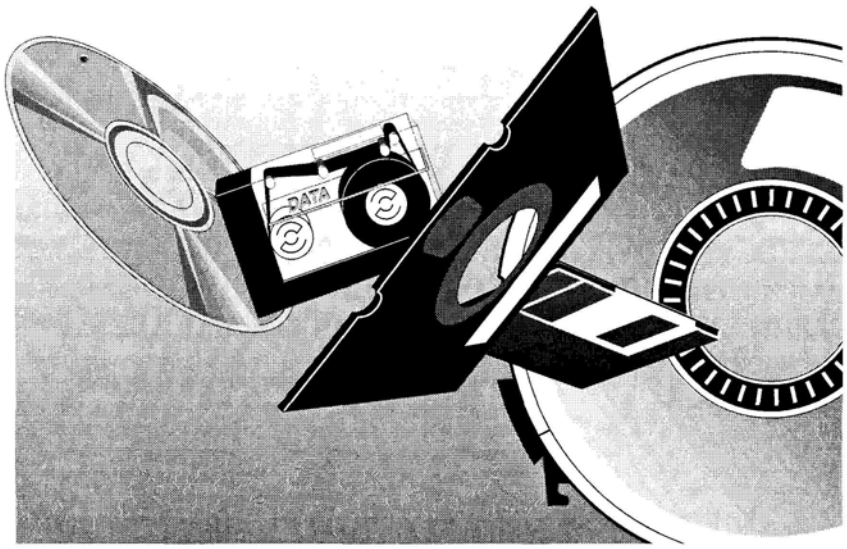
Public Use Data File Documentation

2001 Period Linked Birth/Infant Death Data Set

DEPARTMENT OF HEALTH AND HUMAN SERVICES
Centers for Disease Control and Prevention
National Center for Health Statistics



2001 Period Linked Birth/lnfant Death Data Set

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Introduction

The linked birth/infant death data set (linked file) is released in two different formats - period data and birth cohort data. This documentation is for the 2001 period linked file. Beginning with 1995 data, the period linked files have formed the basis for all official NCHS linked file statistics. Differences between period and birth cohort data are outlined below.

Period data - The numerator for the 2001 period linked file consists of all infant deaths occurring in 2001 linked to their corresponding birth certificates, whether the birth occurred in 2000 or 2001. The denominator file for this data set is the 2001 natality file, that is, all births occurring in 2001. NCHS accepted late filed birth certificates to be used specifically for the 2001 linked file. This reduced the number of unlinked records and increased the number of births in the denominator file by slightly more than 100 births.

Birth cohort data - The numerator for the 2000 birth cohort linked file consists of deaths to infants born in 2000 whether the death occurred in 2000 or 2001. The denominator file is the 2000 natality file, that is, all births occurring in 2000.

While the birth cohort format has methodological advantages, it creates substantial delays in data availability, since it is necessary to wait until the close of the following data year to include all infant deaths to the birth cohort.

The 2001 period linked birth/infant death data set includes several data files. The first file includes all US infant deaths which occurred in the 2001 data year linked to their corresponding birth certificates, whether the birth occurred in 2000 or in 2001 - 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 2001 NCHS natality file for the US (plus late filed records mentioned above), which is used to provide denominators for rate computations. These same three data files are also available for Puerto Rico, the Virgin Islands, and Guam.

Changes Beginning with the 1995 Data Year

In part to correct for known biases in the data, changes were made to the linked file beginning with the 1995 data year, and these changes remain effective for 2000 data. A weight has been added to the linked numerator file to correct in part for biases in percent of records linked by major characteristics (see section on *Percent of records linked* below). 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:

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

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-1year). Thus, weights are 1.0 for states, which link all of their infant deaths. The denominator file is not weighted. Weights are not computed for the Puerto Rico, Virgin Islands, and Guam file.

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 has reduced the percent of not-stated responses for birthweight from 3.92% to 1.42% in the numerator file, and from 0.08% to 0.04% in the denominator file, thus reducing (but not eliminating) the potential for underestimation when computing birthweight-specific infant mortality rates.

Comparisons of infant mortality data from the linked file with infant mortality data from the vital statistics mortality file

Although the time periods are the same, numbers of infant deaths and infant mortality rates by characteristics are not always identical between the period linked file and the vital statistics mortality file. The differences can be traced to three different causes: 1) geographic differences; 2) additional quality control; and 3) weighting.

Geographic differences - To be included in the linked file for the 50 States and D.C., the birth and death must both occur inside the 50 States and D.C. In contrast, for the vital statistics mortality file, deaths which occur in the 50 States and D.C. to infants born inside and outside of the 50 States and D.C. are included. Similarly, to be included in the linked data file for Puerto Rico, the Virgin Islands, and Guam, the birth and death must both occur in Puerto Rico, the Virgin Islands or Guam. In contrast, for the vital statistics mortality file, deaths which occurred in Puerto Rico, the Virgin Islands, and Guam to infants born inside and outside of Puerto Rico, the Virgin Islands and Guam are included.

Additional quality control - The second reason for differences between the two files is that the linkage process subjects infant death records to an additional round of quality control review. Every year, a few records are voided from the file at this stage because they are found to be fetal deaths, deaths at ages greater than 1 year, or duplicate death certificates.

Weighting - Beginning with 1995 data, linked file records are weighted to compensate for the 1-3 percent of infant death records which could not be linked to their corresponding birth certificates. Although every effort has been made to design weights which will accurately reflect the distribution of deaths by characteristics, weighting may contribute to small differences in numbers and rates by specific variables between the linked file and the vital statistics mortality files.

In most cases, differences between numbers of infant deaths and infant mortality rates between the linked file and those computed from the vital statistics mortality file are negligible.

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 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 2001 linked file, 1.1% 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 2001 linked file includes 27,268 linked infant death records and 292 unlinked infant death records. 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 27,560. While the overall percent linked for infant deaths in the 2001 file is 98.9, there are differences in percent linked by certain variables. These differences have important implications for how the data is analyzed.

Table 1 shows the percent of infant deaths linked by State of occurrence of death. While most States link a high percentage of infant deaths, linkage rates for some States are well below the national average. Note in particular the percent linked for Louisiana (95.6), Nevada (96.6), New Jersey (96.4), and West Virginia (94.5). When a high percentage of deaths remain unlinked, unweighted infant mortality rates computed for these States are underestimated. It is for this reason that weights were added to the file to correct for biases in the data due to poor data linkage for particular states.

A slightly higher percentage of postneonatal (28 days to under 1 year) than neonatal (less than 28 days) deaths were linked (99.3 and 98.8, respectively). While the weighting protocol has been designed to correct for possible bias due to variations in match rates by characteristics, no statistical method can correct perfectly for data limitations. Therefore, variations in the percent of records linked should be taken into consideration when comparing infant mortality rates by detailed characteristics.

Geographic classification

Geographic codes in this data set are based on the results of the 1990 census. 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.

Table 1. Percent of infant deaths linked by state of occurrence of death: United States, 2001 linked file

United States	98.9	Nebraska	100.0
Alabama	100.0	Nevada	96.6
Alaska	98.7	New Hampshire	100.0
Arizona	98.8	New Jersey	96.4
Arkansas	99.3	New Mexico	100.0
California	97.9	New York State	98.7
Colorado	99.0	New York City	98.8
Connecticut	100.0	North Carolina	99.8
Delaware	100.0	North Dakota	100.0
District of Columbia	98.9	Ohio	99.9
Florida	99.7	Oklahoma	97.5
Georgia	100.0	Oregon	100.0
Hawaii	98.1	Pennsylvania	99.8
Idaho	98.9	Rhode Island	100.0
Illinois	98.0	South Carolina	100.0
Indiana	99.0	South Dakota	100.0
Iowa	100.0	Tennessee	100.0
Kansas	98.0	Texas	97.4
Kentucky	98.3	Utah	100.0
Louisiana	95.6	Vermont	100.0
Maine	98.8	Virginia	99.9
Maryland	99.6	Washington	100.0
Massachusetts	99.8	West Virginia	94.5
Michigan	99.9	Wisconsin	100.0
Minnesota	99.7	Wyoming	100.0
Mississippi	100.0	Puerto Rico	99.0
Missouri	99.7	Virgin Islands	100.0
Montana	100.0	Guam	100.0

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. These documents, while not absolutely essential to the proper interpretation of the data for a number of general applications, should nevertheless be studied carefully prior to any detailed analysis of demographic or medical 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. Volumes 1, 2 and 3 of the ICD-10 may be purchased from the World Health Organization (WHO) Publication Center USA, 49 Sheridan Avenue, Albany, New York, 12210 (http://www.who.int/whosis/icd10/index.html). Many of the instruction manuals listed below are available electronically on the NCHS website at: http://www.cdc.gov/nchs/about/major/dvs/im.htm. In addition, users who do not already have access to these documents may request them from the Chief, Mortality Medical Classification Branch, Division of Vital Statistics, National Center for Health Statistics, 4105 Hopson Road, Research Triangle Park, North Carolina 27709. The technical appendices for natality and mortality included in this document also provide information on the source of data, coding procedures, quality of the data, etc.

A. National Center for Health Statistics. Vital statistics, Instructions for Classifying the Underlying Cause-of-Death, 2003. NCHS Instruction Manual, Part 2a. Hyattsville, Maryland: Public Health Service.

B. National Center for Health Statistics. Vital statistics, Instructions for Classifying Multiple Cause-of-Death, 2003. NCHS Instruction Manual, Part 2b. Hyattsville, Maryland: Public Health Service.

C. National Center for Health Statistics. Vital statistics, ICD-10 ACME Decision Tables for Classifying Underlying Causes-of-Death, 2003. NCHS Instruction Manual, Part 2c. Hyattsville, Maryland: Public Health Service.

D. National Center for Health Statistics. Vital statistics, NCHS Procedures for Mortality Medical Data System File Preparation and Maintenance, Effective 1985. NCHS Instruction Manual, Part 2d. Hyattsville, Maryland: Public Health Service.

E. National Center for Health Statistics. Vital statistics, ICD-10 TRANSAX Disease Reference Tables for Classifying Multiple Causes-of-Death, 1999. NCHS Instruction Manual, Part 2f. Hyattsville, Maryland: Public Health Service.

F. National Center for Health Statistics. Vital statistics, Classification and Coding Instructions for Live Birth Records, 1999. NCHS Instruction Manual, Part 3a. Hyattsville, Maryland: Public Health Service.

G. National Center for Health Statistics. Vital statistics, Demographic Classification and Coding Instructions for Death Records, 1999-2001. NCHS Instruction Manual, Part 4. Hyattsville, Maryland: Public Health Service.

H. National Center for Health Statistics. Vital statistics, Computer Edits for Natality Data, Effective 1993. NCHS Instruction Manual Part 12. Hyattsville, Maryland: Public Health Service.

I. National Center for Health Statistics. Vital statistics, Computer Edits for Mortality Data, Effective 2001. NCHS Instruction Manual Part 11. Hyattsville, Maryland: Public Health Service.

Underlying Cause of Death Data

Mortality statistics by cause of death are compiled from entries on the medical certification portion of the death certificate. The U.S. Standard Certificate of Death is shown in the Mortality Technical Appendix which is included in this documentation. Causes of death include "all those diseases, morbid conditions or injuries which either resulted in or contributed to death and the circumstances of the accident or violence which produced these injuries". The medical certification of death is divided into two sections. In Part I, the physician is asked to provide the causal chain of morbid conditions that led to death, beginning with the condition most proximate to death on line (a) and working backwards to the initiating condition. The lines (a) through (d) in Part I are connected by the phrase "due to, or as a consequence of." They were designed to encourage the physician to provide the causally related sequence of medical conditions that resulted in death. Thus, the condition on line (a) should be due to the condition on line (b), and the condition on line (b) should be a consequence of the condition on line (c), etc., until the full sequence is described back to the originating or initiating condition. If only one step in the chain of morbid events is recorded, a single entry on line (a) is adequate. Part I of the medical certification is designed to facilitate the selection of the underlying cause of death when two or more causes are recorded on the certificate. The underlying cause of death is defined by the WHO in the ICD-10 as "(a) the disease or injury which initiated the chain of morbid events leading directly to death, or (b) the circumstances of the accident or violence that produced the fatal injury" and is generally considered the most useful cause from a public health standpoint. Part II of the cause-of-death section of the death certificate solicits other conditions that the certifier believed contributed to death, but were not in the causal chain. While some details of the death certificate vary by State, all States use the same general format for medical certification outlined in the U.S. Standard Certificate. The U.S. Standard Certificate, in turn, closely follows the format recommended by the WHO.

If the death certificate is properly completed, the disease or condition listed on the lowest used line in Part I is usually accepted as the underlying cause of death. This is an application of "The General Principle." The General Principle is applied unless it is highly improbable that the condition on the lowest line used could have given rise to all of the diseases or conditions listed above it. In some cases, the sequence of morbid events entered on the death certificate is not

specified correctly. A variety of errors may occur in completing the medical certification of death. Common problems include the following: The causal chain may be listed in reverse order; the distinction between Part I and Part II may have been ignored so that the causal sequence in Part I is simply extended unbroken into Part II; or the reported underlying cause is unlikely, in an etiological sense, to have caused the condition listed above it. In addition, sometimes the certifier attributes the death to uninformative causes such as cardiac arrest or pulmonary arrest.

To resolve the problems of incorrect or implausible cause-of-death statements, the WHO designed standardized rules to select an underlying cause of death from the information available on the death certificate that is most informative from a public health perspective. The rules for the Tenth Revision as updated by WHO since the publication of ICD-10 are described in NCHS instruction manual Part 2A. Coding rules beyond the General Principle are invoked if the cause-of-death section is completed incorrectly or if their application can improve the specificity and characterization of the cause of death in a manner consistent with the ICD. The rules are applied in two steps: selection of a tentative underlying cause of death, and modification of the tentative underlying cause in view of the other conditions reported on the certificate in either Part I or Part II. Modification involves several considerations by the medical coder: determining whether conditions in Part II could have given rise to the underlying cause, giving preference to specific terms over generalized terms, and creating linkages of conditions that are consistent with the terminology of the ICD.

For a given death, the underlying cause is selected from the condition or conditions recorded by the certifier in the cause-of-death section of the death certificate. NCHS is bound by international agreement to make the selection of the underlying cause through the use of the ICD-10 classification structure, and the selection and modification rules contained in this revision of the ICD. These rules are contained in a computer software program called ACME (Automated Classification of Medical Entities). ACME does exactly what a coder would do to select the underlying cause of death. The ACME program has been used for final mortality data since 1968.

The WHO selection rules take into account the certifier's ordering of conditions and their causal relationships to systematically identify the underlying cause of death. The intent of these rules is to improve the usefulness of mortality statistics by giving preference to certain classification categories over others and consolidating two or more conditions on the certificate into a single classification category.

Multiple Cause of Death Data

The limitations of the underlying cause concept and the need for more comprehensive data suggested the need for coding and tabulating all conditions listed on the death certificate. Coding all listed conditions on the death certificate was designed with two objectives in mind. First, to facilitate studies of the relationships among conditions reported on the death certificate, which require presenting each condition and its location on the death certificate in the exact

manner given by the certifier. Secondly, the coding needed to be carried out in a manner by which the underlying cause-of-death could be assigned using the WHO coding rules. Thus, the approach in developing multiple cause data was to provide two fields: 1) entity axis and 2) record axis. For entity axis, NCHS suspends the provisions of the ICD that create linkages between conditions for the purpose of coding each individual condition, or entity, with minimum regard to other conditions present on the death certificate.

Record axis is designed for 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 death certificate and modified or linked to such conditions as provided by ICD-10. By definition, the entity data cannot meet this requirement since the linkage provisions modify the character and placement of the information originally recorded by the certifier. Essentially, the axis of the classification has been converted from a 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). TRANSAX selectively uses the 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 that are free of contradictions and are the most precise within the constraints of ICD-10 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-10 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 K74.6 (Other and unspecified cirrhosis of liver) and F10.2 (Mental and behavioral disorders due to use of alcohol; dependence syndrome), respectively. Tabulation of records with K74.6 would imply that such records had no mention of alcohol. A preferable code would be K70.3 (Alcoholic cirrhosis of liver) in lieu of both K74.6 and F10.2.

Case 2: If “gastric ulcer” and “bleeding gastric ulcer” are reported on a record they are coded to K25.9 (Gastric ulcer, unspecified as acute or chronic, without mention of hemorrhage or perforation) and K25.4 (Gastric ulcer, chronic or unspecified with hemorrhage), respectively. A more concise code is K25.4 which 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 data file. The following paragraphs describe the format

and application of entity axis data.
1. 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 death 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 death certificate. Line “6" represents Part II of the death 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-10 cause code.

4. The last byte is blank.

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.

2. 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 NCHS Instruction Manual Part 11.

3. Entity Axis Applications. The entity axis multiple cause data file is appropriate for analyses that 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 death certificate. Within this framework, the entity data are appropriate to examine relationships among conditions and the validity of traditional assumptions in underlying cause selection. Additionally, the entity data provide in certain categories a more detailed code assignment that could be excluded in creating record axis data. Where such detail is needed for a study, the user should use entity data. Finally, the researcher may not wish to be bound by the assumptions used in the axis translation process.

The main limitation of entity axis data is that it 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 K80.2 is titled “Calculus of gallbladder without cholecystitis.” Within the framework of entity codes this is interpreted to mean that the codable entity itself contained no mention of cholecystitis rather than that cholecystitis was not mentioned anywhere on the record. Tabulation of records with a “K80.2" as a count of persons having Calculus of gallbladder without cholecystitis would therefore be erroneous. This illustrates the fact that under entity coding the ICD-10 titles cannot be taken literally. The user should study the rules for entity coding as they relate to his/her research prior to use of entity data. The user is further cautioned that the inclusion notes in ICD-10 that relate to modifying and combining categories are seldom applicable to entity coding (except where provided NCHS Instruction Manual Part 2b).

In tabulating the entity axis data, one may count codes with an individual code representing the number of times the condition(s) appears in the file. In this kind of tabulation of morbid conditions, 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 Instruction Manual Series (ICD-10 TRANSAX Disease Reference Tables for classifying Multiple Causes-of-Death) describes the TRANSAX process for creating record axis data from entity axis data.

1. 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-10 cause code.

2. The last byte is blank.

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.

2. 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.

3. Record Axis Applications. The record axis multiple cause data are the basis for NCHS core multiple cause tabulations. Location of codes is not relevant to this data, 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-10 category. This is in contrast to the entity code which is assigned each time such a disease is reported on different lines of the certification. Secondly, the linkage implies that within the constraints of ICD-10 the most meaningful code has been assigned. The translation process creates for the user a data file that 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. 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-10 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-10 are used. (NCHS Instruction Manual Part 2f).

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 that combine individual cause categories must take into account the possible interaction of up to 20 codes on a single certificate.

Additional Information

In using the NCHS multiple cause data files, the user is urged to review the information in this document and its references. The instructional material does change from year to year and ICD revision to ICD revision. The user is cautioned that coding of specific ICD-10 categories should be checked in the appropriate instruction manual. What may appear on the surface to be the correct code by ICD-10 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 NCHS Instruction Manual Part 2f 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 assumption of axis translation. In certain situations, a combination of entity and record axis data may be the more appropriate alternative.

2001 Period Linked Birth/Infant Death Data Set

Data File Characteristics:

The data were processed using the SAS language on an IBM 9672.
The data are recorded in IBM/EBCDIC 8-bit code for each character.
Codes may be numeric, alphabets, or blank.
The record type is blocked, fixed format.
The last block for the data year may be a short block.

I. Denominator File:

United States Data Set

A. File Organization:	One file, multiple tapes	
B. Record count:	4,031,635	
C. Record length:	210	
D. Blocksize:	32,130	
E. Data counts:	a. By occurrence:	4,031,635
	b. By residence:	4,026,036
	c. To foreign residents:	5,599

Possessions Data Set

A. File Organization:	One file, one tape	
B. Record count:		61,337
C. Record length:		210
D. Blocksize:		32,130

Puerto Rico

Data counts:	a. By occurrence:	55,983
	b. By occurrence and residence:	55,864
	c. To foreign residents:	119

Virgin Islands

Data counts:	a. By occurrence:	1,770
	b. By occurrence and residence:	1,641
	c. To foreign residents:	129

Guam

Data counts:	a. By occurrence:	3,584
	b. By occurrence and residence	3,565
	c. To foreign residents:	19

II. Numerator File:

United States Data Set

A. File Organization:	One of multiple files on a tape		
B. Record count:	27,268		
C. Record length:	535		
D. Blocksize:	32,635		
E. Data counts:	a. By occurrence:	27,268	
	b. By residence:	27,246	
	c. To foreign residents:	22	

Possessions Data Set

A. File Organization:	one of multiple files on a tape		
B. Record count:	559		
C. Record length:	535		
D. Blocksize:	32,635		

Puerto Rico

Data counts:	a. By occurrence:		515
	b. By occurrence and residence:	509	
	c. To foreign residents:	6	

Virgin Islands

Data counts:	a. By occurrence:	9	
	b. By occurrence and residence:	8	
	c. To foreign residents:	1	

Guam

Data counts:	a. By occurrence:	35	
	b. By occurrence and residence:	35	
	c. To foreign residents:	0	

III. Unlinked File:

United States Data Set

A. File Organization:	one file of multiple files on a tape	
B. Record count:	292	
C. Record length:	535	
D. Blocksize:	32,635	
E. Data counts:	a. By occurrence:	292
	b. By residence:	291
	c. To foreign residents:	1

Possessions Data Set

A. File Organization:	one file of multiple files on a tape	
B. Record count:	5	
C. Record length:	535	
D. Blocksize:	32,635	
Puerto Rico		
Data counts:	a. By occurrence:	5
	b. By occurrence and residence:	4
	c. To foreign residents:	1
Virgin Islands		
Data counts:	a. By occurrence:	0
	b. By occurrence and residence:	0
	c. To foreign residents:	0
Guam		
Data counts:	a. By occurrence:	0
	b. By occurrence and residence:	0
	c. To foreign residents:	0

2001 Period Linked Birth/Infant Death Data Set
List of Data Elements and Locations

Data Items	Denominator File	Numerator File Birth	Death	Unlinked File
1. General				
a. Year of birth	7-10	7-10	--	--
b. Year of death	--	--	524-527	524-527
c. Resident status	11	11	505	505
d. Record weight	--	--	223-230	--
e. Flag for records included in both numerator and denominator	210	--	--	--
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+
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	--	--

2001 Period Linked Birth/Infant Death Data Set
List of Data Elements and Locations

Data Items	Denominator File	Numerator File Birth	Numerator File Death	Unlinked File
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 recode56		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 the 1995 Data Year for explanation.

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

Locations 7-210 of the linked file contain data from the Birth Certificate.
Locations 211-535 of linked file contain data from the Death Certificate.

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 residence of the Decedent.

Item Location	Item Length	Variable Name, Item and Code Outline
1-6	6	**R0** **Reserved Positions**
7-10	4	**BIRYR** **Year of Birth** 2000 ... Born in 2000 (This code valid for numerator (linked) file only). 2001 ... Born in 2001
11	1	**RESSTATB** **Resident Status - Birth** **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 of mother is outside of the 50 States and D.C. **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.

Item Location	Item Length	Variable Name, Item and Code Outline
12-13	2	**BRSTATE** **Expanded State of Residence - NCHS Codes - Birth**

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
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

Item Location	Item Length	Variable Name, Item and Code Outline
12-13	2	**BRSTATE** **Expanded State of Residence - NCHS Codes - Birth (Cont=d)**

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

United States Occurrence

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.

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.

FIPSOCCB
Federal Information Processing Standards (FIPS) Geographic Codes (Occurrence) - Birth

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.

Item Location	Item Length	Variable Name, Item and Code Outline
14-15	2	**STOCCFIPB** **State of Occurrence (FIPS) - Birth**

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
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

Item Location	Item Length	Variable Name, Item and Code Outline
14-15	2	**STOCCFIPB** **State of Occurrence (FIPS) - Birth (Cont=d)**

United States

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

16-18	3	**CNTOCFIPB** **County of Occurrence (FIPS) - Birth**

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

19-23	5	**FIPSRESB** **Federal Information Processing Standards (FIPS) Geographic Codes (Residence) - Birth**

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.

Item	Item	Variable Name,

Location	Length	Item and Code Outline
19-20	2	**STRESFIPB** **State of Residence (FIPS) - Birth**

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
45	...	South Carolina
46	...	South Dakota
47	...	Tennessee

Item Location	Item Length	Variable Name, Item and Code Outline

19-20 2 **STRESFIPB**
State of Residence (FIPS) - Birth Cont=d)

United States Occurrence

48	...	Texas
49	...	Utah
50	...	Vermont
51	...	Virginia
53	...	Washington
54	...	West Virginia
55	...	Wisconsin
56	...	Wyoming

Puerto Rico Occurrence

00-56,66,78	...	Foreign Residents: Refer to U.S. for specific code structure
72	...	Puerto Rico

Virgin Islands Occurrence

00-56,66,72	...	Foreign Residents: Refer to U.S. for specific code structure
78	...	Virgin Islands

Guam Occurrence

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

21-23 3 **CNTYRFPB**
County of Residence (FIPS) - Birth

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.)
999	...	County with less than 250,000 population

24-28 5 **PLRES**
Place (City) of Residence (FIPS)

A complete list of cities is shown in the Geographic Code Outline further back in this document.

00000	...	Foreign residents
00001-nnnnn	...	Code range
99999	...	Balance of county; or city less than 250,000 population

Item Location	Item Length	Variable Name, Item and Code Outline

29 1 **MAGEFLG**
Age of Mother Flag

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 10-54 code range.

Blank	...	Not imputed and reported age is not used
1	...	Reported age is used
2	...	Age is imputed

30-31 2 **DMAGE**
Age of Mother

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.

10-54	...	Age in single years

32 1 **MAGER9**
Age of Mother Recode 9

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 - 49 years
9	...	50 - 54 years

33 1 **ORMOTH**
Hispanic Origin of Mother

Hispanic origin is reported for all areas except Puerto Rico.

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

Item Location | Item Length | Variable Name, Item and Code Outline

34 1 **ORRACEM**

Hispanic Origin and Race of Mother Recode

Hispanic origin is reported for all areas except Puerto Rico.

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 **MRACEIMP**
Race of Mother Imputation Flag

Blank	...	Race is not imputed
1	...	Race is imputed
2	...	All other races, formerly code 09, is imputed

36-37 2 **MRACE**
Race of Mother - Birth Record or for Unlinked Records Race of Decedent from Death Record

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.

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

Item Location | Item Length | Variable Name, Item and Code Outline

36-37 2 **MRACE**
Race of Mother - Birth Record or for Unlinked Records Race of Decedent

from Death Record (Cond=t)

Puerto Rico Occurrence

00	...	Other races
01	...	White
02	...	Black

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

Guam 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
58	...	Guamanian

38 1 **MRACE3**
Race of Mother Recode

1	...	White
2	...	Races other than White or Black
3	...	Black

Item Location	Item Length	Variable Name, Item and Code Outline
39-40	2	**DMEDUC** **Education of Mother Detail**

All areas report education of mother.

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 **MEDUC6**
Education of Mother Recode

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 **DMARIMP**
Marital Status of Mother Imputation Flag

Blank	...	Marital status is not imputed
1	...	Marital status is imputed

43 1 **DMAR**
Marital Status of Mother

Marital status is not reported by all areas. See reporting flags.

United States/Virgin Islands/Guam Occurrence

1	...	Married
2	...	Unmarried
9	...	Unknown or not stated

Puerto Rico Occurrence

1	...	Married
2	...	Unmarried parents living together
3	...	Unmarried parents not living together
9	...	Unknown or not stated

Item Location | Item Length | Variable Name, Item and Code Outline

44-45 2 **MPLBIR**
Place of Birth of Mother

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

Item Location	Item Length	Variable Name, Item and Code Outline
44-45	2	**MPLBIR** **Place of Birth of Mother (Cont=d)**

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

46 1 **MPLBIRR**
Place of Birth of Mother Recode

United States Occurrence

1	...	Born in the 50 States and D.C.
2	...	Born outside the 50 States and DC
3	...	Unknown or not stated

Puerto Rico/Virgin Island/ Guam Occurrence

Blank	...	This item not recorded

47-48 2 **DTOTORD**
Detail Total Birth Order

Sum of live birth order and other terminations of pregnancy. If either item is unknown, this item is made unknown.

01-40	...	Total number of live births and other terminations of pregnancy
99	...	Unknown

49-50 2 **DLIVORD**
Detail Live Birth Order

Sum of live births now living and now dead plus one. If either item is unknown, this item is made unknown.

00-31	...	Number of children born alive to mother
99	...	Unknown

Item Location | Item Length | Variable Name, Item and Code Outline

51-52 2 **MONPRE**
Detail Month of Pregnancy Prenatal Care Began

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

53 1 **MPRE5**
Month Prenatal Care Began Recode 5

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

54-55 2 **NPREVIST**
Total Number of Prenatal Visits

00	...	No prenatal visits
01-48	...	Stated number of visits
49	...	49 or more visits
99	...	Unknown or not stated

56 1 **ADEQUACY**
Adequacy of Care Recode (Kessner Index)

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.

1	...	Adequate
2	...	Intermediate
3	...	Inadequate
4	...	Unknown

57-59 3 **R1**
Reserved Positions

Item Location | Item Length | Variable Name, Item and Code Outline

60 1 **FAGERFLG**
Reported Age of Father Used Flag

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.

Blank	...	Reported age is not used

		1 ...	Reported age is used

61-62 2 **DFAGE**
Age of Father

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.

10-98	...	Age in single years
99	...	Unknown or not stated

63 1 **ORFATH**
Hispanic Origin of Father

Hispanic origin is reported for all areas except Puerto Rico.

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

64 1 **ORRACEF**
Hispanic Origin and Race of Father Recode

Hispanic origin is reported for all areas except Puerto Rico.

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

Item Location | Item Length | Variable Name, Item and Code Outline

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

Item Location	Item Length	Variable Name, Item and Code Outline
65-66	2	**FRACE**

Race of Father (Cont=d)

Guam 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
58	...	Guamanian
99	...	Unknown or not stated

67 1 **PLDEL**
Place or Facility of Delivery

1	...	Hospital
2	...	Freestanding Birthing Center
3	...	Clinic or Doctor's Office
4	...	A Residence
5	...	Other
9	...	Unknown or not stated

68 1 **BIRATTND**
Attendant at Delivery

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 **R2**
Reserved position

70 1 **GESTESTM**
Clinical Estimate of Gestation Used Flag
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.

Blank	...	Clinical Estimate is not used
1	...	Clinical Estimate is used

Item Location	Item Length	Variable Name, Item and Code Outline

71-72 2 **CLINGEST**
Clinical Estimate of Gestation

Clinical estimate is not reported by all areas.
See reporting flags.

17-47	...	Estimated gestation in weeks
99	...	Unknown or not stated

73 1 **GESTIMP**
Gestation Imputation Flag

Blank	...	Gestation is not imputed
1	...	Gestation is imputed

74-75 2 **GESTAT**
Gestation - Detail in Weeks

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.

17-47	...	17th through 47th week of gestation
99	...	Unknown

76-77 2 **GESTAT 10**
GESTATION RECODE 10

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

78 1 **CSEXIMP**
Sex Imputation Flag

Blank	...	Sex is not imputed
1	...	Sex is imputed

79 1 **CSEX**
Sex

1	...	Male
2	...	Female

Item Location | Item Length | Variable Name, Item and Code Outline

80-87 8 **BIRTHWEIGHT**

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 **BWIF**
Birthweight Imputation Flag

Blank	...	Birthweight is not imputed

1	...	Birthweight is imputed	

81-84 4 **DBIRWT**
Birthweight Detail in Grams (Imputed)

0227-8165	...	Number of grams
9999	...	Not stated birth weight

85-86 2 **BIRWT12**
Birthweight Recode 12 (Imputed)

01	...	499 grams or less
02	...	500-999 grams
03	...	1000-1499 grams
04	...	1500-2001 grams
05	...	2001-2499 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 **BIRWT4**
Birthweight Recode 4 (Imputed)

1	...	1499 grams or less
2	...	1500-2499 grams
3	...	2500 grams or more
4	...	Unknown or not stated

88 1 **PLURIMP**
Plurality Imputation Flag

Blank	...	Plurality is not imputed
1	...	Plurality is imputed

Item Location | Item Length | Variable Name, Item and Code Outline

89 1 **DPLURAL**
Plurality

1	...	Single
2	...	Twin
3	...	Triplet
4	...	Quadruplet
5	...	Quintuplet or higher

90-91 2 **FMAPS**
Five-Minute Apgar Score

Apgar score is not reported by all areas. See reporting flags.

00-10	...	A score of 0-10
99	...	Unknown or not stated

92-186 95 **MEDINFO**
Medical and Health Data

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.

92-99 8 **DELMETH**
Method of Delivery

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

1	...	The method was used
2	...	The method was not used
8	...	Method not on certificate
9	...	Method unknown or not stated

92 1 **VAGINAL**
Vaginal

93 1 **VBAC**
Vaginal Birth After Previous C-Section

94 1 **PRIMAC**
Primary C-Section

95 1 **REPEAC**
Repeat C-Section

96 1 **FORCEP**
Forceps

Item Location	Item Length	Variable Name, Item and Code Outline

97 1 **VACUUM**
Vacuum

98 1 **R3**
Reserved Position

99 1 **DELMETH5**
Method of Delivery Recode

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 **MEDRISK**
Medical Risk Factors

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 **MRFLAG**
No Medical Risk Factors Reported Flag

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 **ANEMIA**
Anemia (Hct.<30/Hgb.<10)

102 1 **CARDIAC**
Cardiac disease

103 1 **LUNG**
Acute or chronic lung disease

104 1 **DIABETES**
Diabetes

105 1 **HERPES**
Genital herpes

106 1 **HYDRA**
Hydramnios/Oligohydramnios

Item Location	Item Length	Variable Name, Item and Code Outline
107	1	**HEMO** **Hemoglobinopathy**
108	1	**CHYPER** **Hypertension, chronic**
109	1	**PHYPER** **Hypertension, pregnancy-associated**
110	1	**ECLAMP** **Eclampsia**
111	1	**INCERVIX** **Incompetent cervix**

112	1	**PRE4000** **Previous infant 4000+ grams**
113	1	**PRETERM** **Previous preterm or small-for-gestational-age infant**
114	1	**RENAL** **Renal disease**
115	1	**RH** **Rh sensitization**
116	1	**UTERINE** **Uterine bleeding**
117	1	**OTHERMR** **Other Medical Risk Factors**
118-128	11	**OTHERRSK** **Other Risk Factors for this Pregnancy**
118-121	4	**TOBACRSK** **Tobacco Risks**
118	1	**TOBACCO** **Tobacco Use During Pregnancy** 1 ... Yes 2 ... No 9 ... Unknown or not stated
119-120	2	**CIGAR** **Average Number of Cigarettes Per Day** 00-97 ... As stated 98 ... 98 or more cigarettes per day 99 ... Unknown or not stated

Item Location	Item Length	Variable Name, Item and Code Outline
121	1	**CIGAR6** **Average Number of Cigarettes Per Day Recode** 0 ... Nonsmoker 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	**ALCOHRSK** **Alcohol**
122	1	**ALCOHOL** **Alcohol Use During Pregnancy**

1	...	Yes
2	...	No
9	...	Unknown or not stated

123-124 2 **DRINK**
Average Number of Drinks Per Week

00-97	...	As stated
98	...	98 or more drinks per week
99	...	Unknown or not stated

125 1 **DRINK5**
Average Number of Drinks Per Week Recode

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 **WTGANRSK**
Weight Gain During Pregnancy

126-127 2 **WTGAIN**
Weight Gain

00-97	...	Stated number of pounds
98	...	98 pounds or more
99	...	Unknown or not stated

Item Location | Item Length | Variable Name, Item and Code Outline

128 1 **WTGAIN9**
Weight Gain Recode

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 **OBSTETRC**
Obstetric Procedures

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

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

129 1 **OBFLAG**
Obstetric Flag

Blank	...	One or more obstetric procedures coded, one, eight, or nine
2	...	No obstetric procedures reported. Each factor is coded a two.

130 1 **AMNIO**
Amniocentesis

131 1 **MONITOR**
Electronic fetal monitoring

132 1 **INDUCT**
Induction of labor

133 1 **STIMULA**
Stimulation of labor

134 1 **TOCOL**
Tocolysis

135 1 **ULTRAS**
Ultrasound

136 1 **OTHEROB**
Other Obstetric Procedures

Item Location	Item Length	Variable Name, Item and Code Outline

137-153 17 **LABOR**
Complications of Labor and/or Delivery

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

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

137 1 **FBFLAG**
Labor Flag

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	**FEBRILE** **Febrile (>100 degrees F. or 38 degrees C.)**
139	1	**MECONIUM** **Meconium, moderate/heavy**
140	1	**RUPTURE** **Premature rupture of membrane (>12 hours)**
141	1	**ABRUPTIO** **Abruptio placenta**
142	1	**PREPLACE** **Placenta previa**
143	1	**EXCEBLD** **Other excessive bleeding**
144	1	**SEIZURE** **Seizures during labor**
145	1	**PRECIP** **Precipitous labor (<3 hours)**
146	1	**PROLONG** **Prolonged labor (>20 hours)**
147	1	**DYSFUNC** **Dysfunctional labor**
148	1	**BREECH** **Breech/Malpresentation**

Item Location	Item Length	Variable Name, Item and Code Outline
149	1	**CEPHALO** **Cephalopelvic disproportion**
150	1	**CORD** **Cord prolapse**
151	1	**ANESTHE** **Anesthetic complications**
152	1	**DISTRESS** **Fetal distress**
153	1	**OTHERLB** **Other Complications of Labor and/or Delivery**
154-163	10	**NEWBORN**

Abnormal conditions of the Newborn

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

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

Item Location	Item Length	Variable Name, Item and Code Outline
154	1	**NBFLAG** **Newborn Flag**

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	**NANEMIA** **Anemia Hct.>39/Hgb.<13)**
156	1	**INJURY** **Birth injury**
157	1	**ALCOSYN** **Fetal alcohol syndrome**
158	1	**HYALINE** **Hyaline membrane disease**
159	1	**MECONSYN** **Meconium aspiration syndrome**
160	1	**VENL30** **Assisted ventilation, less than 30 minutes**

Item Location	Item Length	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**		

Item Location	Item Length	Variable Name, Item and Code Outline
173	1	**TRACHEO** **Tracheo-esophageal fistula/Esophageal atresia**
174	1	**OMPHALO** **Omphalocele/Gastroschisis**
175	1	**GASTRO** **Other gastrointestinal anomalies**
176	1	**GENITAL** **Malformed genitalia**
177	1	**RENALAGE** **Renal agenesis**
178	1	**UROGEN** **Other urogenital anomalies**

179	1	**CLEFTLP** **Cleft lip/palate**
180	1	**ADACTYLY** **Polydactyly/Syndactyly/Adactyly**
181	1	**CLUBFOOT** **Club foot**
182	1	**HERNIA** **Diaphragmatic hernia**
183	1	**MUSCULO** **Other musculoskeletal/integumental anomalies**
184	1	**DOWNS** **Down's syndrome**
185	1	**CHROMO** **Other chromosomal anomalies**
186	1	**OTHERCON** **Other congenital anomalies**
187-203	17	**FLRES** **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.

2001
Denominator Record and Natality Section of Numerator (Linked) Record

Item Location	Item Length	Variable Name, Item and Code Outline
187	1	**ORIGM** **Origin of mother**
188	1	**ORIGF** **Origin of father**
189	1	**EDUCM** **Education of mother**
190	1	**R4** **Reserved Position**
191	1	**GESTE** **Clinical estimate of gestation**
192	1	**R5** **Reserved position**

193	1	**FMAPSRF** **5-minute Apgar score**
194	1	**DELMETRF** **Method of delivery**
195	1	**MEDRSK** **Medical risk factors**
196	1	**TOBUSE** **Tobacco use**
197	1	**ALCUSE** **Alcohol use**
198	1	**WTGN** **Weight gain**
199	1	**OBSTRC** **Obstetric procedures**
200	1	**CLABOR** **Complications of labor and/or delivery**
201	1	**ABNML** **Abnormal conditions of newborn**
202	1	**CONGAN** **Congenital anomalies**
203	1	**API flag** **Race codes 18-68 reported (beginning with 1992 data)**

2001
Denominator Record and Natality Section of Numerator (Linked) Record

Item Location	Item Length	Variable Name, Item and Code Outline
204	1	**CDOBMIMP** **Month of Birth of Child Imputation Flag** Blank ... Month is not imputed 1 ... Month is imputed
205-206	2	**BIRMON** **Month of Birth** 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 **R6**
Reserved Position

209 1 **WEEKDAYB**
Day of Week Child Born

1	...	Sunday
2	...	Monday
3	...	Tuesday
4	...	Wednesday
5	...	Thursday
6	...	Friday
7	...	Saturday

210 1 **FLGND**
Flag Indicating Records Included in Both Numerator and Denominator Files

This variable is included in the denominator file only, and identifies a record which is also included in the numerator file. Please note that not all infant deaths in the numerator file are represented in the denominator file, because some of the infants who died in 2001 were born in 2000.

1	...	Record also included in numerator file
Blank	...	Record not included in numerator file

Here ends the Denominator file. Documentation for the Mortality Section of the Numerator (Linked) file begins on the next page.

2001
Mortality Section of Numerator (Linked) Record

Locations 211-535 contain data from the Death Certificate. 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.

Item Location | Item Length | Variable Name, Item and Code Outline

211-213 3 **AGED**
Age at Death in Days

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.

000-364	...	Number of days

214 1 **AGER5**
Infant Age Recode 5

1	...	Under 1 hour
2	...	1-23 hours

3	...	1-6 days
4	...	7-27 days (late neonatal)
5	...	28 days and over (postneonatal)

215 1 **Place of Injury for Causes W00-Y34, except Y06.- and Y07.-**

0	...	Home
1	...	**Residential institution**
2	...	**School, other institution and public administrative area**
3	...	**Sports and athletics area**
4	...	**Street and highway**
5	...	**Trade and service area**
6	...	**Industrial and construction area**
7	...	**Farm**
8	...	Other Specified Places
9	...	Unspecified place
Blank	...	**Causes other than W00-Y34, except Y06.- and Y07.-**

216-219 4 **UCOD**
ICD Code (10th Revision)

See the International Classification of Diseases, 1992 Revision, Volume 1.

Item Location	Item Length	Variable Name, Item and Code Outline

220-222 3 **UCODR130**
130 Infant Cause Recode

A recode of the ICD 10 cause codes into 130 groups for NCHS publications. Further back in this document is a complete list of recodes and the causes included.

001-158	...	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 records each year which cannot be linked to their corresponding birth certificates (see introduction to this tape documentation for further details). These weights are used to produce all NCHS linked file tables, including Documentation tables 1-5 included in this tape documentation. The general format for this record weight is the number one followed by a decimal point and six decimal places as follows:

2001
Mortality Section of Numerator (Linked) Record

Item Location	Item Length	Variable Name, Item and Code Outline
261-504	244	**MULTCOND** **Multiple Conditions** See the "International Classification of Diseases", 1992 Revision, Volume 1. Both the entity-axis and record-axis conditions are coded according to this revision (10th).
261-262	2	**EANUM** **Number of Entity-Axis Conditions** 00-20 ... Code range
263-402	140	**ENTITY** **ENTITY - AXIS CONDITIONS** Space has been provided for a maximum of 20 conditions. Each condition takes 7 positions in the record. **The 7th position will be blank.** Records that do not have 20 conditions are blank in the unused area. Position 1: Part/line number on certificate 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,
		Position 2:	Sequence of condition within part/line
		1-7 ...	Code range
		Position 3 - 6:	Condition code (ICD 10th Revision)
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**	
298-304	7	**6th Condition**	
305-311	7	**7th Condition**	
312-318	7	**8th Condition**	

Item Location	Item Length	Variable Name, Item and Code Outline
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**
403-404	2	**RANUM** **Number of Record-Axis Conditions** 00-20 ... Code range
405-504	100	**RECORD** **RECORD - AXIS CONDITIONS** Space has been provided for a maximum of 20 conditions. Each condition takes 5 positions in the record. **The 5th position will be blank.** Records that do not have 20 conditions are blank in the unused area. Positions 1-4: Condition code (ICD 10th Revision)
405-409	5	**1st Condition**
410-414	5	**2nd Condition**
415-419	5	**3rd Condition**
420-424	5	**4th Condition**

Item Location	Item Length	Variable Name, Item and Code Outline
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 **RESSTATD**
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.

Item Location | Item Length | Variable Name, Item and Code Outline

505 1 **RESSTATD**
Resident Status - Death (Cont=d)

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

Item Location	Item Length	Variable Name, Item and Code Outline

506-507 2 **DRSTATE**

Expanded State of Residence - NCHS Codes - Deaths (Cont=d)

United States Occurrence

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.

