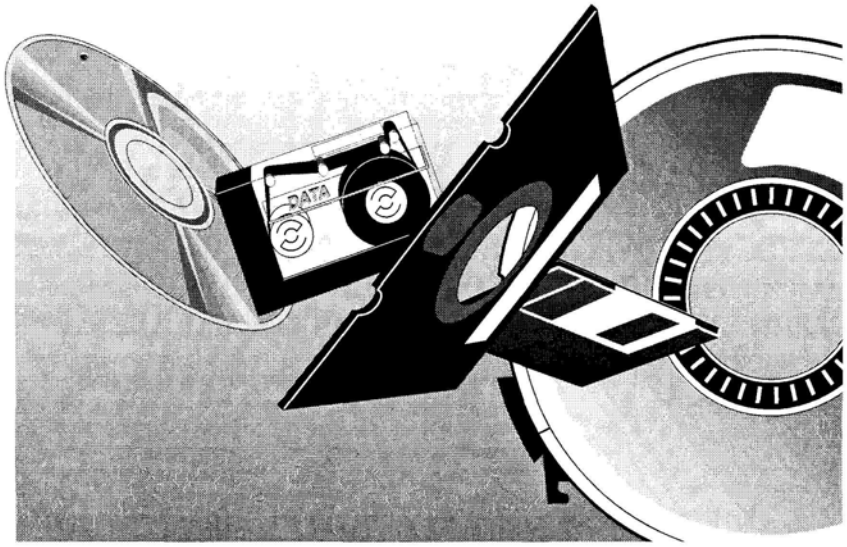
Public Use Data File Documentation

2004 Period Linked Birth/Infant Death Data Set

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



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Contents

Introduction

The linked birth/infant death data set (linked file) is released in two formats - period data and birth cohort data. This documentation is for the 2004 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 2004 period linked file consists of all infant deaths occurring in 2004 linked to their corresponding birth certificates, whether the birth occurred in 2003 or 2004. The denominator file for this data set is the 2004 natality file, that is, all births occurring in 2004. In addition, NCHS accepted a small number of late-filed birth certificates needed to link to infant deaths. This reduced the number of unlinked records and slightly increased the number of births in the denominator file.

Birth cohort data - The numerator for the 2004 birth cohort linked file consists of deaths to infants born in 2004 whether the death occurred in 2004 or 2005. The denominator file is the 2004 natality file, that is, all births occurring in 2004.

The 2004 period linked birth/infant death data set includes several data files. The first file includes all US infant deaths which occurred in the 2004 data year linked to their corresponding birth certificates, whether the birth occurred in 2003 or in 2004 - 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 2004 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.

1989 and 2003 Revisions of the U.S. Standard Certificate of Live Birth and Certificate of Death

This data file includes data based on both the 1989 Revision of the U.S. Standard Certificate of Live Birth (unrevised) and the 2003 revision of the U.S. Standard Certificate of Live Birth (revised). The 2003 revision is described in detail elsewhere. (See the 2003 Revision website at: http://www.cdc.gov/nchs/vital_certs_rev.htm). Pennsylvania and Washington implemented the revised certificate in 2003; five additional states (Idaho, Kentucky, New York (excluding New York City), South Carolina, and Tennessee) implemented as of January 1, 2004. Two additional states, Florida and New Hampshire, implemented the revised birth certificate in 2004, but after January 1. Where comparable, revised data are combined with data from the remaining 41 states and the District of Columbia. (Revised data are denoted by "A;" unrevised data are denoted by "S" in the "Rev" column of the documentation.) Where data for the 1989 and 2003 certificate revisions are not comparable (e.g., educational attainment of the mother), unrevised and revised data are given in separate fields in the data file.

This file includes data for ten states (California, Idaho, Michigan, Montana, New Jersey, New York, Oklahoma, South Dakota, Washington, and Wyoming), which implemented the 2003 revision of the U.S. Standard Certificate of Death as of January 1, 2004 or in 2003. Two additional

states, New Hampshire and Connecticut, implemented the revised death certificate in 2004, but after January 1. Data from all other areas are based on the 1989 revision. Most of the variables from the death certificate in this file are comparable despite changes to item wording and format in the 2003 revision. The 2003 revision is described in detail elsewhere. (See the 2003 Revision website at: http://www.cdc.gov/nchs/vital_certs_rev.htm).

Incomplete National Reporting - Using Reporting Flags

As a result of the delayed, phased transition to the 2003 U.S. Standard Certificate of Live Birth, the 2004 linked file includes data for reporting areas that use the 2003 revision of the U.S. Standard Certificate of Live Birth (revised) and data for reporting areas that use the 1989 Standard Certificate of Live Birth (unrevised). Although many data items are comparable across certificate revisions and are available for the entire United States, many items have more limited reporting areas. In addition, the 2004 linked file contains information on infants born in both 2003 and 2004 (see description of the period linked file above). As reporting areas changed between 2003 and 2004, this complicates the analysis. Also, birth data are collected by place of occurrence but are typically tabulated by mother's place of residence. Reporting flags were developed to help the user more readily identify reporting areas for items with less than national reporting for the entirety of 2003 and 2004. Reporting flags are included in the file to assist in accurately excluding records from non-reporting areas when tabulating data by mother's place of residence. Reporting flags are available for most items on the file.

Reporting areas for the 2004 linked file are different from those for the 2004 birth file, as items had to be reported by a state in both 2003 and 2004 to be able to provide complete data. Thus, data for non-comparable items from states that revised in 2004 are excluded from all tabulations. Positions for reporting flags are noted along with each data item in the file layout. Reporting flags must be invoked to generate accurate numbers by residence for items which are not reported by all states. Where applicable, reporting flags are shown in the column "Reporting Flag Position" in the file documentation. Reporting flag codes are "0" (item reported in neither the current or previous year), 1 (item reported in both current and previous year), 2 (item reported in the previous but not in the current year), and 3 (item reported in the current but not in the previous year). When using these data, select reporting flag=1 to get valid and complete data for an item (see SAS code examples below).

