 45-64 years | 65 years and over |
|-----------------------|------------|---------------|-------------|-------------|-------------|-------------------|
| East South Central: | | | | | | |
| Kentucky | 3,860,219 | 261,108 | 827,133 | 1,473,939 | 811,474 | 486,565 |
| Tennessee | 5,256,051 | 365,477 | 1,088,517 | 2,022,370 | 1,121,476 | 658,211 |
| Alabama | 4,252,982 | 300,663 | 904,543 | 1,609,445 | 885,871 | 552,460 |
| Mississippi | 2,697,243 | 208,557 | 641,069 | 996,032 | 520,205 | 331,380 |
| West South Central: | | | | | | |
| Arkansas | 2,483,769 | 172,617 | 550,258 | 883,203 | 518,417 | 359,274 |
| Louisiana | 4,342,334 | 336,295 | 1,040,537 | 1,624,199 | 846,822 | 494,481 |
| Oklahoma | 3,277,687 | 230,362 | 743,577 | 1,184,260 | 677,267 | 442,221 |
| Texas | 18,723,991 | 1,581,624 | 4,371,811 | 7,338,451 | 3,517,664 | 1,914,441 |
| Mountain: | | | | | | |
| Montana | 870,281 | 56,982 | 205,670 | 305,673 | 188,295 | 113,661 |
| Idaho | 1,163,261 | 89,426 | 298,399 | 415,220 | 227,661 | 132,555 |
| Wyoming | 480,184 | 32,257 | 119,801 | 175,179 | 99,674 | 53,273 |
| Colorado | 3,746,585 | 268,950 | 814,019 | 1,501,226 | 786,087 | 376,303 |
| New Mexico | 1,685,401 | 138,303 | 412,650 | 620,969 | 330,092 | 183,387 |
| Arizona | 4,217,940 | 355,808 | 949,809 | 1,561,024 | 790,771 | 560,528 |
| Utah | 1,951,408 | 183,818 | 568,951 | 721,790 | 304,842 | 172,007 |
| Nevada | 1,530,108 | 119,218 | 314,878 | 596,662 | 324,466 | 174,884 |
| Pacific: | | | | | | |
| Washington | 5,430,940 | 385,897 | 1,178,182 | 2,145,740 | 1,093,387 | 627,734 |
| Oregon | 3,140,585 | 209,591 | 672,424 | 1,168,806 | 663,899 | 425,865 |
| California | 31,589,153 | 2,809,826 | 6,801,330 | 12,830,615 | 5,684,563 | 3,462,819 |
| Alaska | 603,617 | 52,882 | 155,312 | 249,856 | 115,784 | 29,783 |
| Hawaii | 1,186,815 | 95,809 | 246,351 | 458,537 | 236,465 | 149,653 |

VITAL STATISTICS OF THE UNITED STATES: MORTALITY, 1995
TECHNICAL APPENDIX

Table H. Estimated population, by age, for the United States, each division and State, Puerto Rico, Virgin Islands, and Guam: July 1, 1995

[Figures include Armed Forces stationed in each area, and exclude Armed Forces stationed outside the United States]

| Division and State | Total | Under 5 years | 15-19 years | 20-44 years | 45-64 years | 65 years and over |
|--------------------------|-----------|---------------|-------------|-------------|-------------|-------------------|
| Puerto Rico | 3,731,006 | 319,833 | 967,608 | 1,367,887 | 699,770 | 375,908 |
| Virgin Islands | 111,950 | 11,746 | 30,308 | 36,893 | 24,731 | 8,272 |
| Guam | 143,855 | 20,016 | 38,101 | 56,922 | 21,526 | 7,290 |

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

VITAL STATISTICS OF THE UNITED STATES: MORTALITY, 1995
TECHNICAL APPENDIX

Table I. Estimated population by 5-year age groups, specified Hispanic origin, race for non-Hispanic origin, and sex: Total of 49 States and the District of Columbia, July 1, 1995

[Figures include Armed Forces stationed in the United States and exclude those stationed outside the United States]

| Sex and age | All origins | Hispanic | | | | | Non-Hispanic | | |
|-----------------------------|-------------|------------|------------|--------------|-----------|-----------------------------|--------------------|-------------|------------|
| | | Total | Mexican | Puerto Rican | Cuban | Other Hispanic ¹ | Total ² | White | Black |
| Both sexes | | | | | | | | | |
| All ages | 259,504,615 | 26,903,271 | 17,355,772 | 2,769,337 | 1,131,663 | 5,646,499 | 232,601,344 | 190,850,619 | 31,362,664 |
| Under 1 year | 3,809,275 | 655,554 | 470,799 | 64,678 | 8,367 | 111,710 | 3,153,721 | 2,384,798 | 578,805 |
| 1-4 years | 15,580,062 | 2,543,683 | 1,831,485 | 212,544 | 52,849 | 446,805 | 13,036,379 | 9,978,680 | 2,320,160 |
| 5-9 years | 19,012,420 | 2,651,648 | 1,827,552 | 275,458 | 67,706 | 480,932 | 16,360,772 | 12,660,787 | 2,847,501 |
| 10-14 years | 18,630,833 | 2,417,045 | 1,640,556 | 285,618 | 54,814 | 436,057 | 16,213,788 | 12,623,204 | 2,710,259 |
| 15-19 years | 17,819,048 | 2,270,583 | 1,461,401 | 270,401 | 59,450 | 479,331 | 15,548,465 | 12,107,989 | 2,664,902 |
| 20-24 years | 17,672,363 | 2,328,759 | 1,581,229 | 200,083 | 67,422 | 480,025 | 15,343,604 | 12,039,504 | 2,485,920 |
| 25-29 years | 18,817,030 | 2,494,511 | 1,700,668 | 212,113 | 77,023 | 504,707 | 16,322,519 | 12,972,578 | 2,442,477 |
| 30-34 years | 21,650,105 | 2,524,224 | 1,611,589 | 227,880 | 89,061 | 595,694 | 19,125,881 | 15,498,672 | 2,667,118 |
| 35-39 years | 21,991,526 | 2,150,017 | 1,310,414 | 233,753 | 99,407 | 506,443 | 19,841,509 | 16,292,926 | 2,635,411 |
| 40-44 years | 19,954,489 | 1,716,147 | 1,015,553 | 190,484 | 78,309 | 431,801 | 18,238,342 | 15,157,873 | 2,257,012 |
| 45-49 years | 17,220,601 | 1,307,489 | 751,352 | 158,791 | 81,819 | 315,527 | 15,913,112 | 13,475,210 | 1,765,840 |
| 50-54 years | 13,430,283 | 958,448 | 556,698 | 129,488 | 49,707 | 222,555 | 12,471,835 | 10,678,551 | 1,318,856 |
| 55-59 years | 10,925,387 | 758,260 | 432,167 | 98,311 | 60,555 | 167,227 | 10,167,127 | 8,705,433 | 1,088,923 |
| 60-64 years | 9,899,196 | 632,954 | 358,687 | 76,178 | 65,229 | 132,860 | 9,266,242 | 8,008,598 | 950,312 |
| 65-69 years | 9,812,348 | 540,568 | 304,944 | 45,729 | 63,881 | 126,014 | 9,271,780 | 8,127,172 | 884,416 |
| 70-74 years | 8,702,959 | 403,168 | 219,217 | 40,286 | 56,636 | 87,029 | 8,299,791 | 7,420,570 | 676,445 |
| 75-79 years | 6,583,805 | 254,182 | 120,665 | 18,276 | 51,868 | 63,373 | 6,329,623 | 5,714,811 | 493,861 |
| 80-84 years | 4,408,015 | 167,139 | 96,302 | 15,701 | 19,958 | 35,178 | 4,240,876 | 3,861,759 | 307,575 |
| 85 years and over | 3,584,870 | 128,892 | 64,494 | 13,565 | 27,602 | 23,231 | 3,455,978 | 3,141,504 | 266,871 |
| Male | | | | | | | | | |
| All ages | 126,752,625 | 13,628,500 | 8,974,090 | 1,303,169 | 568,949 | 2,782,292 | 113,124,125 | 93,270,479 | 14,828,366 |
| Under 1 year | 1,950,448 | 336,434 | 248,742 | 30,711 | 5,199 | 51,782 | 1,614,014 | 1,227,497 | 290,941 |
| 1-4 years | 7,974,893 | 1,302,113 | 927,676 | 99,554 | 32,451 | 242,432 | 6,672,780 | 5,121,759 | 1,175,545 |
| 5-9 years | 9,735,795 | 1,356,198 | 914,348 | 144,442 | 39,111 | 258,297 | 8,379,597 | 6,497,997 | 1,445,807 |
| 10-14 years | 9,536,570 | 1,233,877 | 808,092 | 161,091 | 27,560 | 237,134 | 8,302,693 | 6,486,892 | 1,372,005 |
| 15-19 years | 9,143,122 | 1,162,112 | 774,039 | 129,647 | 26,834 | 231,592 | 7,981,010 | 6,234,908 | 1,352,603 |

VITAL STATISTICS OF THE UNITED STATES: MORTALITY, 1995
TECHNICAL APPENDIX

Table I. Estimated population by 5-year age groups, specified Hispanic origin, race for non-Hispanic origin, and sex: Total of 49 States and the District of Columbia, July 1, 1995

[Figures include Armed Forces stationed in the United States and exclude those stationed outside the United States]

| Sex and age | All origins | Hispanic | | | | | Non-Hispanic | | |
|-----------------------------|-------------|------------|-----------|--------------|---------|-----------------------------|--------------------|------------|------------|
| | | Total | Mexican | Puerto Rican | Cuban | Other Hispanic ¹ | Total ² | White | Black |
| 20-24 years | 8,979,149 | 1,227,296 | 857,708 | 88,891 | 36,259 | 244,438 | 7,751,853 | 6,125,276 | 1,220,795 |
| 25-29 years | 9,446,366 | 1,340,052 | 940,380 | 91,997 | 44,081 | 263,594 | 8,106,314 | 6,503,109 | 1,160,579 |
| 30-34 years | 10,791,780 | 1,328,484 | 879,990 | 102,131 | 45,048 | 301,315 | 9,463,296 | 7,754,055 | 1,244,394 |
| 35-39 years | 10,951,099 | 1,107,376 | 695,076 | 114,486 | 54,313 | 243,501 | 9,843,723 | 8,179,225 | 1,229,869 |
| 40-44 years | 9,851,416 | 860,573 | 534,558 | 84,524 | 37,865 | 203,626 | 8,990,843 | 7,567,522 | 1,041,341 |
| 45-49 years | 8,472,709 | 642,933 | 395,439 | 66,350 | 35,143 | 146,001 | 7,829,776 | 6,714,254 | 799,865 |
| 50-54 years | 6,510,211 | 460,474 | 268,781 | 64,902 | 26,641 | 100,150 | 6,049,737 | 5,241,592 | 589,922 |
| 55-59 years | 5,243,725 | 356,245 | 207,394 | 37,720 | 34,963 | 76,168 | 4,887,480 | 4,231,003 | 478,799 |
| 60-64 years | 4,656,801 | 292,546 | 174,331 | 33,902 | 27,778 | 56,535 | 4,364,255 | 3,819,584 | 408,331 |
| 65-69 years | 4,453,305 | 240,855 | 139,365 | 19,085 | 31,018 | 51,387 | 4,212,450 | 3,722,238 | 377,203 |
| 70-74 years | 3,780,240 | 176,596 | 98,650 | 18,121 | 27,892 | 31,933 | 3,603,644 | 3,242,236 | 272,714 |
| 75-79 years | 2,680,830 | 102,125 | 51,452 | 6,232 | 21,487 | 22,954 | 2,578,705 | 2,337,566 | 188,359 |
| 80-84 years | 1,584,091 | 59,655 | 37,819 | 3,391 | 5,150 | 13,295 | 1,524,436 | 1,391,899 | 101,425 |
| 85 years and over | 1,010,075 | 42,556 | 20,250 | 5,992 | 10,156 | 6,158 | 967,519 | 871,867 | 77,869 |
| Female | | | | | | | | | |
| All ages | 132,751,990 | 13,274,771 | 8,381,682 | 1,466,168 | 562,714 | 2,864,207 | 119,477,219 | 97,580,140 | 16,534,298 |
| Under 1 year | 1,858,827 | 319,120 | 222,057 | 33,967 | 3,168 | 59,928 | 1,539,707 | 1,157,301 | 287,864 |
| 1-4 years | 7,605,169 | 1,241,570 | 903,809 | 112,990 | 20,398 | 204,373 | 6,363,599 | 4,856,921 | 1,144,615 |
| 5-9 years | 9,276,625 | 1,295,450 | 913,204 | 131,016 | 28,595 | 222,635 | 7,981,175 | 6,162,790 | 1,401,694 |
| 10-14 years | 9,094,263 | 1,183,168 | 832,464 | 124,527 | 27,254 | 198,923 | 7,911,095 | 6,136,312 | 1,338,254 |
| 15-19 years | 8,675,926 | 1,108,471 | 687,362 | 140,754 | 32,616 | 247,739 | 7,567,455 | 5,873,081 | 1,312,299 |
| 20-24 years | 8,693,214 | 1,101,463 | 723,521 | 111,192 | 31,163 | 235,587 | 7,591,751 | 5,914,228 | 1,265,125 |
| 25-29 years | 9,370,664 | 1,154,459 | 760,288 | 120,116 | 32,942 | 241,113 | 8,216,205 | 6,469,469 | 1,281,898 |
| 30-34 years | 10,858,325 | 1,195,740 | 731,599 | 125,749 | 44,013 | 294,379 | 9,662,585 | 7,744,617 | 1,422,724 |
| 35-39 years | 11,040,427 | 1,042,641 | 615,338 | 119,267 | 45,094 | 262,942 | 9,997,786 | 8,113,701 | 1,405,542 |
| 40-44 years | 10,103,073 | 855,574 | 480,995 | 105,960 | 40,444 | 228,175 | 9,247,499 | 7,590,351 | 1,215,671 |

VITAL STATISTICS OF THE UNITED STATES: MORTALITY, 1995
TECHNICAL APPENDIX

Table I. Estimated population by 5-year age groups, specified Hispanic origin, race for non-Hispanic origin, and sex: Total of 49 States and the District of Columbia, July 1, 1995

[Figures include Armed Forces stationed in the United States and exclude those stationed outside the United States]

| Sex and age | All origins | Hispanic | | | | | Non-Hispanic | | |
|-----------------------------|-------------|----------|---------|--------------|--------|-----------------------------|--------------------|-----------|---------|
| | | Total | Mexican | Puerto Rican | Cuban | Other Hispanic ¹ | Total ² | White | Black |
| 45-49 years | 8,747,892 | 664,556 | 355,913 | 92,441 | 46,676 | 169,526 | 8,083,336 | 6,760,956 | 965,975 |
| 50-54 years | 6,920,072 | 497,974 | 287,917 | 64,586 | 23,066 | 122,405 | 6,422,098 | 5,436,959 | 728,934 |
| 55-59 years | 5,681,662 | 402,015 | 224,773 | 60,591 | 25,592 | 91,059 | 5,279,647 | 4,474,430 | 610,124 |
| 60-64 years | 5,242,395 | 340,408 | 184,356 | 42,276 | 37,451 | 76,325 | 4,901,987 | 4,189,014 | 541,981 |
| 65-69 years | 5,359,043 | 299,713 | 165,579 | 26,644 | 32,863 | 74,627 | 5,059,330 | 4,404,934 | 507,213 |
| 70-74 years | 4,922,719 | 226,572 | 120,567 | 22,165 | 28,744 | 55,096 | 4,696,147 | 4,178,334 | 403,731 |
| 75-79 years | 3,902,975 | 152,057 | 69,213 | 12,044 | 30,381 | 40,419 | 3,750,918 | 3,377,245 | 305,502 |
| 80-84 years | 2,823,924 | 107,484 | 58,483 | 12,310 | 14,808 | 21,883 | 2,716,440 | 2,469,860 | 206,150 |
| 85 years and over | 2,574,795 | 86,336 | 44,244 | 7,573 | 17,446 | 17,073 | 2,488,459 | 2,269,637 | 189,002 |

¹ Includes Central and South American and Other and unknown Hispanic.

² Includes races other than white and black.

VITAL STATISTICS OF THE UNITED STATES: MORTALITY, 1995
TECHNICAL APPENDIX

Table J. Estimated population for ages 15 years and over, by 5-year age groups, marital status, race, and sex:
United States, 1995

[Figures may be subject to large sampling variability. Figures include Armed Forces stationed in the United States and exclude those stationed outside the United States]

| Race, sex, and marital status | 15 years and over | 15-17 years | 18-19 years | 20-24 years | 25-29 years | 30-34 years | 35-39 years | 40-44 years | 45-49 years |
|-------------------------------|-------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| White, male | | | | | | | | | |
| Never married | 23,750,005 | 4,474,440 | 2,809,114 | 5,787,809 | 3,792,697 | 2,346,118 | 1,692,627 | 1,057,271 | 627,638 |
| Married | 51,250,071 | 17,889 | 75,290 | 1,445,577 | 3,661,405 | 5,893,078 | 6,543,111 | 6,326,628 | 5,730,011 |
| Widowed | 2,104,997 | 1,189 | 315 | - | 5,229 | 15,259 | 24,800 | 36,068 | 50,687 |
| Divorced | 6,425,431 | 9,449 | 2,509 | 90,457 | 336,578 | 807,768 | 1,021,478 | 1,040,588 | 962,156 |
| White, female | | | | | | | | | |
| Never married | 18,192,353 | 4,173,426 | 2,483,742 | 4,458,856 | 2,373,723 | 1,426,763 | 901,826 | 616,717 | 417,743 |
| Married | 51,742,023 | 52,788 | 246,917 | 2,306,878 | 4,675,165 | 6,540,284 | 6,942,335 | 6,442,465 | 5,700,667 |
| Widowed | 10,320,547 | 588 | 339 | 10,808 | 16,713 | 40,393 | 90,459 | 114,322 | 209,813 |
| Divorced | 8,572,453 | 5,886 | 8,425 | 216,745 | 541,191 | 914,759 | 1,241,857 | 1,295,463 | 1,159,578 |
| Black, male | | | | | | | | | |
| Never married | 5,217,613 | 869,069 | 547,531 | 1,165,762 | 810,062 | 620,472 | 477,994 | 286,672 | 154,253 |
| Married | 4,701,195 | 6,327 | 1,253 | 122,128 | 386,772 | 615,821 | 698,148 | 620,641 | 560,293 |
| Widowed | 319,907 | 420 | - | - | - | 1,671 | 4,512 | 10,195 | 8,819 |
| Divorced | 917,652 | 5,620 | - | 11,437 | 42,935 | 87,161 | 126,653 | 191,268 | 123,026 |
| Black, female | | | | | | | | | |
| Never married | 5,138,791 | 840,458 | 528,317 | 1,129,588 | 805,603 | 620,945 | 460,771 | 267,489 | 183,942 |
| Married | 4,893,415 | 5,999 | 14,155 | 188,803 | 460,700 | 698,877 | 732,533 | 697,581 | 572,248 |
| Widowed | 1,424,088 | 1,265 | - | 1,462 | 2,439 | 16,808 | 23,599 | 37,657 | 47,931 |
| Divorced | 1,526,366 | - | 1,389 | 18,400 | 85,952 | 163,599 | 263,691 | 278,838 | 204,324 |

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Table J. Estimated population for ages 15 years and over, by 5-year age groups, marital status, race, and sex:
United States, 1995

[Figures may be subject to large sampling variability. Figures include Armed Forces stationed in the United States and exclude those stationed outside the United States]

| Race, sex, and marital status | 15 years and over | 15-17 years | 18-19 years | 20-24 years | 25-29 years | 30-34 years | 35-39 years | 40-44 years | 45-49 years |
|-----------------------------------|-------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| American Indian, male | | | | | | | | | |
| Never married | 286,152 | 64,551 | 34,302 | 67,805 | 50,189 | 30,361 | 17,887 | 11,178 | 2,303 |
| Married | 376,812 | - | 2,311 | 26,325 | 35,866 | 47,744 | 50,088 | 47,904 | 49,245 |
| Widowed | 23,787 | - | - | - | - | 1,399 | 559 | - | 2,855 |
| Divorced | 83,983 | - | - | 470 | 7,022 | 13,541 | 18,767 | 16,288 | 6,367 |
| American Indian, female | | | | | | | | | |
| Never married | 255,491 | 60,821 | 32,249 | 58,903 | 51,487 | 15,086 | 9,519 | 9,396 | 2,218 |
| Married | 371,103 | 1,275 | 2,517 | 28,290 | 29,671 | 57,865 | 66,221 | 50,887 | 41,817 |
| Widowed | 78,422 | 1,170 | 1,494 | - | - | 3,170 | 504 | 2,365 | 5,068 |
| Divorced | 97,808 | - | - | 3,121 | 5,986 | 16,756 | 13,529 | 17,535 | 15,035 |
| Asian or Pacific Islander, male | | | | | | | | | |
| Never married | 1,271,962 | 212,391 | 128,562 | 339,586 | 261,374 | 149,950 | 81,197 | 49,431 | 19,571 |
| Married | 1,882,658 | 1,578 | 910 | 29,691 | 129,989 | 261,779 | 291,809 | 270,396 | 245,044 |
| Widowed | 38,375 | - | - | - | 2,981 | - | - | - | 791 |
| Divorced | 109,445 | - | - | - | 6,666 | 10,018 | 21,586 | 25,956 | 16,772 |
| Asian or Pacific Islander, female | | | | | | | | | |
| Never married | 988,646 | 204,348 | 122,714 | 276,193 | 200,872 | 70,303 | 47,973 | 23,894 | 11,872 |
| Married | 2,231,482 | 1,695 | 5,462 | 92,109 | 219,864 | 354,566 | 361,861 | 341,791 | 267,472 |
| Widowed | 257,286 | 1,686 | - | 2,175 | - | 5,650 | 5,244 | 2,915 | 14,143 |
| Divorced | 179,343 | - | 384 | 2,752 | 6,216 | 19,832 | 15,786 | 29,008 | 35,191 |

VITAL STATISTICS OF THE UNITED STATES: MORTALITY, 1995
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Table J. Estimated population for ages 15 years and over, by 5-year age groups, marital status, race, and sex: United States, 1995

[Figures may be subject to large sampling variability. Figures include Armed Forces stationed in the United States and exclude those stationed outside the United States]

| Race, sex, and marital status | 50-54 years | 55-59 years | 60-64 years | 65-69 years | 70-74 years | 75-79 years | 80-84 years | 85 years and over |
|-------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------------|
| White, male | | | | | | | | |
| Never married | 303,354 | 216,138 | 165,215 | 170,503 | 138,637 | 70,242 | 53,787 | 44,415 |
| Married | 4,725,765 | 3,829,836 | 3,482,112 | 3,280,266 | 2,793,139 | 1,932,538 | 1,047,438 | 465,988 |
| Widowed | 66,695 | 84,525 | 141,186 | 267,914 | 338,555 | 363,694 | 328,760 | 380,121 |
| Divorced | 658,417 | 495,051 | 363,831 | 274,354 | 191,383 | 103,814 | 39,412 | 28,186 |
| White, female | | | | | | | | |
| Never married | 270,307 | 202,164 | 157,323 | 168,623 | 164,555 | 152,077 | 94,783 | 129,725 |
| Married | 4,522,863 | 3,581,871 | 3,199,446 | 2,874,328 | 2,332,948 | 1,402,859 | 635,805 | 284,404 |
| Widowed | 281,180 | 416,694 | 662,822 | 1,286,623 | 1,664,854 | 1,844,560 | 1,767,488 | 1,912,891 |
| Divorced | 896,684 | 714,500 | 551,687 | 403,262 | 294,140 | 169,022 | 101,682 | 57,572 |
| Black, male | | | | | | | | |
| Never married | 106,276 | 58,275 | 47,769 | 20,723 | 17,486 | 20,436 | 5,786 | 9,047 |
| Married | 388,332 | 358,855 | 280,399 | 254,459 | 190,307 | 112,829 | 60,007 | 44,624 |
| Widowed | 12,310 | 14,624 | 39,342 | 76,454 | 44,445 | 48,051 | 33,766 | 25,298 |
| Divorced | 112,813 | 67,882 | 57,782 | 41,722 | 28,235 | 13,130 | 7,752 | 236 |
| Black, female | | | | | | | | |
| Never married | 77,869 | 64,840 | 54,710 | 38,477 | 31,162 | 11,400 | 10,456 | 12,764 |
| Married | 413,236 | 353,999 | 274,069 | 213,925 | 148,331 | 74,521 | 31,111 | 13,327 |
| Widowed | 92,370 | 123,976 | 158,261 | 193,880 | 196,599 | 208,224 | 157,003 | 162,614 |
| Divorced | 177,782 | 95,449 | 76,124 | 80,777 | 40,219 | 21,376 | 12,290 | 6,156 |

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Table J. Estimated population for ages 15 years and over, by 5-year age groups, marital status, race, and sex: United States, 1995

[Figures may be subject to large sampling variability. Figures include Armed Forces stationed in the United States and exclude those stationed outside the United States]

| Race, sex, and marital status | 50-54 years | 55-59 years | 60-64 years | 65-69 years | 70-74 years | 75-79 years | 80-84 years | 85 years and over |
|-----------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------------|
| American Indian, male | | | | | | | | |
| Never married | 1,720 | 3,289 | 1,712 | - | 855 | - | - | - |
| Married | 37,235 | 24,960 | 19,752 | 15,595 | 10,821 | 3,417 | 2,203 | 3,346 |
| Widowed | 977 | 1,006 | 646 | 1,582 | 2,378 | 6,793 | 4,133 | 1,459 |
| Divorced | 4,974 | 4,922 | 4,977 | 4,132 | 2,523 | - | - | - |
| American Indian, female | | | | | | | | |
| Never married | 5,068 | 3,147 | 784 | 1,814 | 837 | 4,162 | - | - |
| Married | 29,950 | 23,681 | 15,634 | 10,843 | 7,516 | 2,499 | 2,437 | - |
| Widowed | 9,711 | 5,138 | 7,907 | 10,522 | 7,228 | 6,377 | 7,590 | 10,178 |
| Divorced | 3,811 | 6,074 | 6,621 | 2,297 | 5,242 | 1,741 | 60 | - |
| Asian or Pacific Islander, male | | | | | | | | |
| Never married | 6,939 | 5,546 | 4,065 | 1,788 | 6,772 | 2,580 | - | 2,210 |
| Married | 182,835 | 141,898 | 112,177 | 85,898 | 60,604 | 34,521 | 23,859 | 9,670 |
| Widowed | 1,250 | 1,863 | 2,121 | 8,333 | 8,020 | 8,334 | 2,407 | 2,275 |
| Divorced | 11,935 | 8,571 | 3,727 | 2,105 | 2,109 | - | - | - |
| Asian or Pacific Islander, female | | | | | | | | |
| Never married | 10,239 | 3,507 | 2,130 | 6,213 | 2,713 | 1,759 | 3,916 | - |
| Married | 177,853 | 136,391 | 98,592 | 84,827 | 50,379 | 25,076 | 10,587 | 2,957 |
| Widowed | 17,575 | 16,157 | 36,410 | 39,890 | 44,085 | 33,461 | 19,212 | 18,683 |
| Divorced | 21,544 | 19,759 | 17,158 | 5,836 | 4,122 | 1,755 | - | - |

- Quantity zero.