Item Location	Item Length	Variable Name, Item and Code Outline
506-507	2	**DRSTATE** **Expanded State of Residence - NCHS Codes - Deaths (Cont=d)**

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

Item Location	Item Length	Variable Name, Item and Code Outline		
508-509	2	**STOCCFIPD** **State of Occurrence (FIPS) - Death (Cont=d)**		
		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

Item Location	Item Length	Variable Name, Item and Code Outline
513-517	5	**FIPSRESD** **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	**STRESFIPD** **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

Item Location	Item Length	Variable Name, Item and Code Outline		
513-514	2	**STRESFIPD** **State of Residence (FIPS) - Death (Cont=d)**		
		United States Occurrence		
		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 Occurrence		
		72	...	Puerto Rico
		00-56, 66,78	...	Foreign resident: Refer to U.S. for specific code structure.
		Virgin Islands Occurrence		
		78	...	Virgin Islands
		00-56, 66,72	...	Foreign resident: Refer to U.S. for specific code structure.
		Guam Occurrence		
		66	...	Guam
		01-56, 00,72,78	...	Foreign resident: Refer to U.S. for specific code structure.
515-517	3	**CNTYRFPD** **County of Residence (FIPS) - Death**		
		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

Item Location	Item Length	Variable Name, Item and Code Outline
518-522	5	**PLRES** **Place (City) of Residence (FIPS)** A complete list of cities is shown in the Geographic code outline further back in this document. 00000 ... Foreign residents 00001-nnnnn ... Code range 99999 ... Balance of county; or city less than 250,000 population
523	1	**HOSPD** **Hospital and Patient Status** 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	**DTHYR** **Year of Death** 2001 ... Death occurred in 2001
528-529	2	**DTHMON** **Month of Death** 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	**R9** **Reserved Position**

Item Location	Item Length	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	**R10** **Reserved positions**

Listings of Counties Identified in the Linked Data Set
Vital Statistics Geographic Code Outline Effective With 2000 Data

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
08		Colorado
	001	Adams
	005	Arapahoe
	031	Denver, coext. with Denver city
	041	El Paso
	059	Jefferson

State	County	State and County Name
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
15		Hawaii
	003	Honolulu
16		Idaho

State	County	State and County Name
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
	033	Prince George's
25		Massachusetts
	005	Bristol
	009	Essex
	013	Hampden
	017	Middlesex
	021	Norfolk
	023	Plymouth

	025	Suffolk
	027	Worcester

State	County	State and County Name
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
32		Nevada
	003	Clark
	031	Washoe
33		New Hampshire
	011	Hillsborough
34		New Jersey
	003	Bergen
	005	Burlington
	007	Camden
	013	Essex
	017	Hudson

State	County	State and County Name
	021	Mercer
	023	Middlesex
	025	Monmouth
	027	Morris
	029	Ocean
34		New Jersey
	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
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

State	County	State and County Name
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
	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

State	County	State and County Name
48		Texas
	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
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

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 2000 Data

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
12		Florida
	35000	Jacksonville
	45000	Miami
	71000	Tampa
13		Georgia
	04000	Atlanta

FIPS Codes

State	City/Place	State and City/Place Name
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
26		Michigan
	22000	Detroit
27		Minnesota
	43000	Minneapolis
	58000	St. Paul
28		Mississippi
29		Missouri
	38000	Kansas City
	65000	St. Louis

State	City/Place	FIPS Codes

FIPS Codes State	City/Place	State and City/Place Name
30		Montana
31		Nebraska
	37000	Omaha
32		Nevada
	4000	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
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

FIPS Codes
State City/Place State and City/Place Name

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 Christ
	19000	Dallas
	24000	El Paso
	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

FIPS Codes		
State	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 the World

ST: 1 = Subtotal Limited: Sex: 1 = Males; 2 = Females
Age: 1 = 5 and over; 2 = 10-54; 3 = 28 days and over
4 = Under 1 year; 5 = 1-4 years; 6 = 1 year and over
7 = 10 years and over

***** Cause Subtotals are not identified in this file *****

130 Recode	S T	Limited Sex	Age	Cause Title and ICD-10 Codes Included
001	1			Certain infectious and parasitic diseases (A00-B99)
002				Certain intestinal infectious diseases (A00-A08)
003				Diarrhea and gastroenteritis of infectious origin (A09)
004				Tuberculosis (A16-A19)
005				Tetanus (A33,A35)
006				Diphtheria (A36)
007				Whooping cough (A37)
008				Meningococcal infection (A39)
009			3	Septicemia (A40-A41)
010				Congenital syphilis (A50)
011				Gonococcal infection (A54)
012	1			Viral diseases (A80-B34)
013				Acute poliomyelitis (A80)
014				Varicella (chickenpox) (B01)
015				Measles (B05)
016				Human immunodeficiency virus (HIV) disease (B20-B24)
017				Mumps (B26)
018				Other and unspecified viral diseases (A81-B00,B02-B04,B06-B19,B25,B27-B34)
019				Candidiasis (B37)
020				Malaria (B50-B54)
021				Pneumocystosis (B59)
022				All other and unspecified infectious and parasitic diseases (A20-A32,A38,A42-A49,A51-A53,A55-A79,B35-B36,B38-B49,B55-B58,B60-B99)
023	1			Neoplasms (C00-D48)
024	1			Malignant neoplasms (C00-C97)
025				Hodgkin's disease and non-Hodgkin's lymphomas (C81-C85)
026				Leukemia (C91-C95)
027				Other and unspecified malignant neoplasms (C00-C80,C88,C90,C96-C97)
028				In situ neoplasms, benign neoplasms and neoplasms of uncertain or unknown behavior (D00-D48)
029	1			Diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism (D50-D89)
030				Anemias (D50-D64)
031				Hemorrhagic conditions and other diseases of blood and blood-forming organs (D65-D76)
032				Certain disorders involving the immune mechanism (D80-D89)
033	1			Endocrine, nutritional and metabolic diseases (E00-E88)
034				Short stature, not elsewhere classified (E34.3)
035				Nutritional deficiencies (E40-E64)
036				Cystic fibrosis (E84)
037			3	Volume depletion, disorders of fluid, electrolyte and acid-base balance (E86-E87)
038				All other endocrine, nutritional and metabolic diseases (E00-E32,E34.0-E34.2,E34.4-E34.9,E65-E83,E85,E88)
039	1			Diseases of the nervous system (G00-G98)
040				Meningitis (G00,G03)
041				Infantile spinal muscular atrophy, type I (Werdnig-Hoffman) (G12.0)
042				Infantile cerebral palsy (G80)
043				Anoxic brain damage, not elsewhere classified (G93.1)
044				Other diseases of nervous system (G04,G06-G11,G12.1-G12.9,G20-G72,G81-G92,G93.0,G93.2-G93.9,G95-G98)
045				Diseases of the ear and mastoid process (H60-H93)
046	1			Diseases of the circulatory system (I00-I99)
047				Pulmonary heart disease and diseases of pulmonary circulation (I26-I28)
048				Pericarditis, endocarditis and myocarditis (I30,I33,I40)
049				Cardiomyopathy (I42)
050				Cardiac arrest (I46)
051				Cerebrovascular diseases (I60-I69)
052				All other diseases of circulatory system (I00-I25,I31,I34-I38,I44-I45,I47-I51,I70-I99)
053	1			Diseases of the respiratory system (J00-J98)
054				Acute upper respiratory infections (J00-J06)
055	1			Influenza and pneumonia (J10-J18)

ST: 1 = Subtotal Limited: Sex: 1 = Males; 2 = Females
Age: 1 = 5 and over; 2 = 10-54; 3 = 28 days and over
4 = Under 1 year; 5 = 1-4 years; 6 = 1 year and over
7 = 10 years and over

***** Cause Subtotals are not identified in this file *****

130 Recode	S T	Limited Sex	Age	Cause Title and ICD-10 Codes Included
056				Influenza (J10-J11)
057				Pneumonia (J12-J18)
058				Acute bronchitis and acute bronchiolitis (J20-J21)
059				Bronchitis, chronic and unspecified (J40-J42)
060				Asthma (J45-J46)
061				Pneumonitis due to solids and liquids (J69)
062				Other and unspecified diseases of respiratory system (J22,J30-J39,J43-J44,J47-J68,J70-J98)
063	1			Diseases of the digestive system (K00-K92)
064				Gastritis, duodenitis, and noninfective enteritis and colitis (K29,K50-K55)
065				Hernia of abdominal cavity and intestinal obstruction without hernia (K40-K46,K56)
066				All other and unspecified diseases of digestive system (K00-K28,K30-K38,K57-K92)
067	1			Diseases of the genitourinary system (N00-N95)
068				Renal failure and other disorders of kidney (N17-N19,N25,N27)
069				Other and unspecified diseases of genitourinary system (N00-N15,N20-N23,N26,N28-N95)
070	1			Certain conditions originating in the perinatal period (P00-P96)
071	1			Newborn affected by maternal factors and by complications of pregnancy, labor and delivery (P00-P04)
072				Newborn affected by maternal hypertensive disorders (P00.0)
073				Newborn affected by other maternal conditions which may be unrelated to present pregnancy (P00.1-P00.9)
074	1			Newborn affected by maternal complications of pregnancy (P01)
075				Newborn affected by incompetent cervix (P01.0)
076				Newborn affected by premature rupture of membranes (P01.1)
077				Newborn affected by multiple pregnancy (P01.5)
078				Newborn affected by other maternal complications of pregnancy (P01.2-P01.4,P01.6-P01.9)
079	1			Newborn affected by complications of placenta, cord and membranes (P02)
080				Newborn affected by complications involving placenta (P02.0-P02.3)
081				Newborn affected by complications involving cord (P02.4-P02.6)
082				Newborn affected by chorioamnionitis (P02.7)
083				Newborn affected by other and unspecified abnormalities of membranes (P02.8-P02.9)
084				Newborn affected by other complications of labor and delivery (P03)
085				Newborn affected by noxious influences transmitted via placenta or breast milk (P04)
086	1			Disorders related to length of gestation and fetal malnutrition (P05-P08)
087				Slow fetal growth and fetal malnutrition (P05)
088	1			Disorders related to short gestation and low birthweight, not elsewhere classified (P07)
089				Extremely low birthweight or extreme immaturity (P07.0,P07.2)
090				Other low birthweight or preterm (P07.1,P07.3)
091				Disorders related to long gestation and high birthweight (P08)
092				Birth trauma (P10-P15)
093	1			Intrauterine hypoxia and birth asphyxia (P20-P21)
094				Intrauterine hypoxia (P20)
095				Birth asphyxia (P21)
096				Respiratory distress of newborn (P22)
097	1			Other respiratory conditions originating in the perinatal period (P23-P28)
098				Congenital pneumonia (P23)
099				Neonatal aspiration syndromes (P24)
100				Interstitial emphysema and related conditions originating in the perinatal period (P25)
101				Pulmonary hemorrhage originating in the perinatal period (P26)
102				Chronic respiratory disease originating in the perinatal period (P27)
103				Atelectasis (P28.0-P28.1)
104				All other respiratory conditions originating in the perinatal period (P28.2-P28.9)
105	1			Infections specific to the perinatal period (P35-P39)
106				Bacterial sepsis of newborn (P36)
107				Omphalitis of newborn with or without mild hemorrhage (P38)

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7 = 10 years and over

***** Cause Subtotals are not identified in this file *****

130 Recode	S T	Limited Sex	Age	Cause Title and ICD-10 Codes Included
108				All other infections specific to the perinatal period (P35,P37,P39)
109	1			Hemorrhagic and hematological disorders of newborn (P50-P61)
110				Neonatal hemorrhage (P50-P52,P54)
111				Hemorrhagic disease of newborn (P53)
112				Hemolytic disease of newborn due to isoimmunization and other perinatal jaundice (P55-P59)
113				Hematological disorders (P60-P61)
114				Syndrome of infant of a diabetic mother and neonatal diabetes mellitus (P70.0-P70.2)
115				Necrotizing enterocolitis of newborn (P77)
116				Hydrops fetalis not due to hemolytic disease (P83.2)
117				Other perinatal conditions (P29,P70.3-P70.9,P71-P76,P78-P81,P83.0-P83.1, P83.3-P83.9,P90-P96)
118	1			Congenital malformations, deformations and chromosomal abnormalities (Q00-Q99)
119				Anencephaly and similar malformations (Q00)
120				Congenital hydrocephalus (Q03)
121				Spina bifida (Q05)
122				Other congenital malformations of nervous system (Q01-Q02,Q04,Q06-Q07)
123				Congenital malformations of heart (Q20-Q24)
124				Other congenital malformations of circulatory system (Q25-Q28)
125				Congenital malformations of respiratory system (Q30-Q34)
126				Congenital malformations of digestive system (Q35-Q45)
127				Congenital malformations of genitourinary system (Q50-Q64)
128				Congenital malformations and deformations of musculoskeletal system, limbs and integument (Q65-Q85)
129				Down's syndrome (Q90)
130				Edward's syndrome (Q91.0-Q91.3)
131				Patau's syndrome (Q91.4-Q91.7)
132				Other congenital malformations and deformations (Q10-Q18,Q86-Q89)
133				Other chromosomal abnormalities, not elsewhere classified (Q92-Q99)
134	1			Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified (R00-R99)
135				Sudden infant death syndrome (R95)
136				Other symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified (R00-R53,R55-R94,R96-R99)
137				All other diseases (Residual) (F01-F99,H00-H57,L00-M99)
138	1			External causes of mortality (*U01,V01-Y84)
139	1			Accidents (unintentional injuries) (V01-X59)
140	1			Transport accidents (V01-V99)
141				Motor vehicle accidents(V02-V04,V09.0,V09.2,V12-V14,V19.0-V19.2, V19.4-V19.6,V20-V79,V80.3-V80.5,V81.0-V81.1,V82.0-V82.1,V83-V86, V87.0-V87.8,V88.0-V88.8,V89.0,V89.2)
142				Other and unspecified transport accidents (V01,V05-V06,V09.1,V09.3-V09.9,V10-V11,V15-V18,V19.3, V19.8-V19.9,V80.0-V80.2,V80.6-V80.9,V81.2-V81.9,V82.2-V82.9, V87.9,V88.9,V89.1,V89.3,V89.9,V90-V99)
143				Falls (W00-W19)
144				Accidental discharge of firearms (W32-W34)
145				Accidental drowning and submersion (W65-W74)
146				Accidental suffocation and strangulation in bed (W75)
147				Other accidental suffocation and strangulation (W76-W77,W81-W84)
148				Accidental inhalation and ingestion of food or other objects causing obstruction of respiratory tract (W78-W80)
149				Accidents caused by exposure to smoke, fire and flames (X00-X09)
150				Accidental poisoning and exposure to noxious substances (X40-X49)
151				Other and unspecified accidents (W20-W31,W35-W64,W85-W99,X10-X39,X50-X59)
152	1			Assault (homicide) (*U01,X85-Y09)
153				Assault (homicide) by hanging, strangulation and suffocation (X91)
154				Assault (homicide) by discharge of firearms (*U01.4,X93-X95)
155				Neglect, abandonment and other maltreatment syndromes (Y06-Y07)
156				Assault (homicide) by other and unspecified means (*U01.0-*U01.3,*U01.5-*U01.9,X85-X90,X92,X96-X99,Y00-Y05,Y08-Y09)
157				Complications of medical and surgical care (Y40-Y84)

ST: 1 = Subtotal Limited: Sex: 1 = Males; 2 = Females
Age: 1 = 5 and over; 2 = 10-54; 3 = 28 days and over
4 = Under 1 year; 5 = 1-4 years; 6 = 1 year and over
7 = 10 years and over

***** Cause Subtotals are not identified in this file *****

130 Recode	S T	Limited Sex	Age	Cause Title and ICD-10 Codes Included
158				Other external causes (X60-X84,Y10-Y36)

DOCUMENTATION TABLE 1
LIVE BIRTHS AND INFANT DEATHS BY STATE OF OCCURRENCE AND BY STATE OF RESIDENCE
UNITED STATES, PUERTO RICO, VIRGIN ISLANDS, AND GUAM - 2001 PERIOD DATA

(RESIDENCE OF BIRTH IS OF THE MOTHER)

State	LIVE BIRTHS		INFANT DEATHS			
			Unweighted		Weighted	
	Occurence	Residence	Occurence	Residence	Occurence	Residence
UNITED STATES 2/	4031635	4026036	27268	27246	27560	27523
ALABAMA	59766	60454	558	564	558	564
ALASKA	9908	10004	75	78	76	79
ARIZONA	85757	85597	591	587	598	595
ARKANSAS	36301	37010	279	306	281	309
CALIFORNIA	528565	527784	2778	2770	2837	2823
COLORADO	67100	67007	395	386	399	390
CONNECTICUT	43179	42648	247	257	247	258
DELAWARE	11360	10749	127	114	127	114
DISTRICT OF COLUMBIA	15037	7625	151	81	153	84
FLORIDA	205991	205793	1508	1487	1513	1493
GEORGIA	134402	133526	1135	1140	1135	1142
HAWAII	17127	17072	103	101	105	103
IDAHO	20161	20688	109	129	110	130
ILLINOIS	181086	184064	1351	1397	1378	1405
INDIANA	86710	86459	627	637	633	652
IOWA	37757	37620	203	213	203	213
KANSAS	39052	38869	281	287	286	289
KENTUCKY	53227	54659	294	319	299	322
LOUISIANA	65621	65353	639	622	669	652
MAINE	13567	13759	85	84	86	85
MARYLAND	68663	73218	518	583	520	590
MASSACHUSETTS	82239	81079	396	403	397	404
MICHIGAN	132162	133431	1063	1065	1064	1066
MINNESOTA	67428	67562	365	363	366	365
MISSISSIPPI	41145	42282	406	445	406	445
MISSOURI	76695	75468	609	550	611	554
MONTANA	10935	10970	76	80	76	80
NEBRASKA	25107	24820	168	168	168	168
NEVADA	31007	31382	180	174	186	176
NEW HAMPSHIRE	14055	14656	49	56	49	56
NEW JERSEY	112642	115797	697	720	721	742
NEW MEXICO	26809	27129	170	173	170	173
NEW YORK STATE	131017	134408	769	802	779	820
NEW YORK CITY	124012	119618	716	666	725	666
NORTH CAROLINA	119133	118186	1016	1011	1018	1012
NORTH DAKOTA	8839	7629	72	67	72	68
OHIO	152057	151594	1170	1154	1171	1159
OKLAHOMA	48897	50120	353	358	362	369
OREGON	46200	45322	261	243	261	243
PENNSYLVANIA	143959	143497	1036	1033	1038	1034
RHODE ISLAND	13319	12713	112	87	112	87
SOUTH CAROLINA	53255	55756	469	502	469	502
SOUTH DAKOTA	10784	10483	82	76	82	76
TENNESSEE	83521	78340	763	681	763	682
TEXAS	370509	365437	2093	2096	2148	2146
UTAH	49042	47960	246	233	246	235
VERMONT	6149	6366	36	36	36	36
VIRGINIA	96535	98884	724	734	725	735
WASHINGTON	79082	79574	447	452	447	453
WEST VIRGINIA	21000	20428	160	150	169	150
WISCONSIN	68006	69072	486	489	486	492
WYOMING	5758	6115	24	37	24	37
FOREIGN RESIDENTS	-	5598	-	22	-	22
PUERTO RICO 3/	55983	55864	515	509	-	-
VIRGIN ISLANDS 3/	1770	1641	9	8	-	-
GUAM 3/	3584	3564	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, 2001 period data

[Infant deaths are 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										
Both sexes										
Live births	4,026,036	6,450	11,081	11,847	13,572	15,752	60,858	190,200	3,714,965	1,311
Infant deaths	27,523	5,515	5,283	1,826	1,001	719	1,658	2,148	8,989	383
Infant mortality rate	6.8	855.1	476.8	154.2	73.8	45.6	27.2	11.3	2.4	292.2
Male										
Live births	2,057,977	3,255	5,635	6,172	6,849	8,008	29,758	87,398	1,910,189	713
Infant deaths	15,434	2,842	3,032	1,147	626	405	912	1,120	5,110	240
Infant mortality rate	7.5	873.1	538.1	185.8	91.3	50.6	30.6	12.8	2.7	336.1
Female										
Live births	1,968,059	3,195	5,446	5,675	6,723	7,744	31,100	102,802	1,804,776	598
Infant deaths	12,089	2,674	2,251	679	375	314	746	1,028	3,879	143
Infant mortality rate	6.1	836.8	413.4	119.7	55.8	40.5	24.0	10.0	2.1	239.9
White										
Both sexes										
Live births	3,177,698	3,724	6,376	7,564	9,006	10,697	42,200	133,303	2,963,831	997
Infant deaths	18,087	3,201	3,144	1,175	685	501	1,169	1,506	6,461	247
Infant mortality rate	5.7	859.5	493.1	155.3	76.0	46.8	27.7	11.3	2.2	247.4
Male										
Live births	1,625,548	1,883	3,234	3,962	4,553	5,464	20,799	61,701	1,523,442	510
Infant deaths	10,132	1,656	1,786	732	421	275	636	784	3,702	140
Infant mortality rate	6.2	879.5	552.3	184.7	92.5	50.3	30.6	12.7	2.4	273.5
Female										
Live births	1,552,150	1,841	3,142	3,602	4,453	5,233	21,401	71,602	1,440,389	487
Infant deaths	7,955	1,545	1,357	443	264	226	533	722	2,759	107
Infant mortality rate	5.1	839.0	432.0	123.0	59.2	43.1	24.9	10.1	1.9	220.1
Black										
Both sexes										
Live births	606,183	2,491	4,262	3,733	3,968	4,272	15,414	44,620	527,185	238
Infant deaths	8,084	2,111	1,933	561	271	181	398	505	2,009	115
Infant mortality rate	13.3	847.5	453.5	150.4	68.3	42.3	25.8	11.3	3.8	484.1
Male										
Live births	307,851	1,250	2,187	1,916	1,980	2,124	7,346	19,908	270,984	156
Infant deaths	4,543	1,084	1,132	352	178	105	228	263	1,117	84
Infant mortality rate	14.8	866.9	517.8	183.9	90.1	49.4	31.0	13.2	4.1	538.1
Female										
Live births	298,332	1,241	2,075	1,817	1,988	2,148	8,068	24,712	256,201	82
Infant deaths	3,541	1,028	800	209	93	76	170	242	892	31
Infant mortality rate	11.9	828.0	385.8	115.0	46.6	35.3	21.1	9.8	3.5	381.5

See footnotes at end of table.

Documentation Table 2

Live births, infant deaths, and infant mortality rates by race of mother, sex and birthweight of child: United States, 2001 period data - Con.

[Infant deaths are 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
American Indian [1]										
Both sexes										
Live births	41,872	54	84	125	133	138	627	1,911	38,773	27
Infant deaths	404	42	38	20	14	7	19	49	208	7
Infant mortality rate	9.7	769.3	447.3	162.4	*	*	*	25.9	5.4	*
Male										
Live births	21,183	26	41	59	62	73	306	903	19,696	17
Infant deaths	222	19	19	11	5	5	10	31	116	5
Infant mortality rate	10.5	*	*	*	*	*	*	34.6	5.9	*
Female										
Live births	20,689	28	43	66	71	65	321	1,008	19,077	10
Infant deaths	182	22	18	9	9	2	9	18	92	2
Infant mortality rate	8.8	798.4	*	*	*	*	*	*	4.8	*
Asian or Pacific Islander										
Both sexes										
Live births	200,283	181	359	425	465	645	2,617	10,366	185,176	49
Infant deaths	947	162	169	70	31	30	72	87	312	14
Infant mortality rate	4.7	895.2	470.8	164.6	67.5	47.0	27.4	8.4	1.7	*
Male										
Live births	103,395	96	173	235	254	347	1,307	4,886	96,067	30
Infant deaths	536	83	94	52	21	20	38	42	175	11
Infant mortality rate	5.2	863.4	543.8	220.2	83.6	58.3	29.4	8.5	1.8	*
Female										
Live births	96,888	85	186	190	211	298	1,310	5,480	89,109	19
Infant deaths	411	79	75	18	10	10	33	46	136	3
Infant mortality rate	4.2	931.0	402.9	*	*	*	25.5	8.3	1.5	*

* Figure does not meet standard of reliability or precision; based on fewer than 20 deaths in the numerator
1 Includes Aleuts and Eskimos.

Note: Rates may be over 1,000 due to the weighting of individual cases in the numerator.

Documentation Table 3

Live births, infant deaths, and infant mortality rates by birthweight, race of mother, and gestational age: United States, 2001 period 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										
Total										
Live births	4,026,036	29,123	48,553	222,645	175,978	2,002,813	824,306	408,671	274,065	39,882
Infant deaths	27,523	11,828	2,231	2,580	957	5,517	1,799	906	809	894
Infant mortality rate	6.8	406.1	46.0	11.6	5.4	2.8	2.2	2.2	3.0	22.4
Less than 2,500 grams										
Live births	309,760	28,148	37,073	103,868	35,399	78,547	11,315	5,418	6,238	3,754
Infant deaths	18,151	11,810	2,142	1,830	432	1,111	208	109	145	363
Infant mortality rate	58.6	419.6	57.8	17.6	12.2	14.1	18.4	20.1	23.2	96.8
Less than 500 grams										
Live births	6,450	5,993	233	27	1	12	-	3	3	178
Infant deaths	5,515	5,211	145	17	1	6	-	3	2	131
Infant mortality rate	855.1	869.5	621.2	*	*	*	-	*	*	735.3
500-749 grams										
Live births	11,081	9,344	1,355	121	8	19	5	2	5	222
Infant deaths	5,283	4,753	381	33	6	5	2	-	1	102
Infant mortality rate	476.8	508.6	280.9	274.7	*	*	*	*	*	460.5
750-999 grams										
Live births	11,847	7,185	3,854	448	21	93	36	21	16	173
Infant deaths	1,826	1,325	404	51	4	9	3	-	1	29
Infant mortality rate	154.2	184.5	104.7	113.1	*	*	*	*	*	170.4
1,000-1,249 grams										
Live births	13,572	3,085	7,459	2,108	128	376	99	53	74	190
Infant deaths	1,001	322	447	144	14	32	7	5	5	25
Infant mortality rate	73.8	104.4	59.9	68.1	*	86.3	*	*	*	129.1
1,250-1,499 grams										
Live births	15,752	904	8,216	4,860	424	738	168	89	136	217
Infant deaths	719	98	304	199	22	54	12	7	8	14
Infant mortality rate	45.6	108.6	37.0	41.0	52.5	72.7	*	*	*	*
1,500-1,999 grams										
Live births	60,858	913	11,801	32,720	5,002	7,359	986	537	809	731
Infant deaths	1,658	69	357	683	118	283	46	26	49	27
Infant mortality rate	27.2	75.2	30.2	20.9	23.6	38.4	47.1	48.7	60.1	37.5
2,000-2,499 grams										
Live births	190,200	724	4,155	63,584	29,815	69,950	10,021	4,713	5,195	2,043
Infant deaths	2,148	32	105	704	266	721	137	68	79	35
Infant mortality rate	11.3	44.7	25.4	11.1	8.9	10.3	13.7	14.4	15.2	16.9
2,500-2,999 grams										
Live births	680,813	975	4,161	57,086	63,922	388,420	87,337	38,282	34,049	6,581
Infant deaths	3,042	18	49	460	287	1,494	354	172	163	44
Infant mortality rate	4.5	*	11.7	8.1	4.5	3.8	4.1	4.5	4.8	6.6
3,000-3,499 grams										
Live births	1,515,531	-	4,840	39,746	52,400	839,749	316,555	144,572	103,490	14,179
Infant deaths	3,434	-	26	188	154	1,832	594	314	269	56
Infant mortality rate	2.3	-	5.4	4.7	2.9	2.2	1.9	2.2	2.6	3.9

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, 2001 period data

[Infant deaths weighted. Rates are per 1000 live births] - Con.

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										
3,500-3,999 grams										
Live births	1,139,550	-	2,479	17,408	19,425	542,468	299,992	153,850	93,562	10,366
Infant deaths	1,902	-	14	70	63	830	490	231	177	27
Infant mortality rate	1.7	-	*	4.0	3.3	1.5	1.6	1.5	1.9	2.6
4,000-4,499 grams										
Live births	322,426	-	-	3,838	4,032	131,875	93,388	55,550	30,656	3,087
Infant deaths	474	-	-	19	15	201	119	67	44	9
Infant mortality rate	1.5	-	-	*	*	1.5	1.3	1.2	1.4	*
4,500-4,999 grams										
Live births	51,145	-	-	610	704	19,466	14,389	10,002	5,453	521
Infant deaths	102	-	-	10	4	35	28	11	5	8
Infant mortality rate	2.0	-	-	*	*	1.8	2.0	*	*	*
5,000 grams or more										
Live births	5,500	-	-	89	96	2,288	1,330	997	617	83
Infant deaths	35	-	-	3	1	13	6	3	5	4
Infant mortality rate	6.4	-	-	*	*	*	*	*	*	*
Not stated										
Live births	1,311	-	-	-	-	-	-	-	-	1,311
Infant deaths	383	-	-	-	-	-	-	-	-	383
Infant mortality rate	292.2	-	-	-	-	-	-	-	-	292.2
White										
Total										
Live births	3,177,698	17,312	32,611	162,426	132,788	1,583,913	665,349	332,576	218,956	31,767
Infant deaths	18,087	7,022	1,489	1,846	673	3,917	1,306	679	565	590
Infant mortality rate	5.7	405.6	45.7	11.4	5.1	2.5	2.0	2.0	2.6	18.6
Less than 2,500 grams										
Live births	212,870	16,735	24,957	74,402	24,968	53,543	7,641	3,692	4,279	2,653
Infant deaths	11,380	7,016	1,425	1,306	297	768	144	83	104	236
Infant mortality rate	53.5	419.2	57.1	17.6	11.9	14.3	18.9	22.5	24.3	89.0
Less than 500 grams										
Live births	3,724	3,447	140	16	-	8	-	3	1	109
Infant deaths	3,201	3,012	89	13	-	5	-	3	-	79
Infant mortality rate	859.5	873.7	635.1	*	-	*	-	*	*	724.1
500-749 grams										
Live births	6,376	5,289	836	82	5	9	3	-	-	152
Infant deaths	3,144	2,807	237	19	4	2	-	-	-	75
Infant mortality rate	493.1	530.6	284.0	*	*	*	*	-	-	490.9
750-999 grams										
Live births	7,564	4,486	2,509	311	15	65	23	20	11	124
Infant deaths	1,175	848	265	35	2	6	2	-	-	16
Infant mortality rate	155.3	189.0	105.6	114.1	*	*	*	*	*	*
1,000-1,249 grams										
Live births	9,006	1,992	4,949	1,454	89	231	74	40	47	130
Infant deaths	685	219	302	107	9	20	4	4	3	15
Infant mortality rate	76.0	110.1	61.1	73.8	*	87.9	*	*	*	*

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, 2001 period data

[Infant deaths weighted. Rates are per 1000 live births] - Con.

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										
1,250-1,499 grams										
Live births	10,697	565	5,570	3,378	285	489	111	69	80	150
Infant deaths	501	64	208	147	16	40	7	5	7	7
Infant mortality rate	46.8	112.9	37.4	43.4	*	80.9	*	*	*	*
1,500-1,999 grams										
Live births	42,200	503	8,246	22,941	3,481	4,933	677	357	535	527
Infant deaths	1,169	43	251	486	84	199	31	18	35	20
Infant mortality rate	27.7	86.3	30.4	21.2	24.1	40.4	46.3	*	66.2	38.5
2,000-2,499 grams										
Live births	133,303	453	2,707	46,220	21,093	47,808	6,753	3,203	3,605	1,461
Infant deaths	1,506	23	73	498	182	496	100	53	59	23
Infant mortality rate	11.3	51.5	27.0	10.8	8.6	10.4	14.8	16.4	16.3	16.0
2,500-2,999 grams										
Live births	487,930	577	2,539	41,828	47,482	278,012	61,523	27,113	24,046	4,810
Infant deaths	2,106	6	37	336	205	1,022	239	118	110	33
Infant mortality rate	4.3	*	14.8	8.0	4.3	3.7	3.9	4.3	4.6	6.8
3,000-3,499 grams										
Live births	1,185,191	-	3,249	29,141	40,763	659,761	247,105	113,368	80,529	11,275
Infant deaths	2,464	-	18	133	113	1,306	432	237	181	44
Infant mortality rate	2.1	-	*	4.6	2.8	2.0	1.7	2.1	2.2	3.9
3,500-3,999 grams										
Live births	958,843	-	1,866	13,401	15,576	458,177	252,986	129,842	78,171	8,824
Infant deaths	1,410	-	8	45	43	623	371	174	127	18
Infant mortality rate	1.5	-	*	3.4	2.8	1.4	1.5	1.3	1.6	*
4,000-4,499 grams										
Live births	282,098	-	-	3,088	3,365	115,429	82,198	48,748	26,584	2,686
Infant deaths	383	-	-	14	11	163	95	57	35	7
Infant mortality rate	1.4	-	-	*	*	1.4	1.2	1.2	1.3	*
4,500-4,999 grams										
Live births	45,093	-	-	496	556	17,082	12,756	8,935	4,813	455
Infant deaths	71	-	-	9	3	23	20	7	5	3
Infant mortality rate	1.6	-	-	*	*	1.4	1.6	*	*	*
5,000 grams or more										
Live births	4,676	-	-	70	78	1,909	1,140	878	534	67
Infant deaths	26	-	-	2	1	10	5	2	3	3
Infant mortality rate	5.6	-	-	*	*	*	*	*	*	*
Not stated										
Live births	997	-	-	-	-	-	-	-	-	997
Infant deaths	247	-	-	-	-	-	-	-	-	247
Infant mortality rate	247.4	-	-	-	-	-	-	-	-	247.4
Black										
Total										
Live births	606,183	10,638	13,546	48,061	33,097	294,116	109,166	53,257	39,785	4,517
Infant deaths	8,084	4,351	641	575	227	1,271	401	168	205	246
Infant mortality rate	13.3	409.0	47.3	12.0	6.8	4.3	3.7	3.2	5.1	54.5

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, 2001 period data

[Infant deaths weighted. Rates are per 1000 live births] - Con.

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										
Less than 2,500 grams										
Live births	78,760	10,293	10,402	23,924	8,177	19,301	2,880	1,399	1,617	767
Infant deaths	5,960	4,341	618	410	103	276	53	21	37	102
Infant mortality rate	75.7	421.7	59.4	17.2	12.6	14.3	18.2	15.1	23.1	132.6
Less than 500 grams										
Live births	2,491	2,335	82	9	1	4	-	-	2	58
Infant deaths	2,111	2,009	53	2	1	1	-	-	2	44
Infant mortality rate	847.5	860.2	643.2	*	*	*	-	-	*	753.5
500-749 grams										
Live births	4,262	3,696	460	34	1	7	1	2	5	56
Infant deaths	1,933	1,764	130	13	-	1	1	-	1	22
Infant mortality rate	453.5	477.3	283.0	*	*	*	*	*	*	401.7
750-999 grams										
Live births	3,733	2,369	1,178	111	5	20	10	1	5	34
Infant deaths	561	420	117	9	1	3	1	-	1	9
Infant mortality rate	150.4	177.1	99.7	*	*	*	*	*	*	*
1,000-1,249 grams										
Live births	3,968	985	2,161	560	34	127	21	11	25	44
Infant deaths	271	90	126	29	4	10	3	1	2	6
Infant mortality rate	68.3	91.0	58.2	52.3	*	*	*	*	*	*
1,250-1,499 grams										
Live births	4,272	303	2,261	1,242	115	195	45	16	47	48
Infant deaths	181	29	84	38	6	12	4	1	1	5
Infant mortality rate	42.3	97.0	37.0	31.0	*	*	*	*	*	*
1,500-1,999 grams										
Live births	15,414	363	3,024	8,053	1,226	1,958	258	143	241	148
Infant deaths	398	21	85	162	26	67	13	6	12	6
Infant mortality rate	25.8	58.4	28.0	20.1	21.5	34.0	*	*	*	*
2,000-2,499 grams										
Live births	44,620	242	1,236	13,915	6,795	16,990	2,545	1,226	1,292	379
Infant deaths	505	8	23	156	64	182	30	13	18	9
Infant mortality rate	11.3	*	18.7	11.2	9.5	10.7	11.9	*	*	*
2,500-2,999 grams										
Live births	142,307	345	1,357	12,181	12,601	80,133	18,709	8,251	7,702	1,028
Infant deaths	768	10	11	101	66	384	99	44	45	8
Infant mortality rate	5.4	*	*	8.3	5.3	4.8	5.3	5.4	5.9	*
3,000-3,499 grams										
Live births	231,071	-	1,294	8,308	8,818	124,716	47,724	22,053	16,654	1,504
Infant deaths	764	-	7	38	37	414	133	55	73	7
Infant mortality rate	3.3	-	*	4.6	4.2	3.3	2.8	2.5	4.4	*
3,500-3,999 grams										
Live births	122,568	-	493	3,003	2,894	57,130	31,344	16,317	10,647	740
Infant deaths	375	-	5	20	17	158	89	37	40	7
Infant mortality rate	3.1	-	*	6.7	*	2.8	2.9	2.3	3.8	*

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, 2001 period data

[Infant deaths weighted. Rates are per 1000 live births] - Con.

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										
4,000-4,499 grams										
Live births	26,699	-	-	542	486	10,942	7,306	4,508	2,715	200
Infant deaths	73	-	-	3	2	30	20	8	8	2
Infant mortality rate	2.8	-	-	*	*	2.8	2.8	*	*	*
4,500-4,999 grams										
Live births	3,996	-	-	85	108	1,638	1,080	659	397	29
Infant deaths	21	-	-	1	1	7	6	2	-	4
Infant mortality rate	5.3	-	-	*	*	*	*	*	*	*
5,000 grams or more										
Live births	544	-	-	18	13	256	123	70	53	11
Infant deaths	7	-	-	1	-	2	1	1	1	1
Infant mortality rate	*	-	-	*	*	*	*	*	*	*
Not stated										
Live births	238	-	-	-	-	-	-	-	-	238
Infant deaths	115	-	-	-	-	-	-	-	-	115
Infant mortality rate	484.1	-	-	-	-	-	-	-	-	484.1
American Indian [1]										
Total										
Live births	41,872	278	601	2,650	1,956	19,639	8,540	4,240	3,596	372
Infant deaths	404	96	24	56	21	121	38	22	14	10
Infant mortality rate	9.7	346.3	40.6	21.3	10.8	6.2	4.5	5.2	*	*
Less than 2,500 grams										
Live births	3,072	262	376	1,083	334	715	130	53	81	38
Infant deaths	189	95	24	36	9	20	3	-	-	1
Infant mortality rate	61.6	363.6	64.8	33.5	*	28.3	*	*	*	*
Less than 500 grams										
Live births	54	49	4	-	-	-	-	-	-	1
Infant deaths	42	39	2	-	-	-	-	-	-	-
Infant mortality rate	769.3	805.8	*	-	-	-	-	-	-	*
500-749 grams										
Live births	84	67	15	1	-	1	-	-	-	-
Infant deaths	38	34	4	-	-	-	-	-	-	-
Infant mortality rate	447.3	500.9	*	*	-	*	-	-	-	-
750-999 grams										
Live births	125	75	42	6	-	-	-	-	-	2
Infant deaths	20	13	4	2	-	-	-	-	-	1
Infant mortality rate	162.4	*	*	*	-	-	-	-	-	*
1,000-1,249 grams										
Live births	133	29	75	21	3	1	1	-	-	3
Infant deaths	14	6	6	1	-	1	-	-	-	-
Infant mortality rate	*	*	*	*	*	*	*	-	-	*
1,250-1,499 grams										
Live births	138	12	62	41	5	11	2	-	3	2
Infant deaths	7	1	3	2	-	1	-	-	-	-
Infant mortality rate	*	*	*	*	*	*	*	-	*	*

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, 2001 period data

[Infant deaths weighted. Rates are per 1000 live births] - Con.

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
American Indian [1]										
1,500-1,999 grams										
Live births	627	17	121	343	39	75	10	4	13	5
Infant deaths	19	1	3	9	2	4	-	-	-	-
Infant mortality rate	*	*	*	*	*	*	*	*	*	*
2,000-2,499 grams										
Live births	1,911	13	57	671	287	627	117	49	65	25
Infant deaths	49	1	2	22	7	14	3	-	-	-
Infant mortality rate	25.9	*	*	33.0	*	*	*	*	*	*
2,500-2,999 grams										
Live births	6,473	16	75	620	617	3,493	819	364	412	57
Infant deaths	52	1	-	6	6	25	7	2	4	-
Infant mortality rate	8.0	*	*	*	*	7.2	*	*	*	*
3,000-3,499 grams										
Live births	15,091	-	97	543	644	7,881	3,102	1,436	1,271	117
Infant deaths	82	-	-	9	2	44	12	8	5	1
Infant mortality rate	5.4	-	*	*	*	5.6	*	*	*	*
3,500-3,999 grams										
Live births	12,348	-	53	298	272	5,586	3,200	1,592	1,257	90
Infant deaths	60	-	-	3	3	25	14	10	4	1
Infant mortality rate	4.9	-	*	*	*	4.5	*	*	*	*
4,000-4,499 grams										
Live births	3,995	-	-	89	70	1,642	1,061	638	462	33
Infant deaths	7	-	-	2	1	2	1	1	-	-
Infant mortality rate	*	-	-	*	*	*	*	*	*	*
4,500-4,999 grams										
Live births	761	-	-	17	17	277	203	135	103	9
Infant deaths	5	-	-	-	-	3	1	1	-	-
Infant mortality rate	*	-	-	*	*	*	*	*	*	*
5,000 grams or more										
Live births	105	-	-	-	2	45	25	22	10	1
Infant deaths	2	-	-	-	-	1	-	-	1	-
Infant mortality rate	*	-	-	-	*	*	*	*	*	*
Not stated										
Live births	27	-	-	-	-	-	-	-	-	27
Infant deaths	7	-	-	-	-	-	-	-	-	7
Infant mortality rate	*	-	-	-	-	-	-	-	-	*
Asian or Pacific Islander										
Total										
Live births	200,283	895	1,795	9,508	8,137	105,145	41,251	18,598	11,728	3,226
Infant deaths	947	359	77	103	36	208	54	37	25	48
Infant mortality rate	4.7	401.4	42.8	10.8	4.5	2.0	1.3	2.0	2.2	14.8
Less than 2,500 grams										
Live births	15,058	858	1,338	4,459	1,920	4,988	664	274	261	296
Infant deaths	622	358	75	78	23	47	8	5	3	25
Infant mortality rate	41.3	417.6	55.9	17.4	12.1	9.4	*	*	*	82.9

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, 2001 period data

[Infant deaths weighted. Rates are per 1000 live births] - Con.

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
Asian or Pacific Islander										
Less than 500 grams										
Live births	181	162	7	2	-	-	-	-	-	10
Infant deaths	162	151	1	2	-	-	-	-	-	8
Infant mortality rate	895.2	930.6	*	*	-	-	-	-	-	*
500-749 grams										
Live births	359	292	44	4	2	2	1	-	-	14
Infant deaths	169	149	9	1	2	2	1	-	-	5
Infant mortality rate	470.8	509.3	*	*	*	*	*	-	-	*
750-999 grams										
Live births	425	255	125	20	1	8	3	-	-	13
Infant deaths	70	45	17	4	1	-	-	-	-	3
Infant mortality rate	164.6	175.1	*	*	*	*	*	-	-	*
1,000-1,249 grams										
Live births	465	79	274	73	2	17	3	2	2	13
Infant deaths	31	7	13	6	1	1	-	-	-	3
Infant mortality rate	67.5	*	*	*	*	*	*	*	*	*
1,250-1,499 grams										
Live births	645	24	323	199	19	43	10	4	6	17
Infant deaths	30	4	9	12	-	1	1	1	-	2
Infant mortality rate	47.0	*	*	*	*	*	*	*	*	*
1,500-1,999 grams										
Live births	2,617	30	410	1,383	256	393	41	33	20	51
Infant deaths	72	3	18	25	6	13	2	2	1	1
Infant mortality rate	27.4	*	*	18.3	*	*	*	*	*	*
2,000-2,499 grams										
Live births	10,366	16	155	2,778	1,640	4,525	606	235	233	178
Infant deaths	87	-	7	27	13	29	4	2	2	2
Infant mortality rate	8.4	*	*	9.8	*	6.5	*	*	*	*
2,500-2,999 grams										
Live births	44,103	37	190	2,457	3,222	26,782	6,286	2,554	1,889	686
Infant deaths	115	1	-	17	10	63	9	8	4	3
Infant mortality rate	2.6	*	*	*	*	2.3	*	*	*	*
3,000-3,499 grams										
Live births	84,178	-	200	1,754	2,175	47,391	18,624	7,715	5,036	1,283
Infant deaths	124	-	1	7	2	68	17	14	11	4
Infant mortality rate	1.5	-	*	*	*	1.4	*	*	*	*
3,500-3,999 grams										
Live births	45,791	-	67	706	683	21,575	12,462	6,099	3,487	712
Infant deaths	57	-	1	1	-	23	15	9	6	1
Infant mortality rate	1.2	-	*	*	*	1.1	*	*	*	*
4,000-4,499 grams										
Live births	9,634	-	-	119	111	3,862	2,823	1,656	895	168
Infant deaths	10	-	-	-	1	5	3	-	1	-
Infant mortality rate	*	-	-	*	*	*	*	*	*	*

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, 2001 period data

[Infant deaths weighted. Rates are per 1000 live births] - Con.