Translating "blanks" - In the 2004 linked file, for data items which are not common or comparable across certificate revisions, events to residents of a revised state occurring in an unrevised state, and events to residents in an unrevised state occurring in a revised state, are represented by "blanks." Blanks should be treated as "unknowns" for tabulations.

The correct use of reporting flags and translation of blanks will result in an accurate tally of births and infant deaths for items with incomplete national reporting. For further information please contact us at births@cdc.gov or (301)458-4111.

Example of SAS code using reporting flags (and translating blanks)

An example of SAS code that may be used to incorporate the correct use of reporting flags and the translation of blanks is shown below. This example is for the revised prenatal care item. Prenatal care data based on the revised certificate are not considered comparable to data based on the unrevised certificate, and are shown separately. Accordingly, use of the reporting flag for this item will produce 2004 data for the month prenatal care began for the two revised states which had implemented the revised certificate by January 1st 2003. Data for states which implemented the revised certificates in 2004 are excluded, as part of their linked file births (those born in 2003) were reported on the unrevised certificate.

Sample SAS program

```
01   DATA work;
02        INFILE 'c:link04us.dat' LRECL=1500;
03        INPUT
04             restatus 138
05             precare 245-246
06             f_mpcb 668;
07
08        /*Exclude foreign residents*/
09        IF restatus NE 4;
10        /*Select reporting area*/
11        IF f_mpcb=1;
12        /*Convert blanks to unknown*/
13        IF precare=. THEN precare=99;
14
15   PROC FREQ;
16        TABLE precare;
17   RUN;
```

In this example, "restatus" is used to exclude births to foreign residents (this is standard practice for all NCHS tabulations). Also in this example, blanks are represented by numeric values SAS code = (.). However, for some items in the file, e.g., obstetric procedures, blanks are represented by character values for which the SAS code is empty quotes (' ').

Alternatives to the use of reporting flags - The use of reporting flags provides a relatively quick, accurate way to select records for all areas reporting comparable data for a given item in a particular year. However, should a limited reporting area be needed, specific state(s) of residence may also be selected, or unselected. This approach may be useful, for example, in trend analysis where reporting areas have changed over time. See Table A in the "Natality Technical Appendix" for state-specific information on reporting areas. This approach may also be used to limit the reporting area to only states reporting multiple or single race data (see multiple race section below).

Example of SAS code using state of residence (and translating blanks)

```
01   DATA work;
02        INFILE 'c:link04us.dat' LRECL=1500;
03        INPUT
04             restatus 138
05             xmrstate $ 107-108
```

```
06              precare 245-246;
07
08         /*Exclude foreign residents*/
09         IF restatus NE 4;
10         /*Select reporting area*/
11         IF xmrstate in ('ID','KY','NY','PA','SC','TN','WA');
12         /*Convert blanks to unknown*/
13         IF precare=. THEN precare=99;
14
15    PROC FREQ;
16         TABLE precare;
17    RUN;
```

Single, Multiple, and Bridged Race

In 1997, the Office of Management and Budget (OMB) issued revised standards requiring Federal collection programs to allow respondents to select *one or more race categories.* Beginning with 2003 data, six areas reported multiple race data for all or part of the year: California, Hawaii, Pennsylvania, Utah, and Washington (full year); and Ohio (partial year). Beginning in 2004, six additional areas reported multiple race data for the full year: Idaho, Kentucky, New York State (excluding New York City), South Carolina, Tennessee, and Minnesota. In addition, Florida, and New Hampshire reported multiple race data for part of the year, and Michigan for births at selected facilities only. For the 2004 period linked file, complete data for both 2003 and 2004 births is available from 5 states: California, Hawaii, Pennsylvania, Utah, and Washington.

In 2004, multiple race data was reported on the death certificates of 15 states: California, Hawaii, Idaho, Maine, Michigan, Minnesota, Montana, New Hampshire, New Jersey, New York, Oklahoma, South Dakota, Washington, Wisconsin, and Wyoming. In order to provide uniformity and comparability of the data before all or most of the data are available in the new multiple-race format, it was necessary to ‘‘bridge’’ the responses of those for whom more than one race was reported (multiple race) to one, single race. See the “Technical Notes” of “Births: Final Data for 2004” and “Deaths: Final Data for 2004” which are included on this CD ROM for more information.

Weighting

Beginning with the 1995 linked file, a weight was added to the linked numerator file to correct in part for biases in percent of records linked by major characteristics (see section below on Percent of records linked). 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 (<7 days, 7-27 days, 28 days-1 year). 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.

Birthweight

Beginning with the 1995 linked file, an imputation for not-stated birthweight was 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 4.10 to 0.44 in the numerator file, and from 0.09 to 0.01 in the denominator file, thus greatly 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. Differences in numbers of infant deaths between the two data sources are primarily due to geographic coverage differences. 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. Also, 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. 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 Appendix and Final Reports included in this document.

Characteristics of Unlinked File

For the 2004 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, locations reserved for information from the matching birth certificate are blank since no matching birth certificate could be found for these records. The sex field 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 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 Race and Hispanic origin in the Mortality Technical Notes 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.

Percent of Records Linked

The 2004 linked file for the 50 States and D.C. includes 27,612 linked infant death records and 308 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 27,920. While the overall percent linked for infant deaths in the 2004 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 below shows the percent of infant deaths linked by state of occurrence of death. While many states link all of their infant deaths, linkage rates for some states are below the national average. Note in particular the percent linked for California (96.9), Massachusetts (97.0), New Jersey (97.3), and Texas (96.7). 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.