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Table K. Estimated population for ages 15 years and over, by 5-year age groups, marital status, specified Hispanic origin, race for non-Hispanic origin, and sex: Total of 49 States and the District of Columbia, 1995

[Figures may be subject to large sampling variability. Figures include Armed Forces stationed in the United States and exclude those stationed outside the United States]

| Hispanic origin, race for non-Hispanic origin, sex, and marital status | 15 years and over | 15-17 years | 18-19 years | 20-24 years | 25-29 years | 30-34 years | 35-39 years | 40-44 years | 45-49 years |
|--|-------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Mexican, male | | | | | | | | | |
| Never married | 2,322,825 | 457,701 | 295,170 | 603,495 | 446,087 | 233,563 | 153,949 | 64,788 | 30,410 |
| Married | 3,297,451 | 4,766 | 14,340 | 250,615 | 459,330 | 572,445 | 480,813 | 417,848 | 313,727 |
| Widowed | 97,547 | - | - | - | - | 3,866 | 3,890 | 1,393 | 4,244 |
| Divorced | 357,424 | 2,058 | - | 3,599 | 34,963 | 70,119 | 56,433 | 50,526 | 47,059 |
| Mexican, female | | | | | | | | | |
| Never married | 1,527,024 | 397,750 | 222,502 | 338,783 | 213,449 | 135,568 | 79,024 | 43,925 | 26,901 |
| Married | 3,270,290 | 16,313 | 49,763 | 365,743 | 511,615 | 539,485 | 453,673 | 364,736 | 271,323 |
| Widowed | 316,760 | - | 1,030 | 703 | 3,663 | 4,430 | 8,781 | 10,153 | 15,657 |
| Divorced | 396,077 | - | - | 18,291 | 31,561 | 52,118 | 73,856 | 62,180 | 42,029 |
| Puerto Rican, male | | | | | | | | | |
| Never married | 352,630 | 81,264 | 46,075 | 72,249 | 47,956 | 35,726 | 29,008 | 14,880 | 9,564 |
| Married | 428,958 | - | 2,309 | 14,628 | 41,501 | 60,257 | 72,807 | 54,520 | 47,801 |
| Widowed | 17,600 | - | - | - | - | - | - | - | - |
| Divorced | 68,187 | - | - | 2,016 | 2,540 | 6,150 | 12,670 | 15,123 | 8,986 |
| Puerto Rican, female | | | | | | | | | |
| Never married | 381,157 | 88,517 | 44,689 | 75,968 | 45,798 | 34,808 | 26,400 | 21,252 | 15,225 |
| Married | 504,684 | 2,096 | 5,446 | 30,619 | 69,279 | 75,260 | 71,154 | 64,426 | 64,314 |
| Widowed | 73,505 | - | - | 1,126 | - | 829 | 2,050 | 3,108 | 3,193 |
| Divorced | 104,311 | - | - | 3,478 | 5,042 | 14,851 | 19,669 | 17,177 | 9,706 |

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Table K. Estimated population for ages 15 years and over, by 5-year age groups, marital status, specified Hispanic origin, race for non-Hispanic origin, and sex: Total of 49 States and the District of Columbia, 1995

[Figures may be subject to large sampling variability. Figures include Armed Forces stationed in the United States and exclude those stationed outside the United States]

| Hispanic origin, race for non-Hispanic origin, sex, and marital status | 15 years and over | 15-17 years | 18-19 years | 20-24 years | 25-29 years | 30-34 years | 35-39 years | 40-44 years | 45-49 years |
|--|-------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Cuban, male | | | | | | | | | |
| Never married | 127,649 | 18,460 | 8,374 | 29,216 | 20,293 | 8,986 | 17,857 | 5,421 | 5,160 |
| Married | 275,402 | - | - | 7,043 | 19,810 | 32,399 | 28,346 | 26,224 | 24,246 |
| Widowed | 15,165 | - | - | - | - | - | - | - | 385 |
| Divorced | 46,410 | - | - | - | 3,977 | 3,663 | 8,108 | 6,218 | 5,352 |
| Cuban, female | | | | | | | | | |
| Never married | 85,168 | 20,684 | 11,199 | 15,642 | 5,958 | 6,385 | 2,857 | 1,122 | 3,595 |
| Married | 266,532 | - | 417 | 12,810 | 21,520 | 33,535 | 34,489 | 29,803 | 34,845 |
| Widowed | 66,612 | - | 317 | - | - | - | - | 3,275 | 2,459 |
| Divorced | 64,993 | - | - | 2,712 | 5,469 | 4,095 | 7,749 | 6,245 | 5,777 |
| Other Hispanic, male | | | | | | | | | |
| Never married | 811,525 | 137,554 | 90,555 | 195,234 | 151,429 | 109,091 | 58,023 | 27,421 | 14,241 |
| Married | 1,052,273 | 786 | 2,493 | 46,322 | 104,886 | 177,503 | 170,945 | 151,462 | 118,370 |
| Widowed | 20,520 | - | - | - | - | - | 699 | - | 474 |
| Divorced | 108,327 | 204 | - | 2,880 | 7,283 | 14,720 | 13,827 | 24,744 | 12,916 |
| Other Hispanic, female | | | | | | | | | |
| Never married | 652,747 | 138,608 | 96,065 | 150,142 | 87,517 | 55,678 | 33,588 | 28,225 | 14,084 |
| Married | 1,152,917 | 2,453 | 9,687 | 79,230 | 138,913 | 212,729 | 178,841 | 160,235 | 114,654 |
| Widowed | 155,806 | - | - | 162 | 403 | 1,748 | 5,534 | 2,190 | 8,844 |
| Divorced | 216,890 | 647 | 283 | 6,056 | 14,284 | 24,226 | 44,980 | 37,525 | 31,949 |

VITAL STATISTICS OF THE UNITED STATES: MORTALITY, 1995
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Table K. Estimated population for ages 15 years and over, by 5-year age groups, marital status, specified Hispanic origin, race for non-Hispanic origin, and sex: Total of 49 States and the District of Columbia, 1995

[Figures may be subject to large sampling variability. Figures include Armed Forces stationed in the United States and exclude those stationed outside the United States]

| Hispanic origin, race for non-Hispanic origin, sex, and marital status | 15 years and over | 15-17 years | 18-19 years | 20-24 years | 25-29 years | 30-34 years | 35-39 years | 40-44 years | 45-49 years |
|--|-------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| White non-Hispanic, male | | | | | | | | | |
| Never married | 20,245,460 | 3,791,468 | 2,364,743 | 4,921,513 | 3,171,758 | 1,966,046 | 1,449,787 | 945,579 | 569,893 |
| Married | 45,917,584 | 12,372 | 55,016 | 1,120,573 | 3,041,677 | 5,060,787 | 5,775,486 | 5,645,516 | 5,214,272 |
| Widowed | 1,937,395 | 1,204 | 322 | - | 5,327 | 9,645 | 17,761 | 34,476 | 43,993 |
| Divorced | 5,835,874 | 7,229 | 2,562 | 83,194 | 284,340 | 717,579 | 936,187 | 941,947 | 886,100 |
| White non-Hispanic, female | | | | | | | | | |
| Never married | 15,651,617 | 3,536,170 | 2,107,657 | 3,914,191 | 2,042,535 | 1,212,558 | 768,114 | 528,100 | 360,996 |
| Married | 46,281,708 | 32,608 | 182,978 | 1,807,332 | 3,931,751 | 5,682,767 | 6,190,751 | 5,804,934 | 5,160,216 |
| Widowed | 9,611,884 | 591 | - | 7,941 | 12,785 | 33,430 | 71,147 | 93,739 | 175,274 |
| Divorced | 7,721,626 | 5,300 | 7,777 | 184,765 | 482,408 | 815,861 | 1,083,684 | 1,163,574 | 1,064,472 |
| Black non-Hispanic, male | | | | | | | | | |
| Never married | 4,907,358 | 817,919 | 521,577 | 1,101,958 | 755,604 | 582,615 | 445,606 | 261,366 | 146,790 |
| Married | 4,455,660 | 6,205 | 974 | 107,570 | 363,817 | 577,442 | 660,156 | 588,671 | 529,153 |
| Widowed | 311,121 | 412 | - | - | - | 1,592 | 4,363 | 9,892 | 8,517 |
| Divorced | 869,940 | 5,513 | - | 11,270 | 41,157 | 82,747 | 119,748 | 181,415 | 115,406 |
| Black non-Hispanic, female | | | | | | | | | |
| Never married | 4,873,265 | 791,914 | 500,438 | 1,066,678 | 763,932 | 590,471 | 442,735 | 250,464 | 178,356 |
| Married | 4,664,116 | 5,845 | 11,518 | 179,998 | 433,189 | 662,237 | 693,235 | 660,860 | 548,337 |
| Widowed | 1,369,955 | 1,233 | - | 1,425 | 1,965 | 14,395 | 22,691 | 35,111 | 46,526 |
| Divorced | 1,454,540 | - | 1,355 | 17,029 | 82,817 | 155,622 | 246,875 | 269,234 | 192,752 |

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Table K. Estimated population for ages 15 years and over, by 5-year age groups, marital status, specified Hispanic origin, race for non-Hispanic origin, and sex: Total of 49 States and the District of Columbia, 1995

[Figures may be subject to large sampling variability. Figures include Armed Forces stationed in the United States and exclude those stationed outside the United States]

| Hispanic origin, race for non-Hispanic origin, sex, and marital status | 15 years and over | 15-17 years | 18-19 years | 20-24 years | 25-29 years | 30-34 years | 35-39 years | 40-44 years | 45-49 years |
|--|-------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Other non-Hispanic, male | | | | | | | | | |
| Never married | 1,396,459 | 244,585 | 142,916 | 358,637 | 278,624 | 168,659 | 90,900 | 55,942 | 21,431 |
| Married | 2,060,114 | 1,542 | 4,455 | 46,344 | 149,892 | 276,226 | 310,852 | 289,723 | 271,561 |
| Widowed | 54,000 | - | - | - | 2,692 | 1,125 | 506 | - | 2,390 |
| Divorced | 164,061 | - | - | 802 | 11,413 | 18,839 | 32,374 | 36,315 | 20,277 |
| Other non-Hispanic, female | | | | | | | | | |
| Never married | 1,110,439 | 232,766 | 138,648 | 297,934 | 228,728 | 74,581 | 53,086 | 33,765 | 10,519 |
| Married | 2,386,733 | 2,501 | 5,746 | 109,426 | 228,818 | 377,255 | 393,806 | 358,167 | 284,324 |
| Widowed | 299,185 | 2,417 | - | 2,012 | - | 7,829 | 5,369 | 5,296 | 15,319 |
| Divorced | 256,594 | - | - | 3,027 | 7,286 | 35,580 | 26,281 | 44,247 | 46,243 |

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Table K. Estimated population for ages 15 years and over, by 5-Year age groups, marital status, race, and specified Hispanic origin, race for non-Hispanic origin, and sex: Total of 49 States and the District of Columbia, 1995

[Figures may be subject to large sampling variability. Figures include Armed Forces stationed in the United States and exclude those stationed outside the United States]

| Hispanic origin, race for non-Hispanic origin, sex, and marital status | 50-54 years | 55-59 years | 60-64 years | 65-69 years | 70-74 years | 75-80 years | 80-84 years | 85 years and over |
|--|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------------|
| Mexican, male | | | | | | | | |
| Never married | 13,033 | 10,797 | 6,540 | 443 | 2,667 | 1,374 | 1,492 | 1,316 |
| Married | 215,691 | 169,838 | 152,478 | 112,339 | 72,136 | 27,478 | 23,277 | 10,330 |
| Widowed | 7,435 | 4,208 | 5,330 | 13,565 | 19,613 | 15,628 | 10,942 | 7,433 |
| Divorced | 32,620 | 22,558 | 9,984 | 13,017 | 4,240 | 6,971 | 2,108 | 1,169 |
| Mexican, female | | | | | | | | |
| Never married | 19,117 | 14,829 | 10,923 | 8,662 | 8,148 | 3,183 | 1,055 | 3,205 |
| Married | 216,305 | 166,481 | 117,679 | 106,910 | 47,547 | 18,006 | 17,154 | 7,557 |
| Widowed | 15,002 | 20,289 | 35,002 | 38,568 | 47,286 | 43,767 | 39,766 | 32,663 |
| Divorced | 37,490 | 23,179 | 20,754 | 11,442 | 17,590 | 4,259 | 510 | 818 |
| Puerto Rican, male | | | | | | | | |
| Never married | 9,601 | 3,105 | 1,444 | 1,290 | 468 | - | - | - |
| Married | 44,131 | 29,314 | 27,958 | 12,638 | 12,511 | 4,286 | 2,867 | 1,430 |
| Widowed | 1,271 | 387 | 2,324 | 2,872 | 4,523 | 1,138 | 524 | 4,561 |
| Divorced | 9,901 | 4,914 | 2,175 | 2,285 | 618 | 809 | - | - |
| Puerto Rican, female | | | | | | | | |
| Never married | 8,350 | 6,204 | 3,501 | 5,241 | 986 | 2,055 | 888 | 1,275 |
| Married | 42,335 | 28,874 | 23,653 | 11,895 | 9,724 | 3,185 | 1,337 | 1,087 |
| Widowed | 5,417 | 12,016 | 7,910 | 8,458 | 8,065 | 6,036 | 10,086 | 5,211 |
| Divorced | 8,485 | 13,491 | 7,210 | 1,050 | 3,388 | 764 | - | - |

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Table K. Estimated population for ages 15 years and over, by 5-Year age groups, marital status, race, and specified Hispanic origin, race for non-Hispanic origin, and sex: Total of 49 States and the District of Columbia, 1995

[Figures may be subject to large sampling variability. Figures include Armed Forces stationed in the United States and exclude those stationed outside the United States]

| Hispanic origin, race for non-Hispanic origin, sex, and marital status | 50-54 years | 55-59 years | 60-64 years | 65-69 years | 70-74 years | 75-80 years | 80-84 years | 85 years and over |
|--|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------------|
| Cuban, male | | | | | | | | |
| Never married | 2,241 | 5,367 | 405 | 1,585 | 1,659 | 1,410 | - | 1,215 |
| Married | 21,701 | 24,306 | 25,859 | 23,720 | 17,258 | 13,996 | 5,150 | 5,344 |
| Widowed | - | - | 333 | 2,747 | 3,330 | 6,082 | - | 2,288 |
| Divorced | 2,698 | 5,288 | 1,182 | 2,969 | 5,645 | - | - | 1,310 |
| Cuban, female | | | | | | | | |
| Never married | 2,010 | 3,291 | 2,681 | 1,748 | 2,446 | 2,655 | 1,464 | 1,431 |
| Married | 14,709 | 16,049 | 29,335 | 17,843 | 8,711 | 6,557 | 3,474 | 2,435 |
| Widowed | - | 932 | 2,209 | 5,355 | 11,808 | 17,290 | 9,867 | 13,100 |
| Divorced | 6,347 | 5,319 | 3,225 | 7,917 | 5,780 | 3,878 | - | 480 |
| Other Hispanic, male | | | | | | | | |
| Never married | 10,912 | 5,307 | 6,752 | 1,747 | 766 | 1,040 | 1,453 | - |
| Married | 79,200 | 60,827 | 41,963 | 43,361 | 21,221 | 17,703 | 9,617 | 5,614 |
| Widowed | - | 4,920 | 2,232 | 3,653 | 5,533 | 1,998 | 466 | 545 |
| Divorced | 10,043 | 5,112 | 5,589 | 2,624 | 4,414 | 2,212 | 1,759 | - |
| Other Hispanic, female | | | | | | | | |
| Never married | 12,922 | 8,740 | 4,302 | 10,334 | 5,525 | 3,919 | 1,710 | 1,388 |
| Married | 86,550 | 56,533 | 48,604 | 33,638 | 15,819 | 8,468 | 4,930 | 1,633 |
| Widowed | 8,132 | 10,369 | 15,231 | 23,716 | 26,283 | 24,842 | 14,301 | 14,051 |
| Divorced | 14,797 | 15,418 | 8,189 | 6,937 | 7,471 | 3,188 | 940 | - |

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Table K. Estimated population for ages 15 years and over, by 5-Year age groups, marital status, race, and specified Hispanic origin, race for non-Hispanic origin, and sex: Total of 49 States and the District of Columbia, 1995

[Figures may be subject to large sampling variability. Figures include Armed Forces stationed in the United States and exclude those stationed outside the United States]

| Hispanic origin, race for non-Hispanic origin, sex, and marital status | 50-54 years | 55-59 years | 60-64 years | 65-69 years | 70-74 years | 75-80 years | 80-84 years | 85 years and over |
|--|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------------|
| White non-Hispanic, male | | | | | | | | |
| Never married | 265,431 | 191,875 | 150,639 | 165,098 | 132,961 | 66,643 | 50,033 | 41,993 |
| Married | 4,319,697 | 3,509,268 | 3,196,765 | 3,060,082 | 2,635,630 | 1,837,941 | 991,877 | 440,625 |
| Widowed | 57,619 | 73,973 | 128,368 | 242,289 | 302,201 | 339,713 | 316,175 | 364,329 |
| Divorced | 598,845 | 455,883 | 343,804 | 254,767 | 171,442 | 93,266 | 33,805 | 24,924 |
| White non-Hispanic, female | | | | | | | | |
| Never married | 230,024 | 170,109 | 135,542 | 144,467 | 149,188 | 141,215 | 87,966 | 122,785 |
| Married | 4,129,325 | 3,286,163 | 2,950,324 | 2,684,533 | 2,215,955 | 1,344,292 | 606,109 | 271,670 |
| Widowed | 252,262 | 372,870 | 602,457 | 1,201,982 | 1,555,852 | 1,735,208 | 1,677,545 | 1,818,801 |
| Divorced | 825,342 | 645,286 | 500,702 | 373,951 | 257,351 | 156,523 | 98,240 | 56,390 |
| Black non-Hispanic, male | | | | | | | | |
| Never married | 100,207 | 55,756 | 46,579 | 19,504 | 17,247 | 20,022 | 5,714 | 8,894 |
| Married | 368,346 | 342,800 | 268,571 | 245,912 | 185,192 | 108,401 | 58,578 | 43,872 |
| Widowed | 12,048 | 14,311 | 37,299 | 74,146 | 43,243 | 47,074 | 33,353 | 24,871 |
| Divorced | 109,319 | 65,935 | 55,880 | 37,643 | 27,031 | 12,865 | 3,779 | 232 |
| Black non-Hispanic, female | | | | | | | | |
| Never married | 75,195 | 62,307 | 52,547 | 35,516 | 29,585 | 10,524 | 10,295 | 12,308 |
| Married | 394,359 | 341,342 | 266,416 | 207,257 | 143,074 | 73,496 | 29,678 | 13,275 |
| Widowed | 90,194 | 115,516 | 149,294 | 188,306 | 191,525 | 200,401 | 154,083 | 157,290 |
| Divorced | 169,182 | 90,957 | 73,729 | 76,135 | 39,544 | 21,079 | 12,100 | 6,130 |

VITAL STATISTICS OF THE UNITED STATES: MORTALITY, 1995
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Table K. Estimated population for ages 15 years and over, by 5-Year age groups, marital status, race, and specified Hispanic origin, race for non-Hispanic origin, and sex: Total of 49 States and the District of Columbia, 1995

[Figures may be subject to large sampling variability. Figures include Armed Forces stationed in the United States and exclude those stationed outside the United States]

| Hispanic origin, race for non-Hispanic origin, sex, and marital status | 50-54 years | 55-59 years | 60-64 years | 65-69 years | 70-74 years | 75-80 years | 80-84 years | 85 years and over |
|--|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------------|
| Other non-Hispanic, male | | | | | | | | |
| Never married | 7,512 | 8,008 | 5,454 | 1,658 | 7,442 | 2,509 | - | 2,182 |
| Married | 191,294 | 156,044 | 122,064 | 97,199 | 68,446 | 36,116 | 26,798 | 11,558 |
| Widowed | 2,184 | 2,605 | 2,662 | 9,124 | 8,203 | 14,155 | 4,310 | 4,044 |
| Divorced | 17,234 | 11,023 | 6,158 | 5,026 | 4,600 | - | - | - |
| Other non-Hispanic, female | | | | | | | | |
| Never married | 12,222 | 6,151 | 2,817 | 6,373 | 3,231 | 5,685 | 3,933 | - |
| Married | 193,559 | 142,152 | 104,518 | 91,834 | 51,740 | 27,468 | 11,553 | 3,866 |
| Widowed | 24,677 | 20,167 | 37,256 | 42,250 | 52,450 | 33,290 | 24,900 | 25,953 |
| Divorced | 25,751 | 26,619 | 26,401 | 6,722 | 6,664 | 1,729 | 44 | - |

- Quantity zero

VITAL STATISTICS OF THE UNITED STATES: MORTALITY, 1995
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Table L. Ratio of census-level resident population to resident population adjusted for estimated net census undercount by age, sex, and race: April 1, 1990

| Age | All races | | | White | | | Black | | |
|---------------------|------------|--------|--------|------------|--------|--------|------------|--------|--------|
| | Both sexes | Male | Female | Both sexes | Male | Female | Both sexes | Male | Female |
| All ages | 0.9815 | 0.9721 | 0.9906 | 0.9802 | 0.9728 | 0.9873 | 0.9432 | 0.9151 | 0.9699 |
| Under 5 years | 0.9632 | 0.9634 | 0.9629 | 0.9677 | 0.9685 | 0.9669 | 0.9160 | 0.9139 | 0.9182 |
| Under 1 year | 0.9686 | 0.9684 | 0.9689 | 0.9730 | 0.9734 | 0.9725 | 0.9239 | 0.9214 | 0.9264 |
| 1-4 years | 0.9617 | 0.9621 | 0.9613 | 0.9664 | 0.9674 | 0.9654 | 0.9139 | 0.9119 | 0.9159 |
| 5-14 years | 0.9761 | 0.9768 | 0.9753 | 0.9740 | 0.9750 | 0.9730 | 0.9410 | 0.9402 | 0.9418 |
| 5-9 years | 0.9649 | 0.9655 | 0.9642 | 0.9657 | 0.9665 | 0.9649 | 0.9241 | 0.9230 | 0.9252 |
| 10-14 years | 0.9882 | 0.9891 | 0.9873 | 0.9830 | 0.9841 | 0.9818 | 0.9591 | 0.9586 | 0.9595 |
| 15-24 years | 1.0081 | 1.0088 | 1.0073 | 1.0032 | 1.0053 | 1.0010 | 0.9789 | 0.9723 | 0.9855 |
| 15-19 years | 1.0166 | 1.0198 | 1.0133 | 1.0094 | 1.0128 | 1.0059 | 0.9988 | 1.0016 | 0.9959 |
| 20-24 years | 1.0002 | 0.9987 | 1.0017 | 0.9975 | 0.9985 | 0.9966 | 0.9593 | 0.9432 | 0.9753 |
| 25-34 years | 0.9639 | 0.9463 | 0.9821 | 0.9614 | 0.9480 | 0.9755 | 0.9126 | 0.8666 | 0.9580 |
| 25-29 years | 0.9591 | 0.9439 | 0.9748 | 0.9558 | 0.9441 | 0.9681 | 0.9123 | 0.8732 | 0.9510 |
| 30-34 years | 0.9687 | 0.9487 | 0.9892 | 0.9669 | 0.9518 | 0.9828 | 0.9129 | 0.8599 | 0.9651 |
| 35-44 years | 0.9842 | 0.9689 | 0.9996 | 0.9816 | 0.9700 | 0.9935 | 0.9350 | 0.8867 | 0.9810 |
| 35-39 years | 0.9790 | 0.9628 | 0.9954 | 0.9764 | 0.9643 | 0.9888 | 0.9303 | 0.8808 | 0.9778 |
| 40-44 years | 0.9901 | 0.9758 | 1.0044 | 0.9875 | 0.9764 | 0.9988 | 0.9410 | 0.8943 | 0.9850 |
| 45-54 years | 0.9780 | 0.9628 | 0.9929 | 0.9772 | 0.9649 | 0.9894 | 0.9322 | 0.8805 | 0.9799 |
| 45-49 years | 0.9775 | 0.9633 | 0.9916 | 0.9762 | 0.9648 | 0.9877 | 0.9302 | 0.8807 | 0.9762 |
| 50-54 years | 0.9785 | 0.9623 | 0.9944 | 0.9784 | 0.9651 | 0.9914 | 0.9346 | 0.8802 | 0.9844 |
| 55-64 years | 0.9824 | 0.9640 | 0.9995 | 0.9828 | 0.9684 | 0.9962 | 0.9545 | 0.8875 | 1.0138 |
| 55-59 years | 0.9794 | 0.9609 | 0.9968 | 0.9801 | 0.9656 | 0.9941 | 0.9426 | 0.8790 | 0.9999 |
| 60-64 years | 0.9854 | 0.9671 | 0.1002 | 0.9853 | 0.9712 | 0.9982 | 0.9675 | 0.8969 | 1.0287 |

VITAL STATISTICS OF THE UNITED STATES: MORTALITY, 1995
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Table L. Ratio of census-level resident population to resident population adjusted for estimated net census undercount by age, sex, and race: April 1, 1990

| Age | All races | | | White | | | Black | | |
|-----------------------------|------------|--------|--------|------------|--------|--------|------------|--------|--------|
| | Both sexes | Male | Female | Both sexes | Male | Female | Both sexes | Male | Female |
| 65-74 years | 0.9960 | 0.9784 | 1.0101 | 0.9935 | 0.9781 | 1.0060 | 1.0211 | 0.9704 | 1.0596 |
| 65-69 years | 0.9980 | 0.9776 | 1.0152 | 0.9943 | 0.9762 | 1.0096 | 1.0336 | 0.9786 | 1.0773 |
| 70-74 years | 0.9934 | 0.9795 | 1.0040 | 0.9926 | 0.9807 | 1.0017 | 1.0049 | 0.9589 | 1.0376 |
| 75-84 years | 1.0021 | 1.0046 | 1.0006 | 1.0038 | 1.0066 | 1.0021 | 0.9971 | 0.9913 | 1.0004 |
| 75-79 years | 1.0082 | 1.0064 | 1.0094 | 1.0077 | 1.0065 | 1.0085 | 1.0258 | 1.0126 | 1.0337 |
| 80-84 years | 0.9927 | 1.0015 | 0.9881 | 0.9978 | 1.0068 | 0.9931 | 0.9524 | 0.9547 | 0.9512 |
| 85 years and over | 0.9411 | 0.9592 | 0.9342 | 0.9512 | 0.9696 | 0.9444 | 0.8503 | 0.8827 | 0.8373 |

SOURCE: Unpublished data from the U.S. Bureau of the Census.