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
Asian or Pacific Islander										
4,500-4,999 grams										
Live births	1,295	-	-	12	23	469	350	273	140	28
Infant deaths	5	-	-	-	-	2	1	1	-	1
Infant mortality rate	*	-	-	*	*	*	*	*	*	*
5,000 grams or more										
Live births	175	-	-	1	3	78	42	27	20	4
Infant deaths	-	-	-	-	-	-	-	-	-	-
Infant mortality rate	*	-	-	*	*	*	*	*	*	*
Not stated										
Live births	49	-	-	-	-	-	-	-	-	49
Infant deaths	14	-	-	-	-	-	-	-	-	14
Infant mortality rate	*	-	-	-	-	-	-	-	-	*

- Quantity zero.
* Figure does not meet standard of reliability or precision; based on fewer than 20 deaths in the numerator.
1 Includes Aleuts and Eskimos.

Documentation Table 4

Live births, infant deaths, and infant mortality rates by birthweight, race of mother, and age at death: United States, 2001 period data

[Infant deaths are 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 races						
Total (all birthweights)	4,026,036	27,523	18,275	14,622	3,653	9,248
Rate		6.8	4.5	3.6	0.9	2.3
Less than 2,500 grams	309,760	18,151	14,752	12,413	2,339	3,399
Rate		58.6	47.6	40.1	7.6	11.0
Less than 500 grams	6,450	5,515	5,406	5,231	175	110
Rate		855.1	838.1	810.9	27.2	17.0
500-749 grams	11,081	5,283	4,555	3,736	818	729
Rate		476.8	411.0	337.2	73.8	65.8
750-999 grams	11,847	1,826	1,373	950	422	454
Rate		154.2	115.9	80.2	35.6	38.3
1,000-1,249 grams	13,572	1,001	679	489	190	322
Rate		73.8	50.0	36.0	14.0	23.7
1,250-1,499 grams	15,752	719	535	406	130	183
Rate		45.6	34.0	25.8	8.2	11.6
1,500-1,999 grams	60,858	1,658	1,058	817	242	600
Rate		27.2	17.4	13.4	4.0	9.9
2,000-2,499 grams	190,200	2,148	1,146	784	362	1,002
Rate		11.3	6.0	4.1	1.9	5.3
2,500-2,999 grams	680,813	3,042	1,184	725	459	1,858
Rate		4.5	1.7	1.1	0.7	2.7
3,000-3,499 grams	1,515,531	3,434	1,167	651	516	2,267
Rate		2.3	0.8	0.4	0.3	1.5
3,500-3,999 grams	1,139,550	1,902	576	331	246	1,326
Rate		1.7	0.5	0.3	0.2	1.2
4,000-4,499 grams	322,426	474	160	94	65	314
Rate		1.5	0.5	0.3	0.2	1.0
4,500-4,999 grams	51,145	102	55	49	6	47
Rate		2.0	1.1	1.0	*	0.9
5,000 grams or more	5,500	35	22	13	9	13
Rate		6.4	4.0	*	*	*
Not stated	1,311	383	359	347	12	24
Rate		292.2	273.8	264.5	*	18.4

See footnotes at end of table.

Documentation Table 4

Live births, infant deaths, and infant mortality rates by birthweight, race of mother, and age at death: United States, 2001 period data - Con.

[Infant deaths are 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
White						
Total (all birthweights)	3,177,698	18,087	12,078	9,571	2,506	6,009
Rate		5.7	3.8	3.0	0.8	1.9
Less than 2,500 grams	212,870	11,380	9,419	7,907	1,512	1,961
Rate		53.5	44.2	37.1	7.1	9.2
Less than 500 grams	3,724	3,201	3,145	3,050	96	55
Rate		859.5	844.7	819.0	25.7	14.9
500-749 grams	6,376	3,144	2,785	2,312	473	358
Rate		493.1	436.8	362.6	74.2	56.2
750-999 grams	7,564	1,175	946	661	285	228
Rate		155.3	125.1	87.4	37.7	30.2
1,000-1,249 grams	9,006	685	501	371	130	183
Rate		76.0	55.7	41.2	14.4	20.3
1,250-1,499 grams	10,697	501	390	304	86	111
Rate		46.8	36.4	28.5	8.0	10.4
1,500-1,999 grams	42,200	1,169	782	608	174	386
Rate		27.7	18.5	14.4	4.1	9.2
2,000-2,499 grams	133,303	1,506	868	600	268	639
Rate		11.3	6.5	4.5	2.0	4.8
2,500-2,999 grams	487,930	2,106	902	563	339	1,204
Rate		4.3	1.8	1.2	0.7	2.5
3,000-3,499 grams	1,185,191	2,464	899	513	386	1,565
Rate		2.1	0.8	0.4	0.3	1.3
3,500-3,999 grams	958,843	1,410	443	250	192	968
Rate		1.5	0.5	0.3	0.2	1.0
4,000-4,499 grams	282,098	383	137	81	56	246
Rate		1.4	0.5	0.3	0.2	0.9
4,500-4,999 grams	45,093	71	37	34	3	34
Rate		1.6	0.8	0.7	*	0.8
5,000 grams or more	4,676	26	16	9	7	10
Rate		5.6	*	*	*	*
Not stated	997	247	226	215	10	21
Rate		247.4	226.2	216.0	*	21.2

See footnotes at end of table.

Documentation Table 4

Live births, infant deaths, and infant mortality rates by birthweight, race of mother, and age at death: United States, 2001 period data - Con.

[Infant deaths are 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
Black						
Total (all birthweights)	606,183	8,084	5,396	4,425	971	2,688
Rate		13.3	8.9	7.3	1.6	4.4
Less than 2,500 grams	78,760	5,960	4,708	3,992	716	1,252
Rate		75.7	59.8	50.7	9.1	15.9
Less than 500 grams	2,491	2,111	2,062	1,989	73	49
Rate		847.5	827.7	798.6	29.1	19.8
500-749 grams	4,262	1,933	1,594	1,285	309	339
Rate		453.5	374.0	301.5	72.4	79.5
750-999 grams	3,733	561	358	239	119	203
Rate		150.4	95.9	64.1	31.8	54.4
1,000-1,249 grams	3,968	271	151	100	51	120
Rate		68.3	38.1	25.2	12.9	30.1
1,250-1,499 grams	4,272	181	116	80	36	64
Rate		42.3	27.2	18.7	8.5	15.1
1,500-1,999 grams	15,414	398	217	164	53	181
Rate		25.8	14.1	10.6	3.5	11.7
2,000-2,499 grams	44,620	505	209	134	76	296
Rate		11.3	4.7	3.0	1.7	6.6
2,500-2,999 grams	142,307	768	221	128	93	547
Rate		5.4	1.6	0.9	0.7	3.8
3,000-3,499 grams	231,071	764	210	105	106	553
Rate		3.3	0.9	0.5	0.5	2.4
3,500-3,999 grams	122,568	375	106	64	42	269
Rate		3.1	0.9	0.5	0.3	2.2
4,000-4,499 grams	26,699	73	18	10	8	55
Rate		2.8	*	*	*	2.1
4,500-4,999 grams	3,996	21	13	10	3	8
Rate		5.3	*	*	*	*
5,000 grams or more	544	7	5	3	2	2
Rate		*	*	*	*	*
Not stated	238	115	114	113	1	1
Rate		484.1	479.9	475.7	*	*

See footnotes at end of table.

Documentation Table 4

Live births, infant deaths, and infant mortality rates by birthweight, race of mother, and age at death: United States, 2001 period data - Con.

[Infant deaths are 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
American Indian [1]						
Total (all birthweights)	41,872	404	176	129	47	228
Rate		9.7	4.2	3.1	1.1	5.4
Less than 2,500 grams	3,072	189	128	101	27	61
Rate		61.6	41.6	32.7	8.8	20.0
Less than 500 grams	54	42	42	39	3	-
Rate		769.3	769.3	713.3	*	-
500-749 grams	84	38	30	19	10	8
Rate		447.3	351.4	*	*	*
750-999 grams	125	20	15	12	3	5
Rate		162.4	*	*	*	*
1,000-1,249 grams	133	14	9	5	4	5
Rate		*	*	*	*	*
1,250-1,499 grams	138	7	6	5	1	1
Rate		*	*	*	*	*
1,500-1,999 grams	627	19	13	11	2	6
Rate		*	*	*	*	*
2,000-2,499 grams	1,911	49	13	9	4	36
Rate		25.9	*	*	*	19.0
2,500-2,999 grams	6,473	52	10	6	4	41
Rate		8.0	*	*	*	6.4
3,000-3,499 grams	15,091	82	15	5	10	67
Rate		5.4	*	*	*	4.4
3,500-3,999 grams	12,348	60	11	7	4	49
Rate		4.9	*	*	*	4.0
4,000-4,499 grams	3,995	7	2	1	1	5
Rate		*	*	*	*	*
4,500-4,999 grams	761	5	2	2	-	3
Rate		*	*	*	-	*
5,000 grams or more	105	2	1	1	-	1
Rate		*	*	*	-	*
Not stated	27	7	7	6	1	-
Rate		*	*	*	*	-

See footnotes at end of table.

Documentation Table 4

Live births, infant deaths, and infant mortality rates by birthweight, race of mother, and age at death: United States, 2001 period data - Con.

[Infant deaths are 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
Asian or Pacific Islander						
Total (all birthweights)	200,283	947	624	496	128	323
Rate		4.7	3.1	2.5	0.6	1.6
Less than 2,500 grams	15,058	622	498	414	84	124
Rate		41.3	33.0	27.5	5.6	8.2
Less than 500 grams	181	162	157	153	4	5
Rate		895.2	867.4	845.1	*	*
500-749 grams	359	169	146	120	26	23
Rate		470.8	406.2	333.3	72.9	64.6
750-999 grams	425	70	53	38	15	17
Rate		164.6	124.3	88.5	*	*
1,000-1,249 grams	465	31	17	12	5	14
Rate		67.5	*	*	*	*
1,250-1,499 grams	645	30	23	16	7	7
Rate		47.0	36.0	*	*	*
1,500-1,999 grams	2,617	72	46	34	12	26
Rate		27.4	17.4	12.8	*	10.0
2,000-2,499 grams	10,366	87	56	42	14	31
Rate		8.4	5.4	4.0	*	3.0
2,500-2,999 grams	44,103	115	51	27	23	65
Rate		2.6	1.1	0.6	0.5	1.5
3,000-3,499 grams	84,178	124	43	29	14	82
Rate		1.5	0.5	0.3	*	1.0
3,500-3,999 grams	45,791	57	16	9	7	40
Rate		1.2	*	*	*	0.9
4,000-4,499 grams	9,634	10	2	2	-	8
Rate		*	*	*	-	*
4,500-4,999 grams	1,295	5	3	3	-	2
Rate		*	*	*	-	*
5,000 grams or more	175	-	-	-	-	-
Rate		-	-	-	-	-
Not stated	49	14	12	12	-	2
Rate		*	*	*	-	*

* Figure does not meet standard of reliability or precision; based on fewer than 20 deaths in the numerator
\- Quantity zero.
1 Includes Aleuts and Eskimos.

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, 2001 PERIOD 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, ALL BIRTHWEIGHTS							
ALL CAUSES	NUMBER...	4,026,036	27,523	18,275	14,622	3,653	9,248
	RATE.....		683.6	453.9	363.2	90.7	229.7
CONGENITAL MALFORMATIONS (Q00-Q99)	NUMBER...		5,538	3,906	2,984	923	1,632
	RATE.....		137.6	97.0	74.1	22.9	40.5
SHORT GESTATION AND LOW BIRTHWEIGHT NEC (P07)	NUMBER...		4,408	4,324	4,195	129	84
	RATE.....		109.5	107.4	104.2	3.2	2.1
SUDDEN INFANT DEATH SYNDROME (R95)	NUMBER...		2,236	186	24	162	2,049
	RATE.....		55.5	4.6	.6	4.0	50.9
MATERNAL COMPLICATIONS OF PREGNANCY (P01)	NUMBER...		1,501	1,493	1,469	23	8
	RATE.....		37.3	37.1	36.5	.6	*
RESPIRATORY DISTRESS OF NEWBORN (P22)	NUMBER...		1,019	953	763	190	66
	RATE.....		25.3	23.7	18.9	4.7	1.6
COMPLICATIONS OF PLACENTA, CORD, MEMBRANES (P02)	NUMBER...		1,014	995	961	34	19
	RATE.....		25.2	24.7	23.9	.9	*
ACCIDENTS (UNINTENTIONAL INJURIES) (V01-X59)	NUMBER...		970	103	17	85	867
	RATE.....		24.1	2.5	*	2.1	21.5
BACTERIAL SEPSIS OF NEWBORN (P36)	NUMBER...		695	649	282	367	46
	RATE.....		17.3	16.1	7.0	9.1	1.2
DISEASES OF THE CIRCULATORY SYSTEM (I00-I99)	NUMBER...		616	216	138	79	400
	RATE.....		15.3	5.4	3.4	2.0	9.9
INTRAUTERINE HYPOXIA, BIRTH ASPHYXIA (P20-P21)	NUMBER...		531	508	392	116	23
	RATE.....		13.2	12.6	9.7	2.9	.6
ALL OTHER CAUSES	NUMBER...		8,994	4,941	3,396	1,545	4,053
	RATE.....		223.4	122.7	84.4	38.4	100.7

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, 2001 PERIOD 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, LESS THAN 2,500 GRAMS							
ALL CAUSES	NUMBER...	309,760	18,151	14,752	12,413	2,339	3,399
	RATE.....		5,859.6	4,762.4	4,007.2	755.2	1,097.2
CONGENITAL MALFORMATIONS (Q00-Q99)	NUMBER...		3,134	2,461	2,056	404	673
	RATE.....		1,011.8	794.4	663.9	130.6	217.3
SHORT GESTATION AND LOW BIRTHWEIGHT NEC (P07)	NUMBER...		4,218	4,136	4,008	128	82
	RATE.....		1,361.8	1,335.1	1,293.9	41.2	26.6
SUDDEN INFANT DEATH SYNDROME (R95)	NUMBER...		432	35	4	31	397
	RATE.....		139.4	11.4	*	10.1	128.0
MATERNAL COMPLICATIONS OF PREGNANCY (P01)	NUMBER...		1,422	1,415	1,392	23	7
	RATE.....		459.1	456.8	449.3	7.5	*
RESPIRATORY DISTRESS OF NEWBORN (P22)	NUMBER...		983	921	738	183	61
	RATE.....		317.3	297.5	238.4	59.1	19.8
COMPLICATIONS OF PLACENTA, CORD, MEMBRANES (P02)	NUMBER...		877	863	843	19	14
	RATE.....		283.0	278.5	272.3	*	*
ACCIDENTS (UNINTENTIONAL INJURIES) (V01-X59)	NUMBER...		146	20	7	13	126
	RATE.....		47.1	6.5	*	*	40.6
BACTERIAL SEPSIS OF NEWBORN (P36)	NUMBER...		599	555	236	319	43
	RATE.....		193.2	179.2	76.2	103.0	14.0
DISEASES OF THE CIRCULATORY SYSTEM (I00-I99)	NUMBER...		266	120	83	37	146
	RATE.....		85.9	38.8	26.8	12.0	47.1
INTRAUTERINE HYPOXIA, BIRTH ASPHYXIA (P20-P21)	NUMBER...		270	265	215	49	5
	RATE.....		87.0	85.4	69.4	16.0	*
ALL OTHER CAUSES	NUMBER...		5,805	3,961	2,830	1,132	1,844
	RATE.....		1,874.1	1,278.8	913.4	365.4	595.2

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, 2001 PERIOD 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, 2,500 GRAMS OR MORE							
ALL CAUSES	NUMBER...	3,714,965	8,989	3,164	1,862	1,302	5,825
	RATE.....		242.0	85.2	50.1	35.0	156.8
CONGENITAL MALFORMATIONS (Q00-Q99)	NUMBER...		2,366	1,413	896	517	952
	RATE.....		63.7	38.0	24.1	13.9	25.6
SHORT GESTATION AND LOW BIRTHWEIGHT NEC (P07)	NUMBER...		31	30	29	1	1
	RATE.....		.8	.8	.8	*	*
SUDDEN INFANT DEATH SYNDROME (R95)	NUMBER...		1,801	150	19	130	1,651
	RATE.....		48.5	4.0	*	3.5	44.4
MATERNAL COMPLICATIONS OF PREGNANCY (P01)	NUMBER...		23	22	22	-	1
	RATE.....		.6	.6	.6	-	*
RESPIRATORY DISTRESS OF NEWBORN (P22)	NUMBER...		30	25	18	7	5
	RATE.....		.8	.7	*	*	*
COMPLICATIONS OF PLACENTA, CORD, MEMBRANES (P02)	NUMBER...		112	107	92	15	5
	RATE.....		3.0	2.9	2.5	*	*
ACCIDENTS (UNINTENTIONAL INJURIES) (V01-X59)	NUMBER...		823	82	10	72	740
	RATE.....		22.1	2.2	*	1.9	19.9
BACTERIAL SEPSIS OF NEWBORN (P36)	NUMBER...		94	91	44	47	3
	RATE.....		2.5	2.4	1.2	1.3	*
DISEASES OF THE CIRCULATORY SYSTEM (I00-I99)	NUMBER...		346	94	54	40	252
	RATE.....		9.3	2.5	1.4	1.1	6.8
INTRAUTERINE HYPOXIA, BIRTH ASPHYXIA (P20-P21)	NUMBER...		255	239	173	66	16
	RATE.....		6.9	6.4	4.7	1.8	*
ALL OTHER CAUSES	NUMBER...		3,108	909	504	405	2,199
	RATE.....		83.7	24.5	13.6	10.9	59.2

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, 2001 PERIOD 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, NOT STATED BIRTHWEIGHT							
ALL CAUSES	NUMBER...	1,311	383	359	347	12	24
	RATE.....		29,221.2	27,378.0	26,452.3	*	1,843.2
CONGENITAL MALFORMATIONS (Q00-Q99)	NUMBER...		38	32	31	1	6
	RATE.....		2,924.7	2,463.8	2,383.6	*	*
SHORT GESTATION AND LOW BIRTHWEIGHT NEC (P07)	NUMBER...		159	158	158	-	1
	RATE.....		12,113.3	12,036.9	12,036.9	-	*
SUDDEN INFANT DEATH SYNDROME (R95)	NUMBER...		3	1	1	-	2
	RATE.....		*	*	*	-	*
MATERNAL COMPLICATIONS OF PREGNANCY (P01)	NUMBER...		56	56	56	-	-
	RATE.....		4,240.0	4,240.0	4,240.0	-	-
RESPIRATORY DISTRESS OF NEWBORN (P22)	NUMBER...		6	6	6	-	-
	RATE.....		*	*	*	-	-
COMPLICATIONS OF PLACENTA, CORD, MEMBRANES (P02)	NUMBER...		25	25	25	-	-
	RATE.....		1,923.2	1,923.2	1,923.2	-	-
ACCIDENTS (UNINTENTIONAL INJURIES) (V01-X59)	NUMBER...		1	-	-	-	1
	RATE.....		*	-	-	-	*
BACTERIAL SEPSIS OF NEWBORN (P36)	NUMBER...		3	3	2	1	-
	RATE.....		*	*	*	*	-
DISEASES OF THE CIRCULATORY SYSTEM (I00-I99)	NUMBER...		4	2	1	1	2
	RATE.....		*	*	*	*	*
INTRAUTERINE HYPOXIA, BIRTH ASPHYXIA (P20-P21)	NUMBER...		7	5	4	1	2
	RATE.....		*	*	*	*	*
ALL OTHER CAUSES	NUMBER...		81	71	63	8	10
	RATE.....		6,164.2	5,396.1	4,782.0	*	*

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, 2001 PERIOD 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...	3,177,698	18,087	12,078	9,571	2,506	6,009
	RATE.....		569.2	380.1	301.2	78.9	189.1
CONGENITAL MALFORMATIONS (Q00-Q99)	NUMBER...		4,261	3,065	2,362	704	1,196
	RATE.....		134.1	96.5	74.3	22.1	37.6
SHORT GESTATION AND LOW BIRTHWEIGHT NEC (P07)	NUMBER...		2,463	2,422	2,343	79	41
	RATE.....		77.5	76.2	73.7	2.5	1.3
SUDDEN INFANT DEATH SYNDROME (R95)	NUMBER...		1,449	137	17	120	1,312
	RATE.....		45.6	4.3	*	3.8	41.3
MATERNAL COMPLICATIONS OF PREGNANCY (P01)	NUMBER...		932	928	913	14	4
	RATE.....		29.3	29.2	28.7	*	*
RESPIRATORY DISTRESS OF NEWBORN (P22)	NUMBER...		633	597	471	126	36
	RATE.....		19.9	18.8	14.8	4.0	1.1
COMPLICATIONS OF PLACENTA, CORD, MEMBRANES (P02)	NUMBER...		696	684	659	25	12
	RATE.....		21.9	21.5	20.7	.8	*
ACCIDENTS (UNINTENTIONAL INJURIES) (V01-X59)	NUMBER...		657	72	10	62	584
	RATE.....		20.7	2.3	*	2.0	18.4
BACTERIAL SEPSIS OF NEWBORN (P36)	NUMBER...		439	414	182	232	25
	RATE.....		13.8	13.0	5.7	7.3	.8
DISEASES OF THE CIRCULATORY SYSTEM (I00-I99)	NUMBER...		408	151	95	55	257
	RATE.....		12.8	4.7	3.0	1.7	8.1
INTRAUTERINE HYPOXIA, BIRTH ASPHYXIA (P20-P21)	NUMBER...		391	376	288	88	15
	RATE.....		12.3	11.8	9.1	2.8	*
ALL OTHER CAUSES	NUMBER...		5,759	3,232	2,231	1,002	2,527
	RATE.....		181.2	101.7	70.2	31.5	79.5

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, 2001 PERIOD 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	NUMBER...	212,870	11,380	9,419	7,907	1,512	1,961
	RATE.....		5,345.8	4,424.6	3,714.3	710.3	921.2
CONGENITAL MALFORMATIONS (Q00-Q99)	NUMBER...		2,412	1,924	1,620	304	488
	RATE.....		1,133.2	903.9	760.9	143.0	229.3
SHORT GESTATION AND LOW BIRTHWEIGHT NEC (P07)	NUMBER...		2,363	2,323	2,245	78	40
	RATE.....		1,110.1	1,091.2	1,054.7	36.4	18.9
SUDDEN INFANT DEATH SYNDROME (R95)	NUMBER...		233	25	3	22	207
	RATE.....		109.3	11.9	*	10.4	97.4
MATERNAL COMPLICATIONS OF PREGNANCY (P01)	NUMBER...		880	877	863	14	3
	RATE.....		413.5	412.0	405.4	*	*
RESPIRATORY DISTRESS OF NEWBORN (P22)	NUMBER...		609	577	456	121	32
	RATE.....		286.0	270.9	214.2	56.7	15.1
COMPLICATIONS OF PLACENTA, CORD, MEMBRANES (P02)	NUMBER...		585	577	562	14	8
	RATE.....		274.6	270.8	264.2	*	*
ACCIDENTS (UNINTENTIONAL INJURIES) (V01-X59)	NUMBER...		84	11	3	8	73
	RATE.....		39.3	*	*	*	34.1
BACTERIAL SEPSIS OF NEWBORN (P36)	NUMBER...		360	335	143	192	24
	RATE.....		168.9	157.6	67.2	90.3	11.4
DISEASES OF THE CIRCULATORY SYSTEM (I00-I99)	NUMBER...		175	85	59	26	90
	RATE.....		82.0	39.9	27.6	12.3	42.1
INTRAUTERINE HYPOXIA, BIRTH ASPHYXIA (P20-P21)	NUMBER...		184	181	147	33	3
	RATE.....		86.2	84.8	69.2	15.7	*
ALL OTHER CAUSES	NUMBER...		3,497	2,504	1,805	699	993
	RATE.....		1,642.8	1,176.4	848.0	328.4	466.4

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, 2001 PERIOD 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...	2,963,831	6,461	2,434	1,449	984	4,027
	RATE.....		218.0	82.1	48.9	33.2	135.9
CONGENITAL MALFORMATIONS (Q00-Q99)	NUMBER...		1,815	1,112	714	398	703
	RATE.....		61.2	37.5	24.1	13.4	23.7
SHORT GESTATION AND LOW BIRTHWEIGHT NEC (P07)	NUMBER...		17	17	16	1	-
	RATE.....		*	*	*	*	-
SUDDEN INFANT DEATH SYNDROME (R95)	NUMBER...		1,213	111	13	97	1,102
	RATE.....		40.9	3.7	*	3.3	37.2
MATERNAL COMPLICATIONS OF PREGNANCY (P01)	NUMBER...		19	18	18	-	1
	RATE.....		*	*	*	-	*
RESPIRATORY DISTRESS OF NEWBORN (P22)	NUMBER...		21	17	12	5	4
	RATE.....		.7	*	*	*	*
COMPLICATIONS OF PLACENTA, CORD, MEMBRANES (P02)	NUMBER...		92	88	77	11	4
	RATE.....		3.1	3.0	2.6	*	*
ACCIDENTS (UNINTENTIONAL INJURIES) (V01-X59)	NUMBER...		572	61	7	54	511
	RATE.....		19.3	2.1	*	1.8	17.2
BACTERIAL SEPSIS OF NEWBORN (P36)	NUMBER...		77	76	36	39	1
	RATE.....		2.6	2.6	1.2	1.3	*
DISEASES OF THE CIRCULATORY SYSTEM (I00-I99)	NUMBER...		229	64	36	28	165
	RATE.....		7.7	2.1	1.2	1.0	5.6
INTRAUTERINE HYPOXIA, BIRTH ASPHYXIA (P20-P21)	NUMBER...		202	192	139	53	10
	RATE.....		6.8	6.5	4.7	1.8	*
ALL OTHER CAUSES	NUMBER...		2,204	677	381	296	1,526
	RATE.....		74.3	22.9	12.9	10.0	51.5

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, 2001 PERIOD 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	NUMBER...	997	247	226	215	10	21
	RATE.....		24,742.9	22,621.5	21,604.8	*	2,121.3
CONGENITAL MALFORMATIONS (Q00-Q99)	NUMBER...		34	29	28	1	5
	RATE.....		3,443.0	2,938.0	2,832.5	*	*
SHORT GESTATION AND LOW BIRTHWEIGHT NEC (P07)	NUMBER...		83	82	82	-	1
	RATE.....		8,325.8	8,225.3	8,225.3	-	*
SUDDEN INFANT DEATH SYNDROME (R95)	NUMBER...		3	1	1	-	2
	RATE.....		*	*	*	-	*
MATERNAL COMPLICATIONS OF PREGNANCY (P01)	NUMBER...		32	32	32	-	-
	RATE.....		3,242.0	3,242.0	3,242.0	-	-
RESPIRATORY DISTRESS OF NEWBORN (P22)	NUMBER...		3	3	3	-	-
	RATE.....		*	*	*	-	-
COMPLICATIONS OF PLACENTA, CORD, MEMBRANES (P02)	NUMBER...		19	19	19	-	-
	RATE.....		*	*	*	-	-
ACCIDENTS (UNINTENTIONAL INJURIES) (V01-X59)	NUMBER...		1	-	-	-	1
	RATE.....		*	-	-	-	*
BACTERIAL SEPSIS OF NEWBORN (P36)	NUMBER...		3	3	2	1	-
	RATE.....		*	*	*	*	-
DISEASES OF THE CIRCULATORY SYSTEM (I00-I99)	NUMBER...		4	2	1	1	2
	RATE.....		*	*	*	*	*
INTRAUTERINE HYPOXIA, BIRTH ASPHYXIA (P20-P21)	NUMBER...		5	3	2	1	2
	RATE.....		*	*	*	*	*
ALL OTHER CAUSES	NUMBER...		59	51	45	6	8
	RATE.....		5,883.9	5,075.2	4,468.3	*	*

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, 2001 PERIOD 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, ALL BIRTHWEIGHTS							
ALL CAUSES	NUMBER...	606,183	8,084	5,396	4,425	971	2,688
	RATE.....		1,333.6	890.2	730.0	160.2	443.4
CONGENITAL MALFORMATIONS (Q00-Q99)	NUMBER...		982	650	488	162	332
	RATE.....		162.1	107.3	80.5	26.8	54.8
SHORT GESTATION AND LOW BIRTHWEIGHT NEC (P07)	NUMBER...		1,779	1,737	1,690	47	42
	RATE.....		293.5	286.5	278.7	7.8	7.0
SUDDEN INFANT DEATH SYNDROME (R95)	NUMBER...		688	39	6	33	649
	RATE.....		113.5	6.5	*	5.5	107.1
MATERNAL COMPLICATIONS OF PREGNANCY (P01)	NUMBER...		517	512	504	8	4
	RATE.....		85.2	84.5	83.2	*	*
RESPIRATORY DISTRESS OF NEWBORN (P22)	NUMBER...		346	319	262	57	26
	RATE.....		57.0	52.7	43.2	9.4	4.3
COMPLICATIONS OF PLACENTA, CORD, MEMBRANES (P02)	NUMBER...		280	274	266	8	6
	RATE.....		46.2	45.2	43.9	*	*
ACCIDENTS (UNINTENTIONAL INJURIES) (V01-X59)	NUMBER...		251	27	6	21	224
	RATE.....		41.5	4.5	*	3.5	37.0
BACTERIAL SEPSIS OF NEWBORN (P36)	NUMBER...		229	212	88	124	17
	RATE.....		37.7	34.9	14.5	20.4	*
DISEASES OF THE CIRCULATORY SYSTEM (I00-I99)	NUMBER...		177	52	31	21	125
	RATE.....		29.2	8.6	5.2	3.5	20.6
INTRAUTERINE HYPOXIA, BIRTH ASPHYXIA (P20-P21)	NUMBER...		118	111	87	24	7
	RATE.....		19.5	18.4	14.4	4.0	*
ALL OTHER CAUSES	NUMBER...		2,717	1,462	997	465	1,255
	RATE.....		448.2	241.1	164.4	76.7	207.1

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, 2001 PERIOD 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	NUMBER...	78,760	5,960	4,708	3,992	716	1,252
	RATE.....		7,567.6	5,977.9	5,068.3	909.6	1,589.7
CONGENITAL MALFORMATIONS (Q00-Q99)	NUMBER...		569	422	345	78	147
	RATE.....		722.6	536.2	437.4	98.8	186.4
SHORT GESTATION AND LOW BIRTHWEIGHT NEC (P07)	NUMBER...		1,700	1,659	1,612	47	41
	RATE.....		2,158.6	2,106.2	2,046.3	59.9	52.4
SUDDEN INFANT DEATH SYNDROME (R95)	NUMBER...		180	10	1	9	170
	RATE.....		228.7	*	*	*	215.9
MATERNAL COMPLICATIONS OF PREGNANCY (P01)	NUMBER...		493	489	481	8	4
	RATE.....		626.3	621.2	610.9	*	*
RESPIRATORY DISTRESS OF NEWBORN (P22)	NUMBER...		336	311	256	55	25
	RATE.....		427.1	395.2	325.1	70.2	31.9
COMPLICATIONS OF PLACENTA, CORD, MEMBRANES (P02)	NUMBER...		260	254	249	5	6
	RATE.....		329.7	322.1	315.6	*	*
ACCIDENTS (UNINTENTIONAL INJURIES) (V01-X59)	NUMBER...		53	6	3	3	47
	RATE.....		67.6	*	*	*	60.0
BACTERIAL SEPSIS OF NEWBORN (P36)	NUMBER...		213	198	82	116	15
	RATE.....		269.9	250.8	104.0	146.8	*
DISEASES OF THE CIRCULATORY SYSTEM (I00-I99)	NUMBER...		79	27	17	10	52
	RATE.....		100.8	34.5	*	*	66.3
INTRAUTERINE HYPOXIA, BIRTH ASPHYXIA (P20-P21)	NUMBER...		77	75	61	14	2
	RATE.....		97.6	95.0	77.2	*	*
ALL OTHER CAUSES	NUMBER...		1,999	1,257	886	371	742
	RATE.....		2,538.7	1,596.3	1,125.0	471.3	942.4

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, 2001 PERIOD 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	NUMBER...	527,185	2,009	574	320	254	1,435
	RATE.....		381.0	108.8	60.7	48.1	272.2
CONGENITAL MALFORMATIONS (Q00-Q99)	NUMBER...		410	225	140	85	185
	RATE.....		77.8	42.7	26.6	16.1	35.1
SHORT GESTATION AND LOW BIRTHWEIGHT NEC (P07)	NUMBER...		11	10	10	-	1
	RATE.....		*	*	*	-	*
SUDDEN INFANT DEATH SYNDROME (R95)	NUMBER...		508	29	5	24	479
	RATE.....		96.4	5.5	*	4.6	90.9
MATERNAL COMPLICATIONS OF PREGNANCY (P01)	NUMBER...		3	3	3	-	-
	RATE.....		*	*	*	-	-
RESPIRATORY DISTRESS OF NEWBORN (P22)	NUMBER...		7	6	4	2	1
	RATE.....		*	*	*	*	*
COMPLICATIONS OF PLACENTA, CORD, MEMBRANES (P02)	NUMBER...		17	17	14	3	-
	RATE.....		*	*	*	*	-
ACCIDENTS (UNINTENTIONAL INJURIES) (V01-X59)	NUMBER...		198	21	3	18	177
	RATE.....		37.6	4.0	*	*	33.6
BACTERIAL SEPSIS OF NEWBORN (P36)	NUMBER...		16	14	6	8	2
	RATE.....		*	*	*	*	*
DISEASES OF THE CIRCULATORY SYSTEM (I00-I99)	NUMBER...		98	25	14	11	72
	RATE.....		18.5	4.8	*	*	13.7
INTRAUTERINE HYPOXIA, BIRTH ASPHYXIA (P20-P21)	NUMBER...		39	34	24	10	5
	RATE.....		7.5	6.5	4.6	*	*
ALL OTHER CAUSES	NUMBER...		700	188	96	92	512
	RATE.....		132.8	35.7	18.1	17.5	97.1

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, 2001 PERIOD 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	NUMBER...	238	115	114	113	1	1
	RATE.....		48,414.9	47,994.7	47,574.5	*	*
CONGENITAL MALFORMATIONS (Q00-Q99)	NUMBER...		3	3	3	-	-
	RATE.....		*	*	*	-	-
SHORT GESTATION AND LOW BIRTHWEIGHT NEC (P07)	NUMBER...		68	68	68	-	-
	RATE.....		28,461.6	28,461.6	28,461.6	-	-
SUDDEN INFANT DEATH SYNDROME (R95)	NUMBER...		-	-	-	-	-
	RATE.....		-	-	-	-	-
MATERNAL COMPLICATIONS OF PREGNANCY (P01)	NUMBER...		20	20	20	-	-
	RATE.....		8,491.4	8,491.4	8,491.4	-	-
RESPIRATORY DISTRESS OF NEWBORN (P22)	NUMBER...		2	2	2	-	-
	RATE.....		*	*	*	-	-
COMPLICATIONS OF PLACENTA, CORD, MEMBRANES (P02)	NUMBER...		3	3	3	-	-
	RATE.....		*	*	*	-	-
ACCIDENTS (UNINTENTIONAL INJURIES) (V01-X59)	NUMBER...		-	-	-	-	-
	RATE.....		-	-	-	-	-
BACTERIAL SEPSIS OF NEWBORN (P36)	NUMBER...		-	-	-	-	-
	RATE.....		-	-	-	-	-
DISEASES OF THE CIRCULATORY SYSTEM (I00-I99)	NUMBER...		-	-	-	-	-
	RATE.....		-	-	-	-	-
INTRAUTERINE HYPOXIA, BIRTH ASPHYXIA (P20-P21)	NUMBER...		2	2	2	-	-
	RATE.....		*	*	*	-	-
ALL OTHER CAUSES	NUMBER...		17	16	15	1	1
	RATE.....		*	*	*	*	*

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, 2001 PERIOD 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
AMERICAN INDIAN 1/, ALL BIRTHWEIGHTS							
ALL CAUSES	NUMBER...	41,872	404	176	129	47	228
	RATE.....		965.0	420.9	307.8	113.1	544.1
CONGENITAL MALFORMATIONS (Q00-Q99)	NUMBER...		65	40	29	10	25
	RATE.....		154.7	94.5	70.3	*	60.2
SHORT GESTATION AND LOW BIRTHWEIGHT NEC (P07)	NUMBER...		28	28	28	-	-
	RATE.....		67.6	67.6	67.6	-	-
SUDDEN INFANT DEATH SYNDROME (R95)	NUMBER...		61	8	1	7	53
	RATE.....		146.6	*	*	*	127.5
MATERNAL COMPLICATIONS OF PREGNANCY (P01)	NUMBER...		14	14	14	-	-
	RATE.....		*	*	*	-	-
RESPIRATORY DISTRESS OF NEWBORN (P22)	NUMBER...		9	8	6	2	1
	RATE.....		*	*	*	*	*
COMPLICATIONS OF PLACENTA, CORD, MEMBRANES (P02)	NUMBER...		13	12	11	1	1
	RATE.....		*	*	*	*	*
ACCIDENTS (UNINTENTIONAL INJURIES) (V01-X59)	NUMBER...		37	1	-	1	36
	RATE.....		88.9	*	-	*	86.5
BACTERIAL SEPSIS OF NEWBORN (P36)	NUMBER...		7	5	4	1	2
	RATE.....		*	*	*	*	*
DISEASES OF THE CIRCULATORY SYSTEM (I00-I99)	NUMBER...		10	3	2	1	7
	RATE.....		*	*	*	*	*
INTRAUTERINE HYPOXIA, BIRTH ASPHYXIA (P20-P21)	NUMBER...		6	6	6	-	-
	RATE.....		*	*	*	-	-
ALL OTHER CAUSES	NUMBER...		152	50	26	24	102
	RATE.....		363.9	120.6	63.1	57.5	243.3

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, 2001 PERIOD 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
AMERICAN INDIAN 1/, LESS THAN 2,500 GRAMS							
ALL CAUSES	NUMBER...	3,072	189	128	101	27	61
	RATE.....		6,159.5	4,158.8	3,274.1	884.8	2,000.7
CONGENITAL MALFORMATIONS (Q00-Q99)	NUMBER...		32	23	19	4	9
	RATE.....		1,052.1	756.6	*	*	*
SHORT GESTATION AND LOW BIRTHWEIGHT NEC (P07)	NUMBER...		26	26	26	-	-
	RATE.....		855.8	855.8	855.8	-	-
SUDDEN INFANT DEATH SYNDROME (R95)	NUMBER...		11	-	-	-	11
	RATE.....		*	-	-	-	*
MATERNAL COMPLICATIONS OF PREGNANCY (P01)	NUMBER...		13	13	13	-	-
	RATE.....		*	*	*	-	-
RESPIRATORY DISTRESS OF NEWBORN (P22)	NUMBER...		8	7	5	2	1
	RATE.....		*	*	*	*	*
COMPLICATIONS OF PLACENTA, CORD, MEMBRANES (P02)	NUMBER...		9	9	9	-	-
	RATE.....		*	*	*	-	-
ACCIDENTS (UNINTENTIONAL INJURIES) (V01-X59)	NUMBER...		7	1	-	1	6
	RATE.....		*	*	-	*	*
BACTERIAL SEPSIS OF NEWBORN (P36)	NUMBER...		6	4	3	1	2
	RATE.....		*	*	*	*	*
DISEASES OF THE CIRCULATORY SYSTEM (I00-I99)	NUMBER...		2	2	1	1	-
	RATE.....		*	*	*	*	-
INTRAUTERINE HYPOXIA, BIRTH ASPHYXIA (P20-P21)	NUMBER...		2	2	2	-	-
	RATE.....		*	*	*	-	-
ALL OTHER CAUSES	NUMBER...		72	39	21	18	32
	RATE.....		2,332.0	1,282.8	695.5	*	1,049.2

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, 2001 PERIOD 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
AMERICAN INDIAN 1/, 2,500 GRAMS OR MORE							
ALL CAUSES	NUMBER...	38,773	208	41	22	19	166
	RATE.....		536.0	107.0	57.5	*	429.0
CONGENITAL MALFORMATIONS (Q00-Q99)	NUMBER...		32	16	10	6	16
	RATE.....		83.7	*	*	*	*
SHORT GESTATION AND LOW BIRTHWEIGHT NEC (P07)	NUMBER...		-	-	-	-	-
	RATE.....		-	-	-	-	-
SUDDEN INFANT DEATH SYNDROME (R95)	NUMBER...		50	8	1	7	42
	RATE.....		129.7	*	*	*	109.1
MATERNAL COMPLICATIONS OF PREGNANCY (P01)	NUMBER...		-	-	-	-	-
	RATE.....		-	-	-	-	-
RESPIRATORY DISTRESS OF NEWBORN (P22)	NUMBER...		-	-	-	-	-
	RATE.....		-	-	-	-	-
COMPLICATIONS OF PLACENTA, CORD, MEMBRANES (P02)	NUMBER...		3	2	1	1	1
	RATE.....		*	*	*	*	*
ACCIDENTS (UNINTENTIONAL INJURIES) (V01-X59)	NUMBER...		30	-	-	-	30
	RATE.....		77.8	-	-	-	77.8
BACTERIAL SEPSIS OF NEWBORN (P36)	NUMBER...		1	1	1	-	-
	RATE.....		*	*	*	-	-
DISEASES OF THE CIRCULATORY SYSTEM (I00-I99)	NUMBER...		8	1	1	-	7
	RATE.....		*	*	*	-	*
INTRAUTERINE HYPOXIA, BIRTH ASPHYXIA (P20-P21)	NUMBER...		4	4	4	-	-
	RATE.....		*	*	*	-	-
ALL OTHER CAUSES	NUMBER...		79	9	4	5	70
	RATE.....		203.1	*	*	*	179.6

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, 2001 PERIOD 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
AMERICAN INDIAN 1/, NOT STATED BIRTHWEIGHT							
ALL CAUSES	NUMBER...	27	7	7	6	1	-
	RATE.....		*	*	*	*	-
CONGENITAL MALFORMATIONS (Q00-Q99)	NUMBER...		-	-	-	-	-
	RATE.....		-	-	-	-	-
SHORT GESTATION AND LOW BIRTHWEIGHT NEC (P07)	NUMBER...		2	2	2	-	-
	RATE.....		*	*	*	-	-
SUDDEN INFANT DEATH SYNDROME (R95)	NUMBER...		-	-	-	-	-
	RATE.....		-	-	-	-	-
MATERNAL COMPLICATIONS OF PREGNANCY (P01)	NUMBER...		1	1	1	-	-
	RATE.....		*	*	*	-	-
RESPIRATORY DISTRESS OF NEWBORN (P22)	NUMBER...		1	1	1	-	-
	RATE.....		*	*	*	-	-
COMPLICATIONS OF PLACENTA, CORD, MEMBRANES (P02)	NUMBER...		1	1	1	-	-
	RATE.....		*	*	*	-	-
ACCIDENTS (UNINTENTIONAL INJURIES) (V01-X59)	NUMBER...		-	-	-	-	-
	RATE.....		-	-	-	-	-
BACTERIAL SEPSIS OF NEWBORN (P36)	NUMBER...		-	-	-	-	-
	RATE.....		-	-	-	-	-
DISEASES OF THE CIRCULATORY SYSTEM (I00-I99)	NUMBER...		-	-	-	-	-
	RATE.....		-	-	-	-	-
INTRAUTERINE HYPOXIA, BIRTH ASPHYXIA (P20-P21)	NUMBER...		-	-	-	-	-
	RATE.....		-	-	-	-	-
ALL OTHER CAUSES	NUMBER...		2	2	1	1	-
	RATE.....		*	*	*	*	-

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, 2001 PERIOD 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
ASIAN OR PACIFIC ISLANDER, ALL BIRTHWEIGHTS							
ALL CAUSES	NUMBER...	200,283	947	624	496	128	323
	RATE.....		473.0	311.8	247.8	64.0	161.2
CONGENITAL MALFORMATIONS (Q00-Q99)	NUMBER...		230	151	105	47	79
	RATE.....		114.7	75.4	52.2	23.2	39.3
SHORT GESTATION AND LOW BIRTHWEIGHT NEC (P07)	NUMBER...		138	137	134	3	1
	RATE.....		68.9	68.4	66.9	*	*
SUDDEN INFANT DEATH SYNDROME (R95)	NUMBER...		37	2	-	2	35
	RATE.....		18.7	*	-	*	17.7
MATERNAL COMPLICATIONS OF PREGNANCY (P01)	NUMBER...		38	38	37	1	-
	RATE.....		19.2	19.2	18.7	*	-
RESPIRATORY DISTRESS OF NEWBORN (P22)	NUMBER...		31	28	23	5	3
	RATE.....		15.7	14.2	11.6	*	*
COMPLICATIONS OF PLACENTA, CORD, MEMBRANES (P02)	NUMBER...		25	25	25	-	-
	RATE.....		12.6	12.6	12.6	-	-
ACCIDENTS (UNINTENTIONAL INJURIES) (V01-X59)	NUMBER...		24	2	1	1	22
	RATE.....		12.1	*	*	*	11.1
BACTERIAL SEPSIS OF NEWBORN (P36)	NUMBER...		20	18	8	10	2
	RATE.....		10.1	*	*	*	*
DISEASES OF THE CIRCULATORY SYSTEM (I00-I99)	NUMBER...		21	10	9	1	11
	RATE.....		10.6	*	*	*	*
INTRAUTERINE HYPOXIA, BIRTH ASPHYXIA (P20-P21)	NUMBER...		16	15	11	4	1
	RATE.....		*	*	*	*	*
ALL OTHER CAUSES	NUMBER...		365	197	142	54	168
	RATE.....		182.4	98.3	71.1	27.2	84.1

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, 2001 PERIOD 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
ASIAN OR PACIFIC ISLANDER, LESS THAN 2,500 GRAMS							
ALL CAUSES	NUMBER...	15,058	622	498	414	84	124
	RATE.....		4,128.0	3,303.9	2,747.9	556.0	824.1
CONGENITAL MALFORMATIONS (Q00-Q99)	NUMBER...		120	91	73	18	29
	RATE.....		799.8	605.5	484.6	*	194.3
SHORT GESTATION AND LOW BIRTHWEIGHT NEC (P07)	NUMBER...		129	128	125	3	1
	RATE.....		855.7	849.0	829.0	*	*
SUDDEN INFANT DEATH SYNDROME (R95)	NUMBER...		8	-	-	-	8
	RATE.....		*	-	-	-	*
MATERNAL COMPLICATIONS OF PREGNANCY (P01)	NUMBER...		35	35	34	1	-
	RATE.....		234.5	234.5	227.8	*	-
RESPIRATORY DISTRESS OF NEWBORN (P22)	NUMBER...		29	26	21	5	3
	RATE.....		194.9	174.8	141.3	*	*
COMPLICATIONS OF PLACENTA, CORD, MEMBRANES (P02)	NUMBER...		23	23	23	-	-
	RATE.....		154.5	154.5	154.5	-	-
ACCIDENTS (UNINTENTIONAL INJURIES) (V01-X59)	NUMBER...		2	2	1	1	-
	RATE.....		*	*	*	*	-
BACTERIAL SEPSIS OF NEWBORN (P36)	NUMBER...		20	18	8	10	2
	RATE.....		134.0	*	*	*	*
DISEASES OF THE CIRCULATORY SYSTEM (I00-I99)	NUMBER...		10	6	6	-	4
	RATE.....		*	*	*	-	*
INTRAUTERINE HYPOXIA, BIRTH ASPHYXIA (P20-P21)	NUMBER...		7	7	5	2	-
	RATE.....		*	*	*	*	-
ALL OTHER CAUSES	NUMBER...		237	160	117	43	77
	RATE.....		1,573.3	1,064.5	776.3	288.2	508.8

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, 2001 PERIOD 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
ASIAN OR PACIFIC ISLANDER, 2,500 GRAMS OR MORE							
ALL CAUSES	NUMBER...	185,176	312	115	70	44	197
	RATE.....		168.2	62.0	38.0	24.0	106.2
CONGENITAL MALFORMATIONS (Q00-Q99)	NUMBER...		108	60	32	28	48
	RATE.....		58.5	32.3	17.1	15.3	26.1
SHORT GESTATION AND LOW BIRTHWEIGHT NEC (P07)	NUMBER...		3	3	3	-	-
	RATE.....		*	*	*	-	-
SUDDEN INFANT DEATH SYNDROME (R95)	NUMBER...		29	2	-	2	27
	RATE.....		15.8	*	-	*	14.7
MATERNAL COMPLICATIONS OF PREGNANCY (P01)	NUMBER...		1	1	1	-	-
	RATE.....		*	*	*	-	-
RESPIRATORY DISTRESS OF NEWBORN (P22)	NUMBER...		2	2	2	-	-
	RATE.....		*	*	*	-	-
COMPLICATIONS OF PLACENTA, CORD, MEMBRANES (P02)	NUMBER...		-	-	-	-	-
	RATE.....		-	-	-	-	-
ACCIDENTS (UNINTENTIONAL INJURIES) (V01-X59)	NUMBER...		22	-	-	-	22
	RATE.....		12.0	-	-	-	12.0
BACTERIAL SEPSIS OF NEWBORN (P36)	NUMBER...		-	-	-	-	-
	RATE.....		-	-	-	-	-
DISEASES OF THE CIRCULATORY SYSTEM (I00-I99)	NUMBER...		11	4	3	1	7
	RATE.....		*	*	*	*	*
INTRAUTERINE HYPOXIA, BIRTH ASPHYXIA (P20-P21)	NUMBER...		9	8	6	2	1
	RATE.....		*	*	*	*	*
ALL OTHER CAUSES	NUMBER...		125	35	24	11	91
	RATE.....		67.7	18.7	12.7	*	49.1

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, 2001 PERIOD 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
ASIAN OR PACIFIC ISLANDER, NOT STATED BIRTHWEIGHT							
ALL CAUSES	NUMBER...	49	14	12	12	-	2
	RATE.....		*	*	*	-	*
CONGENITAL MALFORMATIONS (Q00-Q99)	NUMBER...		1	-	-	-	1
	RATE.....		*	-	-	-	*
SHORT GESTATION AND LOW BIRTHWEIGHT NEC (P07)	NUMBER...		6	6	6	-	-
	RATE.....		*	*	*	-	-
SUDDEN INFANT DEATH SYNDROME (R95)	NUMBER...		-	-	-	-	-
	RATE.....		-	-	-	-	-
MATERNAL COMPLICATIONS OF PREGNANCY (P01)	NUMBER...		2	2	2	-	-
	RATE.....		*	*	*	-	-
RESPIRATORY DISTRESS OF NEWBORN (P22)	NUMBER...		-	-	-	-	-
	RATE.....		-	-	-	-	-
COMPLICATIONS OF PLACENTA, CORD, MEMBRANES (P02)	NUMBER...		2	2	2	-	-
	RATE.....		*	*	*	-	-
ACCIDENTS (UNINTENTIONAL INJURIES) (V01-X59)	NUMBER...		-	-	-	-	-
	RATE.....		-	-	-	-	-
BACTERIAL SEPSIS OF NEWBORN (P36)	NUMBER...		-	-	-	-	-
	RATE.....		-	-	-	-	-
DISEASES OF THE CIRCULATORY SYSTEM (I00-I99)	NUMBER...		-	-	-	-	-
	RATE.....		-	-	-	-	-
INTRAUTERINE HYPOXIA, BIRTH ASPHYXIA (P20-P21)	NUMBER...		-	-	-	-	-
	RATE.....		-	-	-	-	-
ALL OTHER CAUSES	NUMBER...		3	2	2	-	1
	RATE.....		*	*	*	-	*

* FIGURE DOES NOT MEET STANDARDS OF RELIABILITY OR PRECISION; BASED ON FEWER THAN 20 DEATHS IN THE NUMERATOR.
- QUANTITY ZERO.