Table 1. Percent of infant deaths linked by state of occurrence of death: United States, 2004 linked file

United States	98.9	Nebraska	99.5
Alabama	100.0	Nevada	99.5
Alaska	100.0	New Hampshire	100.0
Arizona	98.7	New Jersey	97.3
Arkansas	99.7	New Mexico	100.0
California	96.9	New York State	97.8
Colorado	100.0	New York City	99.6
Connecticut	100.0	North Carolina	100.0
Delaware	100.0	North Dakota	100.0
District of Columbia	100.0	Ohio	98.5
Florida	99.8	Oklahoma	99.0
Georgia	100.0	Oregon	99.6
Hawaii	100.0	Pennsylvania	99.6
Idaho	99.2	Rhode Island	100.0
Illinois	97.6	South Carolina	100.0
Indiana	99.4	South Dakota	100.0
Iowa	100.0	Tennessee	99.9
Kansas	100.0	Texas	96.7
Kentucky	99.4	Utah	100.0
Louisiana	98.6	Vermont	100.0
Maine	100.0	Virginia	100.0
Maryland	100.0	Washington	99.8
Massachusetts	97.0	West Virginia	100.0
Michigan	100.0	Wisconsin	100.0
Minnesota	100.0	Wyoming	100.0
Mississippi	99.2	Puerto Rico	99.5
Missouri	99.9	Virgin Islands	100.0
Montana	100.0	Guam	100.0

In general, a slightly higher percentage of postneonatal (28 days to under 1 year) than neonatal (less than 28 days) deaths were linked (99.1 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.

Confidentiality

To minimize the risk of disclosure of individual or institutional information NCHS public-use data files do not contain the actual day of the birth or the dates of birth of the mother or father. Also, for the linked files, only counties and cities of a population size of 250,000 or more are separately identified.

Geographic classification

Geographic codes in this data set are based on the results of the 2000 census, and only identify areas with a population size of 250,000 or more. 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 138 of these files.

Metropolitan statistical areas - Metropolitan statistical areas in this file are based the 1994 Office of Management and Budget (OMB) definition effective July 1, 1994. This definition has been used to define metropolitan statistical areas for natality files since 1994. A listing of the Metropolitan Statistical Areas (MSA's), Primary Metropolitan Statistical Areas (PMSA's), and New England County Metropolitan Areas (NECMA's) is included in this documentation. The 18 Consolidated Metropolitan Statistical Areas (CMSA's) are also included. In June of 2003 the OMB substantially revised the methodology for classifying and coding metropolitan areas in the United States. NCHS plans to convert to the new classification scheme with the release of 2005 natality data.

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, P.O. Box 12214, 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, 2007. 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, 2007. 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, 2007. NCHS Instruction Manual, Part 2c. Hyattsville, Maryland: Public Health Service.

D. National Center for Health Statistics. Specifications for U.S. Standard Certificate of Birth – 2003 Revision. (replaces NCHS Instruction Manual, Part 3a). Available at: http://www.cdc.gov/nchs/about/major/dvs/im.htm.

E. National Center for Health Statistics. Specifications for U.S. Standard Certificate of Death – 2003 Revision. (replaces NCHS Instruction Manual, Part 4). Available at: http://www.cdc.gov/nchs/about/major/dvs/im.htm.

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

G. National Center for Health Statistics. Vital statistics, Computer Edits for Mortality Data, Effective 2007. NCHS Instruction Manual Part 11. Hyattsville, Maryland: Public Health Service.

Also see: http://www.cdc.gov/nchs/vital_certs_rev.htm for the most recent information about revised certificates.

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.

In addition to changes due to the implementation of a new ICD revision, rules for coding a cause of death may occasionally require modification at other times, when evidence suggests that such modifications will improve the quality of cause-of-death data. These changes may affect comparability of data between years for select causes of death. For example, a change was made in a coding rule in 2004 to not code conditions classified to P703-P720, P722-P749, Transitory endocrine and metabolic disorders specified to the fetus and newborn, as the underlying cause of death (there were 20 deaths coded to these categories in the 2003 mortality data). Thus, if this was the only cause listed, the record would be coded to P969, Condition originating in the perinatal period, unspecified; if another cause was also listed, the other cause was preferred.

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

This translation is accomplished by a computer system called TRANSAX (Translation of Axis). 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.

2004 Period Linked Birth/Infant Death Data Set

I. Numerator File:

United States

A. Record count:	27,612
B. Record length:	1,259
C. Data counts:	a. By occurrence: 27,612
	b. By residence: 27,553
	c. To foreign residents: 59

Territories

A. Record count:	459
B. Record length:	1,259

II. Denominator File:

United States

A. Record count:	4,118,951
B. Record length:	868
C. Data counts:	a. By occurrence: 4,118,951
	b. By residence: 4,112,055
	c. To foreign residents: 6,896

Territories

A. Record count:	56,336
B. Record length:	868

III. Unlinked File:

United States

A. Record count:	308
B. Record length:	1,259
C. Data counts:	a. By occurrence: 308
	b. By residence: 308
	c. To foreign residents: 0