VITAL STATISTICS OF THE UNITED STATES: MORTALITY, 1995
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Table M. Age-adjusted death rates for selected causes by race and sex, unadjusted and adjusted for estimated net census undercount: United States, 1990

[Based on age-specific death rates per 100,000 population in specified group. Age-adjusted death rates per 100,000 U.S. standard population. Numbers after causes of deaths are numbers of the Ninth Revision, International Classification of Diseases, 1975. Beginning 1987 includes category numbers *042-*044. See section "Cause of death"]

| Race, sex, and adjustment for net census undercount | All causes | Human immunodeficiency virus infection (*042-*044) | Malignant neoplasms, including neoplasms of lymphatic and hematopoietic tissues (140-208) | Diabetes mellitus (250) | Diseases of heart (390-398,402, 404-429) | Cerebrovascular diseases (430-438) | Homicide and legal intervention (E960-E978) |
|---|------------|--|---|-------------------------|--|------------------------------------|---|
| All races | | | | | | | |
| Both sexes: | | | | | | | |
| Unadjusted | 520.2 | 9.8 | 135.0 | 11.7 | 152.0 | 27.7 | 10.2 |
| Adjusted | 512.7 | 9.6 | 133.3 | 11.5 | 149.9 | 27.3 | 10.1 |
| Male: | | | | | | | |
| Unadjusted | 680.2 | 17.7 | 166.3 | 12.3 | 206.7 | 30.2 | 16.3 |
| Adjusted | 664.3 | 17.0 | 162.4 | 12.1 | 202.1 | 29.6 | 15.9 |
| Female: | | | | | | | |
| Unadjusted | 390.6 | 2.1 | 112.7 | 11.1 | 108.9 | 25.7 | 4.2 |
| Adjusted | 387.9 | 2.1 | 112.6 | 11.0 | 107.9 | 25.4 | 4.2 |
| White | | | | | | | |
| Both sexes: | | | | | | | |
| Unadjusted | 492.8 | 8.0 | 131.5 | 10.4 | 146.9 | 25.5 | 5.9 |
| Adjusted | 485.9 | 7.8 | 129.9 | 10.2 | 145.0 | 25.2 | 5.7 |
| Male: | | | | | | | |
| Unadjusted | 644.3 | 15.0 | 160.3 | 11.3 | 202.0 | 27.7 | 8.9 |
| Adjusted | 631.0 | 14.4 | 156.9 | 11.1 | 198.2 | 27.3 | 8.7 |
| Female: | | | | | | | |
| Unadjusted | 369.9 | 1.1 | 111.2 | 9.5 | 103.1 | 23.8 | 2.8 |
| Adjusted | 367.0 | 1.0 | 110.8 | 9.5 | 102.2 | 23.5 | 2.7 |
| Black | | | | | | | |
| Both sexes: | | | | | | | |
| Unadjusted | 789.2 | 25.7 | 182.0 | 24.8 | 213.5 | 48.4 | 39.5 |
| Adjusted | 760.0 | 23.9 | 177.0 | 24.1 | 207.2 | 46.9 | 37.4 |
| Male: | | | | | | | |
| Unadjusted | 1,061.3 | 44.2 | 248.1 | 23.6 | 275.9 | 56.1 | 68.7 |
| Adjusted | 980.8 | 39.0 | 230.9 | 21.9 | 256.7 | 52.3 | 62.9 |
| Female: | | | | | | | |
| Unadjusted | 581.6 | 9.9 | 137.2 | 25.4 | 168.1 | 42.7 | 13.0 |
| Adjusted | 579.4 | 9.7 | 138.4 | 25.7 | 168.2 | 42.7 | 12.7 |

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Table N. Lower and upper 95% and 96% confidence limit factors for a death rate based on a Poisson variable of 1 through 99 deaths, D or D_{adj}

| D or D_{adj} | $L(1 - \alpha = .95, D)$ | $U(1 - \alpha = .95, D)$ | $L(1 - \alpha = .96, D)$ or $L(1 - \alpha = .96, D_{adj})$ | $U(1 - \alpha = .96, D)$ or $U(1 - \alpha = .96, D_{adj})$ |
|------------------------|--------------------------|--------------------------|--|--|
| 1 | 0.02532 | 5.57164 | 0.02020 | 5.83392 |
| 2 | 0.12110 | 3.61234 | 0.10735 | 3.75830 |
| 3 | 0.20622 | 2.92242 | 0.18907 | 3.02804 |
| 4 | 0.27247 | 2.56040 | 0.25406 | 2.64510 |
| 5 | 0.32470 | 2.33367 | 0.30591 | 2.40540 |
| 6 | 0.36698 | 2.17658 | 0.34819 | 2.23940 |
| 7 | 0.40205 | 2.06038 | 0.38344 | 2.11666 |
| 8 | 0.43173 | 1.97040 | 0.41339 | 2.02164 |
| 9 | 0.45726 | 1.89831 | 0.43923 | 1.94553 |
| 10 | 0.47954 | 1.83904 | 0.46183 | 1.88297 |
| 11 | 0.49920 | 1.78928 | 0.48182 | 1.83047 |
| 12 | 0.51671 | 1.74680 | 0.49966 | 1.78566 |
| 13 | 0.53246 | 1.71003 | 0.51571 | 1.74688 |
| 14 | 0.54671 | 1.67783 | 0.53027 | 1.71292 |
| 15 | 0.55969 | 1.64935 | 0.54354 | 1.68289 |
| 16 | 0.57159 | 1.62394 | 0.55571 | 1.65610 |
| 17 | 0.58254 | 1.60110 | 0.56692 | 1.63203 |
| 18 | 0.59266 | 1.58043 | 0.57730 | 1.61024 |
| 19 | 0.60207 | 1.56162 | 0.58695 | 1.59042 |
| 20 | 0.61083 | 1.54442 | 0.59594 | 1.57230 |
| 21 | 0.61902 | 1.52861 | 0.60435 | 1.55563 |
| 22 | 0.62669 | 1.51401 | 0.61224 | 1.54026 |
| 23 | 0.63391 | 1.50049 | 0.61966 | 1.52602 |
| 24 | 0.64072 | 1.48792 | 0.62666 | 1.51278 |
| 25 | 0.64715 | 1.47620 | 0.63328 | 1.50043 |
| 26 | 0.65323 | 1.46523 | 0.63954 | 1.48888 |

VITAL STATISTICS OF THE UNITED STATES: MORTALITY, 1995
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Table N. Lower and upper 95% and 96% confidence limit factors for a death rate based on a Poisson variable of 1 through 99 deaths, D or D_{adj}

| D or D_{adj} | $L(1 - \alpha = .95, D)$ | $U(1 - \alpha = .95, D)$ | $L(1 - \alpha = .96, D)$ or $L(1 - \alpha = .96, D_{adj})$ | $U(1 - \alpha = .96, D)$ or $U(1 - \alpha = .96, D_{adj})$ |
|------------------------|--------------------------|--------------------------|--|--|
| 27 | 0.65901 | 1.45495 | 0.64549 | 1.47805 |
| 28 | 0.66449 | 1.44528 | 0.65114 | 1.46787 |
| 29 | 0.66972 | 1.43617 | 0.65652 | 1.45827 |
| 30 | 0.67470 | 1.42756 | 0.66166 | 1.44922 |
| 31 | 0.67945 | 1.41942 | 0.66656 | 1.44064 |
| 32 | 0.68400 | 1.41170 | 0.67125 | 1.43252 |
| 33 | 0.68835 | 1.40437 | 0.67575 | 1.42480 |
| 34 | 0.69253 | 1.39740 | 0.68005 | 1.41746 |
| 35 | 0.69654 | 1.39076 | 0.68419 | 1.41047 |
| 36 | 0.70039 | 1.38442 | 0.68817 | 1.40380 |
| 37 | 0.70409 | 1.37837 | 0.69199 | 1.39743 |
| 38 | 0.70766 | 1.37258 | 0.69568 | 1.39134 |
| 39 | 0.71110 | 1.36703 | 0.69923 | 1.38550 |
| 40 | 0.71441 | 1.36172 | 0.70266 | 1.37991 |
| 41 | 0.71762 | 1.35661 | 0.70597 | 1.37454 |
| 42 | 0.72071 | 1.35171 | 0.70917 | 1.36938 |
| 43 | 0.72370 | 1.34699 | 0.71227 | 1.36442 |
| 44 | 0.72660 | 1.34245 | 0.71526 | 1.35964 |
| 45 | 0.72941 | 1.33808 | 0.71816 | 1.35504 |
| 46 | 0.73213 | 1.33386 | 0.72098 | 1.35060 |
| 47 | 0.73476 | 1.32979 | 0.72370 | 1.34632 |
| 48 | 0.73732 | 1.32585 | 0.72635 | 1.34218 |
| 49 | 0.73981 | 1.32205 | 0.72892 | 1.33818 |
| 50 | 0.74222 | 1.31838 | 0.73142 | 1.33431 |
| 51 | 0.74457 | 1.31482 | 0.73385 | 1.33057 |
| 52 | 0.74685 | 1.31137 | 0.73621 | 1.32694 |

VITAL STATISTICS OF THE UNITED STATES: MORTALITY, 1995
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Table N. Lower and upper 95% and 96% confidence limit factors for a death rate based on a Poisson variable of 1 through 99 deaths, D or D_{adj}

| D or D_{adj} | $L(1 - \alpha = .95, D)$ | $U(1 - \alpha = .95, D)$ | $L(1 - \alpha = .96, D)$ or $L(1 - \alpha = .96, D_{adj})$ | $U(1 - \alpha = .96, D)$ or $U(1 - \alpha = .96, D_{adj})$ |
|------------------------|--------------------------|--------------------------|--|--|
| 53 | 0.74907 | 1.30802 | 0.73851 | 1.32342 |
| 54 | 0.75123 | 1.30478 | 0.74075 | 1.32002 |
| 55 | 0.75334 | 1.30164 | 0.74293 | 1.31671 |
| 56 | 0.75539 | 1.29858 | 0.74506 | 1.31349 |
| 57 | 0.75739 | 1.29562 | 0.74713 | 1.31037 |
| 58 | 0.75934 | 1.29273 | 0.74916 | 1.30734 |
| 59 | 0.76125 | 1.28993 | 0.75113 | 1.30439 |
| 60 | 0.76311 | 1.28720 | 0.75306 | 1.30152 |
| 61 | 0.76492 | 1.28454 | 0.75494 | 1.29873 |
| 62 | 0.76669 | 1.28195 | 0.75678 | 1.29601 |
| 63 | 0.76843 | 1.27943 | 0.75857 | 1.29336 |
| 64 | 0.77012 | 1.27698 | 0.76033 | 1.29077 |
| 65 | 0.77178 | 1.27458 | 0.76205 | 1.28826 |
| 66 | 0.77340 | 1.27225 | 0.76373 | 1.28580 |
| 67 | 0.77499 | 1.26996 | 0.76537 | 1.28340 |
| 68 | 0.77654 | 1.26774 | 0.76698 | 1.28106 |
| 69 | 0.77806 | 1.26556 | 0.76856 | 1.27877 |
| 70 | 0.77955 | 1.26344 | 0.77011 | 1.27654 |
| 71 | 0.78101 | 1.26136 | 0.77162 | 1.27436 |
| 72 | 0.78244 | 1.25933 | 0.77310 | 1.27223 |
| 73 | 0.78384 | 1.25735 | 0.77456 | 1.27014 |
| 74 | 0.78522 | 1.25541 | 0.77598 | 1.26810 |
| 75 | 0.78656 | 1.25351 | 0.77738 | 1.26610 |
| 76 | 0.78789 | 1.25165 | 0.77876 | 1.26415 |
| 77 | 0.78918 | 1.24983 | 0.78010 | 1.26223 |
| 78 | 0.79046 | 1.24805 | 0.78143 | 1.26036 |

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Table N. Lower and upper 95% and 96% confidence limit factors for a death rate based on a Poisson variable of 1 through 99 deaths, D or D_{adj}

| D or D_{adj} | $L(1 - \alpha = .95, D)$ | $U(1 - \alpha = .95, D)$ | $L(1 - \alpha = .96, D)$ or $L(1 - \alpha = .96, D_{adj})$ | $U(1 - \alpha = .96, D)$ or $U(1 - \alpha = .96, D_{adj})$ |
|------------------------|--------------------------|--------------------------|--|--|
| 79 | 0.79171 | 1.24630 | 0.78272 | 1.25852 |
| 80 | 0.79294 | 1.24459 | 0.78400 | 1.25672 |
| 81 | 0.79414 | 1.24291 | 0.78525 | 1.25496 |
| 82 | 0.79533 | 1.24126 | 0.78648 | 1.25323 |
| 83 | 0.79649 | 1.23965 | 0.78769 | 1.25153 |
| 84 | 0.79764 | 1.23807 | 0.78888 | 1.24987 |
| 85 | 0.79876 | 1.23652 | 0.79005 | 1.24824 |
| 86 | 0.79987 | 1.23499 | 0.79120 | 1.24664 |
| 87 | 0.80096 | 1.23350 | 0.79233 | 1.24507 |
| 88 | 0.80203 | 1.23203 | 0.79344 | 1.24352 |
| 89 | 0.80308 | 1.23059 | 0.79453 | 1.24201 |
| 90 | 0.80412 | 1.22917 | 0.79561 | 1.24052 |
| 91 | 0.80514 | 1.22778 | 0.79667 | 1.23906 |
| 92 | 0.80614 | 1.22641 | 0.79771 | 1.23762 |
| 93 | 0.80713 | 1.22507 | 0.79874 | 1.23621 |
| 94 | 0.80810 | 1.22375 | 0.79975 | 1.23482 |
| 95 | 0.80906 | 1.22245 | 0.80074 | 1.23345 |
| 96 | 0.81000 | 1.22117 | 0.80172 | 1.23211 |
| 97 | 0.81093 | 1.21992 | 0.80269 | 1.23079 |
| 98 | 0.81185 | 1.21868 | 0.80364 | 1.22949 |
| 99 | 0.81275 | 1.21746 | 0.80458 | 1.22822 |

NOTE: Table N was generated using the SAS[®] code below. Users can compute other level Confidence Intervals by changing the alpha-value. Table N is a modified version of Table 40 (52).

VITAL STATISTICS OF THE UNITED STATES: MORTALITY, 1995
TECHNICAL APPENDIX

```
* Program to compute confidence intervals for expectations of Poisson variables ;
* Specify alpha for alpha*100% Confidence Interval ;

%let alpha = .95;

data CI ;

    alo = (1-&alpha)/2 ;
    ahi = (&alpha+1)/2 ;

do n = 1 to 99;

    L = Gaminv ( alo,n )/n ;
    U = Gaminv ( ahi,n+1)/n ;

output;
end;

proc print data= CI;
var n L U ;
run;
```

1998 ADDENDUM TO "TECHNICAL APPENDIX" OF *VITAL STATISTICS OF THE UNITED STATES: MORTALITY, 1995*

To assist the users of the mortality public-use data tapes and CD-ROMS, attached is a copy of the "Technical Appendix" of the *Vital Statistics of the United States: Mortality, 1995*. This technical appendix provides certain qualifications that are essential to using, analyzing, and interpreting the data in those tapes and CD-ROMS. Certain modifications to the technical appendix are essential to make it applicable to the mortality file for the 1998 data year. Those modifications include the following:

I. Sources of data

State-coded medical data

1996

Utah

1998

Tennessee

For 1998, of the States in the VSCP, 43 States submitted precoded medical data for all death certificates in the form of electronic data files. Of these 43 States, Maine and Montana contracted with a private company to provide NCHS with precoded medical data. The remaining seven VSCP States, New York City, and the District of Columbia submitted copies of the original certificates from which NCHS coded the medical data.

For 1998, approximately 36 percent of the Nation's death records were multiple-cause coded using SuperMICAR and 64 percent using MICAR. This represents data from 25 States which were coded by SuperMICAR and data from 25 States, the District of Columbia, and New York City which were coded by MICAR.

All States submitted precoded demographic data for all death certificates in the form of electronic data files in 1998.

Data for Puerto Rico, the Virgin Islands, and Guam have been included in the mortality public-use data files since 1994. Data for American Samoa have been included since 1997. Data for the Commonwealth of the Northern Mariana Islands (Northern Marianas) are included for the first time for 1998.

II. Classification of data

A. Race

Death certificates for some States have a checkbox for “multi-racial”. Some States are mandated by law to code “multi-racial” as a separate category. For these States, death records with an entry of “multi-racial” but without a specified racial entry or entries were assigned to the specified race of the previous record. States not mandated to code “multi-racial” may code “multi-racial” in the same way as mandated States or may code “multi-racial” to "Other entries." For death records where race is coded to "Other entries", if origin is Hispanic and the place of birth is Puerto Rico, Cuba or Mexico, the race is assigned as White. Otherwise, except for Puerto Rico, death records with race coded to "Other entries" were assigned to the specified race of the previous record with known race. For Puerto Rico, if race is coded to "Other entries", race is assigned to "Other races."

B. Hispanic origin

Beginning with the 1997 data year, data by Hispanic origin include all 50 States and the District of Columbia .

Infant mortality--Infant mortality data by Hispanic origin are based on deaths to residents of the entire United States.

Infant mortality rates by Hispanic origin are biased because of inconsistencies in reporting Hispanic or ethnic origin between the birth and death certificates for the same infant. Estimates of reporting bias may be made by comparing rates based on the linked file of infant deaths and live births ¹ with those where the Hispanic or ethnic origin of infant death is based on information from the death certificate ². Infant mortality rates by Hispanic origin are less subject to reporting bias when based on linked files of infant deaths and live births ¹.

C. Educational attainment

Deaths by educational attainment have been included in the public-use data files since 1989. It is recommended for 1998 that analyses of educational attainment data include deaths to residents of 46 States and the District of Columbia whose data were approximately 80 percent or more complete on a place-of-occurrence basis. Although data for Kentucky are included in the file, they would be excluded from analyses because more than 20 percent of their death certificates were classified to “unknown educational attainment.” Data for Georgia,

Rhode Island, and South Dakota were excluded from the file because their death certificates did not include an educational attainment item.

Death rates for educational attainment are based on population estimates derived from the U.S. Bureau of the Census' Current Population Survey (CPS) and adjusted to resident population control totals. As a result, the rates are subject to the variability of the denominator as well as the numerator. Computation of the relative standard errors, 95-percent confidence intervals, and statistical tests are discussed in the Technical notes of the National Vital Statistics Report ².

Death rates for educational attainment may be biased for the following three reasons: 1) because of inconsistencies in reporting between the death certificates and the CPS for decedents; 2) because of a change in the basic item used to collect data about education in the CPS; and 3) because of possible under-enumeration of the population estimates (there have been no studies evaluating this potential bias).

In the National Longitudinal Mortality Survey (NLMS) a total of 9,257 death certificates were compared with responses to educational attainment questions from a total of 12 CPS's conducted by the U.S. Bureau of the Census for data year 1989 ³. Based on the results of this study and after proportionally allocating the "unknown education" on the death certificate, the ratio of CPS deaths having reported less than a high school education (grades 0-11) to death certificate deaths having reported less than high school education was about 1.37. This indicates that the number of deaths and death rates for decedents having less than high school education are biased downward in the vital statistics data by about 37 percent. Similarly, the corresponding ratios for having completed high school (grade 12) and having completed more than high school (grades 13 and more) are 0.70 and 0.87 respectively.

In the CPS, the item used to collect education information was changed in 1992 from:

23a) What is the highest grade or year of regular school ... has ever attended?;

23b) Did ... complete that grade (year?); Yes, No

to:

23) What is the highest level of school ... has completed or the highest degree ... has received?

Based on a Bureau of the Census study ⁴, the ratio of population estimates derived from the "old" educational attainment definition for less than a high school education (grades 0-11) to population estimates derived from the "new" definition for less than high school education was

about 0.99. This indicates that the death rates for decedents having less than high school education are biased upward in the vital statistics data by about 1 percent. Similarly, the corresponding ratios for having completed high school (grade 12) and having completed more than high school (grades 13 and more) were 1.15 and 0.93 respectively.

Accounting for both the inconsistency in reporting between the death certificates and the CPS for decedents and the change in the definition of education population estimates may be accomplished simultaneously by combining the above ratios. The combined ratio for less than high school is about 1.36 (1.37 x .99), for high school about 0.81 (0.70 x 1.15), and for more than high school about 0.81 (0.87 x .93). These ratios may vary by age, sex, race/Hispanic origin, cause of death, and geographic area.

D. Occupation and industry

For 1998, the occupation and industry mortality data were included for the following 20 reporting States:

| | |
|---------------|----------------|
| Colorado | New Jersey |
| Georgia | New Mexico |
| Hawaii | North Carolina |
| Idaho | Ohio |
| Indiana | Rhode Island |
| Kansas | South Carolina |
| Kentucky | Utah |
| Maine | Vermont |
| Nevada | West Virginia |
| New Hampshire | Wisconsin |

III. Population bases for computing rates

The population used for computing death rates (furnished by the U.S. Bureau of the Census) represents the population residing in the specified area. Population estimates used for computing rates by age, sex, race, Hispanic origin, and race for non-Hispanic origin for the United States for 1998 are based on population estimates as of July 1, 1998 ⁸ (available upon request). The estimates are based on demographic analysis and, therefore, are not subject to sampling variability.

Population estimates used for computing death rates for specified Hispanic origin by age and sex for the United States are as of July 1, 1998⁹ (available upon request). The estimates for Mexicans, Puerto Ricans, Cubans, and Other Hispanics are based on the CPS adjusted to resident population control totals and, therefore, are subject to sampling error (see Technical Appendix from *Vital Statistics of the United States: Mortality, 1995*).

Population estimates used for computing death rates for marital status by age, race, and sex for the United States are as of July 1, 1998⁹ and are available upon request. Population estimates used for computing death rates for marital status by age, Hispanic origin, race for non-Hispanic origin, and sex for the United States are as of July 1, 1998⁹ and are also available upon request. The population estimates for never married, married, widowed, and divorced are based on the CPS adjusted to resident population control totals and, therefore, are subject to sampling error (see Technical Appendix from *Vital Statistics of the United States: Mortality, 1995*).

Population estimates used for computing death rates for educational attainment by age and sex for the total of 46 States and the District of Columbia are as of July 1, 1998⁹ and are presented in table IV of the Technical notes of the “Report of Final Mortality Statistics”². These estimates are based on the CPS adjusted to resident population control for the 46 States and the District of Columbia.

Population estimates for each State, Puerto Rico, Virgin Islands, Guam, American Samoa, and Northern Marianas¹⁰⁻¹⁵ are presented in table V of the Technical notes of the “Report of Final Mortality Statistics”². These estimates are based on demographic analysis, and therefore, are not subject to sampling variability.

All population estimates for 1998 are based on the 1990 census level counts that were modified by age, race, and sex to be consistent with the U.S. Office of Management and Budget categories and historical categories for death data¹⁶.

References

1. MacDorman MF, Atkinson JO. Infant mortality statistics from the 1997 period linked birth/infant death data set. National vital statistics reports; vol 47 no 23, supp. Hyattsville, Maryland: National Center for Health Statistics. 1999.
2. Murphy SL. Deaths: Final data for 1998. National vital statistics reports; in press. Hyattsville, Maryland: National Center for Health Statistics.
3. Sorlie PD, Johnson NJ. Validity of education information on the death certificate. *Epidemiology* 7(4): 437-439. 1996.

4. Kominski R, Adams A. Educational attainment in the United States: March 1993 and 1992. U.S. Bureau of the Census. Current Population Reports: Series P20-476. Washington: U.S. Government Printing Office. 1994.
5. National Center for Health Statistics. Vital statistics, instructions for classifying the underlying cause of death. NCHS instruction manual; part 2a. Hyattsville, Maryland: Public Health Service. Published annually.
6. National Center for Health Statistics. Vital statistics, instructions for classifying multiple causes of death. NCHS instruction manual; part 2b. Hyattsville, Maryland: Public Health Service. Published annually.
7. National Center for Health Statistics. Vital statistics, nonindexed terms, standard abbreviations, and State geographic codes used in mortality data classification. NCHS instruction manual; part 2e. Hyattsville, Maryland: Public Health Service. Published annually.
8. U.S. Bureau of the Census. Unpublished census file NESTV98. Consistent with populations published in: U.S. population estimates, by age, sex, race, and Hispanic origin: 1990 to 1998. Washington, DC. 1999.
9. U.S. Bureau of the Census. Population estimates for 1998 based on unpublished tabulations prepared by the Housing and Household Economics Statistics Division.
10. U.S. Bureau of the Census. Population estimates for the U.S. and states by single year of age and sex: July 1, 1998. Unpublished census file STRES981.txt. Washington, DC. 1999.
11. U.S. Bureau of the Census. Unpublished Census file PR98SYA.WK1.
12. U.S. Bureau of the Census. Unpublished Census file USVI.WK1.
13. U.S. Bureau of the Census. Unpublished Census file GUAM.WK1.
14. U.S. Bureau of the Census. Unpublished Census file ASAMOA.WK1.
15. U.S. Bureau of the Census. Unpublished Census file CNMI.WK1.
16. U.S. Bureau of the Census: Unpublished data from the 1990 census, by age, sex, race and Hispanic origin. 1990.

TECHNICAL APPENDIX FROM

**VITAL STATISTICS OF THE
UNITED STATES**

1998

NATALITY

**U.S. DEPARTMENT OF
HEALTH AND HUMAN SERVICES**

**CENTERS FOR DISEASE CONTROL AND PREVENTION
NATIONAL CENTER FOR HEALTH STATISTICS**

Hyattsville, Maryland: March 2000

VITAL STATISTICS OF THE UNITED STATES: NATALITY, 1998
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A copy of the technical appendix may be obtained by contacting the National Center for Health Statistics, Reproductive Statistics Branch at 301-458-4111.

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Definition of live birth

Every product of conception that gives a sign of life after birth, regardless of the length of the pregnancy, is considered a live birth. This concept is included in the definition set forth by the World Health Organization (1):

Live birth is the complete expulsion or extraction from its mother of a product of conception, irrespective of the duration of pregnancy, which, after such separation, breathes or shows any other evidence of life, such as beating of the heart, pulsation of the umbilical cord, or definite movement of voluntary muscles, whether or not the umbilical cord has been cut or the placenta is attached; each product of such a birth is considered liveborn.

This definition distinguishes in precise terms a live birth from a fetal death (see the section on fetal deaths in the Technical Appendix of volume II, *Vital Statistics of the United States*). In the interest of comparable natality statistics, both the Statistical Commission of the United Nations and the National Center for Health Statistics (NCHS) have adopted this definition (2,3).

History of birth-registration area

The national birth-registration area was proposed in 1850 and established in 1915. By 1933 all 48 States and the District of Columbia were participating in the registration system. The organized territories of Hawaii and Alaska were admitted in 1929 and 1950, respectively; data from these areas were prepared separately until they became States--Alaska in 1959 and Hawaii in 1960. Currently the birth-registration system of the United States covers the 50 States, the District of Columbia, the independent registration area of New York City, Puerto Rico, the U.S. Virgin Islands, Guam, American Samoa, and the Commonwealth of the Northern Mariana Islands. However, in the statistical tabulations, "United States" refers only to the aggregate of the 50 States (including New York City) and the District of Columbia.

The original birth-registration area of 1915 consisted of 10 States and the District of Columbia. The growth of this area is indicated in table 4-1. This table also presents for each year through 1932 the estimated midyear population of the United States and of those States included in the registration system.

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Because of the growth of the area for which data have been collected and tabulated, a national series of geographically comparable data before 1933 can be obtained only by estimation. Annual estimates of births have been prepared by P. K. Whelpton for 1909-34 (4). These estimates include adjustments for underregistration and for States that were not part of the birth-registration area before 1933.

Sources of data

Nativity statistics

Since 1985 natality statistics for all States and the District of Columbia have been based on information from the total file of records. The information is received on computer data tapes coded by the States and provided to NCHS through the Vital Statistics Cooperative Program. NCHS receives these tapes from the registration offices of all States, the District of Columbia, and New York City. Information for Puerto Rico is also received on computer tapes through the Vital Statistics Cooperative Program. Information for the Virgin Islands and Guam is obtained from microfilm copies of original birth certificates and is based on the total file of records for all years. Data from American Samoa first became available in 1997. Data from the Commonwealth of the Northern Mariana Islands (referred to as Northern Marianas) first became available in 1998. Similar to data from the Virgin Islands and Guam, the data are obtained from microfilm copies of original birth certificates and are based on the total file of records.

Birth statistics for years prior to 1951 and for 1955 are based on the total file of birth records. Statistics for 1951-54, 1956-66, and 1968-71 are based on 50-percent samples except for data for Guam and the Virgin Islands, which are based on all records filed. During the processing of the 1967 data the sampling rate was reduced from 50 percent to 20 percent. For details of this procedure and its consequences for the 1967 data see pages 3-9 to 3-11 in volume I of *Vital Statistics of the United States*, 1967. From 1972 to 1984 statistics are based on all records filed in the States submitting computer tapes and on a 50-percent sample of records in all other States.

Information for years prior to 1970 for Puerto Rico, the Virgin Islands, and Guam is published in the annual vital statistics reports of the Department of Health of the Commonwealth of Puerto Rico, the Department of Public Health of the Virgin Islands, the Department of Public Health and Social Services of the Government of Guam, and in selected *Vital Statistics of the United States* annual reports.

U.S. natality data are limited to births occurring within the United States, including those occurring to U.S. residents and nonresidents. Births to nonresidents of the United States have been excluded from all tabulations by place of residence beginning in 1970 (for further discussion see "Classification by occurrence and residence"). Births occurring to U.S. citizens outside the United States are not included in any tabulations in this report. Similarly the data for Puerto Rico, the Virgin Islands, Guam, and American Samoa are limited to births registered in these areas.

Standard Certificate of Live Birth

The U.S. Standard Certificate of Live Birth, issued by the Public Health Service, has served for many years as the principal means of attaining uniformity in the content of the documents used to collect information on births in the United States. It has been modified in each State to the extent required by the particular State's needs or by special provisions of the State's vital statistics law. However, most State certificates conform closely in content to the standard certificate.

The first standard certificate of birth was developed in 1900. Since then, it has been revised periodically by the national vital statistics agency through consultation with State health officers and registrars; Federal agencies concerned with vital statistics; national, State, and county medical societies; and others working in public health, social welfare, demography, and insurance. This procedure has assured careful evaluation of each item for its current and future usefulness for legal, medical, demographic, and research purposes. New items have been added when necessary, and old

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items have been modified to ensure better reporting or, in some cases, dropped when their usefulness appeared to be limited.

1989 revision--Effective January 1, 1989, a revised U.S. Standard Certificate of Live Birth (figure 4-A) replaced the 1978 revision. This revision provided a wide variety of new information on maternal and infant health characteristics, representing a significant departure from previous versions in both content and format. The most significant format change was the use of check boxes to obtain detailed medical and health information about the mother and child. It has been demonstrated that this format produces higher quality and more complete information than do open-ended items.

The reformatted items included "Medical Risk Factors for This Pregnancy," which combines the former items "Complications of Pregnancy" and "Concurrent Illnesses or Conditions Affecting the Pregnancy." "Complications of Labor and/or Delivery" and "Congenital Anomalies of Child" also have been revised from the open-ended format. For each of these items at least 15 specific conditions have been identified.