1/ INCLUDES ALEUTS AND ESKIMOS.

Documentation Table 6

UNLINKED INFANT DEATHS BY RACE, AGE AT DEATH, AND STATE OF RESIDENCE:
UNITED STATES, PUERTO RICO, VIRGIN ISLANDS, GUAM -- 2001 BIRTH PERIOD DATA

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

(Data in this table is for infant deaths in 2001 that are not included in the linked file because they were not linked with their corresponding birth certificates. See Methodolgy section. Residence is of infant decedent; race is from death certificate.)

Area and Race of Child 1/	Infant	Total Neonatal	Early Neonatal	Late Neonatal	Postneonatal
United States 2/.....	288	225	199	26	63
WHITE.....	171	131	111	20	40
BLACK.....	111	88	82	6	23
Alabama	-	-	-	-	-
WHITE.....	-	-	-	-	-
BLACK.....	-	-	-	-	-
Alaska	1	1	1	-	-
WHITE.....	1	1	1	-	-
BLACK.....	-	-	-	-	-
Arizona	6	5	5	-	1
WHITE.....	4	4	4	-	-
BLACK.....	1	-	-	-	1
Arkansas	2	2	2	-	-
WHITE.....	-	-	-	-	-
BLACK.....	2	2	2	-	-
California	55	49	44	5	6
WHITE.....	42	37	33	4	5
BLACK.....	11	10	9	1	1
Colorado	1	1	-	1	-
WHITE.....	-	-	-	-	-
BLACK.....	1	1	-	1	-
Connecticut	1	-	-	-	1
WHITE.....	-	-	-	-	-
BLACK.....	1	-	-	-	1
Delaware	-	-	-	-	-
WHITE.....	-	-	-	-	-
BLACK.....	-	-	-	-	-
District of Columbia	2	2	1	1	-
WHITE.....	1	1	-	1	-
BLACK.....	1	1	1	-	-
Florida	5	5	4	1	-
WHITE.....	2	2	1	1	-
BLACK.....	3	3	3	-	-
Georgia	1	-	-	-	1
WHITE.....	1	-	-	-	1
BLACK.....	-	-	-	-	-
Hawaii	2	1	1	-	1
WHITE.....	1	-	-	-	1
BLACK.....	1	1	1	-	-
Idaho	1	1	1	-	-
WHITE.....	1	1	1	-	-
BLACK.....	-	-	-	-	-
Illinois	15	8	8	-	7
WHITE.....	5	4	4	-	1
BLACK.....	9	3	3	-	6
Indiana	17	10	5	5	7
WHITE.....	10	8	3	5	2
BLACK.....	7	2	2	-	5
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 -- 2001 BIRTH PERIOD DATA

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

(Data in this table is for infant deaths in 2001 that are not included in the linked file because they were not linked with their corresponding birth certificates. See Methodolgy section. Residence is of infant decedent; race is from death certificate.)

Area and Race of Child 1/	Infant	Total Neonatal	Early Neonatal	Late Neonatal	Postneonatal
Kansas	4	1	1	-	3
WHITE	3	1	1	-	2
BLACK	1	-	-	-	1
Kentucky	5	1	-	1	4
WHITE	4	1	-	1	3
BLACK	1	-	-	-	1
Louisiana	27	24	22	2	3
WHITE	3	2	2	-	1
BLACK	24	22	20	2	2
Maine	1	1	1	-	-
WHITE	1	1	1	-	-
BLACK	-	-	-	-	-
Maryland	7	5	5	-	2
WHITE	4	3	3	-	1
BLACK	3	2	2	-	1
Massachusetts	1	1	1	-	-
WHITE	1	1	1	-	-
BLACK	-	-	-	-	-
Michigan	1	1	1	-	-
WHITE	-	-	-	-	-
BLACK	1	1	1	-	-
Minnesota	1	1	-	1	-
WHITE	1	1	-	1	-
BLACK	-	-	-	-	-
Mississippi	-	-	-	-	-
WHITE	-	-	-	-	-
BLACK	-	-	-	-	-
Missouri	2	2	2	-	-
WHITE	2	2	2	-	-
BLACK	-	-	-	-	-
Montana	-	-	-	-	-
WHITE	-	-	-	-	-
BLACK	-	-	-	-	-
Nebraska	1	-	-	-	1
WHITE	1	-	-	-	1
BLACK	-	-	-	-	-
Nevada	6	-	-	-	6
WHITE	6	-	-	-	6
BLACK	-	-	-	-	-
New Hampshire	-	-	-	-	-
WHITE	-	-	-	-	-
BLACK	-	-	-	-	-
New Jersey	23	22	21	1	1
WHITE	11	10	10	-	1
BLACK	12	12	11	1	-
New Mexico	1	1	1	-	-
WHITE	1	1	1	-	-
BLACK	-	-	-	-	-
New York State	13	11	10	1	2
WHITE	10	8	7	1	2
BLACK	3	3	3	-	-

Documentation Table 6

UNLINKED INFANT DEATHS BY RACE, AGE AT DEATH, AND STATE OF RESIDENCE:
UNITED STATES, PUERTO RICO, VIRGIN ISLANDS, GUAM -- 2001 BIRTH PERIOD DATA

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

(Data in this table is for infant deaths in 2001 that are not included in the linked file because they were not linked with their corresponding birth certificates. See Methodolgy section. Residence is of infant decedent; race is from death certificate.)

Area and Race of Child 1/	Infant	Total Neonatal	Early Neonatal	Late Neonatal	Postneonatal
New York City	7	7	7	-	-
WHITE.....	2	2	2	-	-
BLACK.....	5	5	5	-	-
North Carolina	1	-	-	-	1
WHITE.....	-	-	-	-	-
BLACK.....	1	-	-	-	1
North Dakota	-	-	-	-	-
WHITE.....	-	-	-	-	-
BLACK.....	-	-	-	-	-
Ohio	5	4	3	1	1
WHITE.....	5	4	3	1	1
BLACK.....	-	-	-	-	-
Oklahoma	12	9	9	-	3
WHITE.....	8	5	5	-	3
BLACK.....	3	3	3	-	-
Oregon	1	1	-	1	-
WHITE.....	1	1	-	1	-
BLACK.....	-	-	-	-	-
Pennsylvania	1	1	1	-	-
WHITE.....	1	1	1	-	-
BLACK.....	-	-	-	-	-
Rhode Island	-	-	-	-	-
WHITE.....	-	-	-	-	-
BLACK.....	-	-	-	-	-
South Carolina	-	-	-	-	-
WHITE.....	-	-	-	-	-
BLACK.....	-	-	-	-	-
South Dakota	-	-	-	-	-
WHITE.....	-	-	-	-	-
BLACK.....	-	-	-	-	-
Tennessee	-	-	-	-	-
WHITE.....	-	-	-	-	-
BLACK.....	-	-	-	-	-
Texas	54	46	41	5	8
WHITE.....	34	29	25	4	5
BLACK.....	19	16	15	1	3
Utah	1	-	-	-	1
WHITE.....	1	-	-	-	1
BLACK.....	-	-	-	-	-
Vermont	-	-	-	-	-
WHITE.....	-	-	-	-	-
BLACK.....	-	-	-	-	-
Virginia	2	1	1	-	1
WHITE.....	1	-	-	-	1
BLACK.....	1	1	1	-	-
Washington	-	-	-	-	-
WHITE.....	-	-	-	-	-
BLACK.....	-	-	-	-	-
West 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 -- 2001 BIRTH PERIOD DATA

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

(Data in this table is for infant deaths in 2001 that are not included in the linked file because they were not linked with their corresponding birth certificates. See Methodolgy section. Residence is of infant decedent; race is from death certificate.)

Area and Race of Child 1/	Infant	Total Neonatal	Early Neonatal	Late Neonatal	Postneonatal
Wisconsin	2	-	-	-	2
WHITE.....	2	-	-	-	2
BLACK.....	-	-	-	-	-
Wyoming	-	-	-	-	-
WHITE.....	-	-	-	-	-
BLACK.....	-	-	-	-	-
Foreign Residents	-	-	-	-	-
WHITE.....	-	-	-	-	-
BLACK.....	-	-	-	-	-
Puerto Rico 3/	4	1	1	-	3
WHITE.....	4	1	1	-	3
BLACK.....	-	-	-	-	-
Virgin Islands 3/	1	-	-	-	1
WHITE.....	1	-	-	-	1
BLACK.....	-	-	-	-	-
Guam 3/	-	-	-	-	-
WHITE.....	-	-	-	-	-
BLACK.....	-	-	-	-	-

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.

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Infant Mortality Statistics from the 2001 Period Linked Birth/Infant Death Data Set

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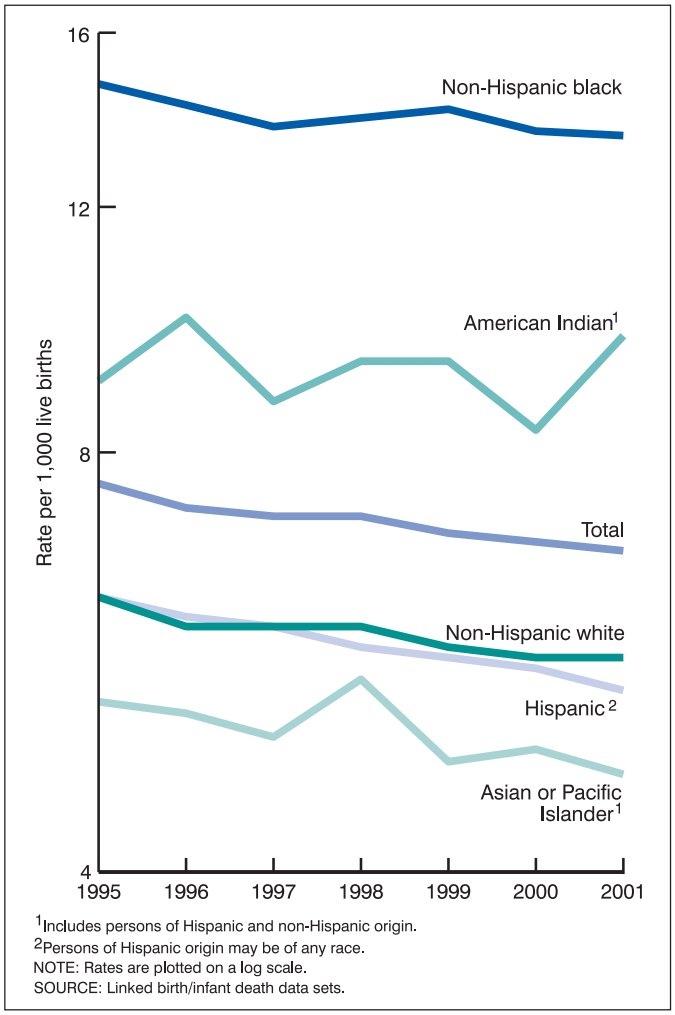
Abstract

Objectives—This report presents 2001 period infant mortality statistics from the linked birth/infant death data set (linked file) by a variety of maternal and infant characteristics.

Methods—Descriptive tabulations of data are presented and interpreted.

Results—Infant mortality rates ranged from 3.2 per 1,000 live births for Chinese mothers to 13.3 for black mothers. Among Hispanics, rates ranged from 4.2 for Cuban mothers to 8.5 for Puerto Rican mothers. Infant mortality rates were higher for those infants whose mothers were born in the 50 States and the District of Columbia, were unmarried, or smoked during pregnancy. Infant mortality was also higher for male infants, multiple births, and infants born preterm or at low birthweight. The three leading causes of infant death—Congenital malformations, low birthweight, and Sudden infant death syndrome (SIDS)—taken together accounted for 44 percent of all infant deaths. Cause-specific mortality rates varied considerably by race and Hispanic origin. For infants of black mothers, the cause-specific infant mortality rate for low birthweight was nearly four times that for infants of white mothers. Between 1995 and 2001, the overall infant mortality rate declined by 10.5 percent; significant declines ranged from 8.2 percent for infants of non-Hispanic black mothers to 14.3 percent for infants of Hispanic mothers. The SIDS rate declined by 11 percent from 2000 to 2001. For infants of black and American Indian mothers, the SIDS rates were 2.2 and 2.8 times that for non-Hispanic white mothers.

Keywords: infant mortality • infant health • birthweight • maternal characteristics



[1]Includes persons of Hispanic and non-Hispanic origin.
[2]Persons of Hispanic origin may be of any race.
NOTE: Rates are plotted on a log scale.
SOURCE: Linked birth/infant death data sets.

Figure 1. Infant mortality rates by race and ethnicity of mother, 1995–2001

Introduction

This report presents infant mortality data from the 2001 period linked file. In the linked file, the information from the death certificate is linked to information from the birth certificate for each infant under 1 year of age who died in the 50 States, the District of Columbia,

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Puerto Rico, the Virgin Islands, or Guam during 2001. Linked birth/infant death data are not available for American Samoa and the Commonwealth of the Northern Marianas. The purpose of the linkage is to use the many additional variables available from the birth certificate to conduct more detailed analyses of infant mortality patterns. This report presents infant mortality data by race and Hispanic origin of the mother, birthweight, period of gestation, sex of infant, plurality, trimester of pregnancy prenatal care began, maternal age, maternal educational attainment, live-birth order, mother's marital status, mother's place of birth, maternal smoking during pregnancy, age at death, and underlying cause of death (tables 1–7, A–D, and figure 1). Other variables available in the linked file data set (1), but which are not discussed in this report include: father's age, race, and Hispanic origin; birth attendant; place of delivery; mother's weight gain during pregnancy; and many medical and health measurements. Another report, based on data from the vital statistics mortality file, provides more detailed information on trends in infant mortality and on causes of infant death (2). Some rates calculated from the mortality file differ from those published using the linked birth/infant death file (see "Technical Notes").

Methods

Data shown in this report are based on birth and infant death certificates registered in all States, the District of Columbia, Puerto Rico, the Virgin Islands, and Guam. As part of the Vital Statistics Cooperative Program, each State provided to the Centers for Disease Control and Prevention's National Center for Health Statistics (NCHS) matching birth and death certificate numbers for each infant under 1 year of age who died in the State during 2001. When the birth and death occurred in different States, the State of death was responsible

Table A. Infant, neonatal, and postneonatal deaths and mortality rates by specified race or national origin of mother: United States, 2001 linked file

Race of mother	Live births	Number of deaths			Mortality rate per 1,000 live births		
		Infant	Neonatal	Postneonatal	Infant	Neonatal	Postneonatal
All races	4,026,036	27,523	18,275	9,248	6.8	4.5	2.3
White	3,177,698	18,087	12,078	6,009	5.7	3.8	1.9
Black	606,183	8,084	5,396	2,688	13.3	8.9	4.4
American Indian[1]	41,872	404	176	228	9.7	4.2	5.4
Asian or Pacific Islander	200,283	947	624	323	4.7	3.1	1.6
Chinese	31,401	100	60	40	3.2	1.9	1.3
Japanese	9,048	36	22	14	4.0	2.5	*
Hawaiian	6,411	47	23	24	7.3	3.6	3.7
Filipino	32,470	180	131	48	5.5	4.0	1.5
Other Asian or Pacific Islander	120,953	584	388	197	4.8	3.2	1.6

* Figure does not meet standard of reliability or precision; based on fewer than 20 deaths in the numerator.
1 Includes Aleuts and Eskimos.

NOTE: Infant deaths are weighted so numbers may not exactly add to totals due to rounding. Neonatal is less than 28 days and postneonatal is 28 days to under 1 year.

Table B. Infant, neonatal, and postneonatal deaths and mortality rates by Hispanic origin of mother and by race of mother for mothers of non-Hispanic origin: United States, 2001 linked file

Hispanic origin and race of mother	Live births	Number of deaths			Mortality rate per 1,000 live births		
		Infant	Neonatal	Postneonatal	Infant	Neonatal	Postneonatal
All origins[1]	4,026,036	27,523	18,275	9,248	6.8	4.5	2.3
Total Hispanic	851,867	4,630	3,105	1,526	5.4	3.6	1.8
Mexican	611,013	3,187	2,130	1,057	5.2	3.5	1.7
Puerto Rican	57,568	491	345	147	8.5	6.0	2.5
Cuban	14,017	60	35	24	4.2	2.5	1.7
Central and South American	121,366	604	408	196	5.0	3.4	1.6
Other and unknown Hispanic	47,903	289	187	102	6.0	3.9	2.1
Non-Hispanic total[2]	3,149,626	22,512	14,864	7,648	7.1	4.7	2.4
Non-Hispanic white	2,326,606	13,300	8,817	4,483	5.7	3.8	1.9
Non-Hispanic black	589,940	7,938	5,293	2,645	13.5	9.0	4.5
Not stated	24,543	380	306	74	...	...	...

... Category not applicable.
1 Origin of mother not stated included in "All origins" but not distributed among origins.
2 Includes races other than white or black.

NOTE: Infant deaths are weighted so numbers may not exactly add to totals due to rounding. Neonatal is less than 28 days and postneonatal is 28 days to under 1 year.

Table C. Infant, neonatal, and postneonatal deaths and mortality rates by race or national origin of mother: Total of 11 States, 2001 linked file

Race of mother	Live births	Number of Deaths			Mortality rate per 1,000 live births		
		Infant	Neonatal	Postneonatal	Infant	Neonatal	Postneonatal
All races	1,806,096	10,962	7,257	3,705	6.1	4.0	2.1
Total Asian or Pacific Islander	141,756	638	401	237	4.5	2.8	1.7
Chinese	24,945	71	39	32	2.8	1.5	1.3
Japanese	7,139	31	17	14	4.4	*	*
Filipino	26,620	153	110	42	5.7	4.1	1.6
Vietnamese	15,129	54	29	25	3.6	1.9	1.7
Asian Indian	26,786	115	74	41	4.3	2.8	1.5
Korean	10,185	29	16	13	2.9	*	*
Hawaiian	5,742	39	20	18	6.8	3.5	*
Samoan	1,673	15	5	10	*	*	*
Guamanian	509	3	2	1	*	*	*
Remaining Asian or Pacific Islander	23,028	128	88	39	5.5	3.8	1.7
White	1,432,297	7,538	5,047	2,491	5.3	3.5	1.7
Black	223,252	2,705	1,774	931	12.1	7.9	4.2
American Indian[1]	8,791	80	34	45	9.1	3.9	5.2

* Figure does not meet standard of reliability or precision; based on fewer than 20 deaths in the numerator.
1 Includes Aleuts and Eskimos.

NOTE: Infant deaths are weighted so numbers may not exactly add to totals due to rounding. States included are California, Hawaii, Illinois, Minnesota, Missouri, New Jersey, New York, Texas, Virginia, Washington, and West Virginia. Neonatal is less than 28 days and postneonatal is 28 days to under 1 year.

Table D. Infant mortality rates, by race and Hispanic origin of mother: United States, 1995–2001 linked files

Race and Hispanic origin of mother	1995	1996	1997	1998	1999	2000	2001	Percent change 1995 to 2001
All races	7.6	7.3	7.2	7.2	7.0	6.9	6.8	–10.5
White	6.3	6.1	6.0	6.0	5.8	5.7	5.7	–9.5
Black	14.6	14.1	13.7	13.8	14.0	13.5	13.3	–8.9
American Indian[1]	9.0	10.0	8.7	9.3	9.3	8.3	9.7	7.8**
Asian or Pacific Islander	5.3	5.2	5.0	5.5	4.8	4.9	4.7	–11.3
Chinese	3.8	3.2	3.1	4.0	2.9	3.5	3.2	–15.8**
Japanese	5.3	4.2	5.3	3.5	3.4	4.5	4.0	–24.5**
Hawaiian	6.6	5.6	9.0	10.0	7.1	9.0	7.3	10.6**
Filipino	5.6	5.8	5.8	6.2	5.8	5.7	5.5	–1.8**
Hispanic	6.3	6.1	6.0	5.8	5.7	5.6	5.4	–14.3
Mexican	6.0	5.8	5.8	5.6	5.5	5.4	5.2	–13.3
Puerto Rican	8.9	8.6	7.9	7.8	8.3	8.2	8.5	–4.5**
Cuban	5.3	5.1	5.5	3.6	4.7	4.6	4.2	–20.8**
Central and South American	5.5	5.0	5.5	5.3	4.7	4.6	5.0	–9.1**
Non-Hispanic white	6.3	6.0	6.0	6.0	5.8	5.7	5.7	–9.5
Non-Hispanic black	14.7	14.2	13.7	13.9	14.1	13.6	13.5	–8.2

** Not significant at p<.05.
[1]Includes Aleuts and Eskimos.

for contacting the State of birth identified on the death certificate to obtain the original birth certificate number. NCHS used the matching birth and death certificate numbers provided by the States to extract final edited data from the NCHS natality and mortality statistical files. These data were linked to form a single statistical record, thereby establishing a national linked record file.

After the initial linkage, NCHS returned to each State computer lists of unlinked infant death records and records with inconsistent data between the birth and death certificates. State additions and corrections were incorporated, and a final national linked file was produced. In 2001, 98.9 percent of all infant death records were successfully matched to their corresponding birth records. This is higher than in 2000 (98.6 percent). A record weight was added to the linked file in 2001 to compensate for the 1.1 percent of infant death records that were not linked to their corresponding birth certificates. See the "Technical Notes" for more information on the weighting of the linked file.

Information on births by age, race, or marital status of mother is imputed if it is not reported on the birth certificate. These items were not reported for less than 1 percent of U.S. births in 2001 (3).

Race and Hispanic origin are reported independently on the birth certificate. In tabulations of birth data by race and Hispanic origin, data for Hispanic persons are not further classified by race because the vast majority of women of Hispanic origin are reported as white. Data for American Indian and Asian or Pacific Islander (API) births are not shown separately by Hispanic origin because the vast majority of these populations are non-Hispanic.

Starting with data year 1999 cause-of-death statistics in this and similar publications are classified in accordance with the *International Statistical Classification of Diseases and Related Health Problems, Tenth Revision* (ICD–10) (4). Previous issues of this report included causes of death classified according to the *Manual of the International Statistical Classification of Diseases, Injuries, and Causes of Death, Ninth Revision* (ICD–9) (5).

Data by maternal and infant characteristics

This report presents descriptive tabulations of infant mortality data by a variety of maternal and infant characteristics. These tabulations are useful for understanding the basic relationships between risk factors and infant mortality, *unadjusted for the possible effects of other variables*. In reality, women with one risk factor often have other risk factors as well. For example, teenage mothers are more likely to also be unmarried and of a low-income status, and mothers who do not receive prenatal care are more likely to be of a low-income status and uninsured. The preferred method for disentangling the multiple interrelationships among risk factors is multivariate analysis; however, an understanding of the basic relationships between risk factors and infant mortality is a necessary precursor to more sophisticated types of analyses, and is the aim of this publication.

Race and Hispanic origin data—Infant mortality rates are presented for both detailed race of mother and Hispanic origin of mother. The linked file is particularly useful for computing accurate infant mortality rates for this purpose because the race of the mother from the birth certificate is used in both the numerator and denominator of the infant mortality rate. In contrast, for the vital statistics mortality data—the more "traditional" source of infant mortality data—race information for the denominator is the race of the mother as reported on the birth certificate, whereas the race information for the numerator is the race of the decedent as reported on the death certificate (1,6). Another source of error is misreported race on the death certificate where race of the deceased infant is reported by the funeral director based on information provided by an informant or on observation. These different reporting methods can lead to differences in race-specific infant mortality rates between the two data sources with a larger impact on rates for races other than white and black (6,7).

Rates for API and for Chinese, Japanese, Filipino, and other API mothers are reported for all 50 States and the District of Columbia. In addition, infant mortality rates for five other detailed API groups, including Vietnamese, Asian Indian, Korean, Samoan, and Guamanian mothers, are presented for an 11-State reporting area: California, Hawaii, Illinois, Minnesota, Missouri, New Jersey, New York, Texas, Virginia, Washington, and West Virginia.

Race and Hispanic origin of mother are reported as separate items on the birth certificate; thus, a mother of Hispanic origin may be of any race. Although the overwhelming majority of Hispanic-origin births are to white women (3), there are notable differences in infant mortality trends between Hispanic and non-Hispanic white women. Therefore, race-specific data for non-Hispanic mothers are presented for comparison in tables showing data for Hispanic mothers. Race and ethnic differentials in infant mortality rates may reflect differences in income, educational levels, access to health care, health insurance, and other factors.

Statistical significance—Text statements have been tested for statistical significance, and a statement that a given infant mortality rate is higher or lower than another rate indicates that the rates are significantly different. Information on the methods used to test for statistical significance, as well as information on differences between period and cohort data, the weighting of the linked file, and a comparison of infant mortality data between the linked file and the vital statistics mortality file are presented in the "Technical Notes." Additional information on maternal age, marital status, period of gestation, birthweight, and cause-of-death classification is also presented in the "Technical Notes."

Results and Discussion

Trends in Infant mortality, 1995–2001

The infant mortality rate in the United States was 7.6 in 1995 and fell by over 10 percent to 6.8 in 2001. The rate either remained unchanged or dropped slightly each year between 1995 and 2001 (table D, figure 1).

Decreases have been observed for nearly all race and ethnic groups, although only a few had significant declines. Declines were observed for infants of non-Hispanic white (10 percent), black (9 percent), and Mexican mothers (13 percent). The infant mortality rate for infants of American Indian and Hawaiian mothers had non-significant increases from 1995 to 2001.

Infant mortality by race and Hispanic origin of mother

The overall 2001 infant mortality rate from the linked file was 6.8 infant deaths per 1,000 live births, similar to the rate in 2000 (6.9) and lower than the 1999 level (7.0)(8).

There was wide variation in infant mortality rates by race of mother with the highest rate, 13.3 for infants of black mothers, four times greater than the lowest rate of 3.2 for infants of Chinese mothers. Rates were also high for infants of Hawaiian (7.3) and American Indian (9.7) mothers. Rates were intermediate for infants of non-Hispanic white (5.7) and Filipino mothers (5.5) (tables A and B).

The neonatal mortality rate (less than 28 days) for infants of black mothers (8.9) was significantly higher than for nearly all other racial groups. Infants of black and American Indian mothers had the highest postneonatal rates (28 days to under 1 year) of any group, 4.4 and 5.4, respectively. In general, the neonatal mortality rates were about twice the postneonatal rates for nearly all groups in which both rates could be reliably computed. The exception was infants of American Indian mothers whose neonatal mortality rate was lower than the postneonatal rate (4.2 versus 5.4).

In the 11-State reporting area for the expanded API subgroups, infant mortality rates were 4.3 for Asian Indians, 3.6 for Vietnamese, and 2.9 for infants of Korean mothers (table C).

There was wide variation in infant mortality rates for Hispanic subgroups with the rates high for infants of Puerto Rican mothers (8.5) and low for Cuban mothers (4.2). Rates were intermediate for infants of Mexican and Central and South American mothers (5.2 and 5.0, respectively) (table B). Among Hispanics, only Mexican mothers showed a significant decline from 1995 to 2001 (6.0 in 1995).

Infant mortality by State

Infant mortality rates for 1999–2001 varied by State and within States by race and Hispanic origin of mother (table 3). Three years of data were combined to obtain statistically reliable rates. Rates were generally highest for States in the South and lowest for States in the West and Northeast. Infant mortality rates ranged from 10.4 for Mississippi to 4.9 for Massachusetts. The highest rate (13.0) was noted for the District of Columbia; however, the rate for the District of Columbia is more appropriately compared with rates for other large U.S. cities, because of the high concentrations of high-risk women in these areas.

Mortality rates for infants of non-Hispanic black mothers ranged from 16.7 in Michigan to 7.5 in Oregon. A recent report described an ongoing multifaceted effort to reduce infant mortality in a Michigan county (9). Again, the highest rate was for the District of Columbia (16.9). Oklahoma had the highest infant mortality rate for infants of non-Hispanic white mothers (7.6) and Massachusetts had the lowest rate (4.1).

Mortality rates for infants of American Indian and API mothers could be reliably computed for only 15 and 24 States, respectively. Mortality rates for infants of American Indian mothers ranged from 17.3 in Nebraska to 7.1 in New Mexico. Overall, infant mortality rates for infants of API mothers were the lowest, ranging from 3.7 in New Jersey and Pennsylvania to 7.4 in Minnesota.

Sex of infant

In 2001 the overall infant mortality rate for male infants was 7.5 per 1,000, 23 percent higher than the rate for female infants (6.1). Infant mortality rates were higher for male than female infants in each racial and Hispanic origin group (tables 1 and 2). Differences were not statistically significant for infants of American Indian and Cuban mothers.

Multiple births

For plural births, the infant mortality rate was 32.4, more than five times the rate of 6.0 for single births (table 1). Infant mortality rates that could be reliably calculated for plural births were higher than rates for single births for all race and Hispanic-origin groups.

The risk of infant death increases with the increasing number of infants in the pregnancy (10). In 2001 the infant mortality rates for quadruplets (126.7) and triplets (71.4) were more than four times and two times, respectively, the rate for twin births (29.7). Rates for quadruplets and triplets were more than 21 and 11 times, respectively, the rate for single births (6.0) (tabular data not shown).

Birthweight and period of gestation

Birthweight and period of gestation are the two most important predictors of an infant's subsequent health and survival. Infants born too small or too soon have a much greater risk of death and both short-term and long-term disability than those born at term (37–41 weeks of gestation) or with birthweights of 2,500 grams or more (11–13). The percent of infants born at low birthweight ranged from 5.3 percent for births to Chinese mothers to 13.0 percent for births to black mothers (tables 4 and 5). The percent of preterm births (those born before 37 completed weeks of gestation) ranged from 7.7 percent for births to Chinese mothers to 17.5 percent for births to black mothers.

Infant mortality rates were much higher for low-birthweight infants than for infants with birthweights of 2,500 grams or more for all race and ethnic groups studied. Overall, the infant mortality rate for very-low-birthweight infants (those with birthweights of less than 1,500 grams) was 244.4, more than 100 times the rate for infants with birthweights of 2,500 grams or more (2.4) (table 6).

Similarly, the infant mortality rate for very preterm infants (those born at less than 32 weeks of gestation) was 181.0, more than 72 times the rate for infants born at term (2.5) (37–41 weeks of gestation) (tables 1 and 2).

Eighty-six percent of infants with birthweights of less than 500 grams died within the first year of life—81 percent within the first few days of life. An infant's chances of survival increase rapidly with increasing birthweight. At birthweights of 1,250–1,499 grams, about 95 out of 100 infants survive the first year of life. Infant mortality rates are lowest at birthweights of 3,500–4,999 grams.

From 1995 to 2001, infants weighing 3,000 to 3,499 grams had the largest decline, 21 percent, in the infant mortality rate by specified birthweight (from 2.9 to 2.3). The only nonsignificant changes were for infants weighing 4,500–4,999 and 5,000 grams or more. For infants of white mothers, the largest decline was for infants weighing 3,000 to 3,499 grams (22 percent). The largest decline by specified birthweight for infants of black mothers was for those weighing 4,000 to 4,499 grams (37 percent).

Prenatal care

The level and timing of prenatal care is often used as a proxy for access to care. Prenatal care includes patient education and early recognition of symptoms and risk factors that may require monitoring or intervention. Therefore, increasing early access to prenatal care has frequently been the focus of efforts to reduce infant mortality, especially among women with medical and demographic risk factors for adverse outcomes (14–18).

In 2001 infants of mothers who began prenatal care after the first trimester of pregnancy or not at all had an infant mortality rate of 8.5 per 1,000, which was 37 percent higher than the rate for those whose care began in the first trimester (6.2). Infant mortality rates for each race and Hispanic origin group were higher for mothers who began prenatal care after the first trimester or received no care than for those who received early care (tables 1 and 2). These differences were significant for all but infants of Mexican and Puerto Rican mothers. Because of the small number of total infant deaths for Cuban mothers, the only rate that could be calculated was for first trimester.

Overall, the rate for women who began care in the third trimester (6.0) was lower than that for women who began care in the second trimester (6.9). This is because women who began prenatal care in the third trimester had to have a gestation period of at least 7 months, thus reducing the probability that the infant would be born preterm or of low birthweight (19). The relationship between month of initiation of prenatal care and length of gestation is complex. Therefore, to be able to compare women who receive the timeliest care with all other women, the category "after first trimester or no care" is reported (table 1 and table 2).

A recent report suggests that especially in the presence of certain pregnancy complications (e.g., post-term pregnancy and pregnancy-

induced hypertension), infants of both black and white women who do not obtain prenatal care are at increased risk of postneonatal death (20).

Maternal age

Infant mortality rates vary by maternal age; they are highest for infants of teenage mothers (10.0) and mothers aged 40 years and over (8.4). Infants of mothers in their late twenties and early thirties have the lowest rates (tables 1 and 2).

In 2001, among teenagers, infants of the youngest teenagers (under 15 years) had the highest rate (16.1). For infants of mothers aged 15–17 years the rate was 10.7; the rate for infants of mothers aged 18–19 years was 9.5 (tabular data not shown). The differences in rates among these three teenage groups were significant.

Generally, infant mortality rates were higher for infants of teenage mothers than for mothers aged 40 years and over. However, among groups for which rates could be reliably computed, for Central and South American mothers rates were higher for infants of the oldest mothers than for teenagers.

Studies suggest that the higher mortality risk for infants of younger mothers may be related to socioeconomic factors; maternal age under 16 might be a marker for poverty (21–23). Among older mothers, especially those of low socioeconomic status, infant mortality rates may be affected by pregnancy complications related to higher maternal age (e.g., gestational diabetes mellitus and hypertensive disorders) (24).

Maternal education

Infant mortality rates generally decreased with increasing educational level (tables 1 and 2). This pattern may reflect the effects of more education as well as socioeconomic differences; women with more education tend to have higher income levels (25). In addition, most mothers with 0–8 years of education were born outside of the 50 States and the District of Columbia (26).

Live-birth order

Infant mortality rates were generally higher for first births than for second births, and then increased as birth order increased (tables 1 and 2). Overall, the infant mortality rate for first births (6.8) was 15 percent higher than for second births (5.9). The rate for fifth and higher order births (10.7) was 81 percent higher than the rate for second births. The higher parities and therefore the highest order births (fifth child and above) are more likely to be associated with older maternal age and lower socioeconomic status (27).

In a recent report, live birth order of fourth child and above, which is likely to be associated with household crowding, was associated with an increased risk of bronchiolitis-related infant mortality (28).

Marital status

Marital status is considered an indicator of the presence or absence of environmental and economic support (29,30). Such support may have a positive effect on fetal growth through fostering healthy maternal behaviors (31). Infants of mothers who are not married have been shown to be at higher risk for poor outcomes (32–34). The infant mortality rate for infants of unmarried mothers was 9.7 per 1,000 in 2001, 80 percent higher than the rate for infants of married mothers (5.4) (tables 1 and 2). Infants of unmarried mothers had higher rates of mortality in each race and Hispanic origin group (with the exception of infants of Cuban mothers).

Nativity

In 2001 the infant mortality rate for mothers born in the 50 States and the District of Columbia (7.2) was 41 percent higher than the rate for mothers born outside of the 50 States and the District of Columbia (5.1). All race and Hispanic origin groups had higher infant mortality rates for mothers born in the 50 States and the District of Columbia (tables 1 and 2).

A variety of different hypotheses have been advanced to account for the lower infant mortality rate among infants of mothers born outside the 50 States and the District of Columbia, including possible differences in the level of familial integration and social support for new mothers (35–37). Also, women born outside the 50 States and the District of Columbia have been shown to have different characteristics than their U.S.- born counterparts with regard to socioeconomic and educational status, and risk behaviors such as smoking and alcohol use (37,38).

Maternal smoking

Tobacco use during pregnancy causes the passage of substances such as nicotine, hydrogen cyanide, and carbon monoxide from the placenta into the fetal blood supply. These substances restrict the growing infant's access to oxygen and can lead to adverse pregnancy and birth outcomes such as low birthweight, preterm delivery, intrauterine growth retardation, and infant mortality (39–42).

The infant mortality rate for infants of smokers was 10.5 in 2001, 62 percent higher than the rate of 6.5 for nonsmokers. For each race and Hispanic-origin group for which these rates could be computed, the infant mortality rate for smokers was higher than for nonsmokers (tables 1 and 2). Infant mortality rates for API, Mexican, and American Indian mothers who smoked during pregnancy were much higher than the rates for nonsmokers (117, 104, and 91 percent higher, respectively).

Leading causes of infant death

Infant mortality rates for the five leading causes of infant death are presented in table 7 by race and Hispanic origin of mother. The leading cause of infant death in the United States in 2001 was Congenital malformations, deformations and chromosomal abnormalities (congenital malformations), accounting for 20 percent of all infant deaths. Disorders relating to short gestation and low birthweight, not elsewhere classified (low birthweight) was second, accounting for 16 percent of all infant deaths, followed by Sudden infant death syndrome (SIDS), accounting for 8 percent of infant deaths. The fourth and fifth leading causes—Newborn affected by maternal complications of pregnancy (maternal complications), and Respiratory distress of newborn, accounted for 5 and 4 percent, respectively, of all infant deaths in 2001. Together the five leading causes accounted for 53 percent of all infant deaths in the United States in 2001.

The first four leading causes of death were the same in 2001 as in the previous year. However, Respiratory distress of newborn (respiratory distress), long a member of the five leading causes, had dropped to sixth in 2000, replaced by Newborn affected by

complications of placenta, cord and membranes (cord complications). Mortality from respiratory distress declined rapidly during the 1990s. However, between 2000 and 2001, respiratory distress rates did not decline, and in fact increased by 2 percent, although the change was not statistically significant. Due to this lack of decline from 2000 to 2001, respiratory distress returned as the fifth leading cause in 2001 (cord complications was fifth in 2000).

The rank order of leading causes of infant death varied substantially by race and Hispanic origin of mother. Congenital malformations was the leading cause of infant death for all groups except for black and Puerto Rican mothers, for whom low birthweight was the leading cause.

The largest decline in cause-specific infant mortality rates from 2000 to 2001 was for SIDS, which declined by 11 percent, continuing its rapid decline during the 1990s. When examined by race and ethnicity, SIDS declined by 12 percent for white mothers, by 21 percent for the total Hispanic population, and by 27 percent for Mexican mothers. The 7 percent decline in SIDS for black mothers was not statistically significant, nor were declines for other race and ethnic groups. In contrast, the infant mortality rate from maternal complications increased by 9 percent from 2000 to 2001, after being relatively stable since the early 1990s. When examined by race and ethnicity, the increase from 2000 to 2001 was 6 percent for black mothers, and 15 percent for non-Hispanic white mothers. Other changes in cause-specific infant mortality rates by race and ethnicity from 2000 to 2001 were not statistically significant.