Territories

A. Record count:	2
B. Record length:	1,259

Linked 2004 Data Elements and Locations

Data Items	Denominator File	Numerator File: Birth	Numerator File: Death	Unlinked File
1. General				
a. Year of birth	15-18	15-18	--	15-18 *
b. Year of death	--	--	1188-91	1188-91
c. Record type	137	137	--	--
d. Resident status	138	138	1151	1151
e. Record weight	776-83	--	--	--
f. Flag indicating records included in both numerator and denominator files	751	--	--	--
2. Occurrence				
a. State	30-31	30-31	1152-53	1152-53
b. Expanded state	32-33	32-33	1157-58	1157-58
c. County	37-39	37-39	1154-55	1154-55
d. Population size	40	40	1159	1159
3. Residence				
a. State	109-10	109-10	1160-61	1160-61
b. Expanded state	107-8	107-8	1176-77	1176-77
c. County	114-16	114-16	1166-67	1166-67
d. Population size – County	132	132	1182	1182
e. Place(city)	120-24	120-24	1169-73	1169-73
f. Population size – City	133	133	1174	1174
g. Metropolitan/Nonmetropolitan county	135	135	1175	1175
h. CMSA	125-6	125-6	1184-85	1184-85
i. PMSA/MSA	127-30	127-30	1178-81	1178-81
j. Population of statistical area	131	131	--	--
4. Infant				
a. Age at death	--	--	872-77	872-77+
b. Race	--	--	--	139-44*
c. Sex	436	436	--	436*
d. Gestation	451-57	451-57	--	--
e. Birthweight	463-66	463-66	--	--
f. Plurality	423	423	--	--
g. Apgar score	415-17	415-17	--	--
h. Day of week of birth/death	29	29	1187	1187
i. Month of birth/death	19-20	19-20	1258-59	1258-59
5. Mother				
a. Age	89-93	89-93	--	--
b. Race	139-44	139-44	--	--
c. Education	155-8	155-8	--	--
d. Marital status	153	153	--	--
e. Place of birth	96-97,100	96-97,100	--	--
f. Hispanic origin	148-49	148-49	--	--
6. Father				
a. Age	184-87	184-87	--	--
b. Race	188-91, 199-200	188-91, 199-200	--	--
c. Hispanic origin	195-96	195-96	--	--
7. Pregnancy items				
a. Month prenatal care began	256-59	256-59	--	--
b. Number of prenatal visits	270-73	270-73	--	--
c. Total birth order	215-17	215-17	--	--
d. Live birth order	210-12	210-12	--	--
e. Born alive, now living	204-5	204-5	--	--
f. Born alive, now dead	206-7	206-7	--	--
g. Other terminations	208-9	208-9	--	--
h. Date of last live birth month	220-21	220-21	--	--

i.	Date of last live birth year	222-25	222-25	--	--
8.	**Medical and Health Data**				
a.	Method of delivery	395-401	395-401	--	--
b.	Medical risk factors	328-44	328-44	--	--
c.	Other risk factors				
	Tobacco	282-94	282-94	--	--
	Alcohol	295-98	295-98	--	--
	Weight gain during pregnancy	276-78	276-78	--	--
d.	Obstetric procedures	355-61	355-61	--	--
e.	Complications of labor and delivery	374-89	374-89	--	--
f.	Abnormal conditions of the newborn	483-91	483-91	--	--
g.	Congenital anomalies	504-25	504-25	--	--
h.	Underlying cause of death	--	--	884-87	884-87
i.	130 Infant cause recode	--	--	889-91	889-91
j.	Multiple conditions	--	--	903-1148	903-1148
9.	**Other items**				
a.	Residence Reporting Flags	569-773	569-773		
b.	Late record flag	9	9	--	--
c.	Place of birth	42,59	42,59	--	--
d.	Attendant at birth	408	408	--	--
e.	Place of death and decedent’s status	--	--	1186	1186
f.	Place of injury	--	--	882	882
g.	Manner of death	--	--	878	878
h.	Method of Disposition	--	--	879	879
i.	Autopsy	--	--	880	880

* For the unlinked file, these items are from the death certificate.

\+ For the unlinked file, date of birth as reported on the death certificate is used to generate age at death.

Position	Len	Field	Description	Reporting Flag Position	Vers*	Values	Definition
1-6	6	FILLER	**Filler**			Blank	
7	1	REVISION	**Revision**		U,R	A	Data based on the 2003 revision of the US Standard Birth Certificate (Revised)
						S	Data based on the 1989 revision of the US Standard Birth Certificate (Unrevised)
8	1	FILLER	**Filler**			Blank	
9	1	LATEREC	**Late Record Flag**		U,R	0	Not late record
							Late record
10-14	5	FILLER	**Filler**			Blank	
15-18	4	DOB_YY	**Birth Year**		U,R	2003 2004	Year of birth
19-20	2	DOB_MM	**Birth Month**		U,R	01	January
						02	February
						03	March
						04	April
						05	May
						06	June
						07	July
						08	August
						09	September
						10	October
						11	November
						12	December
21-28	8	FILLER	**Filler**		U,R	Blank	
29	1	DOB_WK	**Weekday**		U,R	1	Sunday
						2	Monday
							Tuesday
							Wednesday
							Thursday
							Friday
							Saturday
30-31	2	OSTATE	**Occurrence FIPS State**		U,R		

U,R Includes data based on both the 1989 Revision of the U.S. Certificate of Live Birth (unrevised), and the 2003 Revision of the U.S. Certificate of Live Birth (revised).
U Includes data based on the 1989 Revision of U.S. Certificate of Live Birth; excludes data based on the 2003 Revision.
R Includes data based on the 2003 Revision of U.S. Certificate of Live Birth; excludes data based on the 1989 Revision.