Several new items were added to the revised certificate. Included are items to obtain information on tobacco and alcohol use during pregnancy, weight gain during pregnancy, obstetric procedures, method of delivery, and abnormal conditions of the newborn. These items can be used to monitor the health practices of the mother that can affect pregnancy and the use of technology in childbirth, and to identify babies with specific abnormal conditions. When combined with other socioeconomic and health data, these items provide a wealth of information relevant to the etiology of low birth weight and other adverse pregnancy outcomes.

Another modification was the addition of a Hispanic identifier for the mother and father. Although NCHS had recommended that States add items to identify the Hispanic or ethnic origin of the newborn's parents, concurrent with the 1978 revision of the U.S. Standard Certificate of Live Birth and reported data from the cooperating States since that year, the item was new to the U.S. Standard Certificate for 1989.

The 1989 revised certificate also provided more detail than previously requested on the birth attendant and place of birth. This permits a more in-depth analysis of the number and characteristics of births by attendant and type of facility and a comparison of differences in outcome. For further discussion see individual sections for each item.

Classification of data

One of the principal values of vital statistics data is realized through the presentation of rates that are computed by relating the vital events of a class to the population of a similarly defined class. Vital statistics and population statistics, therefore, must 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 to classify geographic and personal items for live births are set forth in "Vital Statistics Classification and Coding Instructions for Live Birth Records, 1998," *NCHS Instruction Manual*, Part 3a. The classification of certain important items is discussed in the following pages. See table A for a listing of items and the percent of records that were not stated for each State, Puerto Rico, Virgin Islands, Guam, American Samoa, and the Northern Marianas.

Classification by occurrence and residence

Births to U.S. residents occurring outside this country are not reallocated to the United States. In tabulations by place of residence, births occurring within the United States to U.S. citizens and to resident aliens are allocated to the usual place of residence of the mother in the United States, as reported on the birth certificate. Beginning in 1970 births to nonresidents of the United States occurring in the United States are excluded from these tabulations. From 1966 to 1969 births occurring in the United States to mothers who were nonresidents of the United States were considered as births to residents of the exact place of occurrence; in 1964 and 1965 all such births were allocated to "balance of county" of

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occurrence even if the birth occurred in a city. The change in coding beginning in 1970 to exclude births to nonresidents of the United States from residence data significantly affects the comparability of data with years before 1970 only for Texas.

For the total United States the tabulations by place of residence and by place of occurrence are not identical. Births to nonresidents of the United States are included in data by place of occurrence but excluded from data by place of residence, as previously indicated. See table B for the number of births by residence and occurrence for the 50 States and the District of Columbia for 1998.

Residence error--A nationwide test of birth-registration completeness in 1950 provided measures of residence error for natality statistics. According to this test, errors in residence reporting for the country as a whole tend to overstate the number of births to residents of urban areas and to understate the number of births to residents of other areas. This tendency has assumed special importance because of a concomitant development--the increased utilization of hospitals in cities by residents of nearby places--with the result that a number of births are erroneously reported as having occurred to residents of urban areas. Another factor that contributes to this overstatement of urban births is the customary procedure of using "city" addresses for persons living outside the city limits.

Incomplete residence--Beginning in 1973 where only the State of residence is reported with no city or county specified and the State named is different from the State of occurrence, the birth is allocated to the largest city of the State of residence. Before 1973 such births were allocated to the exact place of occurrence.

Geographic classification

The rules followed in the classification of geographic areas for live births are contained in the instruction manual mentioned previously. The geographic code structure for 1998 is given in another manual, "Vital Records Geographic Classification, 1994," *NCHS Instruction Manual*, Part 8.

United States--In the statistical tabulations, "United States" refers only to the aggregate of the 50 States and the District of Columbia. Alaska has been included in the U.S. tabulations since 1959 and Hawaii since 1960.

Metropolitan statistical areas--The metropolitan statistical areas and primary metropolitan statistical areas (MSA's and PMSA's) used in this report are those established by the U.S. Office of Management and Budget as of April 1, 1990, and used by the U.S. Bureau of the Census (5) except in the New England States.

Except in the New England States, an MSA has either a city with a population of at least 50,000, or a Bureau of the Census urbanized area of at least 50,000 and a total MSA population of at least 100,000. A PMSA consists of a large urbanized county, or cluster of counties, that demonstrates very strong internal economic and social links and has a population over 1 million. When PMSA's are defined, the large area of which they are component parts is designated a Consolidated Metropolitan Statistical Area (CMSA) (6).

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

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

Population-size groups--Beginning in 1994 vital statistics data for cities and certain other urban places have been classified according to the population enumerated in the 1990 Census of Population. Data are available for individual cities and other urban places of 100,000 or more population. Data for the remaining areas not separately identified are shown in the tables under the heading "Balance of area" or "Balance of county." Classification of areas for 1982-93 was determined by the population enumerated in the 1980 Census of Population. As a result of changes in the enumerated population between 1980 and 1990, some urban places identified in previous reports are no longer included, and a number of other urban places have been added.

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

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

Race or national origin

Beginning with the 1989 data year birth data are tabulated primarily by race of mother. In 1988 and prior years the race or national origin shown in tabulations was that of the newborn child. However, beginning with the 1992 issue of *Vital Statistics of the United States, Volume I, Natality*, trend data for years beginning with 1980 have been retabulated by race of mother. The race of the child was determined for statistical purposes by an algorithm based on the race of the mother and father as reported on the birth certificate. When the parents were of the same race, the race of the child was the same as the race of the parents. When the parents were of different races and one parent was white, the child was assigned to the race of the other parent. When the parents were of different races and neither parent was white, the child was assigned to the race of the father, with one exception--if either parent was Hawaiian, the child was assigned to Hawaiian. If race was missing for one parent, the child was assigned the race of the parent for whom it was reported. When information on race was missing for both parents, the race of the child was considered not stated and the birth was allocated according to rules discussed on page 4 of the Technical Appendix, volume I, *Vital Statistics of the United States*, 1988. In 1989 the criteria for reporting the race of the parents did not change and continues to reflect the response of the informant (usually the mother).

The most important factor influencing the decision to tabulate births by race of the mother was the decennial revision of the U.S. Standard Certificate of Live Birth in 1989. This revision included many more health questions that are directly associated with the mother, including alcohol and tobacco use, weight gain during pregnancy, medical risk factors, obstetric procedures, complications of labor and/or delivery, and method of delivery. Additionally, many of the other items that have been on the birth certificate for more than two decades also relate directly to the mother, for example, marital status, education level, and receipt of prenatal care. It is more appropriate to use the race of the mother than the race of the child in tabulating these items.

A second factor has been the increasing incidence of interracial parentage. In 1998, 5.3 percent of births were to parents of different races, more than double the percent in 1977 (2.0 percent). More than half of these births were to white mothers and fathers of another race (55 percent in 1998). There have been two major consequences of the increasing interracial parentage. One is the effect on birth rates by race. The number of white births under the former procedures has been arbitrarily limited to infants whose parents were both white (or one parent if the race of only one parent was reported). At the same time, the number of births of other races has been arbitrarily increased to include all births to white mothers and fathers of other races. Thus, prior to 1989, if race of mother had been used, birth rates per 1,000 white women in a given age group would have been higher, while comparable rates for black women and women of other races would have been lower. The other consequence of increasing interracial parentage is the impact on the racial differential in various characteristics of births, particularly in cases where there is generally a large racial disparity, such as the incidence of low birthweight. In this instance, the racial differential is larger when the data are tabulated by race of mother rather than by race of child. The same effect has been noted for characteristics such as nonmarital childbearing, preterm births, late or no prenatal care, and low educational attainment of mother.

The third factor influencing the change is the growing proportion of births with race of father not stated, 14 percent in 1998. Although this proportion has stabilized and declined slightly in the 1990's, it is still higher than in 1978, 11

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percent. The high proportion of records with the father's race not reported reflects the increase in the proportion of births to unmarried women; in many cases no information is reported on the father. These births were already assigned the race of the mother because there is no alternative. Tabulating births by race of mother provides a more uniform approach, rather than a necessarily arbitrary combination of parental races.

The change in the tabulation of births by race presents some problems when analyzing birth data by race, particularly trend data. The problem is likely to be acute for races other than white and black.

The categories for race or national origin are "White," "Black," "American Indian" (including Aleuts and Eskimos), "Chinese," "Japanese," "Hawaiian," "Filipino," and "Other Asian or Pacific Islander" (including Asian Indian). Before 1992 there was also an "other" category, which is now combined with the "Not stated" category. Before 1978 the category "Other Asian or Pacific Islander" was not identified separately but included with "Other" races. The separation of this category from "other" allows identification of the category "Asian or Pacific Islander" by combining the new category "Other Asian or Pacific Islander" with Chinese, Japanese, Hawaiian, and Filipino.

Beginning in 1992, NCHS contracted with seven States with the highest API populations to code births to additional API subgroups. The API subgroups include births to Vietnamese, Asian Indian, Korean, Samoan, Guamanian, and other API women. The seven States included in this reporting area are: California, Hawaii, Illinois, New Jersey, New York, Texas, and Washington. At least two-thirds of the U.S. population of each of these additional API groups lived in the seven-State reporting area(8). The data are available on the detailed natality tapes and CD-ROMs beginning with the 1992 data year. An analytic report based on the 1992 data year is also available upon request(9). In 1996, Minnesota became the eighth State to provide this information and in 1998, Virginia became the ninth State.

The category "White" comprises births reported as white and births where race is reported as Hispanic. Before 1964 all births for which race or national origin was not stated were classified as white. Beginning in 1964 changes in the procedures for allocating race when race or national origin is not stated have changed the composition of this category. (See discussion on "Race or national origin not stated.")

If the race or national origin of an Asian parent is ill-defined or not clearly identifiable with one of the categories used in the classification (for example, if "Oriental" is entered), an attempt is made to determine the specific race or national origin from the entry for place of birth. If the birthplace is China, Japan, or the Philippines, the race of the parent is assigned to that category. When race cannot be determined from birthplace, it is assigned to the category "Other Asian or Pacific Islander."

Race or national origin not stated--If the race of the mother is not defined or not identifiable with one of the categories used in the classification (0.8 percent of births in 1998) and the race of the father is known, the race of the father is assigned to the mother. Where information for both parents is missing, the race of the mother is allocated electronically according to the specific race of the mother on the preceding record with a known race of mother. Data for both parents were missing for only 0.4 percent of birth certificates for 1998. Nearly all statistics by race or national origin for the United States as a whole in 1962 and 1963 are affected by a lack of information for New Jersey, which did not report the race of the parents in those years. Birth rates by race for those years are computed on a population base that excluded New Jersey. For the method of estimating the U.S. population by age, sex, and race excluding New Jersey in 1962 and 1963, see page 4-8 in the Technical Appendix of volume I, *Vital Statistics of the United States*, 1963.

Age of mother

Beginning in 1989 an item on the birth certificate asks for "Date of Birth." In previous years, "Age (at time of this birth)" was requested. Not all States have revised this item for 1989, and therefore the age of mother either is derived from the reported month and year of birth or coded as stated on the certificate. In 1998 the mother's age was reported directly by five States (Kentucky, Nevada, North Dakota, Virginia, and Wyoming) and American Samoa. From 1964 to 1996, the age of mother was edited for 10-49 years. When the age of mother was computed to be under 10 years or 50 years or over, it was considered not stated and was assigned as described below. Beginning in 1997, age of mother is edited for ages 10-54 years. When the age of mother is computed to be under 10 years or 55 years or over, it is considered not stated and was assigned as described below. A review and verification of unedited birth data for 1996 showed that the vast majority

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of births reported as occurring to women aged 50 years and older were to women aged 50-54 years. The numbers of births to women 50-54 years are too small for computing age-specific birth rates. These births have been included with births to women 45-49 for computing birth rates.

Age-specific birth rates are based on populations of women by age, prepared by the U.S. Bureau of the Census. In census years the decennial census counts are used. In intercensal years, estimates of the population of women by age are published by the U.S. Bureau of the Census in *Current Population Reports*.

The 1990 Census of Population derived age in completed years as of April 1, 1990, from the responses to questions on age at last birthday and month and year of birth, with the latter given preference. In the 1960, 1970, and the 1980 Census of Population, age was also derived from month and year of birth. "Age in completed years" was asked in censuses before 1960. This was nearly the equivalent of the former birth certificate question, which the 1950 test of matched birth and census records confirms by showing a high degree of consistency in reporting age in these two sources (10).

Median age of mother--Median age is the value that divides an age distribution into two equal parts, one-half of the values being less and one-half being greater. Median ages of mothers for 1960 to the present have been computed from birth rates for 5-year age groups rather than from birth frequencies. This method eliminates the effects of changes in the age composition of the childbearing population over time. Changes in the median ages from year to year can thus be attributed solely to changes in the age-specific birth rates.

Not stated date of birth of mother-- In 1998 age of mother was not reported on 0.02 percent of the records. Beginning in 1964 birth records with date of birth of mother and/or age of mother not stated have had age imputed according to the age of mother from the previous birth record of the same race and total-birth order (total of fetal deaths and live births). (See "Computer Edits for Natality Data, Effective 1993" NCHS Instruction Manual, Part 12, page 9.) In 1963 birth records with age not stated were allocated according to the age appearing on the record previously processed for a mother of identical race and parity (number of live births). For 1960-62 not stated ages were distributed in proportion to the known ages for each racial group. Before 1960 this was done for age-specific birth rates but not for the birth frequency tables, which showed a separate category for age not stated.

Age of father

Age of father is derived from the reported date of birth or coded as stated on the birth certificate. If the age is under 10 years, it is considered not stated and grouped with those cases for which age is not stated on the certificate. Information on age of father is often missing on birth certificates of children born to unmarried mothers, greatly inflating the number of "not stated" in all tabulations by age of father. In computing birth rates by age of father, births tabulated as age of father not stated are distributed in the same proportions as births with known age within each 5-year-age classification of the mother. This procedure is followed because, while father's age is missing in 15 percent of the birth certificates in 1998, one third of these were on records where the mother is a teenager. This distribution procedure is done separately by race. The resulting distributions are summed to form a composite frequency distribution that is the basis for computing birth rates by age of father. This procedure avoids the distortion in rates that would result if the relationship between age of mother and age of father were disregarded.

Live-birth order and parity

Live-birth order and parity classifications refer to the total number of live births the mother has had including the 1998 birth. Fetal deaths are excluded.

Live-birth order indicates what number the present birth represents; for example, a baby born to a mother who has had two previous live births (even if one or both are not now living) has a live-birth order of three. Parity indicates how many live births a mother has had. Before delivery a mother having her first baby has a parity of zero and a mother having her third baby has a parity of two. After delivery the mother of a baby who is a first live birth has a parity of one and the mother of a baby who is a third live birth has a parity of three.

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Live-birth order and parity are determined from two items on the birth certificate, "Live births now living" and "Live births now dead."

Not stated birth order--Before 1969 if both of these items were blank, the birth was considered a first birth. Beginning in 1969, births for which the pregnancy history items were not completed have been tabulated as live-birth order not stated. As a result of this revised procedure, 22,686 births in 1969 that would have been assigned to the "First birth order" category under the old rules were assigned to the "Not stated" category.

All births tabulated in the "Not stated birth order" category are excluded from the computation of percents. In computing birth rates by live-birth order, births tabulated as birth order not stated are distributed in the same proportion as births of known live-birth order.

Date of last live birth

The date of last live birth was added to the U.S. Standard Certificate of Live Birth in 1968 for the purpose of providing information on child spacing. The interval since the last live birth is the difference between the date of last live birth and the date of present birth. For an interval to be computed, both the month and year of the last live birth must be valid. This interval is computed only for events to mothers who have had at least one previous live birth. Births for which the interval since last live birth is not stated are excluded from the computation of percents and means.

Zero interval--An interval of zero months since the last live birth indicates the second born of a set of twins, the second or third born of a set of triplets, and so forth. Births with an interval of zero months are excluded from the computation of mean intervals.

Beginning in 1995, NCHS ceased to collect information on the date of last live birth and thus the information on interval is only available from birth certificate data from 1968-94.

Educational attainment

Data on the educational attainment of both parents were collected beginning in 1968 and tabulated for publication in 1969 for the first time.

The educational attainment of either parent is defined as "the number of years of school completed." Only those years completed in "regular" schools are counted, that is, a formal educational system of public schools or the equivalent in accredited private or parochial schools. Business or trade schools, such as beauty and barber schools, are not considered "regular" schools for the purposes of this item. No attempt has been made to convert years of school completed in foreign school systems, ungraded school systems, and so forth, to equivalent grades in the American school system. Such entries are included in the category "not stated."

Persons who have completed only a partial year in high school or college are tabulated as having completed the highest preceding grade. For those certificates on which a specific degree is stated, years of school completed is coded to the level at which the degree is most commonly attained; for example, persons reporting B.A., A.B., or B.S. degrees are considered to have completed 16 years of school.

Education not stated--The category "Not stated" includes all records in reporting areas for which there is no information on years of school completed as well as all records for which the information provided is not compatible with coding specifications.

Births tabulated as education not stated are excluded from the computations of percents.

Beginning in 1995, NCHS ceased to collect information on the educational attainment of the father and thus the information is available from birth certificate data only for 1969-94.

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Marital status

National estimates of births to unmarried women are based on two methods of determining marital status. For 1994 through 1996, birth certificates in 45 states and the District of Columbia included a question about the mother's marital status. Beginning in 1997, California added a direct question to their birth certificate; thus **by** 1997, all but four States (Connecticut, Michigan, Nevada, and New York) included a direct question on their birth certificates. Nevada asks for the mother's marital status through the electronic birth registration process but this item is not included on certified or paper copies of the birth certificate. Beginning June 15, 1998, Connecticut discontinued inferring the mother's marital status and added a direct question on mother's marital status to the State's birth certificate.

In the two States (Michigan and New York) which used inferential procedures to compile birth statistics by marital status in 1998, a birth is inferred as nonmarital if either of these factors is present: a paternity acknowledgment was received or the father's name is missing. In recent years, a number of States have extended their efforts to identify the fathers when the parents are not married in order to enforce child support obligations. The presence of a paternity acknowledgment therefore is the most reliable indicator that the birth is nonmarital in the States not reporting this information directly; this is now the key indicator in the nonreporting States. The inferential procedures in effect since 1980 represent a substantial departure from the method used before 1980 to prepare national estimates of births to unmarried women, which assumed that the incidence of births to unmarried women in States with no direct question on marital status was the same as the incidence in reporting States in the same geographic division (12). Inferential procedures in current use, however, are quite different from those in use during the 1980's, when there was heavy reliance on a comparison of the surnames of the parents and the child to infer the mother's marital status. The procedures now in use depend, as noted above, on very reliable indicators, namely a paternity affidavit or missing information on the father.

A review of Connecticut's birth data for 1998 indicates that during the first 6 months of 1998, when the inferential procedures were still in use, the proportion of births to unmarried women was somewhat higher (33 percent) than in the last 6 months when marital status was based on a direct question (29 percent). The inferential procedures in effect in Connecticut relied principally on a comparison of the surnames of the parents and child. It appears that the inferential procedures resulted in some overestimation of the number of births to unmarried women. It is estimated that if the Connecticut reporting procedures had not changed, the number of nonmarital births would have been about 1,000 higher. Because Connecticut accounts for about 1 percent of U.S. births, the reporting changes had no impact on data for the Nation.

The procedures for reporting marital status in California, Nevada, New York City changed beginning January 1, 1997. The methods used to determine marital status and the impact of the procedures on the data were discussed in detail in a previous report (13).

The use of inferential marital status data together with information from a direct question represents an attempt to use related information on the birth certificate to improve the quality of national data as well as to provide data for the individual nonreporting States. An evaluation of this method and its validity for California (the largest nonreporting State until 1997) has been published (14). Because of the continued substantial increases in nonmarital childbearing throughout the 1980's, the data have been intensively evaluated by the Division of Vital Statistics, NCHS. The results of this evaluation show that trends in birth rates for unmarried women for rates computed on the basis of estimated data and on the basis of inferred data are essentially the same.

The mother's marital status was not reported in 1998 on 0.04 percent of the birth records. Marital status was imputed as "married" for these records.

When births to unmarried women are reported as second or higher order births, it is not known whether the mother was married or unmarried when the previous deliveries occurred, because her marital status at the time of these earlier births is not available from the birth record.

Rates for 1940 and 1950 are based on decennial census counts. Rates for 1955-97 are based on a smoothed series of population estimates (12). Because of sampling error, the original U.S. Bureau of the Census population estimates by marital status fluctuate erratically from year to year; therefore, they have been smoothed so that the rates do not show

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similar variations. These rates differ from those published in volumes of *Vital Statistics of the United States* before 1969, which were based on the original estimates provided annually by the U.S. Bureau of the Census. Birth rates by marital status for 1971-79 have been revised and differ from rates published before 1980 in volumes of *Vital Statistics of the United States* (see "Computation of rates and other measures").

Place of delivery and attendant at birth

The 1989 revision of the U.S. Standard Certificate of Live Birth included separate categories for freestanding birthing centers, the mother's residence, and clinic or doctor's office as the place of birth. Prior to 1989, place of birth was classified simply as either "In hospital" or "Not in hospital." Births occurring in hospitals, institutions, clinics, centers, or homes were included in the category "In hospital." In this context the word "homes" does not refer to the mother's residence but to an institution, such as a home for unmarried women. Birthing centers were included in either category, depending on each State's assessment of the facility. Beginning in 1989 births occurring in clinics and in birthing centers not attached to a hospital are classified as "Not in hospital." This change in classification may account in part for the lower proportion of "In hospital" births compared with previous years. (The change in classification of clinics should have minor impact because comparatively few births occur in these facilities, but the effect of any change in classification of freestanding birthing centers is unknown.)

Beginning in 1975 the attendant at birth and place of delivery items were coded independently, primarily to permit the identification of the person in attendance at hospital deliveries. The 1989 certificate includes separate classifications for doctor of medicine (MD), doctor of osteopathy (DO), certified nurse midwife (CNM), other midwife, and other attendants. In earlier certificates births attended by certified nurse midwives were grouped with those attended by lay midwives. The new certificate also facilitates the identification of home births, births in freestanding birthing centers, and births in clinics or physician offices.

Data for the "In hospital" category for 1975-88 include all births in clinics or maternity centers, regardless of the attendant. Data for 1975-77 published before 1980 included clinic and center births in the category "In hospital" only when the attendant was a physician. Data shown for 1975-77 published after 1980 will, therefore, differ from data published before 1980. As a result of this change, for 1975 an additional 12,352 births are now classified as occurring in hospitals, raising the percent of births occurring in hospitals from 98.7 to 99.1. Similarly, for 1976 the number of births occurring in hospitals increased by 14,133 and the percent in hospitals raised from 98.6 to 99.1; for 1977 the increase is 15,937 and the percent in hospitals raised from 98.5 to 99.0. For 1974 and earlier the "In hospital" category includes all births in hospitals or institutions and births in clinics, centers, or maternity homes only when attended by physicians.

The "Not in hospital" category includes births for which no information is reported on place of birth. Before 1975 births for which the stated place of birth was a "doctor's office" and delivery was by a physician were included in the category "In hospital." Beginning in 1975 these births were tabulated as "Not in hospital" and included with births delivered by physicians in this category. Although the actual number of such births is unknown, the effect of the change is minimal. In 1974, 0.3 percent of all births were delivered by physicians outside of hospitals; in 1975 this proportion was 0.4 percent.

Babies born on the way to or on arrival at the hospital are classified as having been born in the hospital. This may account for some of the hospital births not delivered by physicians or midwives.

Beginning in 1993, all in-hospital births occurring in Illinois where the attendant was classified as an "other" midwife were changed to certified nurse-midwife. This was necessary because almost all of these births were delivered by midwives certified by the American College of Nurse Midwives but because Illinois does not certify midwives, many of these births were classified as "other" midwives.

Birthweight

Birthweight is reported in some areas in pounds and ounces rather than in grams. However, the metric system has been used in tabulating and presenting the statistics to facilitate comparison with data published by other groups. The

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categories for birthweight were changed in 1979 to be consistent with the recommendations in the *Ninth Revision of the International Classification of Diseases (ICD-9)*. The categories in gram intervals and their equivalents in pounds and ounces are as follows:

Less than 500 grams = 1 lb 1 oz or less
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

The ICD-9 defines low birthweight as less than 2,500 grams. This is a shift of 1 gram from the previous criterion of 2,500 grams or less, which was recommended by the American Academy of Pediatrics in 1935 and adopted in 1948 by the World Health Organization in the *Sixth Revision of the International Lists of Diseases and Causes of Death*.

After data classified by pounds and ounces are converted to grams, median weights are computed and rounded before publication. To establish the continuity of class intervals needed to convert pounds and ounces to grams, the end points of these intervals are assumed to be half an ounce less at the lower end and half an ounce more at the upper end. For example, 2 lb 4 oz-3 lb 4 oz is interpreted as 2 lb 3 ½ oz-3 lb 4 ½ oz.

Births for which birthweight is not reported are excluded from the computation of percents and medians.

Period of gestation

The period of gestation is defined as beginning with the first day of the last normal menstrual period (LMP) and ending with the day of the birth. The LMP is used as the initial date because it can be more accurately determined than the date of conception, which usually occurs 2 weeks after the LMP.

Births occurring before 37 completed weeks of gestation are considered to be “preterm” or “premature” for purposes of classification. At 37-41 weeks gestation, births are considered to be “term,” and at 42 completed weeks and over, “postterm.” These distinctions are according to the ICD-9 definitions.

The 1989 revision of the U.S. Standard Certificate of Live Birth included a new item, “clinical estimate of gestation,” that is being compared with length of gestation computed from the LMP date when the latter appears to be inconsistent with birthweight. This is done for normal weight births of apparently short gestations and very low birthweight births reported to be full term. The clinical estimate also was used if the date of the LMP was not reported. The period of gestation for 5.1 percent of the births in 1998 was based on the clinical estimate of gestation. For 97 percent of these records the clinical estimate was used because the LMP date was not reported. For the remaining 3 percent the clinical estimate was used because it was compatible with the reported birth weight, whereas the LMP-computed gestation was not. In cases where the reported birthweight was inconsistent with both the LMP-computed gestation and the clinical estimate of gestation, the LMP-computed gestation was used if it was within 5 weeks of the clinical estimate and birth weight was reclassified as “not stated.” This was necessary for about 350 births, less than 0.01 percent of all birth records in 1998. If the reported birthweight was inconsistent with both the LMP-computed gestation and the clinical estimate of gestation, gestation and birthweight were classified as “not stated” if the LMP-computed gestation was not within 5 weeks of the clinical estimate. These changes result in only a very small discontinuity in the data. For further information on the use of the clinical estimate of gestation see “Computer Edits for Natality Data, Effective 1993,” *NCHS Instruction Manual*, Part 12, pages 34-36.

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Before 1981 the period of gestation was computed only when there was a valid month, day, and year of LMP. However, length of gestation could not be determined from a substantial number of live-birth certificates each year because the day of LMP was missing. Beginning in 1981 weeks of gestation have been imputed for records with missing day of LMP when there is a valid month and year. Each such record is assigned the gestational period in weeks of the preceding record that has a complete LMP date with the same computed months of gestation and the same 500-gram birthweight interval. The effect of the imputation procedure is to increase slightly the proportion of preterm births and to lower the proportion of births at 39, 40, 41, and 42 weeks of gestation. A more complete discussion of this procedure and its implications is presented in a previous report (15).

Because of postconception bleeding or menstrual irregularities, the presumed date of LMP may be in error. In these instances the computed gestational period may be longer or shorter than the true gestational period, but the extent of such errors is unknown.

Month of pregnancy prenatal care began

For those records in which the name of the month is entered for this item, instead of first, second, third, and so forth, the month of pregnancy in which prenatal care began is determined from the month named and the month last normal menses began. For these births, if the item "Date last normal menses began" is not stated, the month of pregnancy in which prenatal care began is tabulated as not stated.

Number of prenatal visits

Tabulations of the number of prenatal visits were presented for the first time in 1972. Beginning in 1989 these data were collected from the birth certificates of all States. Percent distributions and the median number of prenatal visits exclude births to mothers who had no prenatal care.