In 2001, 97 to 98 percent of infant deaths from maternal complications and respiratory distress occurred to infants born at low birthweight. Thus, the recent increases in the percent of infants born at low birthweight may help to explain the recent increase in mortality from maternal complications, and the lack of decline in mortality from respiratory distress.

When differences between cause-specific infant mortality rates by race and ethnicity were examined, infant mortality rates for congenital malformations were 21 percent higher for black than for white mothers. Rates were 12 percent higher for Mexican mothers and 19 percent higher for Central and South American mothers than for non-Hispanic white mothers. Differences in infant mortality rates for congenital malformations between American Indian and white mothers were not statistically significant. Infant mortality rates from congenital malformations were 14 percent lower for API than for white mothers.

Infants of black mothers had the highest infant mortality rates from low birthweight; the rate for black mothers was 3.8 times the rate for white mothers. The rate for Puerto Rican mothers was more than twice the rate for non-Hispanic white mothers, while rates for Mexican mothers were 11 percent lower than those for non-Hispanic white mothers.

SIDS rates were highest for American Indian mothers—3.2 times those for white mothers. Rates for black mothers were also high—2.5 times those for white mothers. As most SIDS deaths occur during the postneonatal period, the high SIDS rates for infants of black and American Indian mothers account for much of their elevated risk of postneonatal mortality. SIDS rates for API mothers were less than half those for white mothers. For Mexican mothers, the SIDS rate was less than half that for non-Hispanic white mothers, and for Puerto Rican mothers, the SIDS rate was 46 percent higher than the rate for non-Hispanic white mothers.

For maternal complications and respiratory distress, infants of black mothers had the highest mortality rates—2.9 times those for white mothers. Infants of Puerto Rican mothers had respiratory distress mortality rates 2.3 times those for non-Hispanic white mothers. For maternal complications, infant mortality rates for Puerto Rican mothers were one-third higher than for non-Hispanic white mothers, although this difference was not statistically significant. The higher percent of black and Puerto Rican infants born at low birthweight may help to explain their higher infant mortality rates from these causes, which occur predominantly among low-birthweight infants. In contrast, the infant mortality rate from maternal complications was 35 percent lower for API than for white women. Infant mortality rates from maternal complications were 37 and 43 percent lower, respectively, for Mexican and Central and South American women than for non-Hispanic white women.

An examination of cause-specific differences in infant mortality rates between race and Hispanic-origin groups can help the researcher to understand overall differences in infant mortality rates between these groups. For example, 28 percent of the elevated infant mortality rate for black mothers, when compared with white mothers, can be accounted for by their higher infant mortality rate from low birthweight, 9 percent by differences in SIDS, and 7 percent by differences in maternal complications. In other words, if black infant mortality rates for these three causes could be reduced to levels for white infants, the difference in the infant mortality rate between black and white mothers would be reduced by 44 percent.

For American Indian mothers, 25 percent of their elevated infant mortality rate, when compared with white mothers, can be accounted for by their higher SIDS rates. Thus, if American Indian SIDS rates could be reduced to levels for white infants, the difference in the infant mortality rate between American Indian and white mothers would be reduced by 25 percent.

Similarly, 33 percent of the difference between Puerto Rican and non-Hispanic white infant mortality rates can be accounted for by differences in infant mortality rates for low birthweight, 9 percent by differences in respiratory distress, and 8 percent by SIDS. If Puerto Rican infant mortality rates for these three causes could be reduced to levels of non-Hispanic white infants, the difference in the infant mortality rate between Puerto Rican and non-Hispanic white infants would be cut in half. In addition to helping to explain differences in infant mortality rates between various groups, comparisons such as these can be helpful in targeting prevention efforts.

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Table 1. Infant mortality rates, live births, and infant deaths by selected characteristics and specified race of mother: United States, 2001 linked file

Characteristics	All races	Race of mother			
		White	Black	American Indian[1]	Asian/ Pacific Islander
	Infant mortality rates per 1,000 live births in specified group				
Total	6.8	5.7	13.3	9.7	4.7
Age at death:					
Total neonatal	4.5	3.8	8.9	4.2	3.1
Early neonatal (< 7 days)	3.6	3.0	7.3	3.1	2.5
Late neonatal (7-27 days)	0.9	0.8	1.6	1.1	0.6
Postneonatal	2.3	1.9	4.4	5.4	1.6
Sex:					
Male	7.5	6.2	14.8	10.5	5.2
Female	6.1	5.1	11.9	8.8	4.2
Plurality:					
Single births	6.0	5.0	11.8	9.3	4.2
Plural births	32.4	28.0	55.1	25.3	27.4
Birthweight:					
Less than 2,500 grams	58.6	53.5	75.7	61.5	41.3
Less than 1,500 grams	244.4	232.9	270.1	225.9	223.0
1,500-2,499 grams	15.2	15.2	15.0	27.0	12.2
2,500 grams or more	2.4	2.2	3.8	5.4	1.7
Period of gestation:					
Less than 32 weeks	181.0	170.5	206.4	137.3	162.1
32-36 weeks	8.9	8.5	9.9	16.9	7.9
37-41 weeks	2.5	2.3	4.0	5.6	1.8
42 weeks or more	3.0	2.6	5.1	*	2.2
Trimester of pregnancy prenatal care began:					
First trimester	6.2	5.2	12.4	8.1	4.3
After first trimester or no care	8.5	6.9	13.7	12.4	5.6
Second trimester	6.9	5.9	10.4	9.7	4.8
Third trimester	6.0	5.1	8.1	14.0	5.7
No prenatal care	34.8	26.2	52.3	39.2	24.8
Age of mother:					
Under 20 years	10.0	8.6	14.2	9.8	8.3
20-24 years	7.6	6.2	12.9	11.5	5.7
25-29 years	6.1	5.1	13.0	7.1	4.1
30-34 years	5.4	4.5	13.2	8.5	4.2
35-39 years	6.5	5.7	14.0	11.3	4.5
40-54 years	8.4	7.5	14.7	*	8.1
Educational attainment of mother:					
0-8 years	6.7	6.2	14.1	11.4	5.9
9-11 years	9.2	7.7	14.2	12.1	6.1
12 years	7.4	6.1	12.9	9.4	6.0
13-15 years	6.1	5.0	12.2	7.6	4.4
16 years and over	4.3	3.8	10.7	*	3.4
Live-birth order:					
1	6.8	5.8	13.5	8.4	4.4
2	5.9	5.0	11.6	9.7	4.1
3	6.8	5.6	13.1	10.7	5.5
4	8.1	6.7	13.7	9.6	7.5
5 or more	10.7	8.2	18.3	12.4	7.4
Marital status:					
Married	5.4	4.9	11.6	7.4	4.2
Unmarried	9.7	7.7	14.2	11.2	7.9
Mother's place of birth:					
Born in the 50 States and D.C.	7.2	5.8	13.6	9.8	5.7
Born elsewhere	5.1	4.8	9.2	*	4.4
Maternal smoking during pregnancy:[2]					
Smoker	10.5	9.2	19.3	15.7	10.2
Nonsmoker	6.5	5.2	12.7	8.2	4.6

See footnotes at end of table.

Table 1. Infant mortality rates, live births, and infant deaths by selected characteristics and specified race of mother: United States, 2001 linked file--Con.

Characteristics	All races	Race of mother			
		White	Black	American Indian[1]	Asian/ Pacific Islander
			Live births		
Total	4,026,036	3,177,698	606,183	41,872	200,283
Sex:					
Male	2,057,977	1,625,548	307,851	21,183	103,395
Female	1,968,059	1,552,150	298,332	20,689	96,888
Plurality:					
Single births	3,897,299	3,075,741	585,212	40,906	195,440
Plural births	128,737	101,957	20,971	966	4,843
Birthweight:					
Less than 2,500 grams	309,760	212,870	78,760	3,072	15,058
Less than 1,500 grams	58,702	37,367	18,726	534	2,075
1,500-2,499 grams	251,058	175,503	60,034	2,538	12,983
2,500 grams or more	3,714,965	2,963,831	527,185	38,773	185,176
Not stated	1,311	997	238	27	49
Period of gestation:					
Less than 32 weeks	77,676	49,923	24,184	879	2,690
32-36 weeks	398,623	295,214	81,158	4,606	17,645
37-41 weeks	3,235,790	2,581,838	456,539	32,419	164,994
42 weeks or more	274,065	218,956	39,785	3,596	11,728
Not stated	39,882	31,767	4,517	372	3,226
Trimester of pregnancy prenatal care began:					
First trimester	3,276,935	2,648,785	436,513	28,205	163,432
After first trimester or no care	654,069	460,754	149,666	12,476	31,173
Second trimester	506,673	361,530	111,416	9,147	24,580
Third trimester	105,661	72,660	24,927	2,579	5,495
No prenatal care	41,735	26,564	13,323	750	1,098
Not stated	95,032	68,159	20,004	1,191	5,678
Age of mother:					
Under 20 years	453,746	322,669	114,308	8,084	8,685
20-24 years	1,021,643	779,543	199,223	14,071	28,806
25-29 years	1,058,291	850,360	137,406	9,878	60,647
30-34 years	942,718	777,309	94,666	6,190	64,553
35-39 years	451,740	368,830	49,068	2,940	30,902
40-54 years	97,898	78,987	11,512	709	6,690
Educational attainment of mother:					
0-8 years	239,642	216,276	14,594	1,759	7,013
9-11 years	621,926	463,177	133,654	10,994	14,101
12 years	1,253,047	951,950	237,433	16,372	47,292
13-15 years	856,773	669,254	137,539	8,665	41,315
16 years and over	998,505	836,603	72,316	3,370	86,216
Not stated	56,143	40,438	10,647	712	4,346
Live-birth order:					
1	1,594,981	1,259,716	226,789	14,639	93,837
2	1,308,765	1,051,430	178,097	11,619	67,619
3	675,759	535,780	107,913	7,560	24,506
4	263,248	200,996	50,246	3,989	8,017
5 or more	169,458	118,998	41,001	3,829	5,630
Not stated	13,825	10,778	2,137	236	674
Marital status:					
Married	2,676,745	2,297,823	191,635	16,884	170,403
Unmarried	1,349,291	879,875	414,548	24,988	29,880
Mother's place of birth:					
Born in the 50 States and D.C.	3,110,736	2,509,383	528,239	39,556	33,558
Born elsewhere	904,579	661,489	75,107	2,210	165,773
Not stated	10,721	6,826	2,837	106	952
Maternal smoking during pregnancy:[2]					
Smoker	416,483	353,641	51,396	7,658	3,788
Nonsmoker	3,056,543	2,375,680	517,618	30,826	132,419
Not stated	25,226	20,123	3,389	462	1,252

See footnotes at end of table.

Table 1. Infant mortality rates, live births, and infant deaths by selected characteristics and specified race of mother: United States, 2001 linked file--Con.

Characteristics	All races	Race of mother			
		White	Black	American Indian[1]	Asian/ Pacific Islander
	Infant deaths				
Total	27,523	18,087	8,084	404	947
Age at death:					
Total neonatal	18,275	12,078	5,396	176	624
Early neonatal (< 7 days)	14,622	9,571	4,425	129	496
Late neonatal (7-27 days)	3,653	2,506	971	47	128
Postneonatal	9,248	6,009	2,688	228	323
Sex:					
Male	15,434	10,132	4,543	222	536
Female	12,089	7,955	3,541	182	411
Plurality:					
Single births	23,358	15,234	6,929	380	815
Plural births	4,165	2,853	1,155	24	133
Birthweight:					
Less than 2,500 grams	18,151	11,380	5,960	189	622
Less than 1,500 grams	14,345	8,705	5,057	121	463
1,500-2,499 grams	3,806	2,675	903	69	159
2,500 grams or more	8,989	6,461	2,009	208	312
Not stated	383	247	115	7	14
Period of gestation:					
Less than 32 weeks	14,060	8,511	4,992	121	436
32-36 weeks	3,538	2,520	801	78	140
37-41 weeks	8,221	5,901	1,840	181	298
42 weeks or more	809	565	205	14	25
Not stated	894	590	246	10	48
Trimester of pregnancy prenatal care:					
First trimester	20,177	13,808	5,432	230	707
After first trimester or no care	5,581	3,194	2,057	154	176
Second trimester	3,492	2,128	1,159	89	117
Third trimester	638	369	201	36	31
No prenatal care	1,450	697	697	29	27
Not stated	1,766	1,086	595	20	65
Age of mother:					
Under 20 years	4,547	2,772	1,625	79	72
20-24 years	7,729	4,836	2,567	162	165
25-29 years	6,411	4,301	1,792	70	249
30-34 years	5,065	3,497	1,247	53	268
35-39 years	2,945	2,088	685	33	139
40-54 years	825	594	169	8	54
Educational attainment of mother:					
0-8 years	1,609	1,341	206	20	41
9-11 years	5,698	3,587	1,892	133	86
12 years	9,321	5,810	3,072	154	285
13-15 years	5,261	3,334	1,679	66	183
16 years and over	4,245	3,160	775	16	294
Not stated	1,387	855	460	15	58
Live-birth order:					
1	10,864	7,253	3,073	123	415
2	7,758	5,294	2,072	112	279
3	4,615	2,989	1,409	81	136
4	2,131	1,343	689	38	60
5 or more	1,817	977	751	48	41
Not stated	338	230	90	2	16
Marital status:					
Married	14,392	11,340	2,216	124	712
Unmarried	13,131	6,747	5,868	280	236

See footnotes at end of table.

Table 1. Infant mortality rates, live births, and infant deaths by selected characteristics and specified race of mother: United States, 2001 linked file--Con.

Characteristics	All races	Race of mother			
		White	Black	American Indian[1]	Asian/ Pacific Islander
		Infant deaths			
Mother's place of birth:					
Born in the 50 States and D.C.	22,259	14,498	7,181	388	192
Born elsewhere	4,633	3,191	690	14	738
Not stated	631	398	213	2	18
Maternal smoking during pregnancy:[2]					
Smoker	4,393	3,242	992	120	38
Nonsmoker	19,745	12,318	6,569	251	607
Not stated	562	376	160	10	15

* Figure does not meet standard of reliability or precision; based on fewer than 20 deaths in the numerator.
1 Includes Aleuts and Eskimos.
2 Excludes data for California , which does not report tobacco use on the birth certificate.

NOTE: Infant deaths are weighted so numbers may not exactly add to totals due to rounding. Not stated responses were included in totals but not distributed among groups for rate computations.

Table 2. Infant mortality rates, live births, and infant deaths by selected characteristics and Hispanic origin of mother and by race of mother for mothers of non-Hispanic origin: United States, 2001 linked file

Characteristics	All origins[1]	Hispanic						Non-Hispanic		
		Total	Mexican	Puerto Rican	Cuban	Central and South American	Other and unknown Hispanic	Total[2]	White	Black
	Infant mortality rates per 1,000 live births in specified group									
Total	6.8	5.4	5.2	8.5	4.2	5.0	6.0	7.1	5.7	13.5
Age at death:										
Total neonatal	4.5	3.6	3.5	6.0	2.5	3.4	3.9	4.7	3.8	9.0
Early neonatal (< 7 days)	3.6	2.9	2.7	5.0	1.9	2.6	3.2	3.8	3.0	7.4
Late neonatal (7-27 days)	0.9	0.8	0.8	1.0	*	0.7	0.7	0.9	0.8	1.6
Postneonatal	2.3	1.8	1.7	2.5	1.7	1.6	2.1	2.4	1.9	4.5
Sex:										
Male	7.5	6.0	5.7	9.5	4.4	5.5	6.4	7.9	6.3	14.9
Female	6.1	4.9	4.7	7.5	4.1	4.5	5.6	6.4	5.1	12.0
Plurality:										
Single births	6.0	4.9	4.8	7.4	3.3	4.4	5.4	6.2	4.9	11.9
Plural births	32.4	30.1	27.9	47.1	*	28.4	31.6	32.5	27.2	55.3
Birthweight:										
Less than 2,500 grams	58.6	54.9	55.1	64.8	41.0	52.1	47.8	58.8	52.2	75.7
Less than 1,500 grams	244.4	232.6	234.6	265.3	162.9	214.4	217.2	244.4	229.9	269.7
1,500-2,499 grams	15.2	16.5	17.3	14.5	*	15.6	14.9	14.8	14.7	15.1
2,500 grams or more	2.4	1.9	1.9	2.7	*	1.7	2.3	2.5	2.3	3.8
Period of gestation:										
Less than 32 weeks	181.0	152.4	150.9	194.7	110.4	143.8	130.0	185.7	175.0	206.7
32-36 weeks	8.9	8.1	8.0	9.6	*	7.0	8.9	9.0	8.7	9.9
37-41 weeks	2.5	2.1	2.1	2.9	*	1.9	2.6	2.6	2.3	4.1
42 weeks or more	3.0	2.0	2.0	*	*	*	*	3.2	2.8	5.3
Trimester of pregnancy prenatal care began:										
First trimester	6.2	5.1	4.9	7.8	3.3	4.5	5.5	6.4	5.2	12.6
After first trimester or no care	8.5	5.7	5.3	9.7	*	5.7	5.8	9.7	7.8	13.9
Second trimester	6.9	4.6	4.3	8.0	*	4.5	4.8	7.8	6.7	10.5
Third trimester	6.0	4.0	3.7	*	*	5.3	*	7.1	6.1	8.3
No prenatal care	34.8	22.4	20.2	47.0	*	25.3	*	40.0	29.4	52.4
Age of mother:										
Under 20 years	10.0	6.9	6.3	12.0	*	6.8	8.3	11.2	9.6	14.3
20-24 years	7.6	5.1	4.9	7.6	*	4.3	5.7	8.3	6.7	13.0
25-29 years	6.1	4.9	4.8	7.8	*	4.3	4.7	6.3	5.1	13.2
30-34 years	5.4	4.7	4.6	7.2	*	4.4	4.1	5.5	4.4	13.4
35-39 years	6.5	6.4	6.2	8.1	9.0	5.7	8.2	6.5	5.5	14.0
40-54 years	8.4	9.8	8.4	*	*	12.3	*	8.0	6.8	14.9
Educational attainment of mother:										
0-8 years	6.7	5.2	5.0	9.3	*	5.8	7.7	11.1	10.7	14.8
9-11 years	9.2	5.8	5.5	9.9	*	4.9	6.1	11.1	9.6	14.3
12 years	7.4	5.2	4.8	9.2	*	5.0	5.7	8.0	6.4	13.1
13-15 years	6.1	5.0	4.9	6.5	*	4.7	4.4	6.3	5.0	12.3
16 years and over	4.3	3.9	4.3	5.1	*	3.4	*	4.3	3.8	10.8
Live-birth order:										
1	6.8	5.7	5.4	9.3	3.7	5.0	6.6	7.0	5.7	13.7
2	5.9	4.8	4.7	7.4	3.9	4.3	4.8	6.2	5.1	11.8
3	6.8	4.9	4.7	6.9	*	4.7	5.6	7.4	5.8	13.2
4	8.1	6.0	5.5	9.1	*	7.2	6.5	8.8	7.0	13.8
5 or more	10.7	7.3	6.7	13.8	*	7.0	*	11.9	8.8	18.3
Marital status:										
Married	5.4	4.8	4.8	6.9	3.4	4.4	4.7	5.4	4.9	11.7
Unmarried	9.7	6.2	5.8	9.7	6.6	5.7	7.7	10.9	8.5	14.3
Mother's place of birth:										
Born in the 50 States and D.C.	7.2	6.2	5.9	8.8	4.7	5.3	5.6	7.2	5.7	13.6
Born elsewhere	5.1	4.9	4.7	7.8	3.8	4.9	4.7	5.4	4.4	9.6
Maternal smoking during pregnancy:[3]										
Smoker	10.5	10.0	10.4	10.1	*	*	8.0	10.5	9.1	19.5
Nonsmoker	6.5	5.4	5.1	8.1	3.7	4.9	6.0	6.7	5.1	12.8

See footnotes at end of table.

Table 2. Infant mortality rates, live births, and infant deaths by selected characteristics and Hispanic origin of mother and by race of mother for mothers of non-Hispanic origin: United States, 2001 linked file--Con.

Characteristics	All origins[1]	Hispanic						Non-Hispanic			Not stated
		Total	Mexican	Puerto Rican	Cuban	Central and South American	Other and unknown Hispanic	Total[2]	White	Black	
	Live births										
Total	4,026,036	851,867	611,013	57,568	14,017	121,366	47,903	3,149,626	2,326,606	589,940	24,543
Sex:											
Male	2,057,977	433,874	311,015	29,509	7,119	61,788	24,443	1,611,626	1,192,106	299,582	12,477
Female	1,968,059	417,993	299,998	28,059	6,898	59,578	23,460	1,538,000	1,134,500	290,358	12,066
Plurality:											
Single births	3,897,299	833,897	598,926	55,956	13,610	118,624	46,781	3,039,739	2,242,824	569,431	23,663
Plural births	128,737	17,970	12,087	1,612	407	2,742	1,122	109,887	83,782	20,509	880
Birthweight:											
Less than 2,500 grams	309,760	55,253	37,239	5,392	911	7,888	3,823	252,487	157,715	77,325	2,020
Less than 1,500 grams	58,702	9,815	6,480	1,082	180	1,451	622	48,405	27,508	18,407	482
1,500-2,499 grams	251,058	45,438	30,759	4,310	731	6,437	3,201	204,082	130,207	58,918	1,538
2,500 grams or more	3,714,965	796,501	573,702	52,163	13,103	113,458	44,075	2,896,177	2,168,207	512,404	22,287
Not stated	1,311	113	72	13	3	20	5	962	684	211	236
Period of gestation:											
Less than 32 weeks	77,676	14,092	9,477	1,454	229	2,043	889	63,012	35,887	23,733	572
32-36 weeks	398,623	81,291	57,302	6,392	1,254	11,373	4,970	315,099	214,273	79,518	2,233
37-41 weeks	3,235,790	674,020	481,929	45,277	11,630	97,380	37,804	2,543,057	1,908,845	443,809	18,713
42 weeks or more	274,065	63,839	46,381	4,196	845	8,789	3,628	208,643	155,422	38,585	1,583
Not stated	39,882	18,625	15,924	249	59	1,781	612	19,815	12,179	4,295	1,442
Trimester of pregnancy prenatal care began:											
First trimester	3,276,935	625,821	442,515	43,796	12,736	91,079	35,695	2,632,911	2,022,753	425,092	18,203
After first trimester or no care	654,069	200,672	150,857	11,552	1,141	26,627	10,495	449,547	262,177	145,844	3,850
Second trimester	506,673	152,170	114,292	9,031	956	19,897	7,994	351,758	210,948	108,640	2,745
Third trimester	105,661	35,400	26,275	1,874	121	5,367	1,763	69,576	37,807	24,120	685
No prenatal care	41,735	13,102	10,290	647	64	1,363	738	28,213	13,422	13,084	420
Not stated	95,032	25,374	17,641	2,220	140	3,660	1,713	67,168	41,676	19,004	2,490
Age of mother:											
Under 20 years	453,746	132,566	100,729	11,056	1,049	11,437	8,295	318,644	191,745	111,662	2,536
20-24 years	1,021,643	258,437	192,173	18,669	2,408	30,715	14,472	757,697	523,030	194,393	5,509
25-29 years	1,058,291	227,913	165,179	13,426	4,047	33,622	11,639	824,199	622,367	133,496	6,179
30-34 years	942,718	150,353	101,213	9,275	3,821	27,488	8,556	786,211	625,444	91,714	6,154
35-39 years	451,740	67,954	42,709	4,254	2,253	14,641	4,097	380,520	300,013	47,497	3,266
40-54 years	97,898	14,644	9,010	888	439	3,463	844	82,355	64,007	11,178	899
Educational attainment of mother:											
0-8 years	239,642	179,475	150,309	2,503	165	22,813	3,685	59,536	37,910	13,569	631
9-11 years	621,926	227,531	179,242	15,853	1,488	20,536	10,412	391,848	238,213	130,181	2,547
12 years	1,253,047	250,709	172,024	19,667	4,824	37,342	16,852	996,337	704,412	231,410	6,001
13-15 years	856,773	111,090	65,545	12,484	3,184	20,541	9,336	741,646	559,162	134,234	4,037
16 years and over	998,505	65,828	31,563	6,275	4,290	17,563	6,137	927,595	768,511	70,656	5,082
Not stated	56,143	17,234	12,330	786	66	2,571	1,481	32,664	18,398	9,890	6,245
Live-birth order:											
1	1,594,981	312,537	216,645	22,391	6,269	48,308	18,924	1,272,922	947,995	220,107	9,522
2	1,308,765	260,317	183,758	17,916	5,123	38,628	14,892	1,041,236	791,306	173,279	7,212
3	675,759	160,292	118,715	10,026	1,867	21,202	8,482	511,560	375,813	105,187	3,907
4	263,248	69,905	53,633	4,184	498	8,163	3,427	191,752	131,311	49,107	1,591
5 or more	169,458	45,018	35,104	2,921	252	4,764	1,977	123,259	74,060	40,285	1,181
Not stated	13,825	3,798	3,158	130	8	301	201	8,897	6,121	1,975	1,130
Marital status:											
Married	2,676,745	490,173	361,936	23,657	10,204	67,640	26,736	2,170,013	1,802,225	185,424	16,559
Unmarried	1,349,291	361,694	249,077	33,911	3,813	53,726	21,167	979,613	524,381	404,516	7,984
Mother's place of birth:											
Born in the 50 States and D.C.	3,110,736	312,787	220,759	37,214	6,304	13,528	34,982	2,778,264	2,190,423	520,946	19,685
Born elsewhere	904,579	537,302	389,345	20,172	7,702	107,678	12,405	363,385	131,735	66,414	3,892
Not stated	10,721	1,778	909	182	11	160	516	7,977	4,448	2,580	966
Maternal smoking during pregnancy:[3]											
Smoker	416,483	18,900	8,975	5,382	391	1,240	2,912	394,667	333,374	50,603	2,916
Nonsmoker	3,056,543	568,227	370,664	49,901	12,833	94,603	40,226	2,471,539	1,810,875	503,584	16,777
Not stated	25,226	3,660	2,718	234	24	388	296	20,091	15,329	3,199	1,475

See footnotes at end of table.

Table 2. Infant mortality rates, live births, and infant deaths by selected characteristics and Hispanic origin of mother and by race of mother for mothers of non-Hispanic origin: United States, 2001 linked file--Con.

Characteristics	All origins[1]	Hispanic						Non-Hispanic			Not stated
		Total	Mexican	Puerto Rican	Cuban	Central and South American	Other and unknown Hispanic	Total[2]	White	Black	
	Infant deaths										
Total	27,523	4,630	3,187	491	60	604	289	22,512	13,300	7,938	380
Age at death:											
Total neonatal	18,275	3,105	2,130	345	35	408	187	14,864	8,817	5,293	306
Early neonatal (< 7 days)	14,622	2,439	1,653	287	26	317	155	11,903	6,979	4,337	280
Late neonatal (7-27 days)	3,653	666	477	57	9	91	32	2,961	1,839	956	26
Postneonatal	9,248	1,526	1,057	147	24	196	102	7,648	4,483	2,645	74
Sex:											
Male	15,434	2,590	1,785	280	31	338	156	12,659	7,478	4,464	185
Female	12,089	2,040	1,402	212	28	266	132	9,853	5,823	3,474	196
Plurality:											
Single births	23,358	4,089	2,850	415	45	526	253	18,946	11,018	6,804	322
Plural births	4,165	541	338	76	14	78	36	3,566	2,282	1,134	58
Birthweight:											
Less than 2,500 grams	18,151	3,034	2,053	350	37	411	183	14,853	8,238	5,855	264
Less than 1,500 grams	14,345	2,283	1,520	287	29	311	135	11,830	6,323	4,965	232
1,500-2,499 grams	3,806	751	533	62	8	100	48	3,023	1,915	890	31
2,500 grams or more	8,989	1,551	1,102	139	19	188	103	7,372	4,906	1,971	67
Not stated	383	46	33	3	3	4	3	288	156	111	50
Period of gestation:											
Less than 32 weeks	14,060	2,148	1,430	283	25	294	116	11,704	6,279	4,907	208
32-36 weeks	3,538	656	461	61	9	80	44	2,844	1,854	787	38
37-41 weeks	8,221	1,447	1,013	130	18	189	97	6,725	4,458	1,807	49
42 weeks or more	809	126	92	8	-	17	9	678	436	203	5
Not stated	894	254	192	9	7	23	23	561	273	234	79
Trimester of pregnancy prenatal care:											
First trimester	20,177	3,178	2,186	344	42	410	195	16,830	10,599	5,340	168
After first trimester or no care	5,581	1,135	801	112	9	152	60	4,372	2,036	2,027	74
Second trimester	3,492	700	497	73	3	89	38	2,751	1,412	1,142	42
Third trimester	638	142	96	9	1	28	7	492	231	199	4
No prenatal care	1,450	293	208	30	5	34	15	1,129	394	686	28
Not stated	1,766	318	200	35	8	41	33	1,310	665	571	138
Age of mother:											
Under 20 years	4,547	921	637	132	5	78	69	3,569	1,836	1,601	57
20-24 years	7,729	1,318	951	142	8	133	83	6,318	3,497	2,522	94
25-29 years	6,411	1,108	791	105	12	145	55	5,210	3,143	1,758	92
30-34 years	5,065	705	469	66	12	122	35	4,287	2,752	1,225	73
35-39 years	2,945	434	263	34	20	83	33	2,469	1,637	666	42
40-54 years	825	144	75	11	2	43	13	659	434	167	22
Educational attainment of mother:											
0-8 years	1,609	936	752	23	1	132	28	661	407	200	12
9-11 years	5,698	1,319	988	157	9	102	64	4,348	2,279	1,864	31
12 years	9,321	1,307	826	181	17	186	96	7,953	4,507	3,035	62
13-15 years	5,261	556	319	82	17	97	41	4,676	2,790	1,649	29
16 years and over	4,245	257	134	32	12	59	19	3,966	2,891	765	22
Not stated	1,387	255	169	15	3	29	40	909	427	425	223
Live-birth order:											
1	10,864	1,778	1,181	209	23	241	125	8,945	5,424	3,015	141
2	7,758	1,256	866	133	20	165	72	6,420	4,008	2,039	82
3	4,615	786	564	69	5	100	48	3,788	2,195	1,389	42
4	2,131	420	293	38	7	59	22	1,690	920	676	21
5 or more	1,817	329	235	40	2	33	19	1,472	651	738	15
Not stated	338	61	49	1	2	6	3	198	102	81	79
Marital status:											
Married	14,392	2,373	1,753	163	34	297	126	11,806	8,833	2,166	213
Unmarried	13,131	2,257	1,434	328	25	306	163	10,707	4,468	5,771	167

See footnotes at end of table.

Table 2. Infant mortality rates, live births, and infant deaths by selected characteristics and Hispanic origin of mother and by race of mother for mothers of non-Hispanic origin: United States, 2001 linked file--Con.

Characteristics	All origins[1]	Hispanic						Non-Hispanic			Not stated
		Total	Mexican	Puerto Rican	Cuban	Central and South American	Other and unknown Hispanic	Total[2]	White	Black	
	Infant deaths										
Mother's place of birth:											
Born in the 50 States and D.C.	22,259	1,934	1,308	329	29	72	196	20,106	12,474	7,109	219
Born elsewhere	4,633	2,620	1,849	157	29	527	58	1,960	586	639	53
Not stated	631	77	31	6	1	5	34	446	240	191	108
Maternal smoking during pregnancy:[3]											
Smoker	4,393	189	93	54	7	11	23	4,157	3,021	986	47
Nonsmoker	19,745	3,052	1,893	405	47	466	241	16,520	9,262	6,455	173
Not stated	562	74	54	10	-	2	8	392	223	145	96

* Figure does not meet standard of reliability or precision; based on fewer than 20 deaths in the numerator.
- Quantity zero.
1 Includes origin not stated.
2 Includes races other than black or white.
3 Excludes data for California, which does not report tobacco use on the birth certificate.

NOTE: Infant deaths are weighted so numbers may not exactly add to totals due to rounding. Not stated responses were included in totals but not distributed among groups for rate computations.

Table 3. Infant mortality rates by race and Hispanic origin of mother: United States and each State, Puerto Rico, Virgin Islands, and Guam, 1999-2001 linked files

[By place of residence]

State	Total	Race and Hispanic origin of mother						
		Race				Hispanic origin		
		White	Black	American Indian[1]	Asian/Pacific Islander	Hispanic	Non-Hispanic White	Non-Hispanic Black
	Infant mortality rates per 1,000 live births in specified group							
United States [2]	6.9	5.7	13.6	9.1	4.8	5.6	5.7	13.7
Alabama	9.5	6.8	15.3	*	*	7.0	6.8	15.2
Alaska	7.0	5.6	*	11.9	*	*	5.3	*
Arizona	6.8	6.3	16.6	9.3	5.2	6.3	6.3	16.5
Arkansas	8.2	7.2	12.3	*	*	4.2	7.5	12.2
California	5.4	5.0	11.5	7.9	4.5	5.1	4.7	11.6
Colorado	6.2	5.8	12.7	*	6.2	6.1	5.7	12.7
Connecticut	6.2	5.3	13.1	*	*	7.5	4.7	13.3
Delaware	9.2	7.0	16.1	*	*	8.2	6.8	16.3
District of Columbia	13.0	5.3	16.9	*	*	8.5	*	16.9
Florida	7.1	5.5	12.7	*	4.9	5.0	5.6	12.8
Georgia	8.4	5.9	13.4	*	6.2	5.1	6.0	13.5
Hawaii	7.1	6.8	*	*	7.2	6.6	6.4	*
Idaho	6.9	6.8	*	*	*	8.1	6.6	*
Illinois	8.2	6.3	16.4	*	6.7	6.9	6.1	16.4
Indiana	7.8	7.0	14.4	*	*	6.8	7.0	14.5
Iowa	5.9	5.6	15.8	*	*	6.6	5.5	15.8
Kansas	7.1	6.6	14.1	*	*	6.3	6.7	14.1
Kentucky	6.8	6.5	10.4	*	*	*	6.5	10.5
Louisiana	9.4	6.4	13.7	*	*	5.3	6.5	13.7
Maine	5.3	5.3	*	*	*	*	5.3	*
Maryland	8.0	5.2	13.6	*	4.8	6.1	5.1	13.6
Massachusetts	4.9	4.4	9.9	*	3.8	5.5	4.1	11.1
Michigan	8.1	6.2	16.7	*	6.0	6.5	5.9	16.7
Minnesota	5.7	5.1	11.7	10.8	7.4	6.8	5.0	11.4
Mississippi	10.4	6.9	14.7	*	*	*	6.9	14.6
Missouri	7.4	5.9	16.0	*	*	5.7	5.9	16.0
Montana	6.6	5.9	*	11.7	*	*	5.9	*
Nebraska	6.9	6.3	13.0	17.3	*	7.6	6.1	13.2
Nevada	6.2	5.6	11.7	15.8	5.4	5.5	5.2	11.9
New Hampshire	5.2	5.1	*	*	*	*	4.5	*
New Jersey	6.4	5.0	13.5	*	3.7	6.3	4.4	14.0
New Mexico	6.6	6.5	14.6	7.1	*	6.3	6.9	14.7
New York	6.2	5.1	10.9	*	3.6	5.8	4.8	11.4
North Carolina	8.7	6.6	15.1	11.6	6.9	5.9	6.7	15.1
North Dakota	8.0	7.3	*	15.2	*	*	7.0	*
Ohio	7.8	6.6	15.1	*	4.2	7.5	6.6	14.9
Oklahoma	8.1	7.4	14.3	8.4	*	4.9	7.6	14.3
Oregon	5.5	5.5	7.3	9.5	4.0	6.4	5.4	7.5
Pennsylvania	7.2	6.0	15.1	*	3.7	9.0	5.7	15.0
Rhode Island	6.3	5.5	12.8	*	*	7.9	4.6	13.0
South Carolina	9.3	6.2	15.2	*	*	4.4	6.3	15.2
South Dakota	7.1	6.2	*	11.7	*	*	6.2	*
Tennessee	8.5	6.5	16.0	*	5.8	6.3	6.5	16.0
Texas	5.9	5.3	10.9	*	3.9	5.1	5.4	10.9
Utah	5.0	5.0	*	*	7.0	5.9	4.8	*
Vermont	5.9	5.9	*	*	*	*	5.7	*
Virginia	7.2	5.5	13.0	*	4.6	4.9	5.5	13.0
Washington	5.3	5.0	10.8	8.9	4.4	4.9	4.9	10.3
West Virginia	7.4	7.3	9.9	*	*	*	7.3	10.0
Wisconsin	6.8	5.7	16.8	10.1	5.0	6.4	5.7	16.8
Wyoming	6.6	6.7	*	*	*	*	6.4	*
Puerto Rico	9.7	9.7	10.2	---	---	---	---	---
Virgin Islands	9.0	*	9.4	*	*	*	*	8.5
Guam	8.2	*	*	*	8.7	*	*	*

* Figure does not meet standard of reliability or precision; based on fewer than 20 deaths in the numerator.
--- Data not available.
1 Includes Aleuts and Eskimos.
2 Excludes data for Puerto Rico, Virgin Islands, and Guam.

Table 4. Percent of live births with selected maternal and infant characteristics by specified race of mother: United States, 2001 linked file

Characteristic	All races	White	Black	American Indian[1]	Asian or Pacific Islander					
					Total	Chinese	Japanese	Hawaiian	Filipino	Other
Birthweight:										
Less than 1,500 grams	1.5	1.2	3.1	1.3	1.0	0.7	0.7	1.5	1.3	1.1
Less than 2,500 grams	7.7	6.7	13.0	7.3	7.5	5.3	7.3	7.9	8.7	7.8
Preterm births[2]	11.9	11.0	17.5	13.2	10.3	7.7	8.8	14.2	12.5	10.3
Prenatal care beginning in the first trimester	83.4	85.2	74.5	69.3	84.0	87.0	90.1	79.1	85.0	82.7
Births to mothers under 20 years	11.3	10.2	18.9	19.3	4.3	1.0	1.7	16.2	5.1	4.6
Fourth and higher order births	10.8	10.1	15.1	18.8	6.8	2.2	4.2	15.4	7.5	7.6
Births to unmarried mothers	33.5	27.7	68.4	59.7	14.9	8.4	9.2	50.6	20.4	13.7
Mothers completing 12 or more years of school	78.3	78.3	75.1	69.0	89.2	88.1	98.2	84.6	94.0	87.8
Mothers born in the 50 States and D.C.	77.5	79.1	87.6	94.7	16.8	10.2	40.1	97.6	21.2	11.3
Mother smoked during pregnancy[3]	12.0	13.0	9.0	19.9	2.8	0.7	3.8	14.8	3.2	2.3

1 Includes births to Aleuts and Eskimos.
2 Born prior to 37 completed weeks of gestation.
3 Excludes data for California which does not report tobacco use on the birth certificate.

Table 5. Percent of live births with selected maternal and infant characteristics by Hispanic origin of mother and race of mother for mothers of non-Hispanic origin: United States, 2001 linked file

Characteristic	All origins[1]	Hispanic						Non-Hispanic		
		Total	Mexican	Puerto Rican	Cuban	Central and South American	Other and unknown Hispanic	Total[2]	White	Black
Birthweight:										
Less than 1,500 grams	1.5	1.2	1.1	1.9	1.3	1.2	1.3	1.5	1.2	3.1
Less than 2,500 grams	7.7	6.5	6.1	9.4	6.5	6.5	8.0	8.0	6.8	13.1
Preterm births[3]	11.9	11.4	11.2	13.7	10.6	11.2	12.4	12.1	10.8	17.6
Prenatal care beginning in the first trimester	83.4	75.7	74.6	79.1	91.8	77.4	77.3	85.4	88.5	74.5
Births to mothers under 20 years	11.3	15.6	16.5	19.2	7.5	9.4	17.3	10.1	8.2	18.9
Fourth and higher order births	10.8	13.6	14.6	12.4	5.4	10.7	11.3	10.0	8.9	15.2
Births to unmarried mothers	33.5	42.5	40.8	58.9	27.2	44.3	44.2	31.1	22.5	68.6
Mothers completing 12 or more years of school	78.3	51.2	45.0	67.7	88.2	63.5	69.6	85.5	88.0	75.2
Mothers born in the 50 States and D.C.	77.5	36.8	36.2	64.8	45.0	11.2	73.8	88.4	94.3	88.7
Mother smoked during pregnancy[4]	12.0	3.2	2.4	9.7	3.0	1.3	6.8	13.8	15.5	9.1

1 Includes origin not stated.
2 Includes races other than black or white.
3 Born prior to 37 completed weeks of gestation.
4 Excludes data for California which does not report tobacco use on the birth certificate.

Table 6. Live births, infant, neonatal, and postneonatal deaths and mortality rates by race of mother and birthweight: United States, 2001 linked file, and percent change in birthweight-specific infant mortality, 1995-2001 linked file

Race and birthweight	Number in 2001				Mortality rate per 1,000 live births in 2001			Percent change in infant mortality rate 1995-2001
	Live births	Infant deaths	Neonatal deaths	Postneonatal deaths	Infant	Neonatal	Postneonatal	
All races[1]	4,026,036	27,523	18,275	9,248	6.8	4.5	2.3	-10.5
Less than 2,500 grams	309,760	18,151	14,752	3,399	58.6	47.6	11.0	-9.3
Less than 1,500 grams	58,702	14,345	12,548	1,797	244.4	213.8	30.6	-8.9
Less than 500 grams	6,450	5,515	5,406	110	855.0	838.1	17.1	-5.4
500-749 grams	11,081	5,283	4,555	729	476.8	411.1	65.8	-9.7
750-999 grams	11,847	1,826	1,373	454	154.1	115.9	38.3	-15.4
1,000-1,249 grams	13,572	1,001	679	322	73.8	50.0	23.7	-13.7
1,250-1,499 grams	15,752	719	535	183	45.6	34.0	11.6	-16.5
1,500-1,999 grams	60,858	1,658	1,058	600	27.2	17.4	9.9	-18.1
2,000-2,499 grams	190,200	2,148	1,146	1,002	11.3	6.0	5.3	-16.3
2,500 grams or more	3,714,965	8,989	3,164	5,825	2.4	0.9	1.6	-20.0
2,500-2,999 grams	680,813	3,042	1,184	1,858	4.5	1.7	2.7	-16.7
3,000-3,499 grams	1,515,531	3,434	1,167	2,267	2.3	0.8	1.5	-20.7
3,500-3,999 grams	1,139,550	1,902	576	1,326	1.7	0.5	1.2	-15.0
4,000-4,499 grams	322,426	474	160	314	1.5	0.5	1.0	-16.7
4,500-4,999 grams	51,145	102	55	47	2.0	1.1	0.9	-9.1**
5,000 grams or more	5,500	35	22	13	6.4	4.0	*	-23.8**
Not stated	1,311	383	359	24	...	...	...	...
White	3,177,698	18,087	12,078	6,009	5.7	3.8	1.9	-9.5
Less than 2,500 grams	212,870	11,380	9,419	1,961	53.5	44.2	9.2	-10.4
Less than 1,500 grams	37,367	8,705	7,769	936	233.0	207.9	25.0	-10.6
Less than 500 grams	3,724	3,201	3,145	55	859.6	844.5	14.8	-5.7**
500-749 grams	6,376	3,144	2,785	358	493.1	436.8	56.1	-9.7
750-999 grams	7,564	1,175	946	228	155.3	125.1	30.1	-19.5
1,000-1,249 grams	9,006	685	501	183	76.1	55.6	20.3	-16.3
1,250-1,499 grams	10,697	501	390	111	46.8	36.5	10.4	-15.7
1,500-1,999 grams	42,200	1,169	782	386	27.7	18.5	9.1	-16.6
2,000-2,499 grams	133,303	1,506	868	639	11.3	6.5	4.8	-17.5
2,500 grams or more	2,963,831	6,461	2,434	4,027	2.2	0.8	1.4	-18.5
2,500-2,999 grams	487,930	2,106	902	1,204	4.3	1.8	2.5	-18.9
3,000-3,499 grams	1,185,191	2,464	899	1,565	2.1	0.8	1.3	-22.2
3,500-3,999 grams	958,843	1,410	443	968	1.5	0.5	1.0	-16.7
4,000-4,499 grams	282,098	383	137	246	1.4	0.5	0.9	-12.5**
4,500-4,999 grams	45,093	71	37	34	1.6	0.8	0.8	-20.0**
5,000 grams or more	4,676	26	16	10	5.6	*	*	-27.3**
Not stated	997	247	226	21	...	...	...	...
Black	606,183	8,084	5,396	2,688	13.3	8.9	4.4	-8.9
Less than 2,500 grams	78,760	5,960	4,708	1,252	75.7	59.8	15.9	-4.4
Less than 1,500 grams	18,726	5,057	4,282	775	270.1	228.7	41.4	-5.4
Less than 500 grams	2,491	2,111	2,062	49	847.5	827.8	19.7	-5.3**
500-749 grams	4,262	1,933	1,594	339	453.5	374.0	79.5	-9.2
750-999 grams	3,733	561	358	203	150.3	95.9	54.4	-7.8**
1,000-1,249 grams	3,968	271	151	120	68.3	38.1	30.2	-8.3**
1,250-1,499 grams	4,272	181	116	64	42.4	27.2	15.0	-12.8**
1,500-1,999 grams	15,414	398	217	181	25.8	14.1	11.7	-20.4
2,000-2,499 grams	44,620	505	209	296	11.3	4.7	6.6	-16.3
2,500 grams or more	527,185	2,009	574	1,435	3.8	1.1	2.7	-15.6
2,500-2,999 grams	142,307	768	221	547	5.4	1.6	3.8	-12.9
3,000-3,499 grams	231,071	764	210	553	3.3	0.9	2.4	-19.5
3,500-3,999 grams	122,568	375	106	269	3.1	0.9	2.2	-11.4**
4,000-4,499 grams	26,699	73	18	55	2.7	*	2.1	-37.2
4,500-4,999 grams	3,996	21	13	8	5.3	*	*	*
5,000 grams or more	544	7	5	2	*	*	*	*
Not stated	238	115	114	1	...	...	...	...