Position	Len	Field	Description	Reporting Flag Position	Vers*	Values	Definition
			United States			AK	Alaska
						AL	Alabama
						AR	Arkansas
						AZ	Arizona
						CA	California
						CO	Colorado
						CT	Connecticut
						DE	Delaware
						DC	District of Columbia
						FL	Florida
						GA	Georgia
						HI	Hawaii
						ID	Idaho
						IL	Illinois
						IN	Indiana
						IA	Iowa
						KS	Kansas
						KY	Kentucky
						LA	Louisiana
						MA	Massachusetts
						MD	Maryland
						ME	Maine
						MI	Michigan
						MN	Minnesota
						MO	Missouri
						MS	Mississippi
						MT	Montana
						NC	North Carolina
						ND	North Dakota
						NE	Nebraska
						NH	New Hampshire
						NJ	New Jersey
						NM	New Mexico
						NV	Nevada
						NY	New York
						OH	Ohio
						OK	Oklahoma
						OR	Oregon
						PA	Pennsylvania
						RI	Rhode Island
						SC	South Carolina

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Position	Len	Field	Description	Reporting Flag Position	Vers*	Values	Definition
						SD	South Dakota
						TN	Tennessee
						TX	Texas
						UT	Utah
						VA	Virginia
						VT	Vermont
						WA	Washington
						WI	Wisconsin
						WV	West Virginia
						WY	Wyoming
			Possessions			AS	American Samoa
						GU	Guam
						MP	Northern Marianas
						PR	Puerto Rico
						VI	Virgin Islands
32-33	2	XOSTATE	**Expanded Occurrence FIPS State**		U,R		
			United States			AK	Alaska
						AL	Alabama
						AR	Arkansas
						AZ	Arizona
						CA	California
						CO	Colorado
						CT	Connecticut
						DE	Delaware
						DC	District of Columbia
						FL	Florida
						GA	Georgia
						HI	Hawaii
						ID	Idaho
						IL	Illinois
						IN	Indiana
						IA	Iowa
						KS	Kansas
						KY	Kentucky
						LA	Louisiana
						MA	Massachusetts
						MD	Maryland
						ME	Maine
						MI	Michigan

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Position	Len	Field	Description	Reporting Flag Position	Vers*	Values	Definition
						MN	Minnesota
						MO	Missouri
						MS	Mississippi
						MT	Montana
						NC	North Carolina
						ND	North Dakota
						NE	Nebraska
						NH	New Hampshire
						NJ	New Jersey
						NM	New Mexico
						NV	Nevada
						NY	New York
						OH	Ohio
						OK	Oklahoma
						OR	Oregon
						PA	Pennsylvania
						RI	Rhode Island
						SC	South Carolina
						SD	South Dakota
						TN	Tennessee
						TX	Texas
						UT	Utah
						VA	Virginia
						VT	Vermont
						WA	Washington
						WI	Wisconsin
						WV	West Virginia
						WY	Wyoming
						YC	New York City
			Possessions			AS	American Samoa
						GU	Guam
						MP	Northern Marianas
						PR	Puerto Rico
						VI	Virgin Islands
34-36	3	FILLER	**Filler**			Blank	
37-39	3	OCNTYFIPS	**Occurrence FIPS County**		U,R	000-nnn	County of Occurrence
40	1	OCNTYPOP	**Occurrence County Pop**		U,R	0	County of 1,000,000 or more

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Position	Len	Field	Description	Reporting Flag Position	Vers*	Values	Definition
						1	County of 500,000 to 1,000,000
						2	County of 250,000 to 500,000
						9	County less than 250,000
41	1	FILLER	**Filler**			Blank	
42	1	UBFACIL	**Birth Place**		U,R	1	Hospital
						2	Freestanding Birthing Center
							Clinic / Doctor's Office
							Residence
							Other
						9	Unknown
43-58	16	FILLER	**Filler**			Blank	
59	1	BFACIL3	**Birth Place Recode**		U,R	1	In Hospital
							Not in Hospital
						3	Unknown or Not Stated
60-86	26	FILLER	**Filler**			Blank	
87	1	MAGE_IMPFLG	**Mother's Age Imputed**		U,R	Blank	Age not imputed
							Age imputed
88	1	MAGE_REPFLG	**Reported Age of Mother Flag**		U,R	Blank	Reported age not used
							Reported age used
89-90	2	MAGER	**Mother's Age Recode 41**		U,R	12	10 – 12 years
						13	13 years
						14	14 years
						15	15 years
						16	16 years
						17	17 years
						18	18 years
						19	19 years
						20	20 years
						21	21 years
						22	22 years
						23	23 years
						24	24 years
						25	25 years

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Position	Len	Field	Description	Reporting Flag Position	Vers*	Values	Definition
						26	26 years
						27	27 years
						28	28 years
						29	29 years
						30	30 years
						31	31 years
						32	32 years
						33	33 years
						34	34 years
						35	35 years
						36	36 years
						37	37 years
						38	38 years
						39	39 years
						40	40 years
						41	41 years
						42	42 years
						43	43 years
						44	44 years
						45	45 years
						46	46 years
						47	47 years
						48	48 years
						49	49 years
						50	50-54 years
91-92	2	MAGER14	**Mother's Age Recode 14**		U,R	01	Under 15 Years
						03	15 years
						04	16 years
						05	17 years
						06	18 years
						07	19 years
						08	20-24 years
						09	25-29 years
						10	30-34 years
						11	35-39 years
						12	40-44 years
						13	45-49 years
						14	50-54 years
93	1	MAGER9	**Mother's Age Recode 9**		U,R	1	Under 15 years

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Position	Len	Field	Description	Reporting Flag Position	Vers*	Values	Definition
						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
94-95	2	FILLER	**Filler**			Blank	
96-97	2	UMBSTATE	**Mother's Birth State** United States		U,R		
						AK	Alaska
						AL	Alabama
						AR	Arkansas
						AZ	Arizona
						CA	California
						CO	Colorado
						CT	Connecticut
						DE	Delaware
						DC	District of Columbia
						FL	Florida
						GA	Georgia
						HI	Hawaii
						ID	Idaho
						IL	Illinois
						IN	Indiana
						IA	Iowa
						KS	Kansas
						KY	Kentucky
						LA	Louisiana
						MA	Massachusetts
						MD	Maryland
						ME	Maine
						MI	Michigan
						MN	Minnesota
						MO	Missouri
						MS	Mississippi
						MT	Montana
						NC	North Carolina
						ND	North Dakota

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R Includes data based on the 2003 Revision of U.S. Certificate of Live Birth; excludes data based on the 1989 Revision.