Apgar score

The 1- and 5-minute Apgar scores were added to the U.S. Standard Certificate of Live Birth in 1978 to evaluate the condition of the newborn infant at 1 and 5 minutes after birth. The Apgar score is a useful measure of the need for resuscitation and a predictor of the infant's chances of surviving the first year of life. It is a summary measure of the infant's condition based on heart rate, respiratory effort, muscle tone, reflex irritability, and color. Each of these factors is given a score of 0, 1, or 2; the sum of these 5 values is the Apgar score, which ranges from 0 to 10. A score of 10 is optimum, and a low score raises some doubts about the survival and subsequent health of the infant. Beginning in 1995, NCHS only collected information on the 5-minute Apgar score. In 1998 the reporting area for the 5-minute Apgar score was comprised of 48 States and the District of Columbia, accounting for 78 percent of all births in the United States. California and Texas did not have information on Apgar scores on their birth certificate.

Tobacco and alcohol use during pregnancy

The checkbox format allows for classification of a mother as a smoker or drinker during pregnancy and for reporting the average number of cigarettes smoked per day or drinks consumed per week. When smoking and/or drinking status is not reported or is inconsistent with the quantity of cigarettes or drinks reported, the status is changed to be consistent with the amount reported. For example, if the drinking status is reported as "no" but one or more average drinks a week are reported, the mother is classified as a drinker. If the number of cigarettes smoked per day is reported as one or more, the mother is considered a smoker. When one (or a fraction of one) drink a week is recorded, the mother is classified as a drinker. For records on which the number of drinks or number of cigarettes is reported as a span, for example, 10-15, the

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lower number is used. The number of drinkers and number of drinks reported on birth certificates are believed to underestimate actual alcohol use.

Data on tobacco use were collected by 46 States, the District of Columbia, and New York City in 1998. This reporting area accounted for 81 percent of all births in the U.S. in 1998. Information was not available for California, Indiana, South Dakota, and the remainder of New York State. Information on alcohol use was included on the certificates of 48 States and the District of Columbia, accounting for 87 percent of all U.S. births in 1998. California and South Dakota did not include items on alcohol use on their birth certificates.

Weight gained during pregnancy

Weight gain is reported in pounds. A loss of weight is reported as zero gain. Computations of median weight gain were based on ungrouped data. This item was included on the certificates of 49 States and the District of Columbia; California did not report this information. This reporting area excluding California accounted for 87 percent of all births in the United States in 1998.

Medical risk factors for this pregnancy

In 1998 an item on medical risk factors was included on the birth certificates of all States and the District of Columbia, but 2 States did not report all of the 16 risk factors. Texas did not report genital herpes or uterine bleeding, and Kansas did not report Rh sensitization.

The format allows for the designation of more than one risk factor and includes a choice of "None." Accordingly, if the item is not completed, it is classified as "Not stated."

The following definitions are adapted and abbreviated from a set of definitions compiled by a committee of Federal and State health statistics officials for the Association for Vital Records and Health Statistics (16).

Definitions of medical terms

Anemia--Hemoglobin level of less than 10.0 g/dL during pregnancy or a hematocrit of less than 30 percent during pregnancy.

Cardiac disease--Disease of the heart.

Acute or chronic lung disease--Disease of the lungs during pregnancy.

Diabetes--Metabolic disorder characterized by excessive discharge of urine and persistent thirst; includes juvenile onset, adult onset, and gestational diabetes during pregnancy.

Genital herpes--Infection of the skin of the genital area by herpes simplex virus.

Hydramnios/oligohydramnios--Any noticeable excess (hydramnios) or lack (oligohydramnios) of amniotic fluid.

Hemoglobinopathy--A blood disorder caused by alteration in the genetically determined molecular structure of hemoglobin (for example, sickle cell anemia).

Hypertension, chronic--Blood pressure persistently greater than 140/90, diagnosed prior to onset of pregnancy or before the 20th week of gestation.

Hypertension, pregnancy-associated--An increase in blood pressure of at least 30 mm Hg systolic or 15 mm Hg diastolic on two measurements taken 6 hours apart after the 20th week of gestation.

Eclampsia--The occurrence of convulsions and/or coma unrelated to other cerebral conditions in women with signs and symptoms of pre-eclampsia.

Incompetent cervix--Characterized by painless dilation of the cervix in the second trimester or early in the third trimester of pregnancy, with prolapse of membranes through the cervix and ballooning of the membranes into the vagina, followed by rupture of membranes and subsequent expulsion of the fetus.

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Previous infant 4,000+ grams--The birthweight of a previous live-born child was over 4,000 grams (8 lbs 13 oz).
Previous preterm or small-for-gestational-age infant--Previous birth of an infant prior to term (before 37 completed weeks of gestation) or of an infant weighing less than the 10th percentile for gestational age using a standard weight-for-age chart.

Renal disease--Kidney disease.

Rh sensitization--The process or state of becoming sensitized to the Rh factor as when an Rh-negative woman is pregnant with an Rh-positive fetus.

Uterine bleeding--Any clinically significant bleeding during the pregnancy, taking into consideration the stage of pregnancy; any second or third trimester bleeding of the uterus prior to the onset of labor.

Obstetric procedures

This item includes six specific obstetric procedures. Birth records with "Obstetric procedures" left blank are considered "not stated." Data on obstetric procedures were reported by all States and the District of Columbia in 1998.

The following definitions are adapted and abbreviated from a set of definitions compiled by a committee of Federal and State health statistics officials for the National Association for Public Health Statistics and Information Systems (NAPHSIS), formerly the Association for Vital Records and Health Statistics (16).

Definitions of medical terms

Amniocentesis--Surgical transabdominal perforation of the uterus to obtain amniotic fluid to be used in the detection of genetic disorders, fetal abnormalities, and fetal lung maturity.

Electronic fetal monitoring--Monitoring with external devices applied to the maternal abdomen or with internal devices with an electrode attached to the fetal scalp and a catheter through the cervix into the uterus, to detect and record fetal heart tones and uterine contractions.

Induction of labor--The initiation of uterine contractions before the spontaneous onset of labor by medical and/or surgical means for the purpose of delivery.

Stimulation of labor--Augmentation of previously established labor by use of oxytocin.

Tocolysis--Use of medications to inhibit preterm uterine contractions to extend the length of pregnancy and therefore avoid a preterm birth.

Ultrasound--Visualization of the fetus and placenta by means of sound waves.

Complications of labor and/or delivery

The checkbox format allows for the selection of 15 specific complications and for the designation of more than 1 complication where appropriate. A choice of "None" is also included. Accordingly, if the item is not completed, it is classified as "not stated."

All States and the District of Columbia included this item on their birth certificates in 1998. However, Texas did not report all of the complications. Texas did not report anesthetic complications or fetal distress.

The following definitions are adapted and abbreviated from a set of definitions compiled by a committee of Federal and State health statistics officials (16).

Definitions of medical terms

Febrile--A fever greater than 100 degrees F. or 38 C. occurring during labor and/or delivery.

Meconium, moderate/heavy--Meconium consists of undigested debris from swallowed amniotic fluid, various

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products of secretion, excretion, and shedding by the gastrointestinal tract; moderate to heavy amounts of meconium in the amniotic fluid noted during labor and/or delivery.

Premature rupture of membranes (more than 12 hours)--Rupture of the membranes at any time during pregnancy and more than 12 hours before the onset of labor.

Abruptio placenta--Premature separation of a normally implanted placenta from the uterus.

Placenta previa--Implantation of the placenta over or near the internal opening of the cervix.

Other excessive bleeding--The loss of a significant amount of blood from conditions other than abruptio placenta or placenta previa.

Seizures during labor--Maternal seizures occurring during labor from any cause.

Precipitous labor (less than 3 hours)--Extremely rapid labor and delivery lasting less than 3 hours.

Prolonged labor (more than 20 hours)--Abnormally slow progress of labor lasting more than 20 hours.

Dysfunctional labor--Failure to progress in a normal pattern of labor.

Breech/malpresentation--At birth, the presentation of the fetal buttocks rather than the head, or other malpresentation.

Cephalopelvic disproportion--The relationship of the size, presentation, and position of the fetal head to the maternal pelvis prevents dilation of the cervix and/or descent of the fetal head.

Cord prolapse--Premature expulsion of the umbilical cord in labor before the fetus is delivered.

Anesthetic complications--Any complication during labor and/or delivery brought on by an anesthetic agent or agents.

Fetal distress--Signs indicating fetal hypoxia (deficiency in amount of oxygen reaching fetal tissues).

Abnormal conditions of the newborn

This item provides information on eight specific abnormal conditions. More than one abnormal condition may be reported for a given birth or "None" may be selected. If the item is not completed it is tabulated as "not stated." This item was included on the birth certificates of all States and the District of Columbia in 1998. However, four areas did not include all conditions. Nebraska and Texas did not report birth injury, New York City did not report assisted ventilation less than 30 minutes or assisted ventilation of 30 minutes or more, and Wisconsin did not report fetal alcohol syndrome.

The following definitions are adapted and abbreviated from a set of definitions compiled by a committee of Federal and State health statistics (16).

Definitions of medical terms

Anemia--Hemoglobin level of less than 13.0 g/dL or a hematocrit of less than 39 percent.

Birth injury--Impairment of the infant's body function or structure due to adverse influences that occurred at birth.

Fetal alcohol syndrome--A syndrome of altered prenatal growth and development occurring in infants born of women who consumed excessive amounts of alcohol during pregnancy.

Hyaline membrane disease/RDS--A disorder primarily of prematurity, manifested clinically by respiratory distress and pathologically by pulmonary hyaline membranes and incomplete expansion of the lungs at birth.

Meconium aspiration syndrome--Aspiration of meconium by the fetus or newborn, affecting the lower respiratory system.

Assisted ventilation (less than 30 minutes)--A mechanical method of assisting respiration for newborns with respiratory failure.

Assisted ventilation (30 minutes or more)--Newborn placed on assisted ventilation for 30 minutes or longer.

Seizures--A seizure of any etiology.

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Congenital anomalies of child

The data provided in this item relate to 21 specific anomalies or anomaly groups. It is well documented that congenital anomalies, except for the most visible and most severe, are incompletely reported on birth certificates. The completeness of reporting specific anomalies depends on how easily they are recognized in the short time between birth and birth-registration. Forty-nine States and the District of Columbia included this item on their birth certificates (New Mexico did not). This reporting area included 99 percent of all births in the United States in 1998. The format allows for the identification of more than one anomaly including a choice of "None" should no anomalies be evident. The category "not stated" includes birth records for which the item is not completed.

The following definitions are adapted and abbreviated from a set of definitions compiled by a committee of Federal and State health statistics officials (16).

Definitions of medical terms

Anencephalus--Absence of the cerebral hemispheres.

Spina bifida/meningocele--Developmental anomaly characterized by defective closure of the bony encasement of the spinal cord, through which the cord and meninges may or may not protrude.

Hydrocephalus--Excessive accumulation of cerebrospinal fluid within the ventricles of the brain with consequent enlargement of the cranium.

Microcephalus--A significantly small head.

Other central nervous system anomalies--Other specified anomalies of the brain, spinal cord, and nervous system.

Heart malformations--Congenital anomalies of the heart.

Other circulatory/respiratory anomalies--Other specified anomalies of the circulatory and respiratory systems.

Rectal atresia/stenosis--Congenital absence, closure, or narrowing of the rectum.

Tracheo-esophageal fistula/Esophageal atresia--An abnormal passage between the trachea and the esophagus; esophageal atresia is the congenital absence or closure of the esophagus.

Omphalocele/gastroschisis--An omphalocele is a protrusion of variable amounts of abdominal viscera from a midline defect at the base of the umbilicus. In gastroschisis, the abdominal viscera protrude through an abdominal wall defect, usually on the right side of the umbilical cord insertion.

Other gastrointestinal anomalies--Other specified congenital anomalies of the gastrointestinal system.

Malformed genitalia--Congenital anomalies of the reproductive organs.

Renal agenesis--One or both kidneys are completely absent.

Other urogenital anomalies--Other specified congenital anomalies of the organs concerned in the production and excretion of urine, together with organs of reproduction.

Cleft lip/palate--Cleft lip is a fissure of elongated opening of the lip; cleft palate is a fissure in the roof of the mouth. These are failures of embryonic development.

Polydactyly/syndactyly/adactyly--Polydactyly is the presence of more than five digits on either hands and/or feet; syndactyly is having fused or webbed fingers and/or toes; adactyly is the absence of fingers and/or toes.

Club foot--Deformities of the foot, which is twisted out of shape or position.

Diaphragmatic hernia--Herniation of the abdominal contents through the diaphragm into the thoracic cavity usually resulting in respiratory distress.

Other musculoskeletal/integumental anomalies--Other specified congenital anomalies of the muscles, skeleton, or skin.

Down's syndrome--The most common chromosomal defect with most cases resulting from an extra chromosome (trisomy 21).

Other chromosomal anomalies--All other chromosomal aberrations.

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Method of delivery

The birth certificate contains a checkbox item on method of delivery. The choices include vaginal delivery, with the additional options of forceps, vacuum, and vaginal birth after previous cesarean section (VBAC), as well as a choice of primary or repeat cesarean. When only forceps, vacuum, or VBAC is checked, a vaginal birth is assumed. In 1998 this information was collected from the birth certificates of all States and the District of Columbia.

Several rates are computed for method of delivery. The overall cesarean section rate or total cesarean rate is computed as the proportion of all births that were delivered by cesarean section. The primary cesarean rate is a measure that relates the number of women having a primary cesarean birth to all women giving birth who have never had a cesarean delivery. The denominator for this rate is the sum of women with a vaginal birth excluding VBACs and women with a primary cesarean birth. The rate for vaginal birth after previous cesarean (VBAC) delivery is computed by relating all VBAC deliveries to the sum of VBAC and repeat cesarean deliveries, that is, to women with a previous cesarean section. VBAC rates for first births exist because the rates are computed on the basis of previous pregnancies, not just live births.

Hispanic parentage

The 1989 revision of the U.S. Standard Certificate of Live Births includes items to identify the Hispanic origin of the parents. Concurrent with the 1978 revision of the U.S. Certificate of Live Birth, NCHS recommended that items to identify the Hispanic or ethnic origin of the newborn's parents be included on birth certificates and has tabulated and evaluated these data from the reporting States. All 50 States and the District of Columbia reported Hispanic origin of the parents for 1998. In 1989 Louisiana, New Hampshire, and Oklahoma did not report this information; in 1990 New Hampshire and Oklahoma did not report, and in 1991-92 New Hampshire did not report Hispanic origin.

In computing birth and fertility rates for the Hispanic population, births with origin of mother not stated are included with non-Hispanic births rather than being distributed. Thus, rates for the Hispanic population are underestimates of the true rates to the extent that the births with origin of mother not stated (1.2 percent in 1998) were actually to Hispanic mothers. The population with origin not stated was imputed. The effect on the rates is believed to be small.

Quality of data

Although vital statistics data are useful for a variety of administrative and scientific purposes, they cannot be correctly interpreted unless various qualifying factors and methods of classification are taken into account. The factors to be considered depend on the specific purposes for which the data are to be used. It is not feasible to discuss all the pertinent factors in the use of vital statistics tabulations, but some of the more important ones should be mentioned.

Most of the factors limiting the use of data arise from imperfections in the original records or from the impracticability of tabulating these data in very detailed categories. These limitations should not be ignored, but their existence does not lessen the value of the data for most general purposes.

Completeness of registration

An estimated 99 percent of all births occurring in the United States in 1998 were registered; for white births registration was 99.4 percent complete and for all other births, 98.6 percent complete. These estimates are based on the results of the 1964-68 test of birth-registration completeness according to place of delivery (in or out of hospital) and race and on the 1989 proportions of births in these categories. The primary purpose of the test was to obtain current measures of registration completeness for births in and out of hospital by race on a national basis. Data for States were not available

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as they had been from the previous birth-registration tests in 1940 and 1950. A detailed discussion of the method and results of the 1964-68 birth-registration test is available (17).

The 1964-68 test has provided an opportunity to revise the estimates of birth-registration completeness for the years since the previous test in 1950 to reflect the improvement in registration. This has been done using registration completeness figures from the two tests by place of delivery and race. Estimates of registration completeness for four groups (based on place of delivery and race) for 1951-65 were computed by interpolation between the test results. (It was assumed that the data from the more recent test are for 1966, the midpoint of the test period.) The results of the 1964-68 test are assumed to prevail for 1966 and later years. These estimates were used with the proportions of births registered in these categories to obtain revised numbers of births adjusted for underregistration for each year. The overall percent of birth-registration completeness by race was then computed. Data adjusted for underregistration for 1951-59 have been revised to be consistent with the 1964-68 test results and differ slightly from data shown in annual reports for years before 1969. For these years the published number of births and birth rates for both racial groups have been revised slightly downward because the 1964-68 test indicated that previous adjustments to registered births were slightly inflated. Because registration completeness figures by age of mother and by live-birth order are not available from the 1964-68 test, it must be assumed that the relationships among these variables have not changed since 1950.

*Discontinuation of adjustment for underregistration, 1960--*Adjustment for underregistration of births was discontinued in 1960 when birth registration for the United States was estimated to be 99.1 percent complete. This removed a bias introduced into age-specific rates when adjusted births classified by age were used. Age-specific rates are calculated by dividing the number of births to an age group of mothers by the population of women in that age group. Tests have shown that population figures are likely to be understated through census undercounts; these errors compensate for underregistration of births. Adjustment for underregistration of births, therefore, removes the compensating effect of under enumeration, biasing the age-specific rates more than when uncorrected birth and population data are used. (For further details see page 4-11 in the Technical Appendix of volume I, Vital Statistics of the United States, 1963.)

The age-specific rates used in the cohort fertility tables are an exception to the above statement. These rates are computed from births corrected for underregistration and population estimates adjusted for under enumeration and misstatement of age. Adjusted birth and population estimates are used for the cohort rates because they are an integral part of a series of rates, estimated with a consistent methodology. It was considered desirable to maintain consistency with respect to the cohort rates, even though it means that they will not be precisely comparable with other rates shown for 5-year age groups.

Completeness of reporting

Interpretation of these data must include evaluation of item completeness. The percent "not stated" is one measure of the quality of the data. Completeness of reporting varies among items and States. See table A for the percent of birth records on which specified items were not stated.

Quality control procedures

States in the Vital Statistics Cooperative Program are required to have an error rate of less than 2.0 percent for each item for 3 consecutive data months during the initial qualifying period. Once a State is qualified, NCHS monitors the quality of data received. This was achieved through independent verification of a sample of records for some States as well as comparing the State data with data from previous years. In addition, there is verification at the State level before NCHS is sent the data.

After the coding is completed, counts of the taped records are balanced against control totals for each shipment of records from a registration area. Impossible codes are eliminated during the editing processes on the computer and corrected on the basis of reference to the source record or adjusted by arbitrary code assignment. All subsequent operations involved in tabulation and table preparation are verified during computer processing or by statistical clerks.

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Random variation and significance testing for natality data

The number of births reported for an area is essentially a complete count, since more than 99% of all births are registered. While this number is not subject to sampling error, it may be affected by nonsampling errors such as mistakes in recording the mother's residence or age during the registration process.

When the number of births is used for analytic purposes the number of events that actually occurred can be thought of as one in a large series of possible results that could have occurred under the same circumstances. When considered in this way, the number of births is subject to random variation. The probable range of values may be estimated from the actual figures according to certain statistical assumptions.

The confidence interval is the range of values for the number of births, birth rates, or percent of births that you could expect in 95 out of 100 cases. The confidence limits are the end points of this range of values (the highest and lowest values). Confidence limits tell you how much the number of events or rates could vary under similar circumstances.

Confidence limits for numbers, rates, and percents can be estimated from the actual number of events. Procedures differ for rates and percents and also differ depending on the number of births on which these statistics are based. Below are detailed procedures and examples for each type of case.

95-percent confidence limits for numbers less than 100

When the number of births is less than 100 and the rate is small, the data are assumed to follow a Poisson probability distribution. Confidence limits are estimated using the following formulas:

$$\text{Lower limit} = B \times L$$

$$\text{Upper limit} = B \times U$$

where:

B = the number of births

L = the value in Table C that corresponds to the number B

U = the value in Table C that corresponds to the number B

Example

Suppose the number of first births to American Indian women 40-44 years of age was 47. The confidence limits for this number would be:

$$\begin{aligned} \text{Lower limit} &= B \times L \\ &= 47 \times 0.73476 \\ &= 35 \end{aligned}$$

$$\begin{aligned} \text{Upper limit} &= B \times U \\ &= 47 \times 1.32979 \\ &= 63 \end{aligned}$$

This means that the chances are 95 out of 100 that the actual number of first births to American Indian women 40-44 years of age would lie between 35 and 63.

95-percent confidence limits for numbers of 100 or more

When the number of events is greater than 100, the data are assumed to be approximately normally distributed. Formulas for 95-percent confidence limits are:

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$$\text{Lower limit} = B - (1.96 \times \sqrt{B})$$

$$\text{Upper limit} = B + (1.96 \times \sqrt{B})$$

where:

B = the number of births

Example

Suppose the number of first births to white women 40-44 years of age was 14,108. The 95-percent confidence limits for this number would be:

$$\begin{aligned} \text{Lower limit} &= 14,108 - [1.96 \times \sqrt{14,108}] \\ &= 14,108 - 233 \\ &= 13,875 \end{aligned}$$

$$\begin{aligned} \text{Upper limit} &= 14,108 + [1.96 \times \sqrt{14,108}] \\ &= 14,108 + 233 \\ &= 14,341 \end{aligned}$$

This means that the chances are 95 out of 100 that the actual number of first births to white women 40-44 years of age would lie between 13,875 and 14,341.

Computing confidence intervals for rates

The same statistical assumptions can be used to estimate the variability in birth rates. Again, one formula is used for rates based on numbers of events less than 100, and another formula for rates based on numbers of 100 or greater. For our purposes, assume that the denominators of these rates (the population estimates) have no error. While this assumption is technically correct only for denominators based on the census which occurs every 10 years, the error in intercensal population estimates is usually small, difficult to measure, and therefore not considered.

95-percent confidence limits for rates based on less than 100 events

When the number of events in the numerator is less than 20, an asterisk is shown in place of the rate because there were too few births to compute a statistically reliable rate. When the number of events in the numerator is greater than 20 but less than 100, the confidence interval for a rate can be estimated using the two formulas which follow and the values in Table IV.

$$\text{Lower limit} = R \times L$$

$$\text{Upper limit} = R \times U$$

where:

R = the birth rate

L = the value in Table C that corresponds to the number B in the numerator of the rate

U = the value in Table C that corresponds to the number B in the numerator of the rate

Example

Suppose that the first birth rate for American Indian women 40-44 years of age was 0.54 per thousand, based on 47 births in the numerator. Using Table C:

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$$\begin{aligned} \text{Lower limit} &= 0.54 \times 0.73476 = .40 \\ \text{Upper limit} &= 0.54 \times 1.32979 = .72 \end{aligned}$$

This means that the chances are 95 out of 100 that the actual first birth rate for American Indian women 40-44 year of age lies between .40 and .72.

95-percent confidence limits for rates when the numerator is 100 or more

In this case, use the following formula for the birth rate R based on the number of births B:

$$\begin{aligned} \text{Lower limit} &= R - [1.96 \times \sqrt{R/B}] \\ \text{Upper limit} &= R + [1.96 \times \sqrt{R/B}] \end{aligned}$$

where:

- R = the birth rate
- B = the number of births

Example

Suppose the first birth rate for white women 40-44 years of age was 1.55 per thousand, based on 14,108 births in the numerator. Therefore, the 95-percent confidence interval would be:

$$\begin{aligned} \text{Lower limit} &= 1.55 - [1.96 \times \sqrt{1.55 / 14,108}] \\ &= 1.55 - .026 \\ &= 1.52 \end{aligned}$$

$$\begin{aligned} \text{Upper limit} &= 1.55 + [1.96 \times \sqrt{1.55 / 14,108}] \\ &= 1.55 + .026 \\ &= 1.58 \end{aligned}$$

This means that the chances are 95 out of 100 that the actual first birth rate for white women 40-44 years of age lies between 1.52 and 1.58.

Computing 95-percent confidence intervals for percents

In many instances we need to compute the confidence intervals for percents. Percents derive from a binomial distribution. As with birth rates, an asterisk will be shown for any percent which is based on fewer than 20 births in the numerator. We easily compute a 95-percent confidence interval for a percent when the following conditions are met:

$$\begin{aligned} B \times p &\geq 5 \quad \text{and} \\ B \times q &\geq 5 \end{aligned}$$

where:

- B = number of births in the denominator
- p = percent divided by 100
- q = 1 - p

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For natality data, these conditions will be met except for very rare events in small subgroups. If the conditions are *not* met, the variation in the percent will be so large as to render the confidence intervals meaningless. When these conditions are met the 95-percent confidence interval can be computed using the normal approximation of the binomial. The 95-percent confidence intervals are computed by the following formulas:

$$\begin{aligned} \text{Lower limit} &= p - [1.96 \times (\sqrt{p \times q/B})] \\ \text{Upper limit} &= p + [1.96 \times (\sqrt{p \times q/B})] \end{aligned}$$

where:

$$\begin{aligned} B &= \text{number of births in the denominator} \\ p &= \text{percent divided by 100} \\ q &= 1 - p \end{aligned}$$

Example

Suppose the percent of births to Hispanic women in Alabama that were to unmarried women was 23.0 percent. This was based on 310 births in the numerator and 1,345 births in the denominator. First we test to make sure we can use the normal approximation of the binomial:

$$\begin{aligned} &1,345 \times .230 = 309 \\ &1,345 \times (1 - .230) \\ = &1,345 \times .770 = 1,036 \end{aligned}$$

Both 309 and 1,036 are greater than 5 so we can proceed. The 95-percent confidence interval would be:

$$\begin{aligned} \text{Lower limit} &= .23 - [1.96 \times (\sqrt{.23 \times .77/1,345})] \\ &= .23 - .022 \\ &= .208 \text{ or } 20.8 \text{ percent} \\ \\ \text{Upper limit} &= .23 + [1.96 \times (\sqrt{.23 \times .77/1,345})] \\ &= .23 + .022 \\ &= .252 \text{ or } 25.2 \text{ percent} \end{aligned}$$

This means that the chances are 95 out of 100 that the actual percent of births in Alabama to Hispanic women that are to unmarried women lies between 20.8 and 25.2 percent.

Significance testing

One of the rates is based on fewer than 100 cases

To compare two rates, when one or both of those rates are based on less than 100 cases, you first compute the confidence intervals for both rates. Then you check to see if those intervals overlap. If they **do** overlap, the difference is not statistically significant at the 95-percent level. If they **do not** overlap, the difference is indeed “statistically significant.”

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Example

Is the first birth rate for American Indian women 40-44 years of age (.54 per 1,000) significantly lower than the comparable rate for white women (1.55)? The rate for American Indian women is based on 47 events whereas the rate for white women is based on 14,108 events. The rate for American Indian women is based on less than 100 events; therefore, the first step is to compute the confidence intervals for both rates.

| | Lower Limit | Upper Limit |
|-----------------------|-------------|-------------|
| American Indian women | 0.40 | 0.72 |
| White women | 1.52 | 1.58 |

These two confidence intervals do not overlap. Therefore, the first birth rate for American women 40-44 is significantly lower (at the 95-percent confidence level) than the comparable rate for white women.

Both rates are based on 100 or more events

When both rates are based on 100 or more events, the difference between the two rates is considered statistically significant if it exceeds the statistic in the formula below. This statistic equals 1.96 times the standard error for the difference between two rates.

$$1.96 \sqrt{\frac{R_1^2}{N_1} \% \frac{R_2^2}{N_2}}$$

where:

- R₁ = the first rate
- R₂ = the second rate
- N₁ = the first number of births
- N₂ = the second number of births

If the difference is greater than this statistic, then the difference would occur by chance less than 5 times out of 100. If the difference is less than this statistic, the difference might occur by chance more than 5 times out of 100. We say that the difference is not statistically significant at the 95-percent confidence level.

Example

Is the first birth rate for black women 40-44 years of age (1.08 per 1,000) significantly lower than the comparable rate for white women (1.55)? Both rates are based on more than 100 births (1,535 for black women and 14,108 for white women). The difference between the rates is 1.55 - 1.08 = .47. The statistic is then calculated as follows:

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$$1.96 \sqrt{\frac{1.08^2}{1,535} \% \frac{1.55^2}{14,108}}$$

$$\begin{aligned} &= 1.96 \times /[(1.166/1,535 + 2.403/14,108)] \\ &= 1.96 \times /(.00076+0.00017) \\ &= 1.96 \times /.00093 \\ &= 1.96 \times .03 \\ &= .06 \end{aligned}$$

The difference between the rates (.47) is greater than this statistic (.06). Therefore, the difference is statistically significant at the 95-percent confidence level.