* Figure does not meet standard of reliability or precision; based on fewer than 20 deaths in the numerator.
** Not significant at p<.05.
... Category not apllicable.
1 Includes races other than white or black.

NOTE: Infant deaths are weighted so numbers may not exactly add to totals due to rounding. Neonatal is less than 28 days and postneonatal is 28 days to under 1 year.

Table 7. Infant deaths and mortality rates for the five leading causes of infant death by race and Hispanic origin of mother: United States, 2001 linked file

[Rates per 100,000 live births in specified group]

Cause of death (Based on the Tenth Revision, International Classification of Diseases, 1992)	All races			White[1]			Black			American Indian[2,3]			Asian and Pacific Islander		
	Rank	Number	Rate	Rank	Number	Rate	Rank	Number	Rate	Rank	Number	Rate	Rank	Number	Rate
All causes	...	27,523	683.6	...	18,087	569.2	...	8,084	1333.6	...	404	964.8	...	947	472.8
Congenital malformations, deformations and chromosomal abnormalities (Q00-Q99)	1	5,538	137.6	1	4,261	134.1	2	982	162.0	1	65	155.2	1	230	114.8
Disorders related to short gestation and low birth weight, not elsewhere classified (P07)	2	4,408	109.5	2	2,463	77.5	1	1,779	293.5	4	28	66.9	2	138	68.9
Sudden infant death syndrome (R95)	3	2,236	55.5	3	1,449	45.6	3	688	113.5	2	61	145.7	4	37	18.5
Newborn affected by maternal complications of pregnancy (P01)	4	1,501	37.3	4	932	29.3	4	517	85.3	6	14	*	3	38	19.0
Respiratory distress of newborn (P22)	5	1,019	25.3	7	633	19.9	5	346	57.1	10	9	*	5	31	15.5

Cause of death (Based on the Tenth Revision International Classification of Diseases, 1992)	Total Hispanic			Mexican			Puerto Rican			Central and South American[4]			Non-Hispanic White[5]		
	Rank	Number	Rate	Rank	Number	Rate	Rank	Number	Rate	Rank	Number	Rate	Rank	Number	Rate
All causes	...	4,630	543.6	...	3,187	521.6	...	491	852.9	...	604	497.7	...	13,300	571.6
Congenital malformations, deformations and chromosomal abnormalities (Q00-Q99)	1	1,246	146.3	1	885	144.8	2	83	144.2	1	187	154.1	1	3,003	129.1
Disorders related to short gestation and low birth weight, not elsewhere classified (P07)	2	651	76.4	2	413	67.6	1	97	168.5	2	82	67.6	2	1,760	75.6
Sudden infant death syndrome (R95)	3	232	27.1	3	142	23.2	3	44	76.4	7	17	*	3	1,221	52.5
Newborn affected by maternal complications of pregnancy (P01)	5	180	21.0	5	122	20.0	5	24	41.7	3	22	18.1	4	734	31.5
Respiratory distress of newborn (P22)	4	187	21.8	4	129	21.1	4	25	43.4	4	21	17.3	7	440	18.9

..., Category not applicable.
* Figure does not meet standard of reliability or precision; based on fewer than 20 deaths in the numerator.
1 For whites, Newborn affected by complications of placenta, cord and membranes was the fifth leading cause of death, with 696 deaths and a rate of 21.9.
2 Includes Aleuts and Eskimos.
3 For American Indians, Accidents (unintentional injuries) was the third leading cause of death with 37 deaths and a rate of 88.9. Influenza and pneumonia was the fifth leading cause of death; however with only 18 deaths a reliable infant mortality rate could not be computed.
4 For Central and South Americans, Infections specific to the perinatal period was the fifth leading cause of death; however with only 19 deaths a reliable infant mortality rate could not be computed.
5 For non-Hispanic whites, Newborn affected by complications of placenta, cord and membranes was the fifth leading cause of death with 529 deaths and a rate of 22.7.

NOTE: Reliable cause-specific infant mortality rates cannot be computed for Cubans because of the small number of infant deaths (60).

Technical Notes

Differences between period and cohort data

From 1983 to 1991, NCHS produced linked files in a birth cohort format (43). Beginning with 1995 data, linked files are produced first using a period format and then subsequently using a birth cohort format (both available on CD ROM). Thus, the 2001 period linked file contains a numerator file that consists of all infant deaths occurring in 2001 that have been linked to their corresponding birth certificates, whether the birth occurred in 2001 or in 2000. In contrast, the 2001 birth cohort linked file will contain a numerator file that consists of all infant deaths to babies born in 2001 whether the death occurred in 2001 or 2002.

For the 2001 file, NCHS accepted birth records that could be linked to infant deaths even if registered after the closure of the 2001 birth file (slightly more than 100 cases). This improved the infant birth/death linkage and made the denominator file distinctly different from the official 2001 birth file.

The release of linked file data in two different formats allows NCHS to meet demands for more timely linked files while still meeting the needs of data users who prefer the birth cohort format. While the birth cohort format has methodological advantages, it creates substantial delays in data availability, since it is necessary to wait until the close of the following data year to include all infant deaths in the birth cohort. Beginning with 1995 data, the period linked file is the basis for all official NCHS linked file statistics.

Weighting

A record weight is added to the linked file to compensate for the 1.1 percent (in 2001) of infant death records that could not be linked to their corresponding birth certificates. This procedure was initiated in 1995. Records for Puerto Rico, the Virgin Islands, and Guam are not weighted. The percent of records linked varied by registration area (from 95.6 to 100.0 percent with all but four areas—Louisiana, Nevada, New Jersey, and West Virginia at 97 percent or higher) (table I). The number of infant deaths in the linked file for the 50 States and the District of Columbia was weighted to equal the sum of the linked plus unlinked infant deaths by State of residence at birth and age at death (less than 1 day, 1–27 days, and 28 days to under 1 year). The addition of the weight greatly reduced the potential for bias in comparing infant mortality rates by characteristics.

The 2001 linked file started with 27,560 infant death records. Of these 27,560 records, 27,268 were linked; 292 were unlinked because corresponding birth certificates could not be identified. The 27,560 linked and unlinked records contained 37 records of infants whose mother's usual place of residence is outside of the United States. These 37 records were excluded to derive a weighted total of 27,523 infant deaths. Thus, all total calculations for 2001 in this report used a weighted total of 27,523 infant deaths (tables A, B, D, 1, 2, 6, and 7).

Table I. Percent of infant death records which were linked to their corresponding birth records: United States and each State, Puerto Rico, Virgin Islands, and Guam, 2001 linked file

State	Percent linked by State of occurrence of death
United States [1]	98.9
Alabama	100.0
Alaska	98.7
Arizona	98.8
Arkansas	99.3
California	97.9
Colorado	99.0
Connecticut	100.0
Delaware	100.0
District of Columbia	98.9
Florida	99.7
Georgia	100.0
Hawaii	98.1
Idaho	98.9
Illinois	98.0
Indiana	99.0
Iowa	100.0
Kansas	98.0
Kentucky	98.3
Louisiana	95.6
Maine	98.8
Maryland	99.6
Massachusetts	99.8
Michigan	99.9
Minnesota	99.7
Mississippi	100.0
Missouri	99.7
Montana	100.0
Nebraska	100.0
Nevada	96.6
New Hampshire	100.0
New Jersey	96.5
New Mexico	100.0
New York	98.7
North Carolina	99.8
North Dakota	100.0
Ohio	99.9
Oklahoma	97.5
Oregon	100.0
Pennsylvania	99.8
Rhode Island	100.0
South Carolina	100.0
South Dakota	100.0
Tennessee	100.0
Texas	97.4
Utah	100.0
Vermont	100.0
Virginia	99.9
Washington	100.0
West Virginia	94.5
Wisconsin	100.0
Wyoming	100.0
Puerto Rico	99.0
Virgin Islands	100.0
Guam	100.0

[1] Excludes data for Puerto Rico, Virgin Islands, and Guam.

Comparison of infant mortality data between the linked file and the vital statistics mortality file

The overall infant mortality rate from the 2001 period linked file of 6.8 is the same as the 2001 vital statistics mortality file. The number of infant deaths differs slightly; the number in the mortality file was 27,568 (2). Differences in numbers of infant deaths between the two data sources can be traced to three different causes:

1. geographic coverage differences
2. additional quality control
3. weighting

Differences in geographic coverage are due to the fact that for the vital statistics mortality file, all deaths occurring in the 50 States

and the District of Columbia are included regardless of the place of birth of the infant. In contrast, to be included in the linked file, both the birth and death must occur in the 50 States and the District of Columbia. In addition to the mortality quality control review, the linkage process subjects infant death records to an additional round of quality control (2). Every year, a few records are voided from the file at this stage because they are found to be fetal deaths, deaths at ages over 1 year, or duplicate death certificates. Finally, although every effort has been made to design weights that will accurately reflect the distribution of deaths by characteristics, weighting may contribute to small differences in numbers and rates by specific variables between these two data sets.

Marital status

National estimates of births to unmarried women are based on two methods of determining marital status. In 2001 marital status was based on a direct question in 48 States and the District of Columbia. In the two States (Michigan and New York) that used inferential procedures to compile birth statistics by marital status, a birth is inferred as nonmarital if either of these factors, listed in priority-of-use order, is present: a paternity acknowledgment was received or the father's name is missing. For more information on the inferential procedures and on the changes in reporting, see "Technical Notes" in "Births: Final Data for 2001" (3).

Period of gestation and birthweight

The primary measure used to determine the gestational age of the newborn is the interval between the first day of the mother's last normal menstrual period (LMP) and the date of birth. It is subject to error for several reasons, including imperfect maternal recall or misidentification of the LMP because of postconception bleeding, delayed ovulation, or intervening early miscarriage. These data are edited for LMP-based gestational ages that are clearly inconsistent with the infant's plurality and birthweight (see below), but reporting problems for this item persist and many occur more frequently among some subpopulations and among births with shorter gestations (44,45).

The U.S. Standard Certificate of Live Birth contains an item, "clinical estimate of gestation," which is compared with length of gestation computed from the date the LMP began 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 was also used if the LMP date was not reported. The period of gestation for 4.9 percent of the births in 2001 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 consistent with the reported birthweight, whereas the LMP-based 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 and birthweight was reclassified as "not stated." This was necessary for about 283 births or 0.007 percent of all birth records in 2001 (3).

For the linked file, not stated birthweight was imputed for 1,913 records or 0.05 percent of the birth records in 2001 when birthweight was not stated but the period of gestation was known. In this case, birthweight was assigned the value from the previous record with the same period of gestation, maternal race, sex, and plurality. If birthweight and period of gestation were both unknown (1,311 records in 2001) the not stated value for birthweight was retained. This imputation was done to improve the accuracy of birthweight-specific infant mortality rates, since the percent of records with not stated birthweight was higher for infant deaths (3.92 percent before imputation) than for live births (0.08 percent before imputation). The imputation reduced the percent of not stated records to 1.42 percent for infant deaths, and 0.04 percent for births. The not stated birthweight cases in the natality/birth file, as distinct from the linked file, are not imputed (3).

Cause-of-death classification

The mortality statistics presented in this report were compiled in accordance with the World Health Organization (WHO) regulations, which specify that member nations classify and code causes of death in accordance with the current revision of the *International Statistical Classification of Diseases and Related Health Problems*. The ICD provides the basic guidance used in virtually all countries to code and classify causes of death. The ICD not only details disease classification but also provides definitions, tabulation lists, the format of the death certificate, and the rules for coding cause of death. Cause-of-death data presented in this report were coded by procedures outlined in annual issues of the *NCHS Instruction Manual* (46,47).

In this report tabulations of cause-of-death statistics are based solely on the underlying cause of death. The underlying cause is defined by WHO as "the disease or injury which initiated the train of events leading directly to death, or the circumstances of the accident or violence which produced the fatal injury" (4). It is selected from the conditions entered by the physician in the cause-of-death section of the death certificate. When more than one cause or condition is entered by the physician, the underlying cause is determined by the sequence of conditions on the certificate, provisions of the ICD, and associated selection rules and modifications. Generally, more medical information is reported on death certificates than is directly reflected in the underlying cause of death. This is captured in NCHS multiple cause-of-death statistics (48,49).

Changes in cause-of-death classification

About every 10 to 20 years, the *International Classification of Diseases* is revised to take into account advances in medical knowledge. Effective with deaths occurring in 1999, the United States began using the *International Statistical Classification of Diseases and Related Health Problems, Tenth Revision* (ICD–10) (4); during the period 1979–98, causes were coded and classified according to the Ninth Revision (ICD–9) (5).

ICD–10 has many changes from ICD–9, including considerably greater detail, shifts in inclusion terms and titles from one category, section, or chapter to another; regroupings of diseases; new titles and sections; and modifications in coding rules (4). As a result, serious breaks occur in comparability for a number of causes of death. Measures of this discontinuity are essential to the interpretation of mortality trends, and are discussed in detail in other NCHS publications (2,50).

Tabulation lists and cause-of-death ranking

The cause-of-death rankings for ICD–10 are based on the List of 130 Selected Causes of Infant Death. The tabulation lists and rules for ranking leading causes of death are published in the *NCHS Instruction Manual*, Part 9, "ICD–10 Cause-of-Death Lists for Tabulating Mortality Statistics, Effective 1999" (51). Briefly, category titles that begin with the words "Other" and "All other" are not ranked to determine the leading causes of death. When one of the titles that represents a subtotal is ranked (for example, Influenza and pneumonia (J10–J18)), its component parts are not ranked (in this case, Influenza (J10–J11) and Pneumonia (J12–J18)).

Computation of rates

Infant mortality rates are the most commonly used index for measuring the risk of dying during the first year of life. For the linked birth/infant death data set 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. Both the mortality file and the linked birth/infant death file use this computation method but due to unique numbers of infant deaths, as explained in the section above on the comparison of these two files, the rates will often differ for specific variables (particularly for race and ethnicity). Infant mortality rates use the number of live births in the denominator to approximate the population at risk of dying before the first birthday. In contrast to the infant mortality rates based on live births, infant death rates, used only in age-specific death rates with the mortality file, use the estimated population of persons under 1 year of age as the denominator. For all variables, not stated responses were shown in tables of frequencies, but were dropped before rates were computed.

As stated previously, infant death records for the 50 States and the District of Columbia in the linked file are weighted so that the infant mortality rates are not underestimated for those areas that did not successfully link all records.

Random variation in infant mortality rates

The number of infant deaths and live births reported for an area represent complete counts of such events. As such, they are not subject to sampling error, although they are subject to nonsampling error in the registration process. However, when the figures are used for analytic purposes, such as the comparison of rates over time, for different areas, or among different subgroups, 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 (52). As a result, numbers of births, deaths, and infant mortality rates are subject to random variation. 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 (53).

Estimates of relative standard errors (RSEs) and 95-percent confidence intervals are shown below.

The formula for the RSE of infant deaths and live births is:

$$\text{RSE}(D) = 100 \bullet \sqrt{\frac{1}{D}}$$

where D is the number of deaths and

$$\text{RSE}(B) = 100 \bullet \sqrt{\frac{1}{B}}$$

where B is the number of births.

For example, let us say that for Group A the number of infant deaths was 104 while the number of live births was 27,380 yielding an infant mortality rate of 3.8 infant deaths per 1,000 live births.

$$\text{The RSE of the deaths} = 100 \bullet \sqrt{\frac{1}{104}} = 9.81,$$

$$\text{while the RSE of the births} = 100 \bullet \sqrt{\frac{1}{27{,}830}} = 0.60$$

The formula for the RSE of the infant mortality rate (IMR) is:

$$\text{RSE(IMR)} = 100 \bullet \sqrt{\frac{1}{D} + \frac{1}{B}}$$

$$\text{The RSE of the IMR} = 100 \bullet \sqrt{\frac{1}{104} + \frac{1}{27{,}380}} = 9.82$$

Binomial distribution—When the number of events is greater than 100, the binomial distribution is used to estimate the 95-percent confidence intervals as follows:

$$\text{Lower: } R_1 - 1.96 \bullet R_1 \bullet \frac{\text{RSE}(R_1)}{100}$$

$$\text{Upper: } R_1 + 1.96 \bullet R_1 \bullet \frac{\text{RSE}(R_1)}{100}$$

Thus, for Group A:

$$\text{Lower: } 3.8 - \left(1.96 \bullet 3.8 \bullet \frac{9.82}{100}\right) = 3.1$$

$$\text{Upper: } 3.8 + \left(1.96 \bullet 3.8 \bullet \frac{9.82}{100}\right) = 4.5$$

Thus the chances are 95 out of 100 that the true infant mortality rate for Group A lies somewhere in the 3.1 to 4.5 interval.

Poisson distribution—When the number of events in the numerator is less than 100 the confidence interval for the rate can be estimated based on the Poisson distribution using the values in table II.

$$\text{Lower: IMR} \bullet L\ (.95,\ D_{adj})$$

$$\text{Upper: IMR} \bullet U\ (.95,\ D_{adj})$$

where D_{adj} is the adjusted number of infant deaths (rounded to the

Table II. Values of *L* and *U* for calculating 95-percent confidence limits for numbers of events and rates when the number of events is less than 100

N	L	U	N	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			

nearest integer) used to take into account the RSE of the number of infant deaths and live births, and is computed as follows:

$$D_{adj} = \frac{D \bullet B}{D + B}$$

L (.95, D_{adj}) and U (.95, D_{adj}) refer to the values in table II corresponding to the value of D_{adj}.

For example, let us say that for Group B the number of infant deaths was 47, the number of live births was 8,901, and the infant mortality rate was 5.3.

$$D_{adj} = \frac{(47 \bullet 8{,}901)}{(47 + 8{,}901)} = 47$$

Therefore the 95-percent confidence interval (using the formula for 1–99 infant deaths) =

Lower: 5.3 • 0.73476 = 3.9

Upper: 5.3 • 1.32979 = 7.0

Comparison of two infant mortality rates—If either of the two rates to be compared is based on less than 100 deaths, compute the confidence intervals for both rates and check to see if they overlap. If so, the difference is not statistically significant at the 95-percent level. If they do not overlap, the difference is statistically significant. If both of the two rates (R_1 and R_2) to be compared are based on 100 or more deaths, the following z-test may be used to define a significance test statistic:

$$z = \frac{R_1 - R_2}{\sqrt{R_1^2\left(\frac{\mathrm{RSE}(R_1)}{100}\right)^2 + R_2^2\left(\frac{\mathrm{RSE}(R_2)}{100}\right)^2}}$$

If $|z| \geq 1.96$, then the difference is statistically significant at the 0.05 level and if $|z| < 1.96$, the difference is not significant.

Availability of linked file data

Linked file data are available on CD-ROM from the National Technical Information Service (NTIS) and the Government Printing Office (GPO). Data are also available in selected issues of the *Vital and Health Statistics*, Series 20 reports and the *National Vital Statistics Reports* (formerly the *Monthly Vital Statistics Report*) through NCHS. Additional unpublished tabulations are available from NCHS through the Internet site at http://www.cdc.gov/nchs. Selected variables from the linked file are also available for tabulation on CDC WONDER at http://wonder.cdc.gov/lbdj.shtml.

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TECHNICAL APPENDIX FROM

VITAL STATISTICS OF THE UNITED STATES

2001

NATALITY

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES

CENTERS FOR DISEASE CONTROL AND PREVENTION
NATIONAL CENTER FOR HEALTH STATISTICS
Hyattsville, Maryland: Revised February 2003

VITAL STATISTICS OF THE UNITED STATES, 2001 VOLUME 1, NATALITY TECHNICAL APPENDIX

NOTE

This report has been updated to include information on newly available populations based on the 2000 census, and newly revised population-based birth and fertility rates. Please see sections on "Random variation and significance testing for natality data" and "Population bases."

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Introduction

This report, published by the Centers for Disease Control and Prevention's (CDC) National Center for Health Statistics (NCHS), is an updated and abridged version of the 1999 Technical Appendix and focuses on information for the 2001 data file (1). This Appendix is also included in *Vital Statistics of the United States, 2001, Volume I, Natality* (in preparation). Reference will be made to the 1999 Technical Appendix for historical discussion of the variables, definitions, quality, and completeness of the birth data (2). This report supplements the Technical notes section of "Births: Final Data for 2001" (3) and is recommended for use with the public-use file for 2001 births, available on CD-ROM from NCHS, and the tabulated data of *Vital Statistics of the United States, 2001, Volume I, Natality* (in preparation).

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 in 1950 and revised in 1988 by a working group formed by the American Academy of Pediatrics and the American College of Obstetricians and Gynecologists (4, 5, 6):

> 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 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 CDC's NCHS have adopted this definition (7, 8).

History of Birth-Registration Area

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 and Puerto Rico, the U.S. Virgin Islands, Guam, American Samoa, and the Commonwealth of the Northern Mariana Islands (referred to as Northern Marianas). 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. Information on the history and development of the birth-registration area is available elsewhere (2).

Sources of Data

Natality 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 electronic files of individual records processed by the States and provided to NCHS through the Vital Statistics Cooperative Program. NCHS receives these files from the registration offices of all States, the District of Columbia, and New York City. Information for Puerto Rico and the Virgin Islands is also received through the Vital Statistics Cooperative Program. Information for Guam, American Samoa, and the Northern Marianas 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 and from the Northern Marianas in 1998.)

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 tabulation in this report. Data for Puerto Rico, the Virgin Islands, Guam, American Samoa, and the Northern Marianas 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.

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 checkboxes to obtain detailed medical and health information about the mother and child. Details of the nature and content of the 1989 revision are available elsewhere (2).

Classification of Data

One of the principal values of vital statistics data is realized through the presentation of rates 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, significant discrepancies may result from the differences between methods used to obtain the data: population data are obtained by enumeration while vital statistics data are obtained via registration.

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, 1999–2001," *NCHS Instruction Manual*, Part 3a (9). This material is incorporated in the basic file layout on the CD-ROM (1). The instruction materials are for States to use in coding the data items; they do not include any NCHS recodes. The file layout is a better source of information on the code structure since it provides the exact codes and recodes that are available.

The classification of certain important items is discussed in the following pages. Information on the completeness of reporting of birth certificate data is shown in table A, which presents a listing of items and the percent of records that were not stated for each State, Puerto Rico, the Virgin Islands, Guam, American Samoa, and the Northern Marianas.

Classification by occurrence and residence

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. Births to U.S. residents occurring outside this country are excluded from place of residence tabulations.

The total count of births for the United States by place of residence and by place of occurrence will not be 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 2001.

Residence error—A nationwide test of birth-registration completeness in 1950 provided measures of residence error for natality statistics. According to the 1950 test (which has not been repeated), 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 (10). Recent experience demonstrates that this is still a concern based on anecdotal evidence from the States. 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 practice of using city addresses for persons living outside the city limits. Residence error should be taken into consideration in interpreting data for small areas and for cities. Both birth and infant mortality patterns can be affected.

Incomplete residence—Beginning in 1973, in cases 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 itself for 2001 is given in another manual, "Vital Records Geographic Classification, 1995," *NCHS Instruction Manual*, Part 8, which is included with the documentation file on CD-ROM (1). The geographic code structure in 2001 is based on results of the 1990 Census of Population.

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.

Details of the classification of births for metropolitan statistical areas, metropolitan and nonmetropolitan counties, and population size groups for cities and urban places are presented elsewhere (2).

Places with a population of less than 100,000 are not separately identified on the public-use file because of confidentiality limitations.

Race or national origin

Beginning with the 1989 data year, birth data are tabulated primarily by race of mother. The criteria for reporting the race of the parents did not change in 1989, and it continues to reflect the response of the informant (usually the mother). The factors influencing the decision to tabulate births by race of the mother have been discussed in detail elsewhere (2, 11). Information on tabulation procedures for data by race prior to 1989 is presented elsewhere (2).

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 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 "Asian or Pacific Islander" category by combining the new category "Other Asian or Pacific Islander" with Chinese, Japanese, Hawaiian, and Filipino.

Since 1992, States with the largest Asian or Pacific Islander (API) populations have provided NCHS with data for additional API subgroups. The API subgroups include Vietnamese, Asian Indian, Korean, Samoan, Guamanian, and other. In 2001, 11 States were included in this reporting area: California, Hawaii, Illinois, Minnesota, Missouri, New Jersey, New York, Texas, Virginia, Washington, and West Virginia. At least two-thirds of the U.S. population of each of these additional API groups lived in the 11-State reporting area (12). 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 (13).

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 place of birth entry. 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 "Other Asian or Pacific Islander" category.

Hispanic origin and race are reported independently on the birth certificate. Data for Hispanic subgroups are shown, in most cases, for five groups: Mexican, Puerto Rican, Cuban, Central and South American, and other (and unknown) Hispanic. In tabulations of birth data by race only, data for persons of Hispanic origin are included in the data for each race group

according to the mother's reported race. The "White" category comprises births reported as white and births where race, as distinguished from Hispanic origin, is reported as Hispanic. In tabulations of birth data by race and Hispanic origin, data for persons of Hispanic origin are not further classified by race because the vast majority of births to Hispanic women are reported as white (98 percent in 2001). In these tabulations, data for non-Hispanic persons are classified according to the race of the mother because there are substantial differences in fertility and maternal and infant health between Hispanic and non-Hispanic white women. A recode variable is available that provides cross tabulations of race by Hispanic origin.

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 (0.4 percent of births in 2001) 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 0.3 percent of birth certificates for 2001.

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. The percent of records for which Hispanic origin of the parents was not reported in 2001 is shown by State in table A.

Age of mother

Beginning in 1989, a "Date if Birth" item replaced the "Age (at time of this birth)" on the birth certificate. Not all States revised this item, and therefore the age of mother is derived from either the reported month and year of birth or coded as stated on the certificate. In 2001, the mother's age was reported directly by five States (Kentucky, Nevada, North Dakota, Virginia, and Wyoming) and American Samoa.

From 1964 to 1996, age of mother was considered not stated and therefore imputed for ages under 10 years or 50 years and over. Beginning in 1997, age of mother was considered not stated and imputed for ages under 10 years or 55 years and over. The numbers of births to women aged 50–54 years are too small for computing age-specific birth rates; these births have been included with births to women aged 45–49 years 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 U.S. and State-level birth and fertility rates for the 2001 final report of natality data are based on estimates as of July 1 projected from the 1990 census because detailed populations based on the 2000 census were not available when the report was prepared. When the necessary population estimates based on the 2000 census and intercensal estimates become available, population-based rates for the 1990s, 2000, and 2001 will be recalculated and presented in an upcoming report. Meanwhile, considerable caution should be used in interpreting the rates and trends for the Nation and States, particularly for race specific rates (see section on population bases).

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. Trend data on the median age is shown in table 1–5 of *Vital Statistics of the United States, 1999, Volume I, Natality* (at http://www.cdc.gov/nchs/datawh/statab/unpubd/natality/natab99.htm).

Not stated date of birth of mother—In 2001, age of mother was not reported on 0.01 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) (14). Editing procedures for 1963 and earlier years are described elsewhere (2).

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 from birth certificates of children born to unmarried mothers, greatly inflating the number of "not stated" responses 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 13 percent of the birth certificates in 2001, 28 percent 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. Births with age of father not stated are distributed only for rates, not for frequency tabulations (3).

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 2001 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.

Live-birth order and parity are determined from two items on the birth certificate, "Live births now living" and "Live births now dead." Editing procedures for live birth order are summarized elsewhere (2, 14).

Not stated birth order—All births tabulated in the "birth order not stated" 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.

Educational attainment

National data on educational attainment are currently available only for the mother (2). Beginning in 1995, NCHS ceased to collect information on the educational attainment of the father.

The educational attainment of the mother 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 "not stated" category.

Women 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, women reporting B.A., A.B., or B.S. degrees are considered to have completed 16 years of school.

Education not stated—The "not stated" category 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.

In 2001 educational attainment for Alabama was miscoded; some Hispanic mothers with no education were miscoded as having 12 years of education. Caution should be used when interpreting Alabama data on education for Hispanic women.

Marital status

National estimates of births to unmarried women are based on two methods of determining marital status: (1) direct question and (2) inference. 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.

Two States (Michigan and New York) use inferential procedures to compile birth statistics by marital status in 2001. A birth is inferred as nonmarital if either a paternity acknowledgment was received or the father's name is missing. The presence of a paternity acknowledgment 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 procedures for reporting marital status in California, Nevada, and New York City changed beginning January 1, 1997. Marital status of women giving birth in California and Nevada is determined by a direct question in the birth-registration process. Mother's marital status is still inferred in New York City, but the procedures for inferring this information changed and are now consistent with the rest of New York State. The methods used to determine marital status and the impact of the procedures on the data were discussed in detail in a previous report (15).

In 2001 the mother's marital status was not reported on 0.03 percent of the birth records

in States reporting this information from a direct question. 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.

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. 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. Additional information on these items is presented elsewhere (2).

Babies born on the way to or upon 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. The "Not in hospital" category includes births for which no place of birth information is reported.

In 2000, Illinois started collecting data on certified nurse-midwives (CNM) and making corrections for "other midwife" and "other" categories. Data for earlier years were incomplete for Illinois births. As a result, the number of CNMs reported has significantly increased while "other midwife" has sharply decreased when compared to earlier years.

Procedures in some hospitals may require that a physician be listed as the attendant for every birth and that a physician sign each birth certificate, even if the birth is attended by a midwife and no physician is physically present. Therefore, the number of live births attended by midwives may be understated in some areas.

Birthweight

In some areas birthweight is reported 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 categories for birthweight were changed in 1979 to be consistent with recommendations in the *Ninth Revision of the International Classification of Diseases* (ICD–9) and remain the same for the *Tenth Revision of the International Classification of Diseases* (ICD–10) (5). 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 l4 oz–9 lb l4 oz
4,500–4,999 grams = 9 lb 15 oz–11 lb 0 oz
5,000 grams or more = 11 lb l oz or more

ICD–9 and ICD–10 define 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. 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 and ICD–10 definitions (5).

The 1989 revision of the U.S. Standard Certificate of Live Birth included a new item, “clinical estimate of gestation.” This item is 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 for very low birthweight births reported to be full term. The use of the clinical estimate in the 2001 data file is described in the Technical Notes of “Births: Final Data for 2001” (3).

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. The imputation procedure and its effect on the data are described elsewhere (2, 16).

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

When 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 "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 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 five values is the Apgar score, which ranges from 0 to 10. A score of 10 is optimum, and a low score raises some concerns about the potential survival and subsequent health of the infant.

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. Since 1991, the reporting area for the 5-minute Apgar score has been comprised of 48 States and the District of Columbia, accounting for 78 percent of all births in the United States in 2001. (California and Texas did not have Apgar score information on their birth certificates.) Beginning in 1995, NCHS collected information only on the 5-minute Apgar score.

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 and drinks consumed per week. Procedures for determining the consistency between smoking and drinking status and the quantity of cigarettes or drinks reported are described elsewhere (2).

In 2001, 49 States and the District of Columbia reported information on smoking and drinking status (not available for California). For 2001, information on number of cigarettes smoked per day was reported in a consistent manner by 46 States, the District of Columbia, and New York City (figure 4–A), accounting for 87 percent of U.S. births. Indiana and New York State (except for New York City) reported this information but in a format that was inconsistent with NCHS standards. Information was not available for California and South Dakota.

Weight gain 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 2001.

Medical risk factors for this pregnancy

An item on medical risk factors was included on the 1989 birth certificate, but 2 States did not report all of the 16 risk factors in 2001. 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.

Definitions 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 are available elsewhere (3).

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 2001.

Definitions 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, are available elsewhere (3).

Complications of labor and/or delivery

The checkbox format allows for the selection of 15 specific complications and for the designation of more than one 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 2001. However, Texas did not report anesthetic complications or fetal distress.

Definitions adapted and abbreviated from a set of definitions compiled by a committee of Federal and State health statistics officials are available elsewhere (3).

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 2001. 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.

Definitions adapted and abbreviated from a set of definitions compiled by a committee of Federal and State health statistics are available elsewhere (3).

Congenital anomalies of child

The data provided in this item relate to 21 specific anomalies or anomaly groups. The format allows for the identification of more than one anomaly including a choice of "None" should no anomalies be evident. The "not stated" category includes birth records for which the item is not completed.

It is well documented that congenital anomalies, except for the most visible and most severe, are incompletely reported on birth certificates (17). 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 2001. The format allows for the identification of more than one anomaly including a choice of "None" should no anomalies be evident. The "not stated" category includes birth records for which the item is not completed.

In 2001 rates for other central nervous system anomalies in Arizona and Oklahoma may be overstated because of misreporting.

Definitions adapted and abbreviated from a set of definitions compiled by a committee of Federal and State health statistics officials are available elsewhere (3).

Method of delivery

The birth certificate contains a checkbox item for 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 2001 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 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 are computed for first births because the rates are computed on 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. All 50 States and the District of Columbia reported Hispanic origin of the parents for 2001.

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 (0.6 percent in 2001) 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 2001 were registered; for white births, registration was 99.5 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. (This test has not been conducted more recently.) 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 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 (18). Information on procedures for adjusting births for underregistration (for cohort fertility tables) is presented elsewhere in this report (2).

Completeness of reporting

Interpretation of these data must include evaluation of item completeness. The percent in the "not stated" category 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. Data users should note that levels of incomplete or inaccurate reporting for some of the items are quite high in some States. Data for 2001 for the District of Columbia and Washington are of particular concern.

Quality control procedures

As electronic files are received at NCHS, they are automatically checked for completeness, individual item code validity, and unacceptable inconsistencies between data items. The registration area is notified of any problems. In addition, NCHS staff review the files on an ongoing basis to detect problems in overall quality such as inadequate reporting for certain items, failure to follow NCHS coding rules, and systems and software errors. Traditionally, quality assurance procedures were limited to review and analysis of differences between NCHS and registration area code assignments for a small sample of records. In recent years, as electronic birth registration became prevalent, this procedure was augmented by analyses of year-to-year and area-to-area variations in the data. These analyses are based on preliminary tabulations of the data that are cumulated by State on a year-to-date basis each month. NCHS investigates all differences that are judged to have consequences for quality and completeness. In the review process, statistical tests are used to call initial attention to differences for possible follow-up. As necessary, registration areas are informed of differences encountered in the tables and asked to verify the counts or to determine the nature of the differences. Missing records (except those permanently voided) and other problems detected by NCHS are resolved, and

corrections are transmitted to NCHS in the same manner as for those corrections identified by the registration area.

Random variation and significance testing for natality data

A detailed discussion of random variation and significance testing for natality data is presented in the Technical notes of "Births: Final Data for 2001." (3) This section presents information specifically for Hispanic subgroups.

Computing confidence intervals for Hispanic subgroups

Birth and fertility rates for Mexicans, Puerto Ricans, Cubans, and "Other" Hispanics for 2001 are not currently available because the necessary populations estimated from the 2000 Census are not available (3). Rates for Hispanic subgroups will be reported in a special report and in tables 1–4 and 1–12 of *Vital Statistics of the United States, part 1, Natality* when the necessary populations become available.

Population estimates for Hispanic subgroups are derived from the U.S. Census Bureau's *Current Population Survey* and adjusted to resident population control totals as shown in table 4–2. As a result, the rates are subject to the variability of the denominator as well as the numerator. For these Hispanic subgroups only (not for all origin, total Hispanic, total non-Hispanic, non-Hispanic white, or non-Hispanic black populations), the following formulas are used:

Approximate 95 percent Confidence Interval: 100 or more births

When the number of events in the numerator is greater than 100, the confidence interval for the birth rate can be estimated from the following formulas:

For crude and age-specific birth rates,

$$\text{Lower limit} = R - 1.96 * R * \sqrt{\left(\frac{1}{B}\right) + f\left(a + \frac{b}{P}\right)}$$

$$\text{Upper limit} = R + 1.96 * R * \sqrt{\left(\frac{1}{B}\right) + f\left(a + \frac{b}{P}\right)}$$

where:

- R = rate (births per 1,000 population)
- B = total number of births 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, equals 0.670 for single year
- a and b are single year averages of the 2000 and 2001 CPS standard error parameters (19, 20)
  - a = -0.000162
  - b = 5,648
- P = total estimated population upon which rate is based

Example

Suppose that the fertility rate of Cuban women 15–44 years of age was 51.2 per 1,000 based on 13,088 births in the numerator and an estimated resident population of 255,399 in the denominator. The 95 percent confidence interval would be:

$$\begin{aligned}\text{Lower limit} &= 51.2 - 1.96 * 51.2 * \sqrt{\left(\frac{1}{13{,}088}\right) + 0.670 * \left[-0.000162 + \left(\frac{5{,}648}{255{,}399}\right)\right]} \\ &= 51.2 - 1.96 * 51.2 * \sqrt{0.000076405 + (0.670 * 0.021952)} \\ &= 51.2 - 1.96 * 51.2 * \sqrt{0.014784} \\ &= 51.2 - 1.96 * 51.2 * 0.121589 \\ &= 39.00\end{aligned}$$

$$\begin{aligned}\text{Upper limit} &= 51.2 + 1.96 * 51.2 * \sqrt{\left(\frac{1}{13{,}088}\right) + 0.670 * \left[-0.000162 + \left(\frac{5{,}648}{255{,}399}\right)\right]} \\ &= 51.2 + 1.96 * 51.2 * \sqrt{0.000076405 + (0.670 * 0.021952)} \\ &= 51.2 + 1.96 * 51.2 * \sqrt{0.014784} \\ &= 51.2 + 1.96 * 51.2 * 0.121589 \\ &= 63.40\end{aligned}$$

This means that the chances are 95 out of 100 that the actual fertility rate of Cuban women 15–44 years of age is between 39.00 and 63.40.

Approximate 95 percent Confidence Interval: 1–99 births

When the number of events in the numerator is less than 20, an asterisk is shown in place of the rate. When the number of events in the numerator is greater than 20 but less than 100, the confidence interval for the birth rate can be estimated using the formulas that follow and the values in table C.

For crude and age-specific birth rates,

$$\text{Lower limit} = R * L(1 - a = .96, B) * \left(1 - 2.576\sqrt{f\left(a + \frac{b}{P}\right)}\right)$$

$$\text{Upper limit} = R * U(1 - a = .96, B) * \left(1 + 2.576\sqrt{f\left(a + \frac{b}{P}\right)}\right)$$

where:

R = rate (births per 1,000 population)
B = total number of births upon which rate is based
L = the value in table C that corresponds to the number B, using the 96 percent CI

column
U = the value in table C that corresponds to the number B, using the 96 percent CI column
f = factor that depends on whether the population estimate is based on demographic analysis or CPS and the number of years used, equals 0.670 for single year
a and b are CPS standard error parameters (see previous section on 95 percent confidence interval for 100 or more births for description and specific values)
P = total estimated population upon which rate is based

Example

Suppose that the birth rate of Puerto Rican women 45–49 years of age was 0.4 per 1,000, based on 35 births in the numerator and an estimated resident population of 87,892 in the denominator. Using table C, the 95 percent confidence interval would be:

$$\begin{aligned}\text{Lower limit} &= 0.4 * 0.68419 * \left(1 - 2.576\sqrt{0.670\left(-0.000162 + \left(\frac{5{,}648}{87{,}892}\right)\right)}\right)\\ &= 0.4 * 0.68419 * \left(1 - 2.576\sqrt{0.042946}\right)\\ &= 0.4 * 0.68419 * \left(1 - 2.576 * 0.207234\right)\\ &= 0.4 * 0.68419 * 0.466165\\ &= 0.1\end{aligned}$$

$$\begin{aligned}\text{Upper limit} &= 0.4 * 1.41047 * \left(1 + 2.576\sqrt{0.670\left(-0.000162 + \left(\frac{5{,}648}{87{,}892}\right)\right)}\right)\\ &= 0.4 * 1.41047 * \left(1 + 2.576\sqrt{0.042946}\right)\\ &= 0.4 * 1.41047 * \left(1 + 2.576 * 0.207234\right)\\ &= 0.4 * 1.41047 * 1.533835\\ &= 0.9\end{aligned}$$

This means that the chances are 95 out of 100 that the actual birth rate of Puerto Rican women 45–49 years of age is between 0.1 and 0.9.

NOTE: In the formulas above, the confidence limits are estimated from the nonsampling error in the number of births, the numerator, and the sampling error in the population estimate, the denominator. A 96 percent standard error is computed for the numerator, and a 99 percent standard error is computed for the denominator in order to compute a 95 percent confidence interval for the rate.

Significance testing for Hispanic subgroups

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.

$$= 1.96 * \sqrt{R_1^2 * \left[\left(\frac{1}{B_1}\right) + f\left(a + \frac{b}{P_1}\right)\right] + R_2^2 * \left[\left(\frac{1}{B_2}\right) + f\left(a + \frac{b}{P_2}\right)\right]}$$

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 would therefore conclude that the difference is not statistically significant at the 95 percent confidence level.

Example

Suppose the birth rate for Puerto Rican mothers 15–19 years of age (R_1) is 80.6, based on 11,978 births and an estimated population of 148,673, and the birth rate for Cuban mothers 15–19 years of age (R_2) is 27.1, based on 997 births and an estimated population of 36,782. Using the above formula, the z score is computed as follows:

$$= 1.96 * \sqrt{80.6^2 * \left[\left(\frac{1}{11{,}978}\right) + 0.670\left(-0.000162 + \frac{5{,}648}{148{,}673}\right)\right] + 27.1^2 * \left[\left(\frac{1}{997}\right) + 0.670\left(-0.000162 + \frac{5{,}648}{36{,}782}\right)\right]}$$

$$= 1.96 * \sqrt{6{,}496.36 * (0.000083486 + 0.670 * 0.037827) + 734.41 * (0.001003009 + 0.670 * 0.153391)}$$

$$= 1.96 * \sqrt{(6496.36 * 0.025428) + (734.41 * 0.103775)}$$

$$= 1.96 * \sqrt{165.19 + 76.21}$$

$$= 1.96 * 15.54$$

$$= 30.46$$

Since the difference between the two rates of 53.5 is greater than the value above, the two rates are statistically significantly different at the 0.05 level of significance.

Computation of rates and other measures

Population bases

The rates shown in this report were computed based on population statistics prepared by the U.S. Census Bureau. 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. These populations have been modified to be consistent with Office of Management and Budget racial categories and historical categories for birth data, and in the case of age, to reflect age as of the census reference date (21).

Populations in tables 4–1 through 4–4 differ from those used to calculate birth and fertility rates published in “Births: Final Data for 2001” and “ Births: Final Data for 2000” (3, 22). Populations for April 1, 2000 and July 1, 2001 provided in this report were produced under a collaborative arrangement with the U.S. Census Bureau (23-25) and(23–25). They are based on the 2000 census counts by age, race, and sex, which were modified to be consistent with Office

of Management and Budget racial categories of 1977 and historical categories for birth data; in the case of age, they were modified to reflect age as of the census reference date. The modification procedures are described in detail elsewhere (21, 26 and 27).

The special report "Revised Birth and Fertility Rates for the United States, 2000 and 2001," (28) updates the rates published in "Births: Final Data for 2001" and " Births: Final Data for 2000" (3, 22). The revised birth and fertility rates in the new report include rates by race and Hispanic origin, by age of mother, and by age of father for 2000 and 2001. Rates for unmarried women are also presented. A subsequent special report (now in preparation) will show revised birth and fertility rates for the intercensal years, 1991–99, along with the rates for 2000 and 2001.

Birth rates for the United States, individual States, and metropolitan areas are based on the total resident populations of the respective areas. Revised rates for 2001 for individual States and metropolitan areas have not been computed since the necessary populations are not yet available (table 4–4). Revised State-specific population for 2000 are now available, and revised rates will be presented in the special report now in preparation. 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 1900-2001 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. A detailed discussion of historical population bases is presented elsewhere (2).

Net census undercounts and overcounts

Studies conducted by the U.S. Census Bureau indicate that some age, race, and sex groups are more completely enumerated than others. These census miscounts can have consequences for vital statistics measures. For example, an adjustment to increase the population denominator would result in a smaller rate compared to the unadjusted rate. A more detailed discussion of census undercounts and overcounts can be found in the 1999 Technical appendix (2). 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; these ratios are shown in table E.

Cohort fertility tables

The various fertility measures shown for cohorts of women are computed from births adjusted for under-registration and population estimates corrected for under-enumeration and misstatement of age. Data published after 1974 use revised population estimates prepared by the U.S. Census Bureau 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 (29). These tables for current years are available at http://www.cdc.gov/nchs/datawh/statab/unpubd/natality/natab99.htm.

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 obtained by subtracting the cumulative first birth rate from 1,000 and dividing by 10. The proportions of women at parities one through six are derived from the following formula:

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 that year. Birth probabilities differ from central birth rates in that the denominator for birth probabilities is specific for parity as well as for age.