Position	Len	Field	Description	Reporting Flag Position	Vers*	Values	Definition
						NE	Nebraska
						NH	New Hampshire
						NJ	New Jersey
						NM	New Mexico
						NV	Nevada
						NY	New York
						OH	Ohio
						OK	Oklahoma
						OR	Oregon
						PA	Pennsylvania
						RI	Rhode Island
						SC	South Carolina
						SD	South Dakota
						TN	Tennessee
						TX	Texas
						UT	Utah
						VA	Virginia
						VT	Vermont
						WA	Washington
						WI	Wisconsin
						WV	West Virginia
						WY	Wyoming
			Possessions			AS	American Samoa
						GU	Guam
						MP	Northern Marianas
						PR	Puerto Rico
						VI	Virgin Islands
			Foreign			CC	Canada
						CU	Cuba
						MX	Mexico
						YY	Rest of the World
						ZZ	Not Classifiable
98-99	2	FILLER	**Filler**			Blank	
100	1	MBSTATER3	**Mother's Birth State Recode**		U,R	1	Native born (with the 50 States and DC)
						2	Foreign born (outside the 50 States and DC)
						3	Unknown or Not Stated

U,R Includes data based on both the 1989 Revision of the U.S. Certificate of Live Birth (unrevised), and the 2003 Revision of the U.S. Certificate of Live Birth (revised).
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R Includes data based on the 2003 Revision of U.S. Certificate of Live Birth; excludes data based on the 1989 Revision.

Position	Len	Field	Description	Reporting Flag Position	Vers*	Values	Definition
101-106	6	FILLER	**Filler**			Blank	
107-108	2	XMRSTATE	**Expanded State of Residence of Mother**		U,R		
			United States			AK	Alaska
						AL	Alabama
						AR	Arkansas
						AZ	Arizona
						CA	California
						CO	Colorado
						CT	Connecticut
						DE	Delaware
						DC	District of Columbia
						FL	Florida
						GA	Georgia
						HI	Hawaii
						ID	Idaho
						IL	Illinois
						IN	Indiana
						IA	Iowa
						KS	Kansas
						KY	Kentucky
						LA	Louisiana
						MA	Massachusetts
						MD	Maryland
						ME	Maine
						MI	Michigan
						MN	Minnesota
						MO	Missouri
						MS	Mississippi
						MT	Montana
						NC	North Carolina
						ND	North Dakota
						NE	Nebraska
						NH	New Hampshire
						NJ	New Jersey
						NM	New Mexico
						NV	Nevada
						NY	New York
						OH	Ohio
						OK	Oklahoma
						OR	Oregon

U,R Includes data based on both the 1989 Revision of the U.S. Certificate of Live Birth (unrevised), and the 2003 Revision of the U.S. Certificate of Live Birth (revised).
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R Includes data based on the 2003 Revision of U.S. Certificate of Live Birth; excludes data based on the 1989 Revision.

Position	Len	Field	Description	Reporting Flag Position	Vers*	Values	Definition
						PA	Pennsylvania
						RI	Rhode Island
						SC	South Carolina
						SD	South Dakota
						TN	Tennessee
						TX	Texas
						UT	Utah
						VA	Virginia
						VT	Vermont
						WA	Washington
						WI	Wisconsin
						WV	West Virginia
						WY	Wyoming
						YC	New York City
			Possessions			AS	American Samoa
						GU	Guam
						MP	Northern Marianas
						PR	Puerto Rico
						VI	Virgin Islands
			Foreign			CC	Canada
						CU	Cuba
						MX	Mexico
						XX	Not Applicable
						ZZ	Not Classifiable
109-110	2	MRSTATEFIPS	**Mother's Residence FIPS State**		U,R		
			United States			AK	Alaska
						AL	Alabama
						AR	Arkansas
						AZ	Arizona
						CA	California
						CO	Colorado
						CT	Connecticut
						DE	Delaware
						DC	District of Columbia
						FL	Florida
						GA	Georgia
						HI	Hawaii
						ID	Idaho

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Position	Len	Field	Description	Reporting Flag Position	Vers*	Values	Definition
						IL	Illinois
						IN	Indiana
						IA	Iowa
						KS	Kansas
						KY	Kentucky
						LA	Louisiana
						MA	Massachusetts
						MD	Maryland
						ME	Maine
						MI	Michigan
						MN	Minnesota
						MO	Missouri
						MS	Mississippi
						MT	Montana
						NC	North Carolina
						ND	North Dakota
						NE	Nebraska
						NH	New Hampshire
						NJ	New Jersey
						NM	New Mexico
						NV	Nevada
						NY	New York
						OH	Ohio
						OK	Oklahoma
						OR	Oregon
						PA	Pennsylvania
						RI	Rhode Island
						SC	South Carolina
						SD	South Dakota
						TN	Tennessee
						TX	Texas
						UT	Utah
						VA	Virginia
						VT	Vermont
						WA	Washington
						WI	Wisconsin
						WV	West Virginia
						WY	Wyoming
			Possessions			AS	American Samoa
						GU	Guam