Testing differences between two percents

When testing the difference between two percents, both percents must meet the following conditions:

$$\begin{aligned} B \times p &\geq 5 \quad \text{and} \\ B \times q &\geq 5 \end{aligned}$$

where:

$$\begin{aligned} B &= \text{number of births in the denominator} \\ p &= \text{percent divided by 100} \\ q &= 1 - p \end{aligned}$$

When both percents meet these conditions then the difference between the two percents is considered statistically significant if it exceeds the statistic in the formula below. This statistic equals 1.96 times the standard error for the difference between two percents.

$$1.96 \sqrt{p(1-p) \left(\frac{1}{B_1} \% \frac{1}{B_2} \right)}$$

where:

$$\begin{aligned} B_1 &= \text{the number of births in the denominator for the first percent} \\ B_2 &= \text{the number of births in the denominator for the second percent} \\ p &= \end{aligned}$$

$$\frac{B_1 p_1 \% B_2 p_2}{B_1 \% B_2}$$

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p_1 = the first percent divided by 100
 p_2 = the second percent divided by 100

Example

Is the percent of births to Hispanic women that were to unmarried women higher in Alaska (28.8 percent) than in Alabama (23.0). The number in the denominator was 1,345 in Alabama and 593 in Alaska. The necessary conditions are met for both percents (calculations not shown). The difference between the two percents is $.288 - .230 = .058$. The statistic is then calculated as follows:

$$\begin{aligned} & 1.96 \sqrt{(.2477) (.7523) (.0024)} \\ & = 1.96 \times \sqrt{.000447} \\ & = 1.96 \times .021 \\ & = .042 \end{aligned}$$

The difference between the percents (.058) is greater than this statistic (.042). Therefore, the difference is statistically significant at the 95-percent confidence level.

Computation of rates and other measures

Population bases

The rates shown in this report were computed on the basis of population statistics prepared by the U.S. Bureau of the Census. Rates for 1940, 1950, 1960, 1970, 1980, and 1990 are based on the population enumerated as of April 1 in the censuses of those years. Rates for all other years are based on the estimated midyear (July 1) population for the respective years. Birth rates for the United States, individual States, and metropolitan areas are based on the total resident populations of the respective areas. Except as noted these populations exclude the Armed Forces abroad but include the Armed Forces stationed in each area. The resident population of the birth- and death-registration States for 1900-32 and for the United States for 1900-98 is shown in table 4-1. In addition, the population including Armed Forces abroad is shown for the United States. Table D shows the sources for these populations.

In both the 1980 and 1990 censuses, a substantial number of persons did not specify a racial group that could be classified as any of the White, Black, American Indian, Eskimo, Aleut, Asian, or Pacific Islander categories on the census form (18). In 1980 the number of persons of "other" race was 6,758,319; in 1990 it was 9,804,847. In both censuses, the large majority of these persons were of Hispanic origin (based on response to a separate question on the form), and many wrote in their Hispanic origin, or Hispanic origin type (for example, Mexican, Puerto Rican) as their race. In both 1980 and 1990, persons of unspecified race were allocated to one of the four tabulated racial groups (white, black, American Indian, Asian or Pacific Islander), based on their response to the Hispanic origin question. These four race categories conform with the 1979 edition of OMB Directive 15 which mandates that race data must

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contain at least these 4 categories. These categories are also more consistent with the race categories in vital statistics.

In the allocation of unspecified race was carried out using cross-tabulations of age, sex, race, type of Hispanic origin, and county of residence. Persons of Hispanic origin and unspecified race were allocated to either white or black, based on their Hispanic origin type. Persons of "other" race and Mexican origin were categorically assumed to be white, while persons in other Hispanic categories were distributed to white and black pro rata within the county-age-sex group. For "other-not-specified" persons who were not Hispanic, race was allocated to white, black, or Asian and Pacific Islander, based on proportions gleaned from sample data. The 20-percent sample (respondents who were enumerated on the longer census form) provided a highly detailed coding of race, which allowed identification of otherwise unidentifiable responses with a specified race category. Allocation proportions were thus established at the State level, which were used to distribute the non-Hispanic persons of "other" race in the 100-percent tabulations.

In 1990 the race modification procedure was carried out using individual census records. Persons whose race could not be specified were assigned to a racial category using a pool of "race donors," which was derived from persons of specified race and the identical response to the Hispanic origin question within the auspices of the same Census District Office. As in 1980, the underlying assumption was that the Hispanic origin response was the major criterion for allocating race. Unlike 1980, persons of Hispanic origin, including Mexican, could be assigned to any racial group, rather than white or black only, and the non-Hispanic component of "other" race was allocated primarily on the basis of geography (District Office), rather than detailed characteristic.

The means by which respondent's age was determined were fundamentally different in the two censuses; therefore, the problems that necessitated the modification were different. In 1980 respondents reported year of birth and quarter of birth (within year) on the census form. When census results were tabulated, persons born in the first quarter of the year (before April 1) had age equal to 1980 minus year of birth, while persons born in the last three quarters had age equal to 1979 minus year of birth.

In 1990 the quarter year of birth was not reported on the census form, so that direct determination of age from year of birth was impossible. In 1990 census publications age is based on respondents' direct reports of age at last birthday. This definition proved inadequate for postcensal estimates, because it was apparent that many respondents had reported their age at time of either completion of the census form or interview by an enumerator, which could occur several months after the April 1 reference data. As a result, age was biased upward. Modification was based on a respecification of age, for most individual respondents, by year of birth, with allocation to first quarter (persons aged 1990 minus year of birth) and last three quarters (aged 1989 minus year of birth) based on a historical series of registered births by month. This process partially restored the 1980 logic for assignment of age. It was not considered necessary to correct for age overstatement and heaping in 1990, because the availability of age and year of birth on the census form provided elimination of spurious year-of-birth reports in the census data before modification occurred.

Populations for 1998--The population of the United States by age, sex, race, and Hispanic origin is shown in the Census Bureau report United States population estimates, by age, sex, race, and Hispanic origin: 1990 to 1998. Washington, DC: U.S. Bureau of the Census, <http://www.census.gov/population/www/estimates/uspop.html> Internet release, June 4, 1999.

Populations for 1997--The population of the United States by age, sex, race, and Hispanic origin is shown in the Census Bureau report United States population estimates, by age, sex, race, and Hispanic origin: 1990 to 1997. PPL-91R. U.S. Bureau of the Census. Rounded populations are consistent with U.S. Bureau of the Census file NESTV97. Washington: U.S. Department of Commerce. 1998.

Populations for 1996--The population of the United States by age, sex, race, and Hispanic origin is shown in the Census Bureau report, United States population estimates by age, sex, race and Hispanic origin: 1990 to 1996. U.S. Bureau of the Census. PPL-57. Washington: U.S. Department of Commerce. 1997.

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Populations for 1995--The population of the United States by age, sex, race, and Hispanic origin is shown in the Census Bureau report, United States population estimates by age, sex, race and Hispanic origin: 1990 to 1995. U.S. Bureau of the Census. Census file RESDO795, PPL-41. Washington: U.S. Department of Commerce. 1996.

Populations for 1994--The population of the United States by age, sex, race, and Hispanic origin is shown in the Census Bureau report, United States population estimates by age, sex, race and Hispanic origin: 1990 to 1994. U.S. Bureau of the Census. PPL-21. Washington: U.S. Department of Commerce. 1995.

Populations for 1993--The population of the United States by age, sex, race and Hispanic origin is tabulated from Census file RESO793.

Populations for 1992--The population of the United States by age, sex, race and Hispanic origin is tabulated from census file RESPO792.

Populations for 1991--The population of the United States by age, race, and sex is shown in *Current Population Reports*, Series P-25, Number 1095. Monthly population figures were published in *Current Population Reports*, Series P-25, Number 1097.

Populations for 1990--The population of the United States by age, race, and sex, and the population for each State is shown in *Current Population Reports*, Series P-25, Number 1095. The figures have been modified as described above. Monthly population figures were published in *Current Population Reports*, Series P-25, Number 1094.

Population estimates for 1981-89--Birth rates for 1981-89 (except those for cohorts of women) have been revised, based on revised population estimates that are consistent with the 1990 census levels, and thus may differ from rates published in volumes of *Vital Statistics of the United States* for these years. The 1990 census counted approximately 1.5 million fewer persons than had earlier been estimated for April 1, 1990. The revised estimates for the United States by age, race, and sex were published by the U.S. Bureau of the Census in *Current Population Reports*, Series P-25, Number 1095. Population estimates by month are based on data published in *Current Population Reports*, Series P-25, Number 1094 and unpublished data. Unpublished revised estimates for States were obtained from the U.S. Bureau of the Census.

Populations for 1980--The population of the United States by age, race, and sex, and the population for each State are shown in tables 4-2 and 4-3 of volume I, *Vital Statistics of the United States*, 1980. The figures by race have been modified as described above. Monthly population figures were published in *Current Population Reports*, Series P-25, Number 899.

Population estimates for 1971-79--Birth rates for 1971-79 (except those for cohorts of women) have been revised, based on revised population estimates that are consistent with the 1980 census levels, and thus may differ from rates published in volumes of *Vital Statistics of the United States* for these years. The 1980 census counted approximately 5.5 million more persons than had earlier been estimated for April 1, 1980 (19). The revised estimates for the United States by age, race, and sex were published by the U.S. Bureau of the Census in *Current Population Reports*, Series P-25, Number 917. Population estimates by month are based on data published in *Current Population Reports*, Series P-25, Number 899. Unpublished revised estimates for States were obtained from the U.S. Bureau of the Census.

Population estimates for 1961-69--Birth rates for 1961-69 are based on revised estimates of the population and thus may differ slightly from rates published before 1976. The revised estimates used in computing these rates were published in *Current Population Reports*, Series P-25, Number 519. The rates for 1961-64 are based on revised estimates of the population published in *Current Population Reports*, Series P-25, Numbers 321 and 324 and may differ slightly from rates published in those years.

Population estimates for 1951-59--Final intercensal estimates of the population by age, race, and sex and total population by State for 1951-59 are shown in tables 4-4 and 4-5 of volume I, *Vital Statistics of the United States*, 1966. Beginning with 1963 these final estimates have been used to compute birth rates for 1951-59 in all issues of *Vital Statistics of the United States*.

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Net census undercounts and overcounts

The U.S. Bureau of the Census has conducted extensive research to evaluate the coverage of the U.S. population (including undercount, overcount, and misstatement of age, race, and sex) in the last five decennial censuses 1950, 1960, 1970, 1980, and 1990. These studies provide estimates of the national population, that were not enumerated or over enumerated in the respective censuses, by age, race, and sex (19-21). The report for 1990 (22) includes estimates of net under enumeration and over enumeration for age, sex, and racial subgroups of the national population, modified for race consistency with previous population counts as described in the section "Population bases."

These studies indicate that there are differential coverages in the censuses among the population subgroups; that is, some age, race, and sex groups are more completely enumerated than others. To the extent that these estimates of overcounts or undercounts are valid, that they are substantial, and that they vary among subgroups and geographic areas, census miscounts can have consequences for vital statistics measures (20). However, the effects of undercounts in the census are reduced to the extent that there is underregistration of births. If these two factors are of equal magnitude, rates based on unadjusted populations are more accurate than those based on adjusted populations because the births have not been adjusted for underregistration.

The impact of net census miscounts on vital statistics measures includes the effects on levels of the rates and effects on differentials among groups.

If adjustments were made for persons who were not counted in the census of population, the size of the denominators would generally increase and the rates would be smaller than without an adjustment. Adjusted rates for 1990 can be computed by multiplying the reported rates by ratios of the 1990 census-level population adjusted for the estimated net census miscounts, which are shown in table E. A ratio of less than 1.0 indicates a net census undercount and would result in a corresponding decrease in the rate. A ratio in excess of 1.0 indicates a net census overcount and would result in a corresponding increase in the rate.

Enumeration of white females in the childbearing ages was at least 97 percent complete for all ages. Among black women, the undercount ranged up to 5 percent. Generally, females in the childbearing ages were more completely enumerated than males for similar race-age groups.

If vital statistics measures were calculated with adjustments for net census miscounts for each of these subgroups, the resulting rates would have been differentially changed from their original levels; that is, rates for those groups with the greatest estimated overcounts or undercounts would show the greatest relative changes due to these adjustments. Thus the racial differential in fertility between the white and the "All other" population can be affected by such adjustments.

Cohort fertility tables

The various fertility measures shown for cohorts of women are computed from births adjusted for underregistration and population estimates corrected for under enumeration and misstatement of age. Data published after 1974 use revised population estimates prepared by the U.S. Bureau of the Census and have been expanded to include data for the two major racial groups. Heuser has prepared a detailed description of the methods used in deriving these measures as well as more detailed data for earlier years (23).

Parity distribution--The percent distribution of women by parity (number of children ever born alive to mother) is derived from cumulative birth rates by order of birth. The percent of zero-parity women is found by subtracting the cumulative first birth rate from 1,000 and dividing by 10. The proportions of women at parities one through six are found from the following formula:

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Percent at N parity = (cum. rate, order N) - (cum. rate, order N + 1)/10

The percent of women at seventh and higher parities is found by dividing the cumulative rate for seventh-order births by 10.

Birth probabilities--birth probabilities indicate the likelihood that a woman of a certain parity and age at the beginning of the year will have a child during the year. Birth probabilities differ from central birth rates in that the denominator for birth probabilities is specific for parity as well as for age.

Age-sex-adjusted birth rates

The age-sex-adjusted birth rates are computed by the direct method. The age distribution of women aged 10-49 years as enumerated in 1940 and the total population of the United States for that year are used as the standard populations. The age-sex-adjusted birth rates show differences in the level of fertility independent of differences in the age and sex composition of the population. It is important not to confuse these adjusted rates with the crude rates shown in other tables.

Total fertility rate

The total fertility rate is the sum of the birth rates by age of mother (in 5-year age groups) multiplied by 5. It is an age-adjusted rate because it is based on the assumption that there are the same number of women in each age group. The rate of 2,058.5 in 1998, for example, means that if a hypothetical group of 1,000 women were to have the same birth rates in each age group that were observed in the actual childbearing population in 1998, they would have a total of 2,058.5 children by the time they reached the end of the reproductive period (taken here to be age 55 years), assuming that all of the women survived to that age.

Intrinsic vital rates

The intrinsic vital rates are calculated from a stable population. A stable population is that hypothetical population, closed to external migration, that would become fixed in age-sex structure after repeated applications of a constant set of age-sex specific birth and death rates. For the mathematical derivation of intrinsic vital rates, see pages 4-13 and 4-14 in the Technical Appendix of volume I, Vital Statistics of the United States, 1962. The technique of calculating intrinsic vital rates is described by Barclay (24).

Seasonal adjustment of rates

The seasonally adjusted birth and fertility rates are computed from the X-11 variant of Census Method II (25). This method of seasonal adjustment used since 1964 differs slightly from the U.S. Bureau of Labor Statistics (BLS) Seasonal Factor Method, which was used for Vital Statistics of the United States, 1964. The fundamental technique is the same in that it is an adaptation of the ratio-to-moving-average method. Before 1964 the method of seasonal adjustment was based on the X-9 variant and other variants of Census Method II. A comparison of the Census Method II with the BLS Seasonal Factor Method shows the differences in the seasonal patterns of births to be negligible.

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Computation of percents, medians, and means

Percent distributions, medians, and means are computed using only events for which the characteristic is reported. The "Not stated" category is subtracted from the total before computation of these measures. The asterisk (*) indicates that the numerator and/or denominator number is less than 20.

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References

1. World Health Organization. Official records; no 28 (Third World Health Assembly 3.6). Geneva: World Health Organization, 16-17. 1950.
2. National Office of Vital Statistics. International recommendations on definitions of live birth and fetal deaths. Washington: Public Health Service. 1950.
3. Statistical Office of the United Nations. Principles for vital statistics system: Recommendations for the improvement and standardization of vital statistics. Doc. ST/STAT/SER.M/19. New York: United Nations. 1953.
4. National Office of Vital Statistics. Births and birth rates in the entire United States, 1909 to 1948. Vital Statistics--Special reports; vol 33 no 8. Washington: Public Health Service. 1950.
5. U.S. Bureau of the Census. Population of metropolitan areas and component geography: 1990 and 1980 (6-30-90 definitions). 1990 CPH-L-10. Washington: U.S. Department of Commerce. 1991.
6. U.S. Department of Commerce. Metropolitan statistical area classification. Federal Register; vol 45 no 2. Washington: U.S. Government Printing Office, 956-62. 1980.
7. U.S. Office of Management and Budget. Standard metropolitan statistical areas. Rev. ed. Washington: U.S. Government Printing Office, 89-90. 1975.
8. U.S. Bureau of the Census. 1990 Census of Population. General population characteristics; (1990 CP-1-1). Washington: U.S. Department of Commerce. 1992.
9. Martin JA. Birth characteristics for Asian or Pacific Islander subgroups, 1992. Monthly vital statistics report; vol 43 no 10, suppl. Hyattsville, Maryland: National Center for Health Statistics. 1995.
10. Schachter J. Matched record comparison of birth certificate and census information in the United States, 1950. Vital statistics--Special Reports; vol 47 no 12. Washington: Public Health Service. 1962.
11. Ventura SJ, Martin JA, Curtin SC, Mathews TJ. Report of final natality statistics, 1996. Monthly vital statistics report; vol 46 no 11, suppl. Hyattsville, Maryland: National Center for Health Statistics. 1998.
12. Ventura SJ. Births to unmarried mothers, United States, 1980-92. National Center for Health Statistics. Vital Health Stat 21(53). 1995.
13. Ventura SJ, Martin JA, Curtin SC, Mathews TJ. Births: Final data for 1997. National vital statistics reports; vol 47 no 18. Hyattsville, Maryland: National Center for Health Statistics. 1999.
14. Berkov B. An evaluation of California's inferred birth statistics for unmarried women. National Center for Health Statistics. Vital Health Stat 2(97). 1985.
15. Taffel S, Johnson D, Heuser R. A method for imputing length of gestation on birth certificates. National Center for Health Statistics. Vital Health Stat 2(93). 1982.
16. Brockert JE, Stockbauer JW, Senner JW, et al. Recommended standard medical definitions for the U.S. Standard Certificate of Live Birth, 1989 revision. Paper presented at annual meeting of the Association for the Vital Record and Health Statistics. June 1990.
17. U.S. Bureau of the Census. Test of birth-registration completeness, 1964 to 1968. 1970 census of population and housing; PHC (E)-2. Evaluation and Research Program. Washington: U.S. Department of Commerce. 1973.
18. U.S. Bureau of the Census. U.S. population estimates, by age, sex, race, and Hispanic origin, 1980-91. Current population reports; series P-25, no 1095. Washington: U.S. Department of Commerce. 1993.
19. U.S. Bureau of the Census. Coverage of the national population in the 1980 census by age, sex, and race. Preliminary estimates by demographic analysis. Current population reports; series P-23, no 115. Washington: U.S. Department of Commerce. 1982.
20. U.S. Bureau of the Census. Estimates of coverage of the population by sex, race, and age--Demographic analysis. 1970 census of population and housing; PHC (E)-4. Evaluation and Research Program. Washington: U.S. Department of Commerce. 1974.
21. U.S. Bureau of the Census. Developmental estimates of the coverage of the population of States in the 1970 census-demographic analysis. Current population reports; series P-23, no 65. Washington: U.S. Department of

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- Commerce. 1977.
22. Robinson JG, Ahmed B, Das Gupta P, et al. Estimation of population coverage in the 1990 United States census based on demographic analysis. *JASA* 88(423):1061-71. 1993.
 23. Heuser R. Fertility tables for birth cohorts by color: United States, 1917-73. Washington: National Center for Health Statistics. 1976.
 24. Barclay GW. Techniques of population analysis. New York: John Wiley & Sons, Inc., 216-22. 1958.
 25. U.S. Bureau of the Census. The X-11 variant of the Census Method II Seasonal Adjustment Program. Technical paper; no 15, 1967 rev. Washington: U.S. Department of Commerce. 1967.

TYPE/PRINT
IN
PERMANENT
BLACK INK
FOR
INSTRUCTIONS
SEE
HANDBOOK

**U.S. STANDARD
CERTIFICATE OF LIVE BIRTH**

LOCAL FILE NUMBER

BIRTH NUMBER

CHILD

| | | | |
|--|-------------------------------------|---|--------------------|
| 1. CHILD'S NAME (First, Middle, Last) | | 2. DATE OF BIRTH (Month, Day, Year) | 3. TIME OF BIRTH |
| 4. SEX | 5. CITY, TOWN, OR LOCATION OF BIRTH | | 6. COUNTY OF BIRTH |
| 7. PLACE OF BIRTH: <input type="checkbox"/> Hospital <input type="checkbox"/> Freestanding Birthing Center <input type="checkbox"/> Clinic/Doctor's Office <input type="checkbox"/> Residence <input type="checkbox"/> Other (Specify) _____ | | 8. FACILITY NAME (If not institution, give street and number) | |

**CERTIFIER/
ATTENDANT**

DEATH UNDER
ONE YEAR OF
AGE
Enter State File
Number of death
certificate for
this child

| | | |
|--|------------------------------------|---|
| 9. I certify that this child was born alive at the place and time and on the date stated. Signature _____ | 10. DATE SIGNED (Month, Day, Year) | 11. ATTENDANT'S NAME AND TITLE (If other than certifier) (Type/Print) Name _____ <input type="checkbox"/> M.D. <input type="checkbox"/> D.O. <input type="checkbox"/> C.N.M. <input type="checkbox"/> Other Midwife <input type="checkbox"/> Other (Specify) _____ |
| 12. CERTIFIER'S NAME AND TITLE (Type/Print) Name _____ <input type="checkbox"/> M.D. <input type="checkbox"/> D.O. <input type="checkbox"/> Hospital Admin. <input type="checkbox"/> C.N.M. <input type="checkbox"/> Other Midwife <input type="checkbox"/> Other (Specify) _____ | | 13. ATTENDANT'S MAILING ADDRESS (Street and Number or Rural Route Number, City or Town, State, Zip Code) |

MOTHER

| | | | |
|---|----------------------|--|--|
| 14. REGISTRAR'S SIGNATURE _____ | | 15. DATE FILED BY REGISTRAR (Month, Day, Year) | |
| 16a. MOTHER'S NAME (First, Middle, Last) | | 16b. MAIDEN SURNAME | 17. DATE OF BIRTH (Month, Day, Year) |
| 18. BIRTHPLACE (State or Foreign Country) | 19a. RESIDENCE—STATE | 19b. COUNTY | 19c. CITY, TOWN, OR LOCATION |
| 19d. STREET AND NUMBER | | 19e. INSIDE CITY LIMITS? (Yes or no) | 20. MOTHER'S MAILING ADDRESS (If same as residence, enter Zip Code on _____) |

FATHER

| | | |
|---|--------------------------------------|---|
| 21. FATHER'S NAME (First, Middle, Last) | 22. DATE OF BIRTH (Month, Day, Year) | 23. BIRTHPLACE (State or Foreign Country) |
|---|--------------------------------------|---|

INFORMANT

24. I certify that the personal information provided on this certificate is correct to the best of my knowledge and belief.
Signature of Parent or Other Informant _____

INFORMATION FOR MEDICAL AND HEALTH USE ONLY

MOTHER

FATHER

| | | | | | |
|--|--|--|---|---|--|
| 25. OF HISPANIC ORIGIN? (Specify No or Yes—If yes, specify Cuban, Mexican, Puerto Rican, etc.) | | 26. RACE—American Indian, Black, White, etc. (Specify below) | | 27. EDUCATION (Specify only highest grade completed) | |
| 25a. <input type="checkbox"/> No <input type="checkbox"/> Yes Specify: _____ | | 26a. _____ | | 27a. _____ | |
| 25b. <input type="checkbox"/> No <input type="checkbox"/> Yes Specify: _____ | | 26b. _____ | | 27b. _____ | |
| 28. PREGNANCY HISTORY (Complete each section) | | | 29. MOTHER MARRIED? (At birth, conception, or any time between) (Yes or no) | | 30. DATE LAST NORMAL MENSTRUATION BEGAN (Month, Day, Year) |
| LIVE BIRTHS (Do not include this child) | | OTHER TERMINATIONS (Spontaneous and induced at any time after conception) | | 31. MONTH OF PREGNANCY PRENATAL CARE BEGAN—First, Second, Third, etc. (Specify) | |
| 28a. Now Living Number _____ <input type="checkbox"/> None | 28b. Now Dead Number _____ <input type="checkbox"/> None | 28d. _____ <input type="checkbox"/> None | | 32. PRENATAL VISITS—Total Number (If none, so state) | |
| 28c. DATE OF LAST LIVE BIRTH (Month, Year) | | 28e. DATE OF LAST OTHER TERMINATION (Month, Year) | | 33. BIRTH WEIGHT (Specify unit) | |
| 36. APGAR SCORE | | 37a. MOTHER TRANSFERRED PRIOR TO DELIVERY? <input type="checkbox"/> No <input type="checkbox"/> Yes If Yes, enter name of facility transferred from: _____ | | | |
| 36a. 1 Minute | 36b. 5 Minutes | 37b. INFANT TRANSFERRED? <input type="checkbox"/> No <input type="checkbox"/> Yes If Yes, enter name of facility transferred to: _____ | | | |

MULTIPLE BIRTHS
Enter State File
Number for Mate(s)
LIVE BIRTH(S)