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 each age group has the same number of women. For example, a total fertility rate of 2,034 means that if a hypothetical group of 1,000 women had the same birth rates in each age group that were observed in the actual childbearing population for that year, they would have a total of 2,034 children by the time they reached the end of the reproductive period (taken here to be age 50 years), assuming that all of the women survived to that age.

Seasonal adjustment of rates

Seasonally adjusted birth and fertility rates are computed from the X-11 variant of Census Method II (30). This method, 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*. 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. 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.)

Computations of percents, percent distributions, and medians

Births for which a particular characteristic is unknown were subtracted from the figures for total births that were used as denominators before computation of percents, percent distributions, and medians. The percent of records with missing information for each item is shown by State in table A.

The median number of prenatal visits excludes births to mothers who had no prenatal care. Computations of the median years of school completed and the median number of prenatal visits were based on ungrouped data. The median age of mother is computed from birth rates in 5-year age groups, which eliminates the effects of changes in the age composition of the childbearing population over time.

An asterisk is shown in place of any derived statistic based on fewer than 20 births in the numerator or denominator.

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FIGURE 4-A

TYPE/PRINT IN PERMANENT BLACK INK FOR INSTRUCTIONS SEE HANDBOOK

LOCAL FILE NUMBER

U.S. STANDARD

CERTIFICATE OF LIVE BIRTH

STATE 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 ☐ Hospital ☐ Freestanding Birthing Center ☐ Clinic/Doctor's Office ☐ Residence ☐ Other (Specify) | 8 FACILITY NAME (If not institution give street and number)

CERTIFIER/ ATTENDANT

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 ☐ M D ☐ D O ☐ C N M ☐ Other Midwife ☐ Other (Specify)

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

12 CERTIFIER'S NAME AND TITLE (Type/Print) Name ☐ M D ☐ D O ☐ Hospital Admin ☐ C N M ☐ Other Midwife ☐ Other (Specify)

13 ATTENDANT'S MAILING ADDRESS (Street and Number or Rural Route Number City or Town State Zip Code)

14 REGISTRAR'S SIGNATURE ▶ | 15 DATE FILED BY REGISTRAR (Month Day Year)

MOTHER

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 only)

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

	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) Elementary, Secondary (0-12) | College (1-4 or 5+)
MOTHER	25a ☐ No ☐ Yes Specify:	26a	27a
FATHER	25b ☐ No ☐ Yes Specify:	26b	27b

28. PREGNANCY HISTORY (Complete each section)

LIVE BIRTHS (Do not include this child)		OTHER TERMINATIONS (Spontaneous and induced at any time after conception)
28a. Now Living: Number ____ ☐ None	28b. Now Dead: Number ____ ☐ None	28d. Number ____ ☐ None
28c. DATE OF LAST LIVE BIRTH (Month, Year)		28e. DATE OF LAST OTHER TERMINATION (Month, Year)

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

FETAL DEATH(S)

29 MOTHER MARRIED? (At birth, conception, or any time between) (Yes or no)

30 DATE LAST NORMAL MENSES BEGAN (Month, Day, Year)

31. MONTH OF PREGNANCY PRENATAL CARE BEGAN – First, Second, Third, etc. (Specify)

32 PRENATAL VISITS – Total Number (If none, so state)

33. BIRTH WEIGHT (Specify unit)

34 CLINICAL ESTIMATE OF GESTATION (Weeks)

35a. PLURALITY – Single, Twin, Triplet, etc. (Specify)

35b IF 'NOT SINGLE BIRTH' – Born First, Second, Third, etc. (Specify)

36. APGAR SCORE

36a. 1 Minute	36b. 5 Minutes

37a. MOTHER TRANSFERRED PRIOR TO DELIVERY? ☐ No ☐ Yes If Yes, enter name of facility transferred from:

37b. INFANT TRANSFERRED? ☐ No ☐ Yes If Yes, enter name of facility transferred to

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

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

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 ☐
Electronic fetal monitoring	02 ☐
Induction of labor	03 ☐
Stimulation of labor	04 ☐
Tocolysis	05 ☐
Ultrasound	06 ☐
None	00 ☐
Other (Specify)	07 ☐

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

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

41. METHOD OF DELIVERY (Check all that apply)

Vaginal	01 ☐
Vaginal birth after previous C section	02 ☐
Primary C section	03 ☐
Repeat C section	04 ☐
Forceps	05 ☐
Vacuum	06 ☐

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

Anemia (Hct < 39/Hgb < 13)	01 ☐
Birth injury	02 ☐
Fetal alcohol syndrome	03 ☐
Hyaline membrane disease/RDS	04 ☐
Meconium aspiration syndrome	05 ☐
Assisted ventilation < 30 min	06 ☐
Assisted ventilation ≥ 30 min	07 ☐
Seizures	08 ☐
None	00 ☐
Other (Specify)	09 ☐

43 CONGENITAL ANOMALIES OF CHILD (Check all that apply)

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

DEPARTMENT OF HEALTH AND HUMAN SERVICES - PUBLIC HEALTH SERVICE - CENTERS FOR DISEASE CONTROL
NATIONAL CENTER FOR HEALTH STATISTICS - 1989 REVISION

CDC 64.91
REV. 1/89

Table A. Percent of Birth Records on Which Specified Items Were Not Stated: United States and Each State and territory, 2001

[By place of residence]

Area	All births	Place of birth	Attendant at birth	Mother's birthplace	Father's age	Father's race	Hispanic origin		Educational attainment of mother
							Mother	Father	
Total of reporting areas 1/	4,025,933	0.0	0.0	0.3	13.5	14.1	0.6	14.1	1.4
Alabama	60,454	0.0	0.0	0.1	21.4	21.5	0.1	21.4	0.2
Alaska	10,003	0.2	0.1	0.7	12.2	13.8	8.7	17.3	3.4
Arizona	85,597	0.0	0.0	0.1	18.3	19.5	1.3	19.9	2.3
Arkansas	37,010	0.0	0.0	0.4	19.7	21.0	0.4	20.3	0.7
California	527,759	0.0	0.1	0.2	7.1	6.7	0.6	6.3	1.6
Colorado	67,007	-	0.0	0.4	8.1	8.5	0.0	8.6	1.1
Connecticut	42,648	0.0	0.0	0.3	10.2	11.6	1.2	11.3	1.5
Delaware	10,749	-	-	0.1	29.7	30.4	0.1	29.6	0.6
District of Columbia	7,625	-	-	0.1	39.2	47.4	0.6	39.1	7.0
Florida	205,793	0.0	0.0	0.1	16.7	17.0	0.2	18.5	0.7
Georgia	133,526	0.0	0.0	0.2	17.6	17.8	1.2	18.5	1.2
Hawaii	17,072	-	0.0	0.1	9.4	9.5	0.1	9.2	0.8
Idaho	20,688	0.0	0.0	0.7	8.2	11.7	1.9	12.4	3.1
Illinois	184,064	0.0	0.0	0.1	13.4	15.2	0.0	15.1	1.1
Indiana	86,459	0.0	0.0	0.1	12.6	12.6	0.4	12.9	0.6
Iowa	37,619	-	0.0	0.0	12.6	14.3	0.3	14.0	0.3
Kansas	38,869	-	0.1	0.1	10.4	11.2	1.1	11.9	0.4
Kentucky	54,658	0.0	0.1	0.0	19.6	22.2	0.0	22.4	0.3
Louisiana	65,352	0.0	0.0	0.0	20.3	20.3	0.1	20.3	0.1
Maine	13,759	-	-	-	8.6	12.4	0.4	10.4	0.9
Maryland	73,218	0.0	0.0	0.4	11.5	12.7	0.4	10.7	1.4
Massachusetts	81,077	0.0	0.0	0.0	7.0	7.4	0.8	6.7	0.3
Michigan	133,427	0.0	0.1	0.1	14.2	16.4	1.4	17.3	2.2
Minnesota	67,562	0.0	0.0	0.2	9.4	13.5	0.7	13.3	2.3
Mississippi	42,282	-	0.0	0.1	22.1	22.0	0.1	22.1	0.3
Missouri	75,464	0.0	-	0.2	18.5	18.3	0.1	17.8	0.7
Montana	10,970	-	0.2	0.0	9.8	11.0	2.9	13.6	0.1
Nebraska	24,820	-	-	-	11.8	13.3	2.1	13.8	0.1
Nevada	31,382	0.0	0.0	0.5	20.0	20.9	1.1	20.0	2.9
New Hampshire	14,656	-	-	0.1	5.4	7.5	4.5	10.8	1.3
New Jersey	115,795	0.0	0.0	0.1	7.9	9.5	0.3	8.3	2.9
New Mexico	27,128	-	0.0	1.3	21.0	20.5	0.0	20.5	2.9
New York	254,026	0.1	0.0	0.4	14.0	14.4	1.1	14.8	1.0
North Carolina	118,185	-	0.0	0.0	15.7	15.8	0.1	16.1	0.2
North Dakota	7,629	0.0	-	0.0	8.5	8.9	2.5	11.5	0.5
Ohio	151,570	0.0	0.0	1.1	14.9	15.5	0.2	15.0	0.9
Oklahoma	50,118	0.0	0.0	0.0	17.5	18.8	0.2	18.4	0.3
Oregon	45,322	-	-	0.1	10.3	4.0	0.3	4.3	1.2
Pennsylvania	143,495	0.0	0.0	0.9	5.0	5.4	0.7	4.2	2.7
Rhode Island	12,713	-	-	0.5	13.4	13.9	9.9	20.5	2.4
South Carolina	55,756	-	-	0.1	27.1	27.3	0.1	27.1	1.1
South Dakota	10,483	-	-	0.0	13.1	13.2	0.1	13.4	0.3
Tennessee	78,340	0.0	0.0	0.1	15.3	15.5	0.0	15.5	0.3
Texas	365,410	0.0	0.0	0.5	14.2	14.4	0.3	14.4	2.0
Utah	47,959	-	-	0.2	8.4	10.0	0.6	9.4	1.6
Vermont	6,366	-	-	0.1	7.6	13.6	3.0	15.9	0.9
Virginia	98,884	-	0.0	0.1	16.6	18.5	0.2	16.7	1.0
Washington	79,570	0.0	0.1	0.5	10.6	13.1	1.7	13.3	6.1
West Virginia	20,428	0.2	0.0	0.1	12.7	13.1	0.3	13.2	0.6
Wisconsin	69,072	0.0	0.0	0.1	29.5	29.6	0.0	29.6	0.3
Wyoming	6,115	-	-	0.1	13.6	14.0	0.1	13.8	0.3
Puerto Rico	55,866	0.0	0.1	-	3.4	4.2	---	---	0.3
Virgin Islands	1,669	-	0.1	-	19.4	21.0	3.1	24.7	1.7
Guam	3,565	0.1	0.9	0.8	22.1	23.1	2.6	27.5	1.6
American Samoa	1,655	-	0.2	5.1	28.3	30.3	---	---	---
Northern Marianas	1,449	-	0.3	-	7.4	4.1	---	---	3.0

Table A. Percent of Birth Records on Which Specified Items Were Not Stated: United States and Each State and territory, 2001 --Con.

[By place of residence]

Area	All births	Live-birth order	Length of gestation	Month prenatal care began	Number of prenatal visits	Birth weight	5-minute apgar score	Medical risk factors
Total of reporting areas 1/	4,025,933	0.3	1.0	2.4	3.1	0.1	0.4	0.9
Alabama	60,454	0.0	0.1	0.3	0.3	0.1	0.3	0.0
Alaska	10,003	2.1	0.4	4.1	7.2	0.4	0.6	2.7
Arizona	85,597	0.3	0.1	1.6	2.9	0.1	0.3	0.0
Arkansas	37,010	0.2	0.2	1.8	2.4	0.1	3.3	0.1
California	527,759	0.1	2/5.9	1.6	2.8	0.0	---	0.0
Colorado	67,007	0.0	0.0	1.6	2.3	0.0	0.3	0.0
Connecticut	42,648	0.7	0.2	1.9	4.1	0.0	0.6	2.4
Delaware	10,749	0.1	0.1	0.2	0.4	0.1	0.2	0.0
District of Columbia	7,625	1.1	0.3	14.3	9.6	0.0	1.0	-
Florida	205,793	0.0	0.1	1.2	2.1	0.1	0.2	0.0
Georgia	133,526	0.4	0.1	4.4	3.9	0.0	0.4	0.4
Hawaii	17,072	0.0	0.7	2.5	2.5	0.1	0.5	0.4
Idaho	20,688	0.2	0.5	6.7	4.2	0.1	0.6	0.4
Illinois	184,064	0.1	0.2	2.5	2.7	0.1	0.3	0.0
Indiana	86,459	0.1	0.1	0.9	2.2	0.4	0.3	0.1
Iowa	37,619	0.0	0.1	0.5	1.4	0.1	0.3	0.1
Kansas	38,869	0.0	0.1	0.9	1.1	0.0	0.4	3/0.2
Kentucky	54,658	0.0	0.1	1.2	1.5	0.2	0.4	4.6
Louisiana	65,352	0.1	0.1	0.4	0.4	0.0	0.3	0.1
Maine	13,759	0.4	0.1	0.5	0.7	0.1	0.2	0.1
Maryland	73,218	0.2	0.4	2.3	3.4	0.0	0.5	0.0
Massachusetts	81,077	0.3	0.4	1.5	0.5	0.4	0.4	0.5
Michigan	133,427	0.2	0.1	1.9	2.5	0.1	0.3	0.0
Minnesota	67,562	0.5	0.5	4.0	4.8	0.1	0.4	8.2
Mississippi	42,282	0.1	0.1	0.6	1.1	0.0	0.2	0.1
Missouri	75,464	0.3	0.2	2.2	3.8	0.1	0.5	0.1
Montana	10,970	0.0	0.1	0.4	0.3	0.1	0.4	0.0
Nebraska	24,820	0.0	0.0	0.4	0.4	0.0	0.1	0.0
Nevada	31,382	0.8	1.0	4.1	8.1	0.0	1.1	8.6
New Hampshire	14,656	0.2	0.2	2.1	1.9	0.1	0.2	0.0
New Jersey	115,795	0.1	0.1	3.9	3.9	0.1	0.3	0.8
New Mexico	27,128	1.4	0.2	5.1	5.1	0.2	3.4	0.0
New York	254,026	0.3	0.1	4.6	2.9	0.1	0.2	2.3
North Carolina	118,185	0.0	0.0	0.6	0.6	0.0	0.3	0.0
North Dakota	7,629	0.0	0.1	0.9	0.7	0.1	0.2	0.2
Ohio	151,570	1.1	0.0	1.9	2.9	0.1	0.2	0.0
Oklahoma	50,118	0.7	0.1	1.9	0.7	0.1	1.1	1.4
Oregon	45,322	0.0	0.0	0.1	0.2	0.0	0.4	0.7
Pennsylvania	143,495	0.5	0.4	5.0	6.4	0.1	0.4	0.1
Rhode Island	12,713	1.1	0.2	2.6	3.0	0.1	0.3	6.0
South Carolina	55,756	0.1	0.1	0.9	1.0	0.0	0.2	0.0
South Dakota	10,483	-	0.0	0.3	0.3	0.0	0.3	0.0
Tennessee	78,340	0.1	0.2	1.8	1.9	0.0	0.2	0.0
Texas	365,410	1.1	0.9	3.2	6.7	0.1	---	6/1.2
Utah	47,959	0.3	0.1	2.2	2.8	0.1	0.3	0.1
Vermont	6,366	0.5	0.2	4.0	2.2	0.3	0.3	0.3
Virginia	98,884	0.0	0.0	0.3	1.1	0.1	0.2	0.0
Washington	79,570	1.4	0.8	8.2	9.7	0.3	0.6	12.7
West Virginia	20,428	0.0	0.1	3.4	2.0	0.1	0.3	1.9
Wisconsin	69,072	0.0	0.0	0.3	0.4	0.0	0.4	0.1
Wyoming	6,115	-	0.1	0.4	0.6	0.0	0.2	0.0
Puerto Rico	55,866	0.0	0.1	0.3	0.1	0.0	0.1	0.0
Virgin Islands	1,669	1.3	0.6	0.1	2.0	0.1	2.2	2.5
Guam	3,565	1.5	0.2	1.7	2.6	0.2	0.9	2.1
American Samoa	1,655	-	---	---	---	-	---	---
Northern Marianas	1,449	0.7	0.8	2.0	2.1	0.6	1.5	---

Table A. Percent of Birth Records on Which Specified Items Were Not Stated: United States and Each State and territory, 2001 --Con.

[By place of residence]

Area	All births	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/	4,025,933	0.7	0.9	7.0	0.5	0.6	0.5	1.0	0.9
Alabama	60,454	0.1	0.1	3.6	0.0	0.0	0.4	0.0	0.0
Alaska	10,003	0.9	1.1	7.6	2.6	2.8	0.5	2.3	2.2
Arizona	85,597	1.2	1.3	17.3	0.0	0.0	0.4	0.0	11/0.3
Arkansas	37,010	0.7	0.8	7.7	0.1	0.1	0.3	0.1	0.1
California	527,759	---	---	---	0.0	0.0	0.0	0.0	0.0
Colorado	67,007	0.3	0.3	3.4	0.0	0.0	-	0.0	0.2
Connecticut	42,648	1.0	1.1	6.9	2.3	2.1	0.6	2.7	2.8
Delaware	10,749	0.1	0.1	0.8	0.0	-	0.0	0.0	-
District of Columbia	7,625	0.0	0.0	15.1	-	-	0.1	0.0	-
Florida	205,793	0.1	0.1	5.8	0.0	0.0	0.7	0.0	0.0
Georgia	133,526	0.5	0.5	10.0	0.0	0.0	0.5	0.0	0.0
Hawaii	17,072	0.1	0.1	14.4	0.2	0.3	0.4	0.2	0.2
Idaho	20,688	0.6	0.7	10.9	0.3	0.4	0.5	0.6	0.7
Illinois	184,064	0.2	0.1	4.3	0.0	0.0	0.4	0.0	0.1
Indiana	86,459	4/0.2	0.2	2.8	0.0	0.1	0.5	0.1	0.1
Iowa	37,619	0.1	0.1	0.7	0.0	0.1	0.5	0.0	0.1
Kansas	38,869	0.2	0.2	0.2	0.1	0.1	0.3	0.2	0.2
Kentucky	54,658	2.7	3.2	8.0	2.5	4.7	3.2	6.8	5.5
Louisiana	65,352	0.1	0.1	5.6	0.1	0.1	0.2	0.1	0.1
Maine	13,759	0.9	1.3	1.7	0.0	0.1	0.2	0.1	0.1
Maryland	73,218	0.2	0.2	4.5	0.0	0.0	0.2	0.0	0.0
Massachusetts	81,077	0.3	0.2	0.8	0.5	0.5	0.6	0.6	0.9
Michigan	133,427	1.1	1.1	7.7	0.0	0.0	0.4	0.0	0.0
Minnesota	67,562	8.1	8.2	17.9	6.4	8.1	2.6	9.2	9.2
Mississippi	42,282	0.3	0.3	5.6	0.0	0.1	0.3	0.0	0.0
Missouri	75,464	0.4	0.4	3.1	0.1	0.1	0.6	0.1	0.1
Montana	10,970	0.8	1.1	1.0	0.0	0.0	0.3	0.0	0.0
Nebraska	24,820	0.0	0.0	1.6	0.0	0.1	0.3	7/0.0	0.0
Nevada	31,382	1.6	1.6	7.7	1.5	4.1	1.2	3.1	7.8
New Hampshire	14,656	0.6	0.6	4.2	0.0	0.0	0.4	0.0	0.1
New Jersey	115,795	0.7	0.8	5.8	0.1	0.6	0.6	4.3	2.1
New Mexico	27,128	1.3	1.4	8.8	0.0	0.0	0.5	0.0	---
New York	254,026	4/0.2	0.2	5.9	0.3	0.5	0.4	8/2.3	2.2
North Carolina	118,185	0.2	0.2	2.3	0.0	0.0	0.5	0.0	0.0
North Dakota	7,629	0.5	0.9	2.9	0.2	0.1	1.8	0.2	0.2
Ohio	151,570	0.3	0.3	3.2	0.0	0.0	0.6	0.0	0.0
Oklahoma	50,118	0.8	0.9	1.7	1.3	1.6	1.6	2.9	11/3.0
Oregon	45,322	0.8	0.8	1.9	0.0	0.0	0.5	0.0	0.0
Pennsylvania	143,495	0.9	1.0	11.1	0.0	0.0	0.0	0.1	0.0
Rhode Island	12,713	1.7	1.8	13.2	6.2	6.0	0.4	10.8	10.9
South Carolina	55,756	0.1	0.1	1.6	0.0	0.0	0.7	0.0	0.0
South Dakota	10,483	5/0.1	5/0.2	1.1	-	0.0	0.3	0.0	0.0
Tennessee	78,340	0.2	0.2	9.3	0.0	0.0	0.5	0.0	0.0
Texas	365,410	1.1	1.1	12.6	0.0	9/0.0	0.7	7/0.0	0.1
Utah	47,959	0.7	0.7	4.1	0.0	0.0	0.0	0.1	0.1
Vermont	6,366	0.9	0.5	2.7	0.3	0.3	0.1	0.3	0.3
Virginia	98,884	0.0	0.0	3.6	0.0	0.0	0.3	0.2	0.0
Washington	79,570	2.5	9.7	23.8	10.1	11.9	0.4	12.4	12.5
West Virginia	20,428	0.8	1.4	9.1	0.2	1.0	0.3	3.1	0.7
Wisconsin	69,072	0.1	0.1	2.2	0.0	0.1	0.0	10/0.1	0.1
Wyoming	6,115	0.2	0.2	1.8	-	-	0.0	-	0.0
Puerto Rico	55,866	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.1
Virgin Islands	1,669	0.4	0.5	16.2	1.4	2.9	0.9	4.4	3.8
Guam	3,565	0.5	0.6	4.8	1.1	3.2	0.4	2.3	2.2
American Samoa	1,655	---	---	---	---	---	---	---	---
Northern Marianas	1,449	5/0.6	5/0.6	---	---	---	1.6	---	---

0.0 Quantity more than zero but less than 0.05.
- Quantity zero.
--- 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/ Indiana and New York State report tobacco use but do not report the average number of cigarettes smoked per day in standard categories; data for New York City are reported in standard categories.
5/ South Dakota and the Commonwealth of the Northern Marianas report tobacco and alcohol use but do not report the average number of cigarettes smoked per day or the average number of drinks per week.
6/ Texas does not report genital herpes or uterine bleeding.
7/ Nebraska and Texas do not report birth injury.
8/ New York City does not report assisted ventilation less than 30 minutes or assisted ventilation of 30 minutes or more.
9/ Texas does not report anesthetic complications and fetal distress.
10/ Wisconsin does not report fetal alcohol syndrome.
11/ Rates of "Other central nervous system anomalies" may be overstated for Arizona and Oklahoma for 2001.

Table B. Births by State of occurrence and residence for births occurring in the 50 States and the District of Columbia, 2001

Area	Occurrence	Residence
United States	4,031,531	4,025,933
Alabama	59,766	60,454
Alaska	9,907	10,003
Arizona	85,757	85,597
Arkansas	36,301	37,010
California	528,539	527,759
Colorado	67,100	67,007
Connecticut	43,179	42,648
Delaware	11,360	10,749
District of Columbia	15,037	7,625
Florida	205,991	205,793
Georgia	134,402	133,526
Hawaii	17,127	17,072
Idaho	20,161	20,688
Illinois	181,086	184,064
Indiana	86,710	86,459
Iowa	37,756	37,619
Kansas	39,052	38,869
Kentucky	53,227	54,658
Louisiana	65,620	65,352
Maine	13,567	13,759
Maryland	68,663	73,218
Massachusetts	82,237	81,077
Michigan	132,159	133,427
Minnesota	67,428	67,562
Mississippi	41,145	42,282
Missouri	76,690	75,464
Montana	10,935	10,970
Nebraska	25,107	24,820
Nevada	31,007	31,382
New Hampshire	14,055	14,656
New Jersey	112,639	115,795
New Mexico	26,808	27,128
New York State only	131,017	134,408
New York City only	124,012	119,618
North Carolina	119,132	118,185
North Dakota	8,839	7,629
Ohio	152,033	151,570
Oklahoma	48,895	50,118
Oregon	46,200	45,322
Pennsylvania	143,957	143,495
Rhode Island	13,319	12,713
South Carolina	53,255	55,756
South Dakota	10,784	10,483
Tennessee	83,521	78,340
Texas	370,482	365,410
Utah	49,041	47,959
Vermont	6,149	6,366
Virginia	96,535	98,884
Washington	79,078	79,570
West Virginia	21,000	20,428
Wisconsin	68,006	69,072
Wyoming	5,758	6,115
Occurrence in U.S. Territories or Foreign Countries	-	5,598
Puerto Rico	-	18
Virgin Islands	-	43
Guam	-	5
American Samoa	-	-
Northern Marianas	-	-
Canada	-	206
Cuba	-	1
Mexico	-	4,706
Remainder of world	-	619

- Quantity zero.

Table C. Lower and upper 95 percent and 96 percent confidence limit factors for a birth rate based on a Poisson variable of 1 through 99 births, *B*

B	L(1- a=.95,*B*)	U(1- a =.95,*B*)	L(1- a =.96,*B*)	U(1- a =.96,*B*)
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
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

Table C. Lower and upper 95 percent and 96 percent confidence limit factors for a birth rate based on a Poisson variable of 1 through 99 births, B --Con.

B	L(1- a=.95,B)	U(1- a =.95,B)	L(1- a =.96,B)	U(1- a =.96,B)
51	0.74457	1.31482	0.73385	1.33057
52	0.74685	1.31137	0.73621	1.32694
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
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

Table D. Sources for resident population and population including Armed Forces abroad: Birth- and death-registration States, 1900-32, and United States, 1900-2001.

Year	Source
2001	U.S. Census Bureau. Monthly National Population Estimates. Washington, DC: U.S. Census Bureau. Internet release, November 26, 2002. Http://eire.census.gov/popest/data/national/tables/NA-EST2001-04.php
2000	U.S. Census Bureau. Monthly National Population Estimates. Washington, DC: U.S. Census Bureau. Internet release, November 26, 2002. Http://eire.census.gov/popest/data/national/tables/NA-EST2001-04.php
1999	U.S. Census Bureau, United States population estimates, by age, sex, race, and Hispanic origin: 1980 to 1999. Washington: U.S. Bureau of the Census. Internet release, April 11, 2000. Http://www.census.gov/population/www/estimates/nat_90s_1.html.
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: United States, 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, 1900-32, and United States, 1900-2001

[Population enumerated as of April 1 for 1940, 1950, 1960, 1970, 1980, 1990, and 2000 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
2001	285,024,000	284,796,887	1950	151,132,000	150,697,361	. . .	. . .	. . .	. . .
2000	281,652,000	281,421,906	1949	149,188,000	148,665,000	. . .	. . .	. . .	. . .
1999/3	272,945,300	272,690,813	1948	146,631,000	146,093,000	. . .	. . .	. . .	. . .
1998/3	270,509,187	270,298,524	1947	144,126,000	143,446,000	. . .	. . .	. . .	. . .
1997/3	267,901,000	267,636,061	1946	141,389,000	140,054,000	. . .	. . .	. . .	. . .
1996/3	265,556,890	265,283,783	1945	139,928,000	132,481,000	. . .	. . .	. . .	. . .
1995/3	263,033,968	262,755,270	1944	138,397,000	132,885,000	. . .	. . .	. . .	. . .
1994/3	260,650,690	260,340,990	1943	136,739,000	134,245,000	. . .	. . .	. . .	. . .
1993/3	258,119,768	257,783,004	1942	134,860,000	133,920,000	. . .	. . .	. . .	. . .
1992/3	255,457,501	255,077,536	1941	133,402,000	133,121,000	. . .	. . .	. . .	. . .
1991/3	252,688,000	252,177,000	1940	131,820,000	131,669,275	. . .	. . .	. . .	. . .
1990	249,225,000	248,709,873	1939	131,028,000	130,879,718	. . .	. . .	. . .	. . .
1989	247,342,000	246,819,000	1938	129,969,000	129,824,939	. . .	. . .	. . .	. . .
1988	245,021,000	244,499,000	1937	128,961,000	128,824,829	. . .	. . .	. . .	. . .
1987	242,804,000	242,289,000	1936	128,181,000	128,053,180	. . .	. . .	. . .	. . .
1986	240,651,000	240,133,000	1935	127,362,000	127,250,232	. . .	. . .	. . .	. . .
1985	238,466,000	237,924,000	1934	126,485,000	126,373,773	. . .	. . .	. . .	. . .
1984	236,348,000	235,825,000	1933	125,690,000	125,578,763	. . .	. . .	. . .	. . .
1983	234,307,000	233,792,000	1932	124,949,000	124,840,471	47	118,903,899	47	118,903,899
1982	232,188,000	231,664,000	1931	124,149,000	124,039,648	46	117,455,229	47	118,148,987
1981	229,966,000	229,466,000	1930	123,188,000	123,076,741	46	116,544,946	47	117,238,278
1980	227,061,000	226,545,805	1929	- - -	121,769,939	46	115,317,450	46	115,317,450
1979	225,055,000	224,567,000	1928	- - -	120,501,115	44	113,636,160	44	113,636,160
1978	222,585,000	222,095,000	1927	- - -	119,038,062	40	104,320,830	42	107,084,532
1977	220,239,000	219,760,000	1926	- - -	117,399,225	35	90,400,590	41	103,822,683
1976	218,035,000	217,563,000	1925	- - -	115,831,963	33	88,294,564	40	102,031,555
1975	215,973,000	215,465,000	1924	- - -	114,113,463	33	87,000,295	39	99,318,098
1974	213,854,000	213,342,000	1923	- - -	111,949,945	30	81,072,123	38	96,788,197
1973	211,909,000	211,357,000	1922	- - -	110,054,778	30	79,560,746	37	92,702,901
1972	209,896,000	209,284,000	1921	- - -	108,541,489	27	70,807,090	34	87,814,447
1971	207,661,000	206,827,000	1920	- - -	106,466,420	23	63,597,307	34	86,079,263
1970	204,270,000	203,211,926	1919	105,063,000	104,512,110	22	61,212,076	33	83,157,982
1969	202,677,000	201,385,000	1918	104,550,000	103,202,801	20	55,153,782	30	79,008,412
1968	200,706,000	199,399,000	1917	103,414,000	103,265,913	20	55,197,952	27	70,234,775
1967	198,712,000	197,457,000	1916	- - -	101,965,984	11	32,944,013	26	66,971,177
1966	196,560,000	195,576,000	1915	- - -	100,549,013	10	31,096,697	24	61,894,847
1965	194,303,000	193,526,000	1914	- - -	99,117,567	. . .	. . .	24	60,963,309
1964	191,889,000	191,141,000	1913	- - -	97,226,814	. . .	. . .	23	58,156,740
1963	189,242,000	188,483,000	1912	- - -	95,331,300	. . .	. . .	22	54,847,700
1962	186,538,000	185,771,000	1911	- - -	93,867,814	. . .	. . .	22	53,929,644
1961	183,691,000	182,992,000	1910	- - -	92,406,536	. . .	. . .	20	47,470,437
1960	179,933,000	179,323,175	1909	- - -	90,491,525	. . .	. . .	18	44,223,513
1959	177,264,000	176,513,000	1908	- - -	88,708,976	. . .	. . .	17	38,634,759
1958	174,141,000	173,320,000	1907	- - -	87,000,271	. . .	. . .	15	34,552,837
1957	171,274,000	170,371,000	1906	- - -	85,436,556	. . .	. . .	15	33,782,288
1956	168,221,000	167,306,000	1905	- - -	83,819,666	. . .	. . .	10	21,767,980
1955	165,275,000	164,308,000	1904	- - -	82,164,974	. . .	. . .	10	21,332,076
1954	162,391,000	161,164,000	1903	- - -	80,632,152	. . .	. . .	10	20,943,222
1953	159,565,000	158,242,000	1902	- - -	79,160,196	. . .	. . .	10	20,582,907
1952	156,954,000	155,687,000	1901	- - -	77,585,128	. . .	. . .	10	20,237,453
1951	154,287,000	153,310,000	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.

3/ Population projected from the 1990 Census.

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

Table 4-2. Estimated total population by specified Hispanic origin and estimated female population by age and specified Hispanic origin and by race for women of non-Hispanic origin: United States, 2001

[Populations estimated as of July 1]

Age	Hispanic					Non-Hispanic		
	Total	Mexican	Puerto Rican	Cuban	Other Hispanic 1/	Total 2/	White	Black
Total population	36,972,219	---	---	---	---	247,824,668	198,036,588	35,629,549
Female population								
15-44 years	8,872,357	---	---	---	---	52,800,344	40,652,518	8,566,914
10-14 years	1,645,512	---	---	---	---	8,539,686	6,413,270	1,617,050
15-19 years	1,503,868	---	---	---	---	8,340,113	6,337,392	1,477,675
15-17 years	892,070	---	---	---	---	5,000,420	3,803,604	890,470
18-19 years	611,798	---	---	---	---	3,339,693	2,533,788	587,205
20-24 years	1,580,956	---	---	---	---	8,038,274	6,056,019	1,421,177
25-29 years	1,622,931	---	---	---	---	7,710,278	5,762,492	1,313,060
30-34 years	1,540,556	---	---	---	---	8,719,969	6,686,569	1,392,172
35-39 years	1,418,573	---	---	---	---	9,719,751	7,605,075	1,490,954
40-44 years	1,205,473	---	---	---	---	10,271,959	8,204,971	1,471,876
45-49 years	958,473	---	---	---	---	9,585,646	7,766,096	1,278,267

--- Data not available.

1/ Includes Central and South American and other and unknown Hispanic.

2/ Includes races other than white and black.

SOURCE: National Center for Health Statistics. Estimates of the July 1, 2001, United States population by age, sex, race, and Hispanic origin. Washington, DC: U.S. Census Bureau. 2002.

Table 4-3. Estimated population of the United States, by age, race, and sex: July 1, 2001

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

Age	All races			White			Black			American Indian			Asian and Pacific Islander		
	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female
All ages	284,796,887	139,813,108	144,983,779	232,351,696	114,659,071	117,692,625	37,196,779	17,710,410	19,486,369	3,054,311	1,524,362	1,529,949	12,194,101	5,919,265	6,274,836
Under 1	4,033,748	2,064,258	1,969,490	3,145,068	1,609,133	1,535,935	651,438	333,991	317,447	57,350	29,296	28,054	179,892	91,838	88,054
1-4 years	15,335,593	7,841,024	7,494,569	11,950,518	6,124,281	5,826,237	2,484,818	1,263,494	1,221,324	214,450	109,200	105,250	685,807	344,049	341,758
5-9 years	20,184,052	10,336,616	9,847,436	15,672,696	8,043,297	7,629,399	3,376,928	1,715,921	1,661,007	283,566	143,588	139,978	850,862	433,810	417,052
10-14 years	20,881,442	10,696,244	10,185,198	16,279,358	8,354,582	7,924,776	3,440,783	1,746,075	1,694,708	304,032	154,209	149,823	857,269	441,378	415,891
15-19 years	20,267,154	10,423,173	9,843,981	15,951,898	8,227,850	7,724,048	3,139,156	1,594,670	1,544,486	289,027	147,933	141,094	887,073	452,720	434,353
15-17 years	12,117,326	6,224,836	5,892,490	9,537,142	4,911,692	4,625,450	1,892,936	962,695	930,241	174,739	88,981	85,758	512,509	261,468	251,041
18-19 years	8,149,828	4,198,337	3,951,491	6,414,756	3,316,158	3,098,598	1,246,220	631,975	614,245	114,288	58,952	55,336	374,564	191,252	183,312
20-24 years	19,681,213	10,061,983	9,619,230	15,521,549	8,007,393	7,514,156	2,933,423	1,438,129	1,495,294	254,247	131,897	122,350	971,994	484,564	487,430
25-29 years	18,926,104	9,592,895	9,333,209	14,935,220	7,666,153	7,269,067	2,646,872	1,262,075	1,384,797	226,227	116,961	109,266	1,117,785	547,706	570,079
30-34 years	20,681,202	10,420,677	10,260,525	16,553,199	8,437,327	8,115,872	2,773,000	1,312,228	1,460,772	225,433	114,708	110,725	1,129,570	556,414	573,156
35-39 years	22,243,146	11,104,822	11,138,324	18,013,342	9,091,759	8,921,583	2,931,674	1,379,113	1,552,561	238,212	118,958	119,254	1,059,918	514,992	544,926
40-44 years	22,775,521	11,298,089	11,477,432	18,693,104	9,369,388	9,323,716	2,871,426	1,347,741	1,523,685	231,189	112,908	118,281	979,802	468,052	511,750
45-49 years	20,768,983	10,224,864	10,544,119	17,233,171	8,577,202	8,655,969	2,463,325	1,143,642	1,319,683	198,121	96,167	101,954	874,366	407,853	466,513
50-54 years	18,419,209	9,011,221	9,407,988	15,500,041	7,662,704	7,837,337	2,008,644	923,827	1,084,817	162,106	78,924	83,182	748,418	345,766	402,652
55-59 years	14,190,116	6,865,439	7,324,677	12,140,638	5,928,397	6,212,241	1,418,669	639,265	779,404	114,255	55,283	58,972	516,554	242,494	274,060
60-64 years	11,118,462	5,288,527	5,829,935	9,518,392	4,568,329	4,950,063	1,116,657	491,671	624,986	83,012	40,029	42,983	400,401	188,498	211,903
65-69 years	9,532,702	4,409,658	5,123,044	8,229,353	3,847,282	4,382,071	926,216	393,537	532,679	61,319	28,376	32,943	315,814	140,463	175,351
70-74 years	8,780,521	3,887,793	4,892,728	7,740,099	3,463,574	4,276,525	743,103	297,077	446,026	45,133	20,298	24,835	252,186	106,844	145,342
75-79 years	7,424,947	3,057,402	4,367,545	6,635,075	2,751,269	3,883,806	575,777	215,224	360,553	31,819	13,327	18,492	182,276	77,582	104,694
80-84 years	5,149,013	1,929,315	3,219,698	4,653,605	1,753,044	2,900,561	369,204	124,597	244,607	19,055	7,258	11,797	107,149	44,416	62,733
85 years +	4,403,759	1,299,108	3,104,651	3,985,370	1,176,107	2,809,263	325,666	88,133	237,533	15,758	5,042	10,716	76,965	29,826	47,139

SOURCE: National Center for Health Statistics. Estimates of the July 1, 2001, United States population by age, sex, race, and Hispanic origin. Washington, DC: U.S. Census Bureau. 2002.

Table 4-4. Estimated total population and female population aged 15-44 years: United States, each division, State, and territory: July 1, 2001

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

Division and States	Total	Female 15-44 years
United States	284,796,887	61,672,701
New England	---	---
Maine	---	---
New Hampshire	---	---
Vermont	---	---
Massachusetts	---	---
Rhode Island	---	---
Connecticut	---	---
Middle Atlantic	---	---
New York	---	---
New Jersey	---	---
Pennsylvania	---	---
East North Central	---	---
Ohio	---	---
Indiana	---	---
Illinois	---	---
Michigan	---	---
Wisconsin	---	---
West North Central	---	---
Minnesota	---	---
Iowa	---	---
Missouri	---	---
North Dakota	---	---
South Dakota	---	---
Nebraska	---	---
Kansas	---	---
South Atlantic	---	---
Delaware	---	---
Maryland	---	---
District of Columbia	---	---
Virginia	---	---
West Virginia	---	---
North Carolina	---	---
South Carolina	---	---
Georgia	---	---
Florida	---	---
East South Central	---	---
Kentucky	---	---
Tennessee	---	---
Alabama	---	---
Mississippi	---	---
West South Central	---	---
Arkansas	---	---
Louisiana	---	---
Oklahoma	---	---
Texas	---	---
Mountain	---	---
Montana	---	---
Idaho	---	---
Wyoming	---	---
Colorado	---	---
New Mexico	---	---
Arizona	---	---
Utah	---	---
Nevada	---	---
Pacific	---	---
Washington	---	---
Oregon	---	---
California	---	---
Alaska	---	---
Hawaii	---	---
Puerto Rico	---	---
Virgin Islands	---	---
Guam	---	---
American Samoa	---	---
Northern Marianas	---	---

--- Data not available.

SOURCE: National Center for Health Statistics. Estimates of the July 1, 2001, United States population by age, sex, race, and Hispanic origin. Washington, DC: U.S. Census Bureau. 2002.

2001 Technical notes

Nature and sources of data

Data in this report are based on information from all death certificates filed in the 50 States and the District of Columbia and are processed by the Centers for Disease Control and Prevention's National Center for Health Statistics (NCHS). Data for 2001 are based on records of deaths that occurred during 2001 and were received as of October 24, 2002. The U.S. Standard Certificate of Death--which is used as a model by the States--was last revised in 1989; for additional details see the 1989 revision of the U.S. standard certificates and reports (28) and Technical Appendix of *Vital Statistics of the United States, 1989,* Volume II, Mortality, part A (29). Data for Puerto Rico, the Virgin Islands, Guam, American Samoa, and the Northern Marianas are included in tables showing data by State, but are not included in U.S. totals.

Mortality statistics are based on information coded by the States and provided to the National Center for Health Statistics (NCHS) through the Vital Statistics Cooperative Program (VSCP) and from copies of the original certificates received by NCHS from the State registration offices. In 2001 all the States and the District of Columbia participated in this program and submitted part or all of the mortality data for 2001 in electronic data files to NCHS. All States provided precoded medical (cause-of-death) data to NCHS except Illinois, Kentucky, New Jersey, Ohio, and West Virginia, and the District of Columbia. For 2001 all States submitted precoded demographic data for all deaths.

Data for the entire United States refer to events occurring within the United States. Data shown for geographic areas are by place of residence. Beginning with 1970, mortality statistics for the United States exclude deaths of nonresidents of the United States. All data exclude fetal deaths.

Mortality statistics for Puerto Rico, Virgin Islands, American Samoa, and Northern Marianas exclude deaths of nonresidents of Puerto Rico, Virgin Islands, American Samoa, and Northern Marianas, respectively. For Guam, however, mortality statistics exclude deaths that occurred to a resident of any place other than Guam or the United States.

Cause-of-death classification

The mortality statistics presented in this report were compiled in accordance with World Health Organization (WHO) regulations, which specify that member nations classify and code causes of death in accordance with the current *revision* of the *International Classification of Diseases*.(ICD). The ICD provides the basic guidance used in virtually all countries to code and classify causes of death. Effective with deaths occurring in 1999, the United States began using the Tenth Revision of this classification (ICD-10) (7). For earlier years causes of death were classified according to the revisions then in use--1979-98, Ninth Revision; 1968-78, Eighth Revision, adapted for use in the United States; 1958-67, Seventh Revision; and 1949-57, Sixth Revision.

Changes in classification of causes of death due to these revisions may result in discontinuities in cause-of-death trends. Consequently, cause-of-death comparisons among revisions require consideration of comparability ratios and, where available, estimates of their standard errors. Comparability ratios between the Ninth and Tenth Revisions, between the Eighth and Ninth Revisions, between the Seventh and Eighth Revisions, and between the Sixth and Seventh Revisions may be found in other NCHS reports (20,30-32).

The ICD not only details disease classification but also provides definitions, tabulation lists, the format of the death certificate, and the rules for coding cause of death. Cause-of-death data presented in this publication were coded by procedures outlined in annual issues of the *NCHS Instruction Manual* (33,34). It includes rules for selecting the underlying cause of death for tabulation purposes, definitions, tabulation lists, and regulations on the use of the ICD.

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) (35), multiple cause codes serve as inputs to the computer software that employs WHO rules to select the underlying cause. All cause-of-death data in this report are coded using

ACME.

The ACME system is used to select the underlying cause of death for all death certificates in the United States. In addition, NCHS has developed two computer systems as inputs to ACME. Beginning with 1990 data, the Mortality Medical Indexing, Classification, and Retrieval system (MICAR) (36,37), was introduced to automate coding multiple causes of death. In addition, MICAR provides more detailed information on the conditions reported on death certificates than is available through the International Classification of Diseases (ICD) code structure. Then, beginning with data year 1993, SuperMICAR, an enhancement of the MICAR system, was introduced. SuperMICAR allows for literal entry of the multiple cause-of-death text as reported by the certifier. This information is then automatically processed by the MICAR and ACME computer systems. Records that cannot be automatically processed by MICAR or SuperMICAR are manually multiple-cause coded and then further processed through ACME.

For 2001 approximately 61 percent of the Nation's death records were multiple-cause coded using SuperMICAR and 39 percent, using MICAR only. This represents data from 37 States, New York City and the District of Columbia that were coded by SuperMICAR and data from 13 States that were coded by MICAR.

In this report tabulations of cause-of-death statistics are based solely on the underlying cause of death. The underlying cause is defined by WHO as “the disease or

injury which initiated the train of events leading directly to death, or the circumstances of the accident or violence which produced the fatal injury" (7). It is selected from the conditions entered by the physician in the cause-of-death section of the death certificate. When more than one cause or condition is entered by the physician, the underlying cause is determined by the sequence of conditions on the certificate, provisions of the ICD, and associated selection rules and modifications. Generally, more medical information is reported on death certificates than is directly reflected in the underlying cause of death. This is captured in NCHS multiple cause-of-death statistics (38-40).