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Position	Len	Field	Description	Reporting Flag Position	Vers*	Values	Definition
						MP	Northern Marianas
						PR	Puerto Rico
						VI	Virgin Islands
			Foreign			CC	Canada
						CU	Cuba
						MX	Mexico
						XX	Not Applicable
						ZZ	Not Classifiable
111-113	3	FILLER	**Filler**			Blank	
114-116	3	MRCNTYFIPS	**Mother's County of Residence**		U,R	000	Foreign residents
						001-999	See Geographic Tables
117-119	3	FILLER	**Filler**			Blank	
120-124	5	MRCITYFIPS	**Mother's Residence City**		U,R	00000	Foreign residents
						00001-99999	See Geographic Table
125-126	2	CMSA	**Consolidated Metropolitan Statistical Areas**		U,R		
			United States			00	Not a CMSA
						07	Boston, Worchester, Lawrence, MA-NH-ME-CT, CMSA
						14	Chicago-Gary-Kenosha, IL-IN-WI, CMSA
						21	Cincinnati-Hamilton, OH-KY-IN, CMSA
						28	Cleveland-Akron, OH, CMSA
						31	Dallas-Fort Worth, TX, CMSA
						34	Denver-Bolder-Greeley, CO, CMSA
						35	Detroit-Ann Arbor-Flint, MI, CMSA
						42	Houston-Galveston-Brazoria, TX, CMSA
						49	Los Angeles-Riverside-Orange County, CA, CMSA
						56	Miami-Fort Lauderdale, FL, CMSA
						63	Milwaukee-Racine, WI, CMSA
						70	New York-Northern New Jersey-Long Island, NY-NJ-CT-PA, CMSA
						77	Philadelphia-Wilmington-Atlantic City, PA-NJ-DE-MD, CMSA
						79	Portland-Salem, OR-WA, CMSA
						82	Sacramento-Yolo, CA, CMSA
						84	San Francisco-Oakland-San Jose, CA, CMSA

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						91	Seattle-Tacoma-Bremerton, WA, CMSA
						97	Washington-Baltimore, DC-MD-VA-WV, CMSA
			US Territories			00	Not a CMSA
						87	San Juan-Caguas-Arecibo, PR, CMSA
127-130	4	MSA	**Metropolitan Statistical Areas**		U,R	0000	Nonmetropolitan counties or Foreign residence
						0040-9360	Code Range
131	1	MSA_POP	**Population of Statistical Area**		U,R	1	Area of 250,000 or more
						2	Area of less than 250,000
						9	Nonmetropolitan area Foreign resident
132	1	RCNTY_POP	**Population of Residence County**		U,R	0	County of 1,000,000 or more
						1	County of 500,000 to 1,000,000
						2	County of 250,000 to 500,000
						9	County less than 250,000 Foreign resident
133	1	RCITY_POP	**Population of Residence City**		U,R	0	City of 1,000,000 or more
						1	City of 500,000 to 1,000,000
						2	City of 250,000 to 500,000
							All other areas in the US Foreign resident
134	1	FILLER	**Filler**			Blank	
135	1	METRORES	**Metropolitan Residence County**		U,R	1	Metropolitan County
						2	Nonmetropolitan County
						Z	Foreign resident
136	1	FILLER	**Filler**			Blank	
137	1	RECTYPE	**Record Type**		U,R	1	RESIDENT: State and county of occurrence and residence are the same.
						2	NONRESIDENT: State and county of occurrence and residence are different.
138	1	RESTATUS	**Residence Status**		U,R		
			United States			1	RESIDENT: State and county of occurrence and residence

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Z

Position	Len	Field	Description	Reporting Flag Position	Vers*	Values	Definition
							are the same.
						2	INTRASTATE NONRESIDENT: State of occurrence and residence are the same but county is different.
						3	INTERSTATE NONRESIDENT: State of occurrence and residence are different but both are one of the 50 US states or District of Columbia.
						4	FOREIGN RESIDENT: The state of residence is not one of the 50 US states or District of Columbia.
			US Territories			1	RESIDENT: State and county of occurrence and residence are the same. (Unique to Guam, all US residents are considered residents of Guam and thus are assigned 1.)
						2	INTRATERRITORY NONRESIDENT: Territory of occurrence and residence are the same but county is different.
						3	INTERTERRITORY RESIDENT: Territory of occurrence and residence are different but both are US Territories.
						4	FOREIGN RESIDENT: The residence is not a US Territory.
139-140	2	MBRACE	**Mother's Bridged Race** Includes only states reporting multiple race. Codes 01-14 used for individuals reporting only one race. Codes 21-24 used for individuals reporting more than one race that have been bridged to a single race. Code 24 also used for individuals reporting more than one Asian/ Pacific Islander group; see "Technical Appendix." ** Also includes unrevised states that report multiple race.		R**	01 02 03 04 05 06 07 08 09 10 11 12 13 14 21 22 23 24 Blank	White – single race Black – single race American Indian / Alaska Native – single race Asian Indian – single race Chinese – single race Filipino – single race Japanese – single race Korean – single race Vietnamese – single race Other Asian – single race Hawaiian – single race Guamanian – single race Samoan – single race Other Pacific Islander – single race White – bridged multiple race Black – bridged multiple race American Indian/Alaskan Native – bridged multiple race Asian / Pacific Islander – bridged multiple race Not on certificate
141-142	2	MRACE	**Mother's Race**				

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Position	Len	Field	Description	Reporting Flag Position	Vers*	Values	Definition
			Includes only states exclusively reporting single race. Some areas report 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. See reporting flag at pos. 650 for expanded API reporting area.			01	White
						02	Black
						03	American Indian/Alaska Native
						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 18-68 for areas that do not report them separately.
						Blank	Not on certificate.
			Puerto Rico			01	White
						02	Black
						00	Other races
						Blank	Not on certificate
			Guam			01	White
						02	Black
						03	American Indian & Alaskan Natives
						04	Chinese
						05	Japanese
						06	Hawaiian (includes part Hawaiian)
						07	Filipino
						08	Other Asian or Pacific Islander
						58	Guamanian
						Blank	Not on certificate
			All other Territories			01	White
						02	Black
						03	American Indian & Alaskan Natives
						04	Chinese
						05	Japanese
						06	Hawaiian (includes part Hawaiian)