FETAL DEATH(S)

| | | |
|---|---|---|
| <p>38a. MEDICAL RISK FACTORS FOR THIS PREGNANCY (Check all that apply)</p> <p>Anemia (Hct. <30/Hgb. <10) 01 <input type="checkbox"/></p> <p>Cardiac disease 02 <input type="checkbox"/></p> <p>Acute or chronic lung disease 03 <input type="checkbox"/></p> <p>Diabetes 04 <input type="checkbox"/></p> <p>Genital herpes 05 <input type="checkbox"/></p> <p>Hydramnios/Oligohydramnios 06 <input type="checkbox"/></p> <p>Hemoglobinopathy 07 <input type="checkbox"/></p> <p>Hypertension, chronic 08 <input type="checkbox"/></p> <p>Hypertension, pregnancy-associated 09 <input type="checkbox"/></p> <p>Eclampsia 10 <input type="checkbox"/></p> <p>Incompetent cervix 11 <input type="checkbox"/></p> <p>Previous infant 4000+ grams 12 <input type="checkbox"/></p> <p>Previous preterm or small-for-gestational-age infant 13 <input type="checkbox"/></p> <p>Renal disease 14 <input type="checkbox"/></p> <p>Rh sensitization 15 <input type="checkbox"/></p> <p>Uterine bleeding 16 <input type="checkbox"/></p> <p>None 00 <input type="checkbox"/></p> <p>Other _____ 17 <input type="checkbox"/></p> <p>(Specify)</p> | <p>40. COMPLICATIONS OF LABOR AND/OR DELIVERY (Check all that apply)</p> <p>Febrile (>100°F. or 38°C.) 01 <input type="checkbox"/></p> <p>Meconium, moderate/heavy 02 <input type="checkbox"/></p> <p>Premature rupture of membrane (>12 hours) 03 <input type="checkbox"/></p> <p>Abruptio placenta 04 <input type="checkbox"/></p> <p>Placenta previa 05 <input type="checkbox"/></p> <p>Other excessive bleeding 06 <input type="checkbox"/></p> <p>Seizures during labor 07 <input type="checkbox"/></p> <p>Precipitous labor (<3 hours) 08 <input type="checkbox"/></p> <p>Prolonged labor (>20 hours) 09 <input type="checkbox"/></p> <p>Dysfunctional labor 10 <input type="checkbox"/></p> <p>Breech/Malpresentation 11 <input type="checkbox"/></p> <p>Cephalopelvic disproportion 12 <input type="checkbox"/></p> <p>Cord prolapse 13 <input type="checkbox"/></p> <p>Anesthetic complications 14 <input type="checkbox"/></p> <p>Fetal distress 15 <input type="checkbox"/></p> <p>None 00 <input type="checkbox"/></p> <p>Other _____ 16 <input type="checkbox"/></p> <p>(Specify)</p> | <p>43. CONGENITAL ANOMALIES OF CHILD (Check all that apply)</p> <p>Anencephalus 01</p> <p>Spina bifida/Meningocele 02</p> <p>Hydrocephalus 03</p> <p>Microcephalus 04</p> <p>Other central nervous system anomalies (Specify) _____ 05</p> <p>Heart malformations 06</p> <p>Other circulatory/respiratory anomalies (Specify) _____ 07</p> <p>Rectal atresia/stenosis 08</p> <p>Tracheo-esophageal fistula/ Esophageal atresia 09</p> <p>Omphalocele/ Gastroschisis 10</p> <p>Other gastrointestinal anomalies (Specify) _____ 11</p> <p>Malformed genitalia 12</p> <p>Renal agenesis 13</p> <p>Other urogenital anomalies (Specify) _____ 14</p> <p>Cleft lip/palate 15</p> <p>Polydactyly/Syndactyly/Adactyly 16</p> <p>Club foot 17</p> <p>Diaphragmatic hernia 18</p> <p>Other musculoskeletal/integumental anomalies (Specify) _____ 19</p> <p>Down's syndrome 20</p> <p>Other chromosomal anomalies (Specify) _____ 21</p> <p>None 00</p> <p>Other _____ 22</p> <p>(Specify)</p> |
| <p>38b. OTHER RISK FACTORS FOR THIS PREGNANCY (Complete all items)</p> <p>Tobacco use during pregnancy Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p>Average number cigarettes per day _____</p> <p>Alcohol use during pregnancy Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p>Average number drinks per week _____</p> <p>Weight gained during pregnancy _____ lbs.</p> | <p>41. METHOD OF DELIVERY (Check all that apply)</p> <p>Vaginal 01 <input type="checkbox"/></p> <p>Vaginal birth after previous C-section 02 <input type="checkbox"/></p> <p>Primary C-section 03 <input type="checkbox"/></p> <p>Repeat C-section 04 <input type="checkbox"/></p> <p>Forceps 05 <input type="checkbox"/></p> <p>Vacuum 06 <input type="checkbox"/></p> | |
| <p>39. OBSTETRIC PROCEDURES (Check all that apply)</p> <p>Amniocentesis 01 <input type="checkbox"/></p> <p>Electronic fetal monitoring 02 <input type="checkbox"/></p> <p>Induction of labor 03 <input type="checkbox"/></p> <p>Stimulation of labor 04 <input type="checkbox"/></p> <p>Tocolysis 05 <input type="checkbox"/></p> <p>Ultrasound 06 <input type="checkbox"/></p> <p>None 00 <input type="checkbox"/></p> <p>Other _____ 07 <input type="checkbox"/></p> <p>(Specify)</p> | <p>42. ABNORMAL CONDITIONS OF THE NEWBORN (Check all that apply)</p> <p>Anemia (Hct. <39/Hgb. <13) 01 <input type="checkbox"/></p> <p>Birth injury 02 <input type="checkbox"/></p> <p>Fetal alcohol syndrome 03 <input type="checkbox"/></p> <p>Hyaline membrane disease/RDS 04 <input type="checkbox"/></p> <p>Meconium aspiration syndrome 05 <input type="checkbox"/></p> <p>Assisted ventilation <30 min 06 <input type="checkbox"/></p> <p>Assisted ventilation ≥30 min 07 <input type="checkbox"/></p> <p>Seizures 08 <input type="checkbox"/></p> <p>None 00 <input type="checkbox"/></p> <p>Other _____ 09 <input type="checkbox"/></p> <p>(Specify)</p> | |

Table A. Percent of birth records on which specified items were not stated: United States each State, and Territory, 1998

(Page 1 of 2)

[By place of residence]

| Area | Number of births | Place of birth | Attendant at birth | Mother's birth-place | Father's age | Father's race | Hispanic Origin | | Educational attainment Mother | Live-birth order | Length of Gestation | Month prenatal care began | Number of prenatal visits |
|-----------------------------|------------------|----------------|--------------------|----------------------|--------------|---------------|-----------------|--------|-------------------------------|------------------|---------------------|---------------------------|---------------------------|
| | | | | | | | Mother | Father | | | | | |
| Total of reporting areas 1/ | 3,941,553 | 0.0 | 0.0 | 0.3 | 14.4 | 14.8 | 1.2 | 15.3 | 1.5 | 0.7 | 1.0 | 2.8 | 3.6 |
| Alabama | 62,074 | - | - | 0.0 | 23.8 | 23.8 | .0 | 23.8 | 0.3 | 0.0 | 0.1 | 0.3 | 0.3 |
| Alaska | 9,926 | .0 | .0 | .2 | 12.9 | 14.7 | .5 | 13.7 | 2.0 | .2 | .3 | 1.7 | 1.5 |
| Arizona | 78,243 | - | .0 | .3 | 21.5 | 23.3 | 1.3 | 23.6 | 2.0 | .4 | .2 | 2.1 | 3.6 |
| Arkansas | 36,865 | .0 | .0 | .4 | 20.6 | 21.8 | .1 | 21.0 | .9 | .2 | .3 | 2.4 | 3.3 |
| California | 521,661 | .0 | .1 | .3 | 7.4 | 6.8 | .7 | 6.3 | 1.7 | .1 | 2/ 5.4 | 1.6 | 2.9 |
| Colorado | 59,577 | - | - | .2 | 9.6 | 10.2 | .0 | 10.3 | 1.4 | .0 | .0 | .7 | .9 |
| Connecticut | 43,820 | .0 | .0 | .4 | 9.4 | 10.8 | 5.3 | 14.4 | 3.9 | 8.3 | .1 | 5.4 | 9.0 |
| Delaware | 10,578 | .0 | .0 | .3 | 30.7 | 31.6 | .3 | 30.7 | .7 | .3 | .1 | .9 | 1.1 |
| District of Columbia | 7,686 | - | - | .0 | 44.9 | 51.3 | .5 | 44.7 | 9.0 | .2 | .4 | 15.3 | 18.6 |
| Florida | 195,637 | .0 | - | .2 | 17.6 | 17.7 | .1 | 19.1 | .4 | .0 | .1 | .8 | 1.7 |
| Georgia | 122,368 | .0 | .0 | .2 | 18.0 | 18.4 | .8 | 18.6 | 2.0 | .3 | .1 | 2.9 | 2.7 |
| Hawaii | 17,583 | - | .0 | .1 | 8.4 | 8.6 | .1 | 8.4 | .4 | .0 | 10.4 | 5.3 | 6.1 |
| Idaho | 19,391 | .0 | .0 | .3 | 8.6 | 11.2 | 1.5 | 11.4 | 4.2 | 1.3 | .6 | 2.2 | 2.6 |
| Illinois | 182,588 | .0 | .0 | .1 | 15.5 | 16.8 | .0 | 16.8 | .8 | .2 | .2 | 1.8 | 2.2 |
| Indiana | 85,122 | .3 | .1 | .2 | 13.5 | 13.7 | .4 | 13.7 | .9 | .4 | .1 | 1.5 | 2.6 |
| Iowa | 37,282 | .0 | .0 | .4 | 12.1 | 14.2 | 1.1 | 15.0 | 1.5 | .1 | .1 | 1.3 | 3.9 |
| Kansas | 38,422 | .0 | .0 | .1 | 10.6 | 10.7 | 1.0 | 12.1 | .4 | .0 | .1 | .6 | .8 |
| Kentucky | 54,329 | .0 | .1 | .0 | 22.0 | 22.7 | .1 | 23.7 | .2 | .1 | .1 | 1.1 | 1.3 |
| Louisiana | 66,888 | - | .0 | .0 | 22.3 | 22.5 | .2 | 22.5 | .1 | .0 | .0 | .3 | .5 |
| Maine | 13,733 | - | .0 | - | 10.0 | 10.0 | 4.3 | 18.7 | .8 | .3 | .1 | .5 | .5 |
| Maryland | 71,972 | .0 | .0 | .7 | 8.4 | 10.1 | .6 | 6.8 | 2.0 | 1.6 | .5 | 4.7 | 8.2 |
| Massachusetts | 81,411 | .0 | .0 | .0 | 7.8 | 7.6 | .4 | 6.8 | .3 | .2 | .2 | .9 | .3 |
| Michigan | 133,666 | .0 | .2 | .1 | 16.0 | 18.0 | 5.4 | 22.5 | 1.4 | .6 | .1 | 3.9 | 5.4 |
| Minnesota | 65,202 | .0 | .0 | .0 | 8.9 | 11.3 | 5.2 | 15.4 | 2.2 | .5 | 1.0 | 5.6 | 5.0 |
| Mississippi | 42,939 | .0 | .0 | .1 | 24.2 | 24.0 | .1 | 24.3 | .2 | .1 | .2 | .6 | 1.1 |
| Missouri | 75,358 | .0 | .0 | .2 | 18.3 | 18.3 | .1 | 18.5 | .8 | .3 | .2 | 1.4 | 2.0 |
| Montana | 10,795 | .0 | .1 | - | 10.2 | 11.5 | 2.0 | 13.4 | .4 | .0 | .1 | .5 | .5 |
| Nebraska | 23,534 | .0 | .0 | .0 | 12.2 | 12.8 | 2.2 | 14.4 | .1 | .0 | .0 | .3 | .6 |
| Nevada | 28,699 | - | .0 | .8 | 22.4 | 23.3 | .7 | 22.0 | 3.2 | 1.1 | 1.1 | 6.2 | 10.0 |
| New Hampshire | 14,429 | - | - | .0 | 7.2 | 9.1 | 3.5 | 11.6 | .8 | 2.8 | .2 | 1.7 | 1.8 |
| New Jersey | 114,550 | .1 | .1 | .2 | 8.9 | 11.1 | .4 | 9.4 | 2.3 | .2 | .2 | 5.0 | 6.0 |
| New Mexico | 27,318 | .0 | .0 | 2.8 | 27.5 | 26.8 | .0 | 26.8 | 5.1 | .5 | .7 | 5.7 | 5.5 |
| New York | 258,207 | .1 | .1 | .4 | 15.7 | 16.1 | 6.2 | 20.8 | 1.7 | .1 | .2 | 10.0 | 6.7 |
| North Carolina | 111,688 | .0 | .0 | .0 | 17.2 | 17.2 | .0 | 17.1 | .2 | .0 | .1 | .5 | .5 |
| North Dakota | 7,932 | - | - | .0 | 7.9 | 9.4 | 3.1 | 12.3 | .2 | - | .1 | .6 | .3 |
| Ohio | 152,794 | .0 | .0 | .2 | 15.2 | 16.0 | .4 | 15.8 | .5 | .2 | .0 | .5 | 1.5 |
| Oklahoma | 49,461 | .0 | .1 | .1 | 17.0 | 18.9 | 1.1 | 18.8 | 2.0 | 12.2 | 3.2 | 10.9 | 12.8 |
| Oregon | 45,273 | - | - | .1 | 11.6 | 4.6 | .2 | 4.9 | 1.2 | .1 | .0 | .4 | .5 |
| Pennsylvania | 145,899 | .0 | .0 | .8 | 5.7 | 4.3 | .6 | 3.8 | 2.3 | .4 | .2 | 3.2 | 4.8 |
| Rhode Island | 12,599 | - | - | .3 | 13.6 | 14.2 | 12.8 | 23.1 | 2.9 | 2.2 | 2.6 | 8.8 | 9.8 |
| South Carolina | 53,877 | - | .0 | .3 | 28.8 | 28.9 | .1 | 28.8 | 4.6 | .1 | .2 | 1.5 | 1.6 |
| South Dakota | 10,288 | .0 | - | .0 | 11.8 | 12.1 | .1 | 13.3 | .2 | - | .0 | .4 | .4 |
| Tennessee | 77,396 | .0 | .0 | .0 | 16.1 | 16.2 | .0 | 16.3 | .2 | .0 | .2 | 1.1 | .9 |
| Texas | 342,283 | .0 | .0 | .4 | 15.3 | 15.4 | .3 | 15.4 | 1.3 | 1.2 | .6 | 2.0 | 5.2 |
| Utah | 45,165 | .0 | .0 | .2 | 9.7 | 10.8 | .3 | 9.3 | .9 | .2 | .1 | 2.9 | 3.0 |
| Vermont | 6,582 | .0 | - | .1 | 9.1 | 15.3 | 2.6 | 16.4 | 2.5 | .4 | .2 | 3.6 | 1.2 |
| Virginia | 94,351 | .0 | .1 | .1 | 17.8 | 18.6 | .1 | 18.5 | .5 | 1.1 | .3 | .6 | 1.2 |
| Washington | 79,663 | .0 | .0 | .8 | 11.8 | 12.0 | 3.2 | 12.3 | 10.6 | 4.5 | 1.0 | 9.7 | 13.1 |
| West Virgin | 20,747 | .1 | .0 | .1 | 13.3 | 14.2 | .2 | 14.6 | .5 | .2 | .5 | 4.3 | 3.2 |
| Wisconsin | 67,450 | - | - | .0 | 28.4 | 28.4 | .0 | 28.4 | .1 | .0 | .0 | .2 | .3 |
| Wyoming | 6,252 | .0 | - | .0 | 13.6 | 14.0 | .1 | 13.9 | .4 | .0 | .1 | .5 | .5 |
| Puerto Rico | 60,412 | - | .1 | - | 2.9 | 3.4 | ... | ... | .2 | .0 | .1 | .2 | .1 |
| Virgin Islands | 1,800 | .1 | .6 | - | 21.6 | 24.3 | 3.2 | 26.4 | 1.7 | .9 | .8 | .6 | 1.7 |
| Guam | 4,318 | .1 | .5 | .1 | 23.6 | 24.9 | .4 | 23.3 | .6 | .6 | .2 | .8 | 1.2 |
| American Samoa | 1,688 | .1 | - | 5.9 | 34.2 | 34.8 | ... | ... | ... | - | ... | ... | ... |
| Northern Marianas | 1,462 | .2 | 1.0 | 0.3 | 9.6 | 24.4 | ... | ... | 25.0 | 23.1 | 26.3 | 56.5 | 25.0 |

See footnotes at end of table.

Table A. Percent of birth records on which specified items were not stated: United States each State, and Territory, 1998

(Page 2 of 2)
[By place of residence]

| Area | Number of births | Birth weight | 5-minute Apgar score * | Medical risk factors | Tobacco use | Alcohol use | Weight gain | Obstetric procedures | Complications of labor and/or delivery | * Method of delivery | Abnormal conditions of newborn | Congenital anomalies |
|-----------------------------|------------------|--------------|------------------------|----------------------|-------------|-------------|-------------|----------------------|--|----------------------|--------------------------------|----------------------|
| Total of reporting areas 1/ | 3,941,553 | 0.1 | 0.6 | 1.4 | 1.5 | 1.5 | 8.3 | 0.9 | 1.2 | 0.9 | 2.4 | 1.7 |
| Alabama | 62,074 | 0.0 | 0.2 | 3/ 0.0 | 0.0 | 0.1 | 3.1 | 0.0 | 0.0 | 0.3 | 0.0 | 0.1 |
| Alaska | 9,926 | .2 | .6 | .3 | .6 | .6 | 1.6 | .3 | .3 | .4 | .4 | .3 |
| Arizona | 78,243 | .1 | .6 | .0 | 1.8 | 2.0 | 11.3 | .0 | .0 | .2 | .0 | .4 |
| Arkansas | 36,865 | .1 | 3.6 | .5 | .9 | 1.0 | 9.5 | .4 | .5 | .7 | .4 | .4 |
| California | 521,661 | .0 | ... | .0 | ... | ... | ... | .0 | .0 | .0 | .0 | .0 |
| Colorado | 59,577 | .0 | .3 | .0 | .1 | .1 | 3.4 | .0 | .0 | .0 | .0 | .1 |
| Connecticut | 43,820 | .0 | 1.5 | 11.8 | 8.1 | 7.4 | 18.6 | 10.4 | 12.2 | 4.5 | 18.9 | 20.1 |
| Delaware | 10,578 | .0 | .4 | .0 | .2 | .2 | 1.9 | .0 | .0 | .0 | .1 | .1 |
| District of Columbia | 7,686 | .1 | 1.1 | .0 | .1 | .1 | 16.4 | .0 | .0 | .0 | .0 | .0 |
| Florida | 195,637 | .1 | .2 | .0 | .1 | .1 | 4.4 | .0 | .0 | .6 | .0 | .0 |
| Georgia | 122,368 | .0 | .5 | .4 | .4 | .4 | 5.6 | .0 | .0 | .3 | .0 | .0 |
| Hawaii | 17,583 | 2.8 | 7.2 | 16.2 | .1 | .1 | 13.8 | 9.7 | 7.3 | 16.5 | 17.2 | 18.9 |
| Idaho | 19,391 | .3 | .6 | 1.0 | .7 | 1.0 | 10.2 | .9 | .9 | .3 | .7 | .7 |
| Illinois | 182,588 | .1 | .3 | .1 | 1.0 | .2 | 3.9 | .0 | .1 | .4 | .1 | .1 |
| Indiana | 85,122 | .5 | .5 | .1 | ... | .4 | 3.2 | .1 | .2 | .4 | .6 | .6 |
| Iowa | 37,282 | .1 | .3 | .2 | 3.3 | 3.8 | 6.9 | .1 | .3 | .4 | .3 | .4 |
| Kansas | 38,422 | .0 | .4 | 3/ .5 | .5 | .5 | .7 | .4 | .4 | 2.9 | .4 | .4 |
| Kentucky | 54,329 | .1 | .4 | 6.1 | 4.5 | 4.5 | 8.6 | 3.9 | 6.5 | 4.1 | 11.3 | 10.3 |
| Louisiana | 66,888 | .1 | .3 | .0 | .1 | .1 | 6.8 | .0 | .1 | .1 | .1 | .0 |
| Maine | 13,733 | .1 | .2 | .1 | 1.1 | 1.4 | 1.8 | .0 | .1 | .2 | .1 | .2 |
| Maryland | 71,972 | .1 | .5 | .0 | .5 | .7 | 8.3 | .0 | .0 | .2 | .0 | .0 |
| Massachusetts | 81,411 | .2 | .3 | .6 | .3 | .3 | 1.1 | .6 | .6 | .4 | 1.0 | 1.0 |
| Michigan | 133,666 | .3 | .4 | .1 | 1.8 | 1.5 | 9.4 | .1 | .1 | .6 | .1 | .1 |
| Minnesota | 65,202 | .1 | .8 | 8.3 | 7.2 | 7.3 | 18.1 | 6.5 | 7.6 | 4.5 | 8.2 | 8.5 |
| Mississippi | 42,939 | .0 | .4 | .1 | .2 | .2 | 4.6 | .1 | .1 | .2 | .1 | .1 |
| Missouri | 75,358 | .0 | .5 | .1 | .4 | .4 | 3.0 | .1 | .1 | .7 | .1 | .1 |
| Montana | 10,795 | .0 | .4 | .1 | .8 | 1.5 | 1.4 | .1 | .1 | .5 | .2 | .1 |
| Nebraska | 23,534 | .0 | .2 | .0 | .9 | .9 | 1.3 | .0 | .0 | .2 | 6/ .0 | .0 |
| Nevada | 28,699 | .1 | 1.7 | 10.7 | 2.2 | 2.5 | 11.8 | .5 | 6.6 | 1.5 | 12.4 | 12.5 |
| New Hampshire | 14,429 | .1 | .3 | .0 | .2 | .3 | 5.5 | .0 | .0 | .2 | .1 | .1 |
| New Jersey | 114,550 | .1 | .2 | 2.3 | 1.0 | 1.0 | 6.1 | .1 | 1.6 | .5 | 26.2 | 1.7 |
| New Mexico | 27,318 | 1.6 | 4.0 | .1 | 2.0 | 2.1 | 11.3 | .0 | .0 | .4 | .1 | ... |
| New York | 258,207 | .1 | .2 | 1.1 | 4/ 4.3 | .2 | 9.6 | .2 | .4 | .3 | 7/ 0.9 | 1.0 |
| North Carolina | 111,688 | .0 | .3 | .0 | .1 | .1 | 2.3 | .0 | .0 | .4 | .0 | .4 |
| North Dakota | 7,932 | .1 | .4 | .1 | .6 | .7 | 1.3 | .1 | .1 | 1.0 | .1 | .1 |
| Ohio | 152,794 | .1 | .2 | .0 | .3 | .1 | 2.6 | .0 | .0 | .4 | .0 | .0 |
| Oklahoma | 49,461 | .6 | 5.5 | 34.0 | 23.9 | 24.2 | 34.6 | 30.2 | 33.0 | 26.9 | 39.5 | 40.3 |
| Oregon | 45,273 | .0 | .4 | .5 | .7 | .7 | 3.0 | .0 | .0 | .2 | .0 | .0 |
| Pennsylvania | 145,899 | .1 | .3 | .1 | .9 | .6 | 8.3 | .0 | .1 | .1 | .6 | .5 |
| Rhode Island | 12,599 | .4 | .7 | 8.4 | 2.7 | 2.9 | 12.0 | 8.3 | 8.4 | .7 | 18.9 | 19.3 |
| South Carolina | 53,877 | .0 | .4 | .0 | .1 | .1 | 2.6 | .0 | .0 | .5 | .0 | .0 |
| South Dakota | 10,288 | .0 | .3 | .0 | ... | ... | 1.4 | .0 | .0 | .2 | .0 | .0 |
| Tennessee | 77,396 | .0 | .3 | .0 | .2 | .2 | 6.1 | .0 | .1 | .4 | .1 | .0 |
| Texas | 342,283 | .1 | ... | 5/ 1.3 | .4 | .5 | 19.6 | .1 | 8/ .1 | .7 | 6/ .2 | .3 |
| Utah | 45,165 | .0 | .3 | .1 | .5 | .4 | 4.1 | .0 | .0 | .0 | .2 | .4 |
| Vermont | 6,582 | .2 | .2 | .1 | .9 | .5 | 2.0 | .1 | .1 | .0 | .2 | .2 |
| Virginia | 94,351 | .3 | .4 | .0 | .1 | .1 | 4.8 | .0 | .0 | .4 | .1 | .1 |
| Washington | 79,663 | .3 | .4 | 5.5 | 5.2 | 15.1 | 23.7 | 7.1 | 9.3 | .4 | 11.0 | 10.4 |
| West Virginia | 20,747 | .1 | .2 | .0 | .8 | 2.4 | 9.0 | .0 | .0 | .2 | .0 | .0 |
| Wisconsin | 67,450 | .0 | .4 | .1 | .1 | .1 | 1.6 | .0 | .1 | .0 | 9/ .1 | .1 |
| Wyoming | 6,252 | .0 | .4 | .0 | 1.1 | 1.1 | 2.1 | .0 | .0 | .2 | .0 | .0 |
| Puerto Rico | 60,412 | .0 | .2 | .0 | .0 | .0 | .1 | .0 | .1 | .0 | .1 | .1 |
| Virgin Islands | 1,800 | .1 | 2.9 | 6.4 | 2.3 | 2.3 | 9.8 | 2.5 | 7.4 | 3.0 | 8.7 | 6.8 |
| Guam | 4,318 | .1 | 1.3 | 5.4 | 1.1 | 1.3 | 4.0 | 1.9 | 2.9 | 1.3 | 5.7 | 5.5 |
| American Samoa | 1,688 | - | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Northern Marianas | 1,462 | 12.3 | 21.5 | ... | ... | ... | ... | ... | ... | 43.6 | ... | ... |

0.0 Quantity more than zero but less than 0.05.

--Data not available.

1/ Excludes data for Puerto Rico, Virgin Islands, Guam, American Samoa, and the Commonwealth of the Northern Marianas.

2/ California reports date last normal menses began but does not report clinical estimate of gestation.

3/ Kansas does not report Rh sensitization.

4/ New York city (but not New York State) reports tobacco use.

5/ Texas does not report genital herpes and uterine bleeding.

6/ Nebraska and Texas do not report birth injury.

7/ New York city does not report assisted ventilation less than 30 minutes and assisted ventilation of 30 minutes or more.

8/ Texas does not report anesthetic complications and fetal distress.

9/ Wisconsin does not report fetal alcohol syndrome.

Table B. Births by State of Occurrence and Residence for Births Occurring in the 50 States and the District of Columbia, 1998

| Area | Occurrence | Residence |
|----------------------|------------|-----------|
| United States | 3,945,192 | 3,941,553 |
| Alabama | 61,209 | 62,074 |
| Alaska | 9,832 | 9,926 |
| Arizona | 78,076 | 78,243 |
| Arkansas | 35,763 | 36,865 |
| California | 522,290 | 521,661 |
| Colorado | 59,816 | 59,577 |
| Connecticut | 43,669 | 43,820 |
| Delaware | 11,023 | 10,578 |
| District of Columbia | 15,138 | 7,686 |
| Florida | 195,734 | 195,637 |
| Georgia | 123,262 | 122,368 |
| Hawaii | 17,619 | 17,583 |
| Idaho | 18,959 | 19,391 |
| Illinois | 179,462 | 182,588 |
| Indiana | 85,176 | 85,122 |
| Iowa | 37,433 | 37,282 |
| Kansas | 37,450 | 38,422 |
| Kentucky | 52,880 | 54,329 |
| Louisiana | 67,100 | 66,888 |
| Maine | 13,530 | 13,733 |
| Maryland | 67,408 | 71,972 |
| Massachusetts | 82,216 | 81,411 |
| Michigan | 132,443 | 133,666 |
| Minnesota | 65,094 | 65,202 |
| Mississippi | 41,942 | 42,939 |
| Missouri | 77,701 | 75,358 |
| Montana | 10,742 | 10,795 |
| Nebraska | 23,915 | 23,534 |
| Nevada | 28,218 | 28,699 |
| New Hampshire | 13,933 | 14,429 |
| New Jersey | 111,709 | 114,550 |
| New Mexico | 26,960 | 27,318 |
| New York State only | 135,408 | 138,296 |
| New York City only | 124,240 | 119,911 |
| North Carolina | 112,785 | 111,688 |
| North Dakota | 9,156 | 7,932 |
| Ohio | 153,400 | 152,794 |
| Oklahoma | 48,449 | 49,461 |
| Oregon | 46,278 | 45,273 |
| Pennsylvania | 146,465 | 145,899 |
| Rhode Island | 13,489 | 12,599 |
| South Carolina | 51,701 | 53,877 |
| South Dakota | 10,391 | 10,288 |
| Tennessee | 82,412 | 77,396 |
| Texas | 346,101 | 342,283 |
| Utah | 46,128 | 45,165 |
| Vermont | 6,257 | 6,582 |
| Virginia | 92,021 | 94,351 |
| Washington | 78,980 | 79,663 |
| West Virginia | 21,574 | 20,747 |
| Wisconsin | 66,421 | 67,450 |
| Wyoming | 5,834 | 6,252 |
| Foreign Residents | - | 3,639 |
| Puerto Rico | - | 21 |
| Virgin Islands | - | 19 |
| Guam | - | 4 |
| American Samoa | - | - |
| Northern Marianas | - | - |
| Canada | - | 111 |
| Cuba | - | 2 |
| Mexico | - | 2,818 |
| Remainder of world | - | 664 |

- Quantity zero.