Tabulation lists and cause-of-death ranking

Tabulation lists for ICD-10 are published in the NCHS Instruction Manual, Part 9, ICD-10 Cause-of-Death Lists for Tabulating Mortality Statistics, Effective 1999 (41). For this report, two tabulation lists are used, namely, the List of 113 Selected Causes of Death used for deaths of all ages, and the List of 130 Selected Causes of Infant Death used for infants. These lists are also used to rank leading causes of death for the two population groups. For the List of 113 Selected Causes of Death, the group titles Major cardiovascular diseases (ICD-10 codes I00-I78) and Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified (ICD-10 codes R00-R99) are not ranked. In addition, category titles that begin with the words "Other" and "All other" are not ranked to determine the leading causes of death. When one of the titles that represents a subtotal is ranked (for example, Tuberculosis (ICD-10 codes A16-A19)), its

component parts are not ranked (in this case, Respiratory tuberculosis (ICD-10 code A16) and Other tuberculosis (ICD-10 codes A17-A19)). For the List of 130 Selected Causes of Infant Death, the same ranking procedures are used, except that the category Major cardiovascular diseases is not in the list. More detail regarding ranking procedures can be found in “Deaths: Leading Causes for 2001 (3).

Leading cause-of-death trends, discussed in this report, are based on cause-of-death data according to ICD-10 for 1999-2001, and on data for the most comparable ICD-9 cause-of-death titles for 1979-1998. Tables showing ICD-9 categories that are comparable to the ICD-10 titles in the list of 113 selected causes of death may be found in "Comparability of Cause of Death Between ICD-9 and ICD-10: Preliminary Estimates" (20) and "Deaths: Final Data for 1999" (21). Although in some cases categories from the list of 113 selected causes are identical to those in the old list of 72 selected causes of death used with ICD-9, it is important to note that many of these categories are not comparable with categories in the list of 72 selected causes even though the cause-of-death titles may be the same.

Trend data for 1978-1999 that is classified by ICD-9 but is sorted into the list of 113 selected causes of death developed for ICD-10 can be found on the mortality website at http://www.cdc.gov/nchs/data/statab/hist001.pdf

Revision of the ICD and resulting changes in classification and rules for selecting the underlying cause of death have important implications for the analysis of mortality

trends by cause of death. For some causes of death the discontinuity in trend can be substantial (20). Therefore, considerable caution should be used in analyzing cause-of-death trends for periods of time that extend across more than one revision of the ICD.

Codes for terrorism

Beginning with data for 2001, NCHS introduced categories *U01-*U03 for classifying and coding deaths due to acts of terrorism. The asterisks before the category codes indicate that they are not part of the *International Classification of Diseases, Tenth Revision* (ICD-10). Deaths classified to the terrorism categories are included in the categories for Assault (homicide) and Intentional self-harm (suicide) in the 113 cause-of-death list and in the category for Assault (homicide) in the 130 cause-of-death list for infants. Additional information on these new categories can be found at http://www.cdc.gov/nchs/about/otheract/icd9/terrorism_code.htm.

Race and Hispanic origin

Race and Hispanic origin are reported separately on the death certificate. Therefore, data shown by race include persons of Hispanic and non-Hispanic origin, and data for Hispanic origin include persons of any race. In this report, unless otherwise specified, deaths of Hispanic origin are included in the totals for each race group --- white, black, American Indian, and Asian or Pacific Islander (API) --- according to the decedent's race as reported on the death certificate. Data shown for Hispanic persons

include all persons of Hispanic origin of any race.

Mortality data for the Hispanic-origin population are based on deaths to residents of all 50 States and the District of Columbia. Data year 1997 was the first year that mortality data for the Hispanic population were available for the entire United States.

Quality of race and Hispanic origin data--Death rates for Hispanic, American Indian, and API persons should be interpreted with caution because of inconsistencies in reporting Hispanic origin or race on the death certificate as compared with race on censuses, surveys, and birth certificates. Studies have shown under-reporting on death certificates of American Indians, API, and Hispanic decedents; and undercounts of these groups in the censuses (16,42).

A number of studies have been conducted on the reliability of race reported on the death certificate by comparing race on the death certificate with that reported on another data collection instrument, such as the Census or a survey. Differences may arise because of differences in who provides race information on the compared records. Race information on the death certificate is reported by the funeral director as provided by an informant or in the absence of an informant, on the basis of observation. In contrast, race on the census or on the Current Population Survey (CPS) is obtained while the individual is alive and is self-reported or reported by another member of the household familiar with the individual 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 assure unbiased death rates by race.

Studies (42,43) show that a person self-reported as American Indian or Asian on census or survey records was sometimes reported as white on the death certificate. The net effect of misclassification is an underestimation of deaths and death rates for races other than white and black. In addition, under-coverage of minority groups in the census and resultant population estimates, introduces biases into death rates by race (6,16,44). Estimates of the approximate effect of the combined bias due to race misclassification on death certificates and under-enumeration on the 1990 census are as follows: white, -1.0 percent; black, -5.0; American Indian, +20.6; Asian or Pacific Islander, +10.7 (16).

The National Longitudinal Mortality Study (NLMS) examined the reliability of Hispanic origin reported on 43,520 death certificates with that reported on a total of 12 Current Population Surveys conducted by the U.S. Bureau of the Census for the years 1979-85 (16). In this study, agreement--on a record-by-record basis--was 89.7 percent for any report of Hispanic origin. The ratio of deaths for CPS divided by deaths for death certificate was 1.07 indicating net underreporting of Hispanic origin on death certificates by 7 percent as compared with self-reports on the surveys. Death rates for the Hispanic-origin population are also affected by under-coverage of this population group in the census and resultant population estimates; the estimated net correction, taking into account both sources of bias, is 1.6 percent (16,44).

Other races and race not stated--Beginning in 1992 all records coded as "Other

races" (0.03 percent of the total deaths in 2001) were assigned to the specified race of the previous record. Records for which race was unknown, not stated, or not classifiable (0.08 percent) were assigned the racial designation of the previous record.

Infant and maternal mortality rates--For 1989-2001, as in previous years, infant and maternal deaths continue to be tabulated by the race of the decedent. However, beginning with the 1989 data year, the method of tabulating live births by race was changed from race of parents to race of mother as stated on the birth certificate. This change affects infant and maternal mortality rates because live births are the denominators of these rates (29,45). To improve continuity and ease of interpretation, trend data by race in this report have been retabulated by race of mother for all years beginning with the 1980 data year.

Quantitatively, the change in the basis for tabulating live births by race results in more white births and fewer black births and births of other races. Consequently, infant and maternal mortality rates under the new tabulating procedure tend to be about 2 percent lower for white infants and about 5 percent higher for black infants than when they are computed by the previous method of tabulating live births by race of parents. Rates for most other minority races also are higher when computed by race of mother (45,46).

Infant mortality rates for the Hispanic-origin population are based on numbers of resident infant deaths reported to be of Hispanic origin and numbers of resident live

births by Hispanic origin of mother for the United States. In computing infant mortality rates, deaths and live births of unknown origin are not distributed among the specified Hispanic and non-Hispanic groups. In 2001 the percent of infant deaths of unknown origin was 0.9 and the percent of live births to mothers of unknown origin was 0.6 for the United States.

Small numbers of infant deaths for specific Hispanic-origin groups result in infant mortality rates subject to relatively large random variation (see "Random variation"). Infant mortality rates by Hispanic origin are less subject to reporting error when based on linked files of infant deaths and live births (27).

Infant mortality rates calculated from the general mortality file for specified race and/or Hispanic origin are in error because of reporting problems that affect the classification of race and Hispanic origin on the birth and death certificates for the same infant. Infant mortality rates by specified race and Hispanic origin are more accurate when based on the linked file of infant deaths and live births (27). The linked file computes infant mortality rates using the race and/or Hispanic origin of the mother from the birth certificate in both the numerator and denominator of the rate. In addition, mother’s race and/or Hispanic origin from the birth certificate is considered to be more accurately reported than infant’s race and/or Hispanic origin from the death certificate because, on the birth certificate, race is generally reported by the mother at the time of delivery whereas, on the death certificate, infant’s race and/or Hispanic origin is reported by an informant, usually the mother but sometimes by the funeral director.

Estimates of reporting errors have been made by comparing rates based on the linked files with those in which the race of infant death is based on information from the death certificate (16,27).

Life tables

The life table provides a comprehensive measure of the effect of mortality on life expectancy. It is composed of sets of values showing the mortality experience of a hypothetical group of infants born at the same time and subject throughout their lifetime to the age-specific death rates of a particular time period, usually a given year. Beginning with final data reported for 1997, the life table methodology was changed from previous annual reports. Previously, U.S. life tables were abridged and constructed by reference to a standard table (47). In addition, the age range for these life tables was limited to 5-year age groups ending with the age group 85 years and over.

Beginning with 1997 mortality data, a revised life table methodology was used to construct complete life tables by single years of age that extend to age 100 (48) using a methodology similar to that of the decennial life tables (49). The advantages of the new over the previous methodology are its comparability with decennial life table methodology, greater accuracy, and greater age detail. A comparison of the two methods shows small differences in resulting values for life expectancy (48). Although the new method produces complete life tables, that is, life tables by single years of age, life table data shown in this report are summarized in 5-year age groupings. To

calculate the probability of dying at each age, the revised methodology uses vital statistics death rates for ages under 85 years and mortality data from the Medicare program for ages over 85 years. Medicare data were used to model the probability of dying at ages 85 and over because the data are shown to be significantly more reliable than vital statistics data at the oldest ages (50).

The life tables presented in this report use a slight modification of the new life table method introduced in 1997 as a result of a change in the age detail of populations received from the US Census Bureau. Populations for 2000 and 2001 were provided by single year of age up to age 84, followed by "85 years and over," and as a result it was not possible to apply the same smoothing technique that has been used when population figures in single years of age up to ages "100 years and over" were available. Accordingly, Medicare data were used to estimate the probability of dying by single year of age for ages 85 to "100 years and over."

Revised life expectancies were not computed for 1991-99 because revised intercensal populations, consistent with the 2000 census, were not available by single years of age up to “100 years and over” for the 1990s’ as of the printing of this report.

Causes of death contributing to changes in life expectancy

Causes of death contributing to changes in life expectancy were estimated using a life table partitioning technique. The method partitions changes into component additive parts. This method identifies the causes of death having the greatest influence, positive or negative, on changes in life expectancy (17,51).

Injury mortality by mechanism and intent

Injury mortality data are presented using an alternative framework in table 18. In this framework, causes of injury deaths are organized principally by mechanism (e.g. firearm or poisoning), and secondarily by manner, or intent of death (e.g. unintentional, suicide, homicide, etc.).

In addition, the number of deaths for selected causes in this framework may differ from those shown in tables that use the standard mortality tabulation lists. Following WHO conventions, standard mortality tabulations (table 10) present external causes of death (ICD-10 codes *U01-*U03, V01-Y89). In contrast, the alternative framework (table 18) excludes deaths classified to Complications of medical and surgical care (ICD-10 codes Y40-Y84, Y88). For additional information on injury data presented in this framework, see http://www.cdc.gov/nchs/about/otheract/ice/matrix10.htm and “Deaths: Injuries, 2001” (4).

Codes for firearm deaths

Causes of death attributable to firearm mortality include ICD-10 codes *U01.4, Terrorism involving firearms (homicide); W32-W34, Accidental discharge of firearms; X72-X74, Intentional self-harm (suicide) by discharge of firearms; X93-X95, Assault (homicide) by discharge of firearms; Y22-Y24, Discharge of firearms, undetermined intent; and Y35.0, Legal intervention involving firearm discharge. Deaths from injury by firearms exclude deaths due to explosives and other causes indirectly related to firearms.

Codes for drug-induced deaths

Causes of death attributable to drug-induced mortality include selected codes from the ICD-10 title Mental and behavioral disorders due to psychoactive substance use, specifically, ICD-10 codes F11.0-F11.5, F11.7-F11.9, F12.0-F12.5, F12.7-F12.9, F13.0-F13.5, F13.7-F13.9, F14.0-F14.5, F14.7-F14.9, F15.0-F15.5, F15.7-F15.9, F16.0-F16.5, F16.7-F16.9, F17.0, F17.3-F17.5, F17.7-F17.9, F18.0-F18.5, F18.7-F18.9, F19.0-F19.5, and F19.7-F19.9; Accidental poisoning by and exposure to drugs, medicaments and biological substances, X40-X44; Intentional self-poisoning (suicide) by and exposure to drugs, medicaments and biological substances, X60-X64; Assault (homicide) by drugs, medicaments and biological substances, X85; and Poisoning by and exposure to drugs, medicaments and biological substances, undetermined intent, Y10-Y14. Drug-induced causes exclude accidents, homicides, and other causes indirectly related to drug use. Also excluded are newborn deaths associated with mother's drug use.

Codes for alcohol-induced deaths

Causes of death attributable to alcohol-induced mortality include ICD-10 codes F10, Mental and behavioral disorders due to alcohol use; G31.2, Degeneration of nervous system due to alcohol; G62.1, Alcoholic polyneuropathy; I42.6, Alcoholic cardiomyopathy; K29.2, Alcoholic gastritis; K70, Alcoholic liver disease; R78.0, Finding of alcohol in blood; X45, Accidental poisoning by and exposure to alcohol; X65, Intentional self-poisoning by and exposure to alcohol; and Y15, Poisoning by and

exposure to alcohol, undetermined intent. Alcohol-induced causes exclude accidents, homicides, and other causes indirectly related to alcohol use. This category also excludes newborn deaths associated with maternal alcohol use.

Marital status

Age-specific and age-adjusted death rates by marital status are shown in table 25 by race and in table 26 by Hispanic origin. Mortality data by marital status is generally of high quality. A study of death certificate data using the 1986 National Mortality Followback Survey showed a high level of consistency in reporting marital status (43). Age-adjusted death rates by marital status were computed based on the age-specific rates and the standard population for ages 25 years and over. While age-specific death rates by marital status are shown for the age group 15-24 years, they are not included in the computation of the age-adjusted rate because of their high variability, particularly for the widowed population. Also, the age groups 75-84 and 85 years and over are combined due to high variability in death rates in the 85 year and over age group, particularly for the never married population.

Educational attainment

Beginning with the 1989 data year, an item indicating decedent's educational attainment was added to the certificates of numerous States. Mortality data on educational attainment for 2001 are based on deaths to residents of the 47 States and

the District of Columbia whose data were approximately 80 percent or more complete on a place-of-occurrence basis. Data for Georgia, Rhode Island, and South Dakota were excluded because the item was not on their certificates.

Age-specific and age-adjusted death rates by educational attainment are shown in table 27. Age-adjusted death rates by educational attainment were computed based on the age-specific rates and the standard population for ages 25-64 years. Data for age groups 65 years and over are not shown because reporting quality is poorer at older than younger ages (52).

Rates by educational attainment are affected by differences in measurement of education for the numerator and the denominator. The numerator is based on number of years of education completed as reported on the death certificate whereas the denominator is based on highest degree completed as reported on census surveys (53).

Injury at work

Information on deaths attributed to injuries at work is derived from a separate item on the death certificate that asks the medical certifier whether the death resulted from an injury sustained at work. The item is on the death certificate of all States. Number of deaths, age-specific death rates, and age-adjusted death rates for injury at work are shown in tables 28 and 29. Deaths, crude death rates, and age-adjusted death rates for injury at work are shown for ages 15 years and over. Age-adjusted death rates for injury at work were computed using age-specific death rates and the U.S. standard

population based on year 2000 standard for ages 15 years and over. See section on "Computing rates." Figures presented in this report include deaths from the September 11, 2001 terrorist attacks for which death certificates indicated the death occurred at work and were filed as of 10/24/02. For further information on the September 11, 2001 terrorism related deaths, see section entitled "Quality of reporting and processing cause of death."

Infant mortality

Infant mortality rates are the most commonly-used index for measuring the risk of dying during the first year of life. The rates presented in this report 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. For final birth figures used in the denominator for infant mortality rates, see *Births: Final Data for 2001* (54). 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 that appear in tabulations of age-specific death rates in this report are calculated by dividing the number of infant deaths by the July 1, 2001 population estimate of persons under 1 year of age, based on 2000 Census populations. These rates are presented as rates per 100,000 population in this age group. Because of differences in the denominators, infant death rates may differ from infant mortality rates.

Maternal mortality

Maternal mortality rates are also 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. They are calculated by dividing the number of maternal deaths in a calendar year by the number of live births registered for the same period and are presented as rates per 100,000 live births. 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.

"Maternal deaths" are defined by the World Health Organization 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" (7). Included in these deaths are ICD-10 codes A34, O00-O95, and O98-O99.

Some State death certificates include a separate question regarding pregnancy status. A positive response to the question is interpreted as if "pregnant" was reported in Part II of the cause-of-death section of the death certificate. If a specified length of time is not provided by the medical certifier, it is assumed that the pregnancy terminated 42 days or less prior to death. Further, if only indirect maternal causes of death (i.e., a previously existing disease or a disease that developed during pregnancy which was not due to direct obstetric causes but was aggravated by physiologic effects of pregnancy) are reported in Part I and pregnancy is reported in either Part I or Part II, the death is classified as a maternal death.

Quality of reporting and processing cause of death

One index of the quality of reporting causes of death is the proportion of death certificates coded to Chapter XVIII; Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified (ICD-10 codes R00-R99). Although deaths occur for which the underlying causes are impossible to determine, this proportion indicates the care and consideration given to the cause-of-death statement 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. The percent of all reported deaths in the United States assigned to Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified, was 1.34 percent, about the same as in 2000 (1.33 percent), but considerably higher than in 1999 (1.12 percent). From 1990 through 1999, the percent of deaths from this cause for all ages combined generally was fairly stable, between 1.08 and 1.18 percent.

The large decrease in Influenza (ICD-10 codes J10-J11) deaths from 2000 to 2001 is largely due to a change in the coding rules, which resulted in deaths that would have previously been assigned to Influenza, instead were assigned to Pneumonia in 2001.

Terrorism related deaths referred to in this report do not represent a final count of deaths resulting from the terrorist attacks on September 11, 2001, as this figure has not

yet been determined. To date, an estimated 3,028 deaths resulted from the September 11, 2001 terrorist attacks that occurred in New York City, Pennsylvania, and Virginia (table D). Of these, an estimated 2,792 deaths occurred in New York City, 189 in Virginia, and 44 in Pennsylvania. Three deaths occurred in other States, one each in Massachusetts, Missouri, and New Jersey, to persons who were injured on September 11 but died as the result of their injuries at a later date. The New Jersey death occurred in 2002.

As of October 24, 2002, death certificates were issued for 2,957 of the estimated 3,028 individuals believed to have died as a result of the September 11 attacks (table D). Of these, four were issued for terrorists and are classified as suicides. The criteria for issuing a death certificate for those believed to have died in the attacks differed by State, reflecting differences in State laws regarding death certification. Pennsylvania issued a death certificate for every individual, including the terrorists. Death certificates were not issued for any of the terrorists in Virginia or New York City. Virginia issued a death certificate only for those victims whose remains were identified. New York City issued a death certificate for those whose remains were identified or, if remains were not recovered, for those whose families applied for a death certificate. For more detailed information regarding New York City's processing of these deaths, see *Deaths in World Trade Center Terrorist Attacks---New York City, 2001* at http://www.cdc.gov/mmwr/preview/mmwrhtml/mm51SPa6.htm.

Data in this report include deaths to residents of the United States. Tables in this report, other than table D, include only the September 11 related deaths that occurred to residents of the United States in 2001 for which a certificate was issued as of October 24, 2002. Of these deaths, 2,922 are classified as homicides and 4 as suicides.

Rare causes of death

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. These causes, termed "Infrequent and rare causes of death," are listed in the NCHS instruction manuals Parts 2a, 11, and 20 (33,55,56).

For data year 2001, complete confirmation of deaths from infrequent and rare causes were not provided by the District of Columbia and the following States: California, Illinois, Indiana, Kansas, Kentucky, Maine, Minnesota, Montana, New Jersey, New York, North Dakota, Ohio, Oklahoma, Pennsylvania, and Rhode Island.

Population bases for computing rates

Populations used for computing death rates and life tables shown in this report represent the population residing in the United States, enumerated as of April 1 for census years and estimated as of July 1 for all other years. Death rates for the United States for 2001 are computed using postcensal estimates published in 2001 based on the 2000 census estimated as of July 1, 2001. These populations are shown by race for 10-year age groups in table I and are available by 5-year age groups on the mortality Web site at http://www.cdc.gov/nchs/datawh/statab/unpubd/mortabs.htm (57).

Population estimates for all origins, Hispanic, non-Hispanic, non-Hispanic white, and non-Hispanic black for 2001 are shown in table II.

Death rates, shown in this report, for 1991-2000 have been recomputed, based on revised populations that are consistent with the 2000 census levels (58-67). These estimates were produced under a collaborative arrangement with the U.S. Census Bureau and are based on the 2000 census counts by age, race, and sex, modified to be consistent with U.S. Office of Management and Budget racial categories as of 1977 and historical categories for death data (9). The modification procedures are described in detail elsewhere (11,12). Death rates previously published in annual reports of final data for 1991 to 2000 (21,23,68-75) were based on postcensal population estimates derived from the 1990 census.

Population estimates in table II for Mexicans, Puerto Ricans, Cubans, and Other Hispanics, and population estimates by marital status in tables III and IV, are based on the Current Population Survey adjusted to resident population control totals for the United States (76) and, as such, are subject to sampling variation (see “Random variation”). The control totals used are 2000-based population estimates for the United States for July 1, 2001 (57).

Population estimates by educational attainment, shown in table V, are also based on the Current Population Survey (76) adjusted to resident population control totals, and are also subject to sampling variation (see “Random variation”). The control totals used

are 2000-based population estimates for 47 States and the District of Columbia for July 1, 2001 (57).

Population estimates for each State, shown in table VI, were estimated from State-level postcensal population estimates based on the 2000 census, estimated as of July 1, 2001 (77). State population estimates, produced in 2002 (2002 “vintage” series), incorporate information not included in the national population estimates, produced in 2001 (2001 “vintage” series); thereby, State population estimates are not consistent with national population estimates used in this report. Population estimates for Puerto Rico, Virgin Islands, Guam, American Samoa, and Northern Marianas, also shown in table VI, are based on the 2000 census, estimated as of July 1, 2001 and produced in 2002 (2002 “vintage” series) (78). Population estimates for each State and territory are based on demographic analysis and, therefore, are not subject to sampling variation.

Computing rates

Except for infant and maternal mortality rates, rates are on an annual basis per 100,000 estimated population residing in the specified area. Infant and maternal mortality rates are per 1,000 or per 100,000 live births. Comparisons made in the text among rates, unless otherwise specified, are statistically significant at the 0.05 level of significance. Lack of comment in the text about any two rates does not mean that the difference was tested and found not to be significant at this level.

Age-adjusted rates (R') are used to compare relative mortality risks among

groups and over time. However, they should be viewed as relative indexes rather than as actual measures of mortality risk. They were computed by the direct method, that is, by applying age-specific death rates (R_i) to the U.S. standard population (w_i) (table VII).

$$R' = \sum_i w_i R_i$$

Beginning with the 1999 data year, a new population standard was adopted by NCHS for use in age-adjusting death rates. Based on the projected year 2000 population of the United States, the new standard replaces the 1940 standard population that had been used for over 50 years. The new population standard affects levels of mortality and to some extent trends and group comparisons. Of particular note are the effects on race comparison of mortality. For detailed discussion see *Age Standardization of Death Rates: Implementation of the Year 2000 Standard* (79).

All age-adjusted rates shown in this report are based on the year 2000 standard population. The year 2000 standard population and corresponding weights used for computing age-adjusted rates and standard errors, excluding those by marital status, education, injury at work, and the U.S. territories, are shown in table VII.

Table VII. United States standard population: Numbers and proportions (weights)

Age	Number	Weights (w_i)
All ages.....	1,000,000	1.000000
Under 1 year.....	13,818	0.013818
1-4 years.....	55,317	0.055317
5-14 years.....	145,565	0.145565
15-24 years.....	138,646	0.138646
25-34 years.....	135,573	0.135573
35-44 years.....	162,613	0.162613

45-54 years.....	134,834	0.134834
55-64 years.....	87,247	0.087247
65-74 years.....	66,037	0.066037
75-84 years.....	44,842	0.044842
85 years and over.....	15,508	0.015508

Age-adjusted rates by marital status were computed by applying the age-specific death rates to the U.S. standard population for ages 25 years and over. Although age-specific death rates by marital status are shown for the age group 15-24 years, they are not included in the calculation of age-adjusted rates because of their high variability, particularly for the widowed population. Also, the age groups 75-84 and 85 years and over are combined because of high variability in death rates in the 85 years and over age group, particularly for the never married population. The year 2000 standard population and corresponding weights used for computing age-adjusted rates and standard errors by marital status are shown in table VIII.

Table VIII. United States standard population for ages 25 years and over: Numbers and proportions (weights)

Age	Number	Weights (w_i)
25 years and over.....	646,654	1.000000
25-34 years.....	135,573	0.209653
35-44 years.....	162,613	0.251468
45-54 years.....	134,834	0.208510
55-64 years.....	87,247	0.134921
65-74 years.....	66,037	0.102121
75 years and over.....	60,350	0.093327

Age-adjusted rates by educational attainment were computed by applying the age-specific death rates to the U.S. standard population for ages 25-64 years. Data for age groups 65 years and over are not shown because reporting quality is poorer for older than for younger ages (52). The year 2000 standard population and corresponding weights used for computing age-adjusted rates and standard errors by education are shown in table IX.

Table IX. United States standard population for ages 25-64 years: Numbers and proportions (weights)

Age	Number	Weights (w_i)
25-64 years.....	520,267	1.000000
25-34 years.....	135,573	0.260584
35-44 years.....	162,613	0.312557
45-54 years.....	134,834	0.259163
55-64 years.....	87,247	0.167697

Age-adjusted rates for injury at work were computed by applying the age-specific death rates to the U.S. standard population for ages 15 years and over. The year 2000 standard population and corresponding weights used for computing age-adjusted rates and standard errors for injury at work are shown in table X.

Table X. United States standard population for ages 15 years and over: Numbers and proportions (weights)

Age	Number	Weights (w_i)

15 years and over.....	785,300	1.000000
15-24 years.....	138,646	0.176552
25-34 years.....	135,573	0.172638
35-44 years.....	162,613	0.207071
45-54 years.....	134,834	0.171697
55-64 years.....	87,247	0.111100
65 years and over.....	126,387	0.160941

Age-adjusted rates for Puerto Rico, Virgin Islands, Guam, American Samoa, and Northern Marianas were computed by applying the age-specific death rates to the U.S. standard population. Age groups for 75 years and over were combined because population counts were unavailable by age group for ages over 75 years. The year 2000 standard population and corresponding weights used for computing age-adjusted rates and standard errors for the territories are shown in table XI.

Table XI. United States standard population: Numbers and proportions (weights)

Age	Number	Weights (w_i)
All ages.....	1,000,000	1.000000
Under 1 year.....	13,818	0.013818
1-4 years.....	55,317	0.055317
5-14 years.....	145,565	0.145565
15-24 years.....	138,646	0.138646
25-34 years.....	135,573	0.135573
35-44 years.....	162,613	0.162613
45-54 years.....	134,834	0.134834
55-64 years.....	87,247	0.087247
65-74 years.....	66,037	0.066037
75 years and over.....	60,350	0.060350

Using the same standard population, death rates for the total population and for each race-sex group were adjusted separately. The age-adjusted rates were based on

10-year age groups. It is important not to compare age-adjusted death rates with crude rates.

Death rates for the Hispanic population are based only on events to persons reported as Hispanic. Rates for non-Hispanic white persons are based on the sum of all events to white decedents reported as non-Hispanic and white decedents with origin not stated. Hispanic origin is not imputed if it is not reported.

Random variation

The mortality data presented in this report, with the exception of data for 1972, are not subject to sampling error. In 1972 mortality data were based on a 50-percent sample of deaths because of resource constraints. Mortality data, even based on complete counts, may be affected by random variation. That is, the number of deaths that actually occurred may be considered as one of a large series of possible results that could have arisen under the same circumstances (80,81). When the number of deaths is small (perhaps less than 100), random variation tends to be relatively large. Therefore, considerable caution must be observed in interpreting statistics based on small numbers of deaths.

Measuring random variability—To quantify the random variation associated with mortality statistics, one must make an assumption regarding the appropriate underlying distribution. Deaths, as infrequent events, can be viewed as deriving from a Poisson probability distribution. The Poisson distribution is simple conceptually and computationally, and provides reasonable, conservative variance estimates for mortality statistics when the probability of dying is relatively low (81). Using the properties of the Poisson distribution, the standard error (SE) associated with the number of deaths (*D*) is

1. $$SE(D) = \sqrt{\text{var}(D)} = \sqrt{D}$$

where var(*D*) denotes the variance of *D*.

The standard error associated with crude and age-specific death rates (*R*) assumes that the population denominator (*P*) is a constant and is

2. $$SE(R) = \sqrt{\text{var}\left(\frac{D}{P}\right)} = \sqrt{\frac{1}{P^2}\text{var}(D)} = \sqrt{\frac{D}{P^2}} = \frac{R}{\sqrt{D}}$$

The coefficient of variation or relative standard error (RSE) is a useful measure of relative variation. The RSE is calculated by dividing the statistic (e.g., number of deaths, death rate) into its standard error and multiplying by 100. For the number of deaths

$$RSE(D) = 100\frac{SE(D)}{D} = 100\frac{\sqrt{D}}{D} = 100\sqrt{\frac{1}{D}}$$

For crude and age-specific death rates

$$RSE(R) = 100\frac{SE(R)}{R} = 100\frac{R/\sqrt{D}}{R} = 100\sqrt{\frac{1}{D}}$$

Thus,

3. $$RSE(D) = RSE(R) = 100\sqrt{\frac{1}{D}}$$

The standard error of the age-adjusted death rate (R') is

4. $$SE(R') = \sqrt{\sum_i w_i^2 \ \mathrm{var}(R_i)} = \sqrt{\sum_i \left\{ w_i^2 \left(\frac{R_i^2}{D_i} \right) \right\}}$$

where

R_i = age-specific rate for the *i*th age group

w_i = age-specific standard weight for the *i*th age group from the U.S. standard population such that $\sum w_i$ =1.0 (see table VII and age-adjusted death rate under "Definition of terms")

D_i = number of deaths for the *i*th age group

The RSE for the age-adjusted rate, $RSE(R')$, can easily be calculated by dividing $SE(R')$ from formula 4 by the age-adjusted death rate, R', and multiplying by 100.

$$RSE(R') = 100\frac{SE(R')}{R'}$$

For tables showing infant and maternal mortality rates based on live births (*B*) in the denominator, calculation of the standard error assumes random variability in both the numerator and denominator. The standard error for the infant mortality rate (*IMR*) is

5. $$SE(IMR) = \sqrt{\frac{\mathrm{var}(D) + IMR \cdot \mathrm{var}(B)}{E(B)^2}} = \sqrt{\frac{D}{B^2} + \frac{D^2}{B^3}}$$

where the number of births, B, is also assumed to be distributed according to a Poisson distribution and *E(B)* is the expectation of *B*.

The RSE for the IMR is

6. $$RSE(IMR) = 100\frac{SE(IMR)}{IMR} = 100\sqrt{\frac{1}{D} + \frac{1}{B}}$$

For maternal mortality rates, formulas 5 and 6 may be used substituting the maternal mortality rate for the IMR.

Formulas 1-6 may be used for all tables presented in this report except for death rates and age-adjusted death rates shown in tables 5, 25, 26, and 27 which are calculated using population figures that are subject to sampling error (see the following subsection).

Tables 5, 25, 26, and 27—Death rates for Mexicans, Puerto Ricans, Cubans, and Other Hispanics in table 5, rates by marital status in tables 25 and 26, and rates by educational attainment in table 27 are based on population estimates derived from the U.S. Bureau of the Census' Current Population Survey (CPS) for 2001 and adjusted to resident population control totals. As a result, the rates are subject to sampling variability in the denominator as well as random variability in the numerator.

For crude and age-specific death rates (R) the standard error is calculated as

7. $$SE(R) = R\sqrt{\frac{1}{D} + 0.67\left(a + \frac{b}{P}\right)}$$

For age-adjusted death rates (R')

8. $$SE(R') = \sqrt{\sum_i \left\{ w_i^2 R_i^2 \left[\frac{1}{D_i} + 0.67\left(a + \frac{b}{P_i} \right) \right] \right\}}$$

where *a* and *b* in formulas 7 and 8 represent parameters presented in table XII, which are derived from the CPS data for 2001 and vary depending on the subgroup of interest (82).

Suppression of unreliable rates—Beginning with 1989 data, an asterisk is shown in place of a crude or age-specific death rate based on fewer than 20 deaths, the equivalent of an RSE of 23 percent or more. The limit of 20 deaths is a convenient, if somewhat arbitrary, benchmark, below which rates are considered to be too statistically unreliable for presentation. For infant and maternal mortality rates, the same criterion (less than 20 deaths) is used to determine whether an asterisk is presented in place of the rate. For age-adjusted death rates the suppression criterion is based on the sum of the age-specific deaths; i.e., if the sum of the age-specific deaths is less than 20, an asterisk is presented in place of the rate. These procedures are used throughout this report except for death rates shown in tables 5, 25, 26, and 27.

For death rates shown in tables 5, 25, 26, and 27, sampling variability in the population denominator has a substantial impact on the overall variability in the rate. Therefore, the number of deaths in the numerator is not used as the sole suppression factor. RSEs for rates shown in tables 5, 25, 26, and 27 are derived from formulas 7 and 8 by dividing the results of formulas 7 and 8, by the crude/age-specific rate and age-adjusted rate, respectively, and multiplying by 100. Rates are replaced by asterisks if the calculated RSE is 23 percent or more. In some cases, for smaller population

subgroups, the estimated sample population from the CPS may be zero, even though deaths are presented for these same subgroups. In these cases, the death rate is incalculable and is automatically replaced with an asterisk.

Confidence intervals and statistical tests based on 100 deaths or more—When the number of deaths is large, a normal approximation may be used in the calculation of confidence intervals and statistical tests. How large is to some extent a subjective judgment. In general, for crude and age-specific death rates and for infant and maternal mortality rates, the normal approximation performs quite well when the number of deaths is 100 or greater,. For age-adjusted rates, the criterion for use of the normal approximation is somewhat more complicated (6,79,83). Formula 9 is used to calculate 95-percent confidence limits for the death rate when the normal approximation is appropriate.

9. $$L(R) = R - 1.96(SE(R)) \text{ and } U(R) = R + 1.96(SE(R))$$

where *L(R)* and *U(R)* are the lower and upper limits of the confidence interval, respectively. The resulting 95-percent confidence interval can be interpreted to mean that the chances are 95 in 100 that the "true" death rate falls between *L(R)* and *U(R)*. For example, suppose that the crude death rate for Malignant neoplasms is 194.4 per 100,000 population based on 553,768 deaths. Lower and upper 95-percent confidence limits using formula 9 are calculated as

$$L(194.4) = 194.4 - 1.96(.26) = 193.9 \text{ and } U(194.4) = 194.4 + 1.96(.26) = 194.9$$

Thus, the chances are 95 in 100 that the true death rate for Malignant neoplasms is between 193.9 and 194.9. Formula 9 can also be used to calculate 95-percent confidence intervals for the number of deaths, age-adjusted death rates, infant mortality rates, and other mortality statistics when the normal approximation is appropriate by replacing *R* with *D*, R', *IMR*, etc.

When testing the difference between two rates, R_1 and R_2 (each based on 100 or more deaths), the normal approximation may be used to calculate a test statistic, z, such that

10. $$z = \frac{R_1 - R_2}{\sqrt{SE(R_1)^2 + SE(R_2)^2}}$$

If $|z| \geq 1.96$ then the difference between the rates is statistically significant at the 0.05-level. If $|z| < 1.96$ then the difference is not statistically significant. Formula 10 can also be used to perform tests for other mortality statistics when the normal approximation is appropriate (when both statistics being compared meet the normal criteria) by replacing R_1 and R_2 with D_1 and D_2, R_1' and R_2', etc. Suppose that the female age-adjusted death rate for lung cancer is 41.3 per 100,000 U.S. standard population in 2000 (R_1) and 41.0 per 100,000 U.S. standard population in 2001 (R_2). The standard error for each of these figures, SE(R_1) and SE(R_2), is calculated using formula 4. Using formula 10, one can test if the decrease in the age-adjusted rate is statistically significant.

$$z = \frac{41.3 - 41.0}{\sqrt{(0.163)^2 + (0.161)^2}} = 1.31$$

Because z=1.31<1.96, the decrease from 2000 to 2001 in the female age-adjusted

death rate for lung cancer is not statistically significant.

Confidence intervals and statistical tests based on less than 100 deaths—When the number of deaths is not large (less than 100), the Poisson distribution cannot be approximated by the normal distribution. The normal distribution is a symmetric . to + distribution with a range from - As a result, confidence intervals based on the normal distribution also have this range. The number of deaths or the death rate, however, cannot be less than zero. When the number of deaths is very small, approximating confidence intervals for deaths and death rates using the normal distribution will sometimes produce lower confidence limits that are negative. The Poisson distribution, in contrast, is an asymmetric distribution with zero as a lower bound. Thus, confidence limits based on this distribution will never be less than zero. A simple method based on the more general family of gamma distributions, of which the Poisson is a member, can be used to approximate confidence intervals for deaths and death rates when the number of deaths is small (79,83). For more information regarding how the gamma method is derived, see *Derivation of the* g*amma method* at the end of this section.

Calculations using the gamma method can be made using commonly available spreadsheet programs or statistical software (e.g., Excel, SAS) that include an inverse gamma function. In Excel, the function “gammainv(probability, alpha, beta)” returns values associated with the inverse gamma function for a given probability between 0 and 1. For 95 percent confidence limits, the probability associated with the lower limit is .05/2=.025 and the probability associated with the upper limit is 1-(.05/2)=.975. Alpha and beta are parameters associated with the gamma distribution. For the number of deaths and crude and age-specific death rates, alpha=*D* (the number of deaths) and

beta=1. In Excel, the following formulas can be used to calculate lower and upper 95 percent confidence limits for the number of deaths and crude and age-specific death rates

L(D)=GAMMAINV(.025, *D*, 1) and *U(D)*= GAMMAINV(.975, *D*+1, 1)

Confidence limits for the death rate are then calculated by dividing *L(D)* and *U(D)* by the population (*P*) at risk of dying (see formula 17).

Alternatively, 95 percent confidence limits can be estimated using the lower and upper confidence limit factors shown in table XIII. For the number of deaths, *D*, and the death rate, *R*,

11. $L(D) = L \times D$ and $U(D) = U \times D$

12. $L(R) = L \times R$ and $U(R) = U \times R$

where *L* and *U* in formulas 11 and 12 are the lower and upper confidence limit factors which correspond to the appropriate number of deaths, *D*, in table XIII. For example, suppose that the death rate for American Indian females aged 10-14 is 24.0 per 100,000 and based on 30 deaths. Applying formula 12, values for L and U from table XIII for 30 deaths are multiplied by the death rate, 24.0, such that

$L(R) = L(24.0) = 0.674696 \times 24.0 = 16.2$ and $U(R) = U(24.0) = 1.427562 \times 24.0 = 34.3$

These confidence limits indicate that the chances are 95 out of 100 that the actual death rate for American Indian females aged 10-14 is between 16.2 and 34.3 per 100,000.

Although the calculations are similar, confidence intervals based on small numbers for age-adjusted death rates, infant and maternal mortality rates, and rates that are subject to sampling variability in the denominator are somewhat more complicated (6,79). Refer to the most recent version of the Mortality Technical Appendix for more details (http://www.cdc.gov/nchs/datawh/statab/pubd/ta.htm).

When comparing the difference between two rates, R_1 and R_2 where one or both of the rates are based on fewer than 100 deaths, a comparison of 95 percent confidence intervals may be used as a statistical test. If the 95 percent confidence intervals do not overlap, then the difference can be said to be statistically significant at the 0.05-level. A simple rule of thumb is: if $R_1 > R_2$ then test if $L(R_1) > U(R_2)$ or if $R_2 > R_1$ then test if $L(R_2) > U(R_1)$. Positive tests denote statistical significance at the 0.05-level. For example, suppose that American Indian females aged 10-14 have a death rate (R_1) of 24.0 based on 30 deaths and Asian and Pacific Islander (API) females aged 10-14 have a death rate (R_2) of 12.4 per 100,000 based on 55 deaths. The 95 percent confidence limits for R_1 and R_2 calculated using formula 12 would be

$L(R_1) = L(24.0) = 0.674696 \times 24.0 = 16.2$ and $U(R_1) = U(24.0) = 1.427562 \times 24.0 = 34.3$

$L(R_2) = L(12.4) = 0.753337 \times 12.4 = 9.3$ and $U(R_2) = U(12.4) = 1.301637 \times 12.4 = 16.1$

Because $R_1 > R_2$ and $L(R_1) > U(R_2)$, it can be concluded that the difference between the death rates for American Indian females 10-14 and API females of the same age is statistically significant at the .05-level. That is, taking into account random variability, API females 10-14 have a death rate that is significantly lower than that for American Indian females of the same age.

This test may also be used to perform tests for other statistics when the normal approximation is not appropriate for one or both of the statistics being compared by replacing R_1 and R_2 with D_1 and D_2, R_1' and R_2', etc.

Users of the method of comparing confidence intervals should be aware that this method is a conservative test for statistical significance. That is, the difference between two rates may, in fact, be statistically significant even though confidence intervals for the

two rates overlap (84). Thus, caution should be observed when interpreting a non-significant difference between two rates, especially when the lower and upper limits being compared overlap only slightly.

Derivation of the gamma method—For a random variable X that follows a gamma distribution $\Gamma(y,z)$, where *y* and *z* are the parameters that determine the shape of the distribution, $E(X)=yz$ and $Var(X)=yz^2$ (85). For the number of deaths, *D*, *E(D)=D* and *Var(D)=D* . It follows that *y=D* and *z*=1 and thus,

13. $$D \sim \Gamma(D,1)$$

From equation 13, it is clear that the shape of the distribution of deaths depends only on the number of deaths.

For the death rate, *R*, *E(R)=R* and $Var(R)=\frac{D}{P^2}$. It follows, in this case, that *y=D* and $z=P^{-1}$ and thus,

14. $$R \sim \Gamma(D,P^{-1}) .$$

A useful property of the gamma distribution is that for $X \sim \Gamma(y,z)$, one can divide *X* by *z* such that $\frac{X}{z} \sim \Gamma(y,1)$. This converts the gamma distribution into a simplified, standard form dependent only on parameter *y*. Expressing equation 14 in its simplified form gives

15. $$\frac{R}{P^{-1}} = D \sim \Gamma(D,1)$$

From equation 15, it is clear that the shape of the distribution of the death rate is also

dependent solely on the number of deaths.

Using the results of equations 13 and 15, one can use the inverse gamma distribution to calculate upper and lower confidence limits. Lower and upper 100(1-*α*) percent confidence limits for the number of deaths, *L(D)* and *U(D)*, are estimated as

16. $L(D) = \Gamma^{-1}{}_{(D,1)}(\alpha/2)$ and $U(D) = \Gamma^{-1}{}_{(D+1,1)}(1-\alpha/2)$

where Γ^{-1} represents the inverse of the gamma distribution and D+1 in the formula for *U(D)* reflects a continuity correction made necessary by the fact that *D* is a discrete random variable and the gamma distribution is a continuous distribution. For a 95 percent confidence interval, *α*=.05. For the death rate, it can be shown that

17. $L(R) = \frac{L(D)}{P}$ and $U(R) = \frac{U(D)}{P}$

For more detail regarding the derivation of the gamma method and its application to age-adjusted death rates and other mortality statistics, see references 6,79,83.

Availability of mortality data

Mortality data are available in publications, unpublished tables, and electronic products as described on the mortality web site at the following address: http://www.cdc.gov/nchs/about/major/dvs/mortdata.htm. More detailed analysis than provided in this report is possible by using the Mortality public-use data set issued each data year. Since 1991, the data set is available through NCHS in CD-ROM format. Data are also available in the *Vital Statistics of the United States*, Mortality, and *Vital and Health Statistics*, Series 20 reports, and the *National Vital Statistics Reports*

through NCHS.

Definitions of terms

Infant deaths —Deaths of infants aged under 1 year.

Neonatal deaths—Deaths of infants aged 0–27 days.

Postneonatal deaths—Deaths of infants aged 28 days–1 year.

Crude death rate—Total deaths per 100,000 population for a specified period. The crude death rate represents the average chance of dying during a specified period for persons in the entire population.

Age-specific death rate—Deaths per 100,000 population in a specified age group, such as 1–4 years or 5–9 years for a specified period.

Age-adjusted death rate—The death rate used to make comparisons of relative mortality risks across groups and over time. This rate should be viewed as a construct or an index rather than as direct or actual measure of mortality risk. Statistically, it is a weighted average of the age-specific death rates, where the weights represent the fixed population proportions by age (86).

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