Table C. Lower and upper 95 percent confidence limit factors for a birth rate based on a Poisson variable of 1-99 births

| Number of births | L | U | Number of births | L | U |
|------------------|---------|---------|------------------|---------|---------|
| 1 | 0.02532 | 5.57164 | 51 | 0.74457 | 1.31482 |
| 2 | 0.12110 | 3.61234 | 52 | 0.74685 | 1.31137 |
| 3 | 0.20622 | 2.92242 | 53 | 0.74907 | 1.30802 |
| 4 | 0.27247 | 2.56040 | 54 | 0.75123 | 1.30478 |
| 5 | 0.32470 | 2.33367 | 55 | 0.75334 | 1.30164 |
| 6 | 0.36698 | 2.17658 | 56 | 0.75539 | 1.29858 |
| 7 | 0.40205 | 2.06038 | 57 | 0.75739 | 1.29562 |
| 8 | 0.43173 | 1.97040 | 58 | 0.75934 | 1.29273 |
| 9 | 0.45726 | 1.89831 | 59 | 0.76125 | 1.28993 |
| 10 | 0.47954 | 1.83904 | 60 | 0.76311 | 1.28720 |
| 11 | 0.49920 | 1.78928 | 61 | 0.76492 | 1.28454 |
| 12 | 0.51671 | 1.74680 | 62 | 0.76669 | 1.28195 |
| 13 | 0.53246 | 1.71003 | 63 | 0.76843 | 1.27943 |
| 14 | 0.54671 | 1.67783 | 64 | 0.77012 | 1.27698 |
| 15 | 0.55969 | 1.64935 | 65 | 0.77178 | 1.27458 |
| 16 | 0.57159 | 1.62394 | 66 | 0.77340 | 1.27225 |
| 17 | 0.58254 | 1.60110 | 67 | 0.77499 | 1.26996 |
| 18 | 0.59266 | 1.58043 | 68 | 0.77654 | 1.26774 |
| 19 | 0.60207 | 1.56162 | 69 | 0.77806 | 1.26556 |
| 20 | 0.61083 | 1.54442 | 70 | 0.77955 | 1.26344 |
| 21 | 0.61902 | 1.52861 | 71 | 0.78101 | 1.26136 |
| 22 | 0.62669 | 1.51401 | 72 | 0.78244 | 1.25933 |
| 23 | 0.63391 | 1.50049 | 73 | 0.78384 | 1.25735 |
| 24 | 0.64072 | 1.48792 | 74 | 0.78522 | 1.25541 |
| 25 | 0.64715 | 1.47620 | 75 | 0.78656 | 1.25351 |
| 26 | 0.65323 | 1.46523 | 76 | 0.78789 | 1.25165 |
| 27 | 0.65901 | 1.45495 | 77 | 0.78918 | 1.24983 |
| 28 | 0.66449 | 1.44528 | 78 | 0.79046 | 1.24805 |
| 29 | 0.66972 | 1.43617 | 79 | 0.79171 | 1.24630 |
| 30 | 0.67470 | 1.42756 | 80 | 0.79294 | 1.24459 |
| 31 | 0.67945 | 1.41942 | 81 | 0.79414 | 1.24291 |
| 32 | 0.68400 | 1.41170 | 82 | 0.79533 | 1.24126 |
| 33 | 0.68835 | 1.40437 | 83 | 0.79649 | 1.23965 |
| 34 | 0.69253 | 1.39740 | 84 | 0.79764 | 1.23807 |
| 35 | 0.69654 | 1.39076 | 85 | 0.79876 | 1.23652 |
| 36 | 0.70039 | 1.38442 | 86 | 0.79987 | 1.23499 |
| 37 | 0.70409 | 1.37837 | 87 | 0.80096 | 1.23350 |
| 38 | 0.70766 | 1.37258 | 88 | 0.80203 | 1.23203 |
| 39 | 0.71110 | 1.36703 | 89 | 0.80308 | 1.23059 |
| 40 | 0.71441 | 1.36172 | 90 | 0.80412 | 1.22917 |
| 41 | 0.71762 | 1.35661 | 91 | 0.80514 | 1.22778 |
| 42 | 0.72071 | 1.35171 | 92 | 0.80614 | 1.22641 |
| 43 | 0.72370 | 1.34699 | 93 | 0.80713 | 1.22507 |
| 44 | 0.72660 | 1.34245 | 94 | 0.80810 | 1.22375 |
| 45 | 0.72941 | 1.33808 | 95 | 0.80906 | 1.22245 |
| 46 | 0.73213 | 1.33386 | 96 | 0.81000 | 1.22117 |
| 47 | 0.73476 | 1.32979 | 97 | 0.81093 | 1.21992 |
| 48 | 0.73732 | 1.32585 | 98 | 0.81185 | 1.21868 |
| 49 | 0.73981 | 1.32205 | 99 | 0.81275 | 1.21746 |
| 50 | 0.74222 | 1.31838 | | | |

Table D. Sources for resident population and population including Armed Forces abroad: Birth- and death-registration States, 1900-1932, and United States, 1900-1998.

| Year | Source |
|----------------|--|
| 1998----- | U.S. Bureau of the Census, United States population estimates, by age, sex, race, and Hispanic origin: 1990 to 1998. Washington: U.S. Bureau of the Census. Internet release, June 4, 1999. Http://www.census.gov/population/www/estimates/uspop.html . |
| 1997----- | U.S. Bureau of the Census, United States population estimates, by age, sex, race, and Hispanic origin: 1990 to 1997. PPL-91R. Rounded populations consistent with U.S. Bureau of the Census file NESTV97. Washington:U.S. Department of Commerce. 1998. |
| 1996----- | U.S. Bureau of the Census, United States population estimates, by age, sex, race, and Hispanic origin: 1990 to 1996. PPL-57. Washington:U.S. Department of Commerce. 1997. |
| 1995----- | U.S. Bureau of the Census, United States population estimates, by age, sex, race, and Hispanic origin: 1990 to 1995. Census file RESD0795, PPL-41. Washington:U.S. Department of Commerce. 1996. |
| 1994----- | U.S. Bureau of the Census, United States population estimates, by age, sex, race, and Hispanic origin: 1990 to 1994. PPL-21. Washington:U.S. Department of Commerce. 1995. |
| 1993----- | U.S. Bureau of the Census, United States population estimates, by age, sex, race, and Hispanic origin: 1993. Census file RESO793. Washington:U.S. Department of Commerce. 1995. |
| 1992----- | U.S. Bureau of the Census, United States population estimates, by age, sex, race, and Hispanic origin: 1992. Census file RESPO792. Washington:U.S. Department of Commerce. 1994. |
| 1991----- | U.S. Bureau of the Census, Unpublished data consistent with Current Population Reports, Series P-25, No. 1095, Feb. 1993. |
| 1990----- | U.S. Bureau of the Census, Unpublished data from the 1990 census. 1990 CPH-L-74 and unpublished data consistent with Current Population Reports, Series P-25, No. 1095, Feb. 1993. |
| 1989----- | U.S. Bureau of the Census, Current Population Reports, Series P-25, No. 1057, Mar. 1990. |
| 1988----- | U.S. Bureau of the Census, Current Population Reports, Series P-25, No. 1045, Jan. 1990. |
| 1986-87----- | U.S. Bureau of the Census, Current Population Reports, Series P-25, No. 1022, Mar. 1988. |
| 1985----- | U.S. Bureau of the Census, Current Population Reports, Series P-25, No. 1000, Feb. 1987. |
| 1984----- | U.S. Bureau of the Census, Current Population Reports, Series P-25, No. 985, Apr. 1986. |
| 1983----- | U.S. Bureau of the Census, Current Population Reports, Series P-25, No. 965, Mar. 1985. |
| 1982----- | U.S. Bureau of the Census, Current Population Reports, Series P-25, No. 949, May 1984. |
| 1981----- | U.S. Bureau of the Census, Current Population Reports, Series P-25, No. 929, May 1983. |
| 1980----- | U.S. Bureau of the Census, U.S. Census of Population: 1980, Number of Inhabitants, PC80-1-A1, United States Summary, 1983. |
| 1971-79----- | U.S. Bureau of the Census, Current Population Reports, Series P-25, No. 917, July 1982. |
| 1970----- | U.S. Bureau of the Census, U.S. Census of Population: 1970, Number of Inhabitants, Final Report PC(1)-A1, United States Summary, 1971. |
| 1961-69----- | U.S. Bureau of the Census, Current Population Reports, Series P-25, No. 519, April 1974. |
| 1960----- | U.S. Bureau of the Census, U.S. Census of Population: 1960, Number of Inhabitants, PC(1)-A1, United States Summary, 1964. |
| 1951-59----- | U.S. Bureau of the Census, Current Population Reports, Series P-25, No. 310, June 30, 1965. |
| 1940-50----- | U.S. Bureau of the Census, Current Population Reports, Series P-25, No. 499, May 1973. |
| 1930-39----- | U.S. Bureau of the Census, Current Population Reports, Series P-25, No. 499, May 1973, and National Office of Vital Statistics, Vital Statistics Rates in the United States, 1900-1940, 1947. |
| 1920-29----- | National Office of Vital Statistics, Vital Statistics Rates in the United States, 1900-1940, 1947. |
| 1917-19----- | Same as for 1930-39. |
| 1900-1916----- | Same as for 1920-29. |

Table E. Ratio of census-level resident population to resident population adjusted for estimated net census undercount
by age, sex, and race: April 1, 1990

| Age | Total | | | White | | | Black | | |
|-------------------|------------|--------|--------|------------|--------|--------|------------|--------|--------|
| | Both sexes | Male | Female | Both sexes | Male | Female | Both sexes | Male | Female |
| All ages | 0.9815 | 0.9721 | 0.9906 | 0.9802 | 0.9728 | 0.9873 | 0.9432 | 0.9151 | 0.9699 |
| 10-14 | 0.9882 | 0.9891 | 0.9873 | 0.9830 | 0.9841 | 0.9818 | 0.9591 | 0.9586 | 0.9595 |
| 15-19 | 1.0166 | 1.0198 | 1.0133 | 1.0094 | 1.0128 | 1.0059 | 0.9988 | 1.0016 | 0.9959 |
| 20-24 | 1.0002 | 0.9987 | 1.0017 | 0.9975 | 0.9985 | 0.9966 | 0.9593 | 0.9432 | 0.9753 |
| 25-29 | 0.9591 | 0.9439 | 0.9748 | 0.9558 | 0.9441 | 0.9681 | 0.9123 | 0.8732 | 0.9510 |
| 30-34 | 0.9687 | 0.9487 | 0.9892 | 0.9669 | 0.9518 | 0.9828 | 0.9129 | 0.8599 | 0.9651 |
| 35-39 | 0.9790 | 0.9628 | 0.9954 | 0.9764 | 0.9643 | 0.9888 | 0.9303 | 0.8808 | 0.9778 |
| 40-44 | 0.9901 | 0.9758 | 1.0044 | 0.9875 | 0.9764 | 0.9988 | 0.9410 | 0.8943 | 0.9850 |
| 45-49 | 0.9775 | 0.9633 | 0.9916 | 0.9762 | 0.9648 | 0.9877 | 0.9302 | 0.8807 | 0.9762 |
| 50-54 | ... | 0.9623 | ... | ... | 0.9651 | ... | ... | 0.8802 | ... |
| 55 years and over | ... | 0.9758 | ... | ... | 0.9783 | ... | ... | 0.9294 | ... |
| 15-44 | ... | ... | 0.9954 | ... | ... | 0.9890 | ... | ... | 0.9739 |
| 15-54 | ... | 0.9710 | ... | ... | 0.9710 | ... | ... | 0.9046 | ... |

... Category not applicable.

Table 4-1. Population of Birth- and Death-Registration States, 1990-1932, and United States, 1900-1998

(Population enumerated as of April 1 for 1940, 1950, 1960, 1970, 1980 and 1990 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 |
| 1998 | 270,509,187 | 270,298,524 | 1950 | 151,132,000 | 150,697,361 | ... | ... | ... | ... |
| 1997 | 267,901,000 | 267,636,061 | 1949 | 149,188,000 | 148,665,000 | ... | ... | ... | ... |
| 1996 | 265,556,890 | 265,283,783 | 1948 | 146,631,000 | 146,093,000 | ... | ... | ... | ... |
| 1995 | 263,033,968 | 262,755,270 | 1947 | 144,126,000 | 143,446,000 | ... | ... | ... | ... |
| 1994 | 260,659,690 | 260,340,990 | 1946 | 141,389,000 | 140,054,000 | ... | ... | ... | ... |
| 1993 | 258,119,768 | 257,783,004 | 1945 | 139,928,000 | 132,481,000 | ... | ... | ... | ... |
| 1992 | 255,457,501 | 255,077,536 | 1944 | 138,397,000 | 132,885,000 | ... | ... | ... | ... |
| 1991 | 252,688,000 | 252,177,000 | 1943 | 136,739,000 | 134,245,000 | ... | ... | ... | ... |
| 1990 | 249,225,000 | 248,709,873 | 1942 | 134,860,000 | 133,920,000 | ... | ... | ... | ... |
| 1989 | 247,342,000 | 246,819,000 | 1941 | 133,402,000 | 133,121,000 | ... | ... | ... | ... |
| 1988 | 245,021,000 | 244,499,000 | 1940 | 131,820,000 | 131,669,275 | ... | ... | ... | ... |
| 1987 | 242,804,000 | 242,289,000 | 1939 | 131,028,000 | 130,879,718 | ... | ... | ... | ... |
| 1986 | 240,651,000 | 240,133,000 | 1938 | 129,969,000 | 129,824,939 | ... | ... | ... | ... |
| 1985 | 238,466,000 | 237,924,000 | 1937 | 128,961,000 | 128,824,829 | ... | ... | ... | ... |
| 1984 | 236,348,000 | 235,825,000 | 1936 | 128,181,000 | 128,053,180 | ... | ... | ... | ... |
| 1983 | 234,307,000 | 233,792,000 | 1935 | 127,362,000 | 127,250,232 | ... | ... | ... | ... |
| 1982 | 232,188,000 | 231,664,000 | 1934 | 126,485,000 | 126,373,773 | ... | ... | ... | ... |
| 1981 | 229,966,000 | 229,466,000 | 1933 | 125,690,000 | 125,578,763 | ... | ... | ... | ... |
| 1980 | 227,061,000 | 226,545,805 | 1932 | 124,949,000 | 124,840,471 | 47 | 118,903,899 | 47 | 118,903,899 |
| 1979 | 225,055,000 | 224,567,000 | 1931 | 124,149,000 | 124,039,648 | 46 | 117,455,229 | 47 | 118,148,987 |
| 1978 | 222,585,000 | 222,095,000 | 1930 | 123,188,000 | 123,076,741 | 46 | 116,544,946 | 47 | 117,238,278 |
| 1977 | 220,239,000 | 219,760,000 | 1929 | --- | 121,769,939 | 46 | 115,317,450 | 46 | 115,317,450 |
| 1976 | 218,035,000 | 217,563,000 | 1928 | --- | 120,501,115 | 44 | 113,636,160 | 44 | 113,636,160 |
| 1975 | 215,973,000 | 215,465,000 | 1927 | --- | 119,038,062 | 40 | 104,320,830 | 42 | 107,084,532 |
| 1974 | 213,854,000 | 213,342,000 | 1926 | --- | 117,399,225 | 35 | 90,400,590 | 41 | 103,822,683 |
| 1973 | 211,909,000 | 211,357,000 | 1925 | --- | 115,831,963 | 33 | 88,294,564 | 40 | 102,031,555 |
| 1972 | 209,896,000 | 209,284,000 | 1924 | --- | 114,113,463 | 33 | 87,000,295 | 39 | 99,318,098 |
| 1971 | 207,661,000 | 206,827,000 | 1923 | --- | 111,949,945 | 30 | 81,072,123 | 38 | 96,788,197 |
| 1970 | 204,270,000 | 203,211,926 | 1922 | --- | 110,054,778 | 30 | 79,560,746 | 37 | 92,702,901 |
| 1969 | 202,677,000 | 201,385,000 | 1921 | --- | 108,541,489 | 27 | 70,807,090 | 34 | 87,814,447 |
| 1968 | 200,706,000 | 199,399,000 | 1920 | --- | 106,466,420 | 23 | 63,597,307 | 34 | 86,079,263 |
| 1967 | 198,712,000 | 197,457,000 | 1919 | 105,063,000 | 104,512,110 | 22 | 61,212,076 | 33 | 83,157,982 |
| 1966 | 196,560,000 | 195,576,000 | 1918 | 104,550,000 | 103,202,801 | 20 | 55,153,782 | 30 | 79,008,412 |
| 1965 | 194,303,000 | 193,526,000 | 1917 | 103,414,000 | 103,265,913 | 20 | 55,197,952 | 27 | 70,234,775 |
| 1964 | 191,889,000 | 191,141,000 | 1916 | --- | 101,965,984 | 11 | 32,944,013 | 26 | 66,971,177 |
| 1963 | 189,242,000 | 188,483,000 | 1915 | --- | 100,549,013 | 10 | 31,096,697 | 24 | 61,894,847 |
| 1962 | 186,538,000 | 185,771,000 | 1914 | --- | 99,117,567 | ... | ... | 24 | 60,963,309 |
| 1961 | 183,691,000 | 182,992,000 | 1913 | --- | 97,226,814 | ... | ... | 23 | 58,156,740 |
| 1960 | 179,933,000 | 179,323,175 | 1912 | --- | 95,331,300 | ... | ... | 22 | 54,847,700 |
| 1959 | 177,264,000 | 176,513,000 | 1911 | --- | 93,867,814 | ... | ... | 22 | 53,929,644 |
| 1958 | 174,141,000 | 173,320,000 | 1910 | --- | 92,406,536 | ... | ... | 20 | 47,470,437 |
| 1957 | 171,274,000 | 170,371,000 | 1909 | --- | 90,491,525 | ... | ... | 18 | 44,223,513 |
| 1956 | 168,221,000 | 167,306,000 | 1908 | --- | 88,708,976 | ... | ... | 17 | 38,634,759 |
| 1955 | 165,275,000 | 164,308,000 | 1907 | --- | 87,000,271 | ... | ... | 15 | 34,552,837 |
| 1954 | 162,391,000 | 161,164,000 | 1906 | --- | 85,436,556 | ... | ... | 15 | 33,782,288 |
| 1953 | 159,565,000 | 158,242,000 | 1905 | --- | 83,819,666 | ... | ... | 10 | 21,767,980 |
| 1952 | 156,954,000 | 155,687,000 | 1904 | --- | 82,164,974 | ... | ... | 10 | 21,332,076 |
| 1951 | 154,287,000 | 153,310,000 | 1903 | --- | 80,632,152 | ... | ... | 10 | 20,943,222 |
| | | | 1902 | --- | 79,160,196 | ... | ... | 10 | 20,582,907 |
| | | | 1901 | --- | 77,585,128 | ... | ... | 10 | 20,237,453 |
| | | | 1900 | --- | 76,094,134 | ... | ... | 10 | 19,965,446 |

... Category not applicable

1/Alaska included beginning 1959 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: Published and unpublished data from the U.S. Bureau of the Census; see text.

Table 4-2. Estimated Population of the United States, by Age, Race, and Sex: July 1, 1998

[Figures include Armed Forces stationed in the United States but exclude those stationed outside the United States.]

| Age | All races | | | White | | | Black | | | American Indian | | | Asian or Pacific Islander | | |
|-------------|-------------|-------------|-------------|-------------|-------------|-------------|------------|------------|------------|-----------------|------------|------------|---------------------------|-----------|-----------|
| | Both sexes | Male | Female | Both sexes | Male | Female | Both sexes | Male | Female | Both sexes | Male | Female | Both sexes | Male | Female |
| All ages | 270,298,524 | 132,046,327 | 138,252,197 | 223,000,729 | 109,489,380 | 113,511,349 | 47,297,795 | 22,556,947 | 24,740,848 | 34,430,569 | 16,340,144 | 18,090,425 | 2,359,946 | 1,168,063 | 1,191,883 |
| Under 1 | 3,776,389 | 1,929,312 | 1,847,077 | 2,993,441 | 1,532,601 | 1,460,840 | 782,948 | 396,711 | 386,237 | 560,713 | 284,257 | 276,456 | 40,887 | 20,523 | 20,364 |
| 1-4 years | 15,189,749 | 7,766,906 | 7,422,843 | 12,058,700 | 6,179,436 | 5,879,264 | 3,131,049 | 1,587,470 | 1,543,579 | 2,266,865 | 1,149,017 | 1,117,848 | 158,834 | 80,347 | 78,487 |
| 5-9 years | 19,920,862 | 10,195,027 | 9,725,835 | 15,686,897 | 8,038,094 | 7,648,803 | 4,233,965 | 2,156,933 | 2,077,032 | 3,170,130 | 1,609,577 | 1,560,553 | 224,191 | 113,894 | 110,297 |
| 10-14 years | 19,241,808 | 9,854,788 | 9,387,020 | 15,202,008 | 7,799,351 | 7,402,657 | 4,039,800 | 2,055,437 | 1,984,363 | 2,992,945 | 1,520,299 | 1,472,646 | 243,014 | 123,463 | 119,551 |
| 15-19 years | 19,539,327 | 10,045,566 | 9,493,761 | 15,492,233 | 7,991,575 | 7,500,658 | 4,047,094 | 2,053,991 | 1,993,103 | 3,024,366 | 1,537,293 | 1,487,073 | 228,853 | 115,032 | 113,821 |
| 15-17 years | 11,743,251 | 6,049,165 | 5,694,086 | 9,301,764 | 4,803,090 | 4,498,674 | 2,441,487 | 1,246,075 | 1,195,412 | 1,803,798 | 922,334 | 881,464 | 143,997 | 72,700 | 71,297 |
| 18-19 years | 7,796,076 | 3,996,401 | 3,799,675 | 6,190,469 | 3,188,485 | 3,001,984 | 1,605,607 | 807,916 | 797,691 | 1,220,568 | 614,959 | 605,609 | 84,856 | 42,332 | 42,524 |
| 20-24 years | 17,674,134 | 8,996,110 | 8,678,024 | 14,093,581 | 7,224,785 | 6,868,796 | 3,580,553 | 1,771,325 | 1,809,228 | 2,633,203 | 1,300,285 | 1,332,918 | 188,975 | 95,301 | 93,674 |
| 25-29 years | 18,588,114 | 9,246,888 | 9,341,226 | 14,867,714 | 7,473,057 | 7,394,657 | 3,720,400 | 1,773,831 | 1,946,569 | 2,622,710 | 1,253,815 | 1,368,895 | 192,668 | 99,429 | 93,239 |
| 30-34 years | 20,186,296 | 10,006,893 | 10,179,403 | 16,347,087 | 8,201,666 | 8,145,421 | 3,839,209 | 1,805,227 | 2,033,982 | 2,727,967 | 1,279,155 | 1,448,812 | 181,362 | 91,972 | 89,390 |
| 35-39 years | 22,625,784 | 11,256,018 | 11,369,766 | 18,626,277 | 9,364,283 | 9,261,994 | 3,999,507 | 1,891,735 | 2,107,772 | 2,883,922 | 1,354,291 | 1,529,631 | 184,914 | 92,388 | 92,526 |
| 40-44 years | 21,894,075 | 10,844,698 | 11,049,377 | 18,177,682 | 9,098,379 | 9,079,303 | 3,716,393 | 1,746,319 | 1,970,074 | 2,676,120 | 1,251,755 | 1,424,365 | 169,796 | 82,912 | 86,884 |
| 45-49 years | 18,859,365 | 9,252,354 | 9,607,011 | 15,830,743 | 7,858,712 | 7,972,031 | 3,028,622 | 1,393,642 | 1,634,980 | 2,153,894 | 984,132 | 1,169,762 | 138,416 | 67,158 | 71,258 |
| 50-54 years | 15,725,519 | 7,647,607 | 8,077,912 | 13,473,817 | 6,624,094 | 6,849,723 | 2,251,702 | 1,023,513 | 1,228,189 | 1,587,413 | 711,774 | 875,639 | 108,289 | 52,080 | 56,209 |
| 55-59 years | 12,406,909 | 5,956,213 | 6,450,696 | 10,672,553 | 5,180,801 | 5,491,752 | 1,734,356 | 775,412 | 958,944 | 1,249,295 | 546,840 | 702,455 | 80,560 | 38,082 | 42,478 |
| 60-64 years | 10,269,061 | 4,849,497 | 5,419,564 | 8,853,308 | 4,231,745 | 4,621,563 | 1,415,753 | 617,752 | 798,001 | 1,028,261 | 439,816 | 588,445 | 62,606 | 29,241 | 33,365 |
| 65-69 years | 9,593,497 | 4,392,568 | 5,200,929 | 8,340,929 | 3,857,225 | 4,483,704 | 1,252,568 | 535,343 | 717,225 | 936,144 | 400,002 | 536,142 | 49,192 | 22,202 | 26,990 |
| 70-74 years | 8,801,796 | 3,857,005 | 4,944,791 | 7,821,943 | 3,452,264 | 4,369,679 | 979,853 | 404,741 | 575,112 | 729,672 | 299,327 | 430,345 | 39,937 | 17,868 | 22,069 |
| 75-79 years | 7,218,007 | 2,997,107 | 4,220,900 | 6,487,580 | 2,705,650 | 3,781,930 | 730,427 | 291,457 | 438,970 | 553,805 | 216,180 | 337,625 | 30,116 | 12,799 | 17,317 |
| 80-84 years | 4,734,182 | 1,764,311 | 2,969,871 | 4,308,395 | 1,609,889 | 2,698,506 | 425,787 | 154,422 | 271,365 | 326,973 | 112,476 | 214,497 | 18,396 | 7,374 | 11,022 |
| 85 years + | 4,053,650 | 1,187,459 | 2,866,191 | 3,665,841 | 1,065,773 | 2,600,068 | 387,809 | 121,686 | 266,123 | 306,171 | 89,853 | 216,318 | 18,940 | 5,998 | 12,942 |

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

Table 4-3. Estimated Total Population and Female Population Aged 15-44 Years: United States, Each Division and State, Puerto Rico, Virgin Islands, Guam, American Samoa, and the Northern Marianas: July 1, 1998

[Figures include Armed Forces stationed in each area and exclude those stationed outside the United States.]

| Area | Total | Female 15-44 years | Area | Total | Female 15-44 years |
|-----------------------|------------|-----------------------|----------------------|------------|-----------------------|
| United States | 270298524 | 60111557 | | | |
| Geographic divisions: | | | South Atlantic | | |
| New England | 13,429,862 | 3,012,806 | Delaware | 743,603 | 172,819 |
| Middle Atlantic | 38,291,763 | 8,382,361 | Maryland | 5,134,808 | 1,196,880 |
| East North Central | 44,194,756 | 9,863,754 | District of Columbia | 523,124 | 126,426 |
| West North Central | 18,694,626 | 4,088,137 | Virginia | 6,791,345 | 1,597,037 |
| South Atlantic | 48,944,678 | 10,864,320 | West Virginia | 1,811,156 | 386,346 |
| East South Central | 16,471,211 | 3,718,882 | North Carolina | 7,546,493 | 1,677,166 |
| West South Central | 30,013,597 | 6,755,599 | South Carolina | 3,835,962 | 879,477 |
| Mountain | 16,813,233 | 3,681,878 | Georgia | 7,642,207 | 1,820,738 |
| Pacific | 43,444,798 | 9,743,820 | Florida | 14,915,980 | 3,007,431 |
| New England | | | East South Central | | |
| Maine | 1,244,250 | 276,187 | Kentucky | 3,936,499 | 882,559 |
| New Hampshire | 1,185,048 | 275,914 | Tennessee | 5,430,621 | 1,225,736 |
| Vermont | 590,883 | 133,989 | Alabama | 4,351,999 | 981,633 |
| Massachusetts | 6,147,132 | 1,392,583 | Mississippi | 2,752,092 | 628,954 |
| Rhode Island | 988,480 | 218,934 | West South Central | | |
| Connecticut | 3,274,069 | 715,199 | Arkansas | 2,538,303 | 545,749 |
| Middle Atlantic | | | Louisiana | 4,368,967 | 1,002,566 |
| New York | 18,175,301 | 4,038,534 | Oklahoma | 3,346,713 | 717,052 |
| New Jersey | 8,115,011 | 1,781,092 | Texas | 19,759,614 | 4,490,232 |
| Pennsylvania | 12,001,451 | 2,562,735 | Mountain | | |
| East North Central | | | Montana | 880,453 | 182,845 |
| Ohio | 11,209,493 | 2,497,235 | Idaho | 1,228,684 | 268,122 |
| Indiana | 5,899,195 | 1,324,439 | Wyoming | 480,907 | 102,643 |
| Illinois | 12,045,326 | 2,675,096 | Colorado | 3,970,971 | 886,746 |
| Michigan | 9,817,242 | 2,213,708 | New Mexico | 1,736,931 | 378,533 |
| Wisconsin | 5,223,500 | 1,153,276 | Arizona | 4,668,631 | 1,000,352 |
| West North Central | | | Utah | 2,099,758 | 494,186 |
| Minnesota | 4,725,419 | 1,054,458 | Nevada | 1,746,898 | 368,451 |
| Iowa | 2,862,447 | 607,088 | Pacific | | |
| Missouri | 5,438,559 | 1,198,407 | Washington | 5,689,263 | 1,279,008 |
| North Dakota | 638,244 | 136,091 | Oregon | 3,281,974 | 699,329 |
| South Dakota | 738,171 | 158,153 | California | 32,666,550 | 7,377,208 |
| Nebraska | 1,662,719 | 361,056 | Alaska | 614,010 | 135,809 |
| Kansas | 2,629,067 | 572,884 | Hawaii | 1,193,001 | 252,466 |
| | | | Territories | | |
| | | | Puerto Rico | 3,857,070 | 904,668 |
| | | | Virgin Islands | 118,382 | 29,315 |
| | | | Guam | 149,101 | 31,057 |
| | | | American Samoa | 62,093 | 13,547 |
| | | | Northern Marianas | 66,611 | 22,483 |

Source: Published and unpublished data from the Bureau of the Census; see text.