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Position	Len	Field	Description	Reporting Flag Position	Vers*	Values	Definition
						07	Filipino
						08	Other Asian or Pacific Islander
						Blank	Not on certificate
143	1	MRACEREC	**Mother's Race Recode** Includes individuals reporting only one race and those reporting more than one race bridged to a single race.		U,R		
			United States and non-Puerto Rican Territories			1	White
							Black
							American Indian / Alaskan Native
							Asian / Pacific Islander
			Puerto Rico			1	White
						2	Black
						0	Other (not classified as White or Black)
144	1	MRACEIMP	**Mother's Race Imputed**		U,R	Blank	Mother's race not imputed
						1	Unknown race imputed
						2	All other races, formerly coded 09, imputed.
145-147	3	FILLER	**Filler**			Blank	
148	1	UMHISP	**Mother's Hispanic Origin**	569	U,R	0	Non-Hispanic
							Mexican
							Puerto Rican
							Cuban
							Central American
						5	Other and Unknown Hispanic
						9	Origin unknown or not stated
149	1	MRACEHISP	**Mother's Race/Hispanic Origin**	569	U,R	1	Mexican
							Puerto Rican
							Cuban
						4	Central or South American
						5	Other and Unknown Hispanic
							Non-Hispanic White
							Non-Hispanic Black
							Non-Hispanic Other Races
						9	Origin unknown or not stated

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Position	Len	Field	Description	Reporting Flag Position	Vers*	Values	Definition
150-152	3	FILLER	**Filler**			Blank	
153	1	MAR	**Mother's Marital Status**	652	U,R		
			United States & all non-Puerto Rican Territories			1	Yes
						2	No
						9	Unknown or not Stated
			Puerto Rico			1	Yes
						2	Unmarried parents living together
						3	Unmarried parents not living together
						9	Unknown or not stated
154	1	MAR_IMP	**Mother's Marital Status Imputed**		U,R	Blank	Marital Status not imputed
						1	Marital Status imputed
155	1	MEDUC	**Mother's Educ –Revised**	571	R	1	8th grade or less
						2	9th through 12th grade with no diploma
						3	High school graduate or GED completed
						4	Some college credit, but not a degree.
						5	Associate degree (AA,AS)
						6	Bachelor's degree (BA, AB, BS)
						7	Master's degree (MA, MS, MEng, MEd, MSW, MBA)
						8	Doctorate (PhD, EdD) or Professional Degree (MD, DDS, DVM, LLB, JD)
						9	Unknown
						Blank	Not on certificate
156-157	2	UMEDUC	**Mother's Educ –Unrevised**	647	U	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
						Blank	Not on certificate

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Position	Len	Field	Description	Reporting Flag Position	Vers*	Values	Definition
158	1	MEDUC_REC	**Mother's Education Recode**	647	U	1	0 – 8 years
						2	9 – 11 years
						3	12 years
						4	13 – 15 years
						5	16 years and over
						6	Not stated
						Blank	Not on certificate
159-174	16	FILLER	**Filler**			Blank	
175	1	FAGERPT_FLG	**Father's Reported Age Used**		U,R	Blank	Father's reported age not used
							Father's reported age used
176-181	6	FILLER	**Filler**			Blank	
182-183	2	FAGECOMB	**Father's Combined Age (Revised)**		R	09-98	Father's combined age in years
						99	Unknown or not stated
						Blank	Not on certificate
184-185	2	UFAGECOMB	**Father's Combined Age**		U,R	09-98	Father's combined age in years
						99	Unknown or not stated
186-187	2	FAGEREC11	**Father's Age Recode 11**		U,R	01	Under 15 years
						02	15-19 years
						03	20-24 years
						04	25-29 years
						05	30-34 years
						06	35-39 years
						07	40-44 years
						08	45-49 years
						09	50-54 years
						10	55-98 years
						11	Not stated
188-189	2	FBRACE	**Father's Bridged Race**		R**	01	White – single race
			Includes only states reporting multiple race. Codes 01-14 used for individuals reporting only one race. Codes 21-24 used for individuals reporting more than one race that have been bridged to a single race. Code 24 also used for individuals reporting more than one Asian/ Pacific Islander group; see "Technical Appendix."			02	Black – single race
						03	American Indian / Alaska Native – single race
						04	Asian Indian – single race
						05	Chinese – single race
						06	Filipino – single race
						07	Japanese – single race

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Position	Len	Field	Description	Reporting Flag Position	Vers*	Values	Definition
						08	Korean – single race
			** Also includes unrevised states that report multiple race.			09	Vietnamese – single race
						10	Other Asian – single race
						11	Hawaiian – single race
						12	Guamanian – single race
						13	Samoan – single race
						14	Other Pacific Islander – single race
						21	White – bridged multiple race
						22	Black – bridged multiple race
						23	American Indian/Alaskan Native – bridged multiple race
						25	Asian / Pacific Islander – bridged multiple race
						Blank	Not on certificate
190	1	FILLER	**Filler**			Blank	
191	1	FRACEREC	**Father's Race Recode**		U,R		
			Includes individuals reporting only one race and those reporting more than one race bridged to a single race.				
			United States and non-Puerto Rican Territories			1	White
							Black
							American Indian / Alaskan Native
							Asian / Pacific Islander
						9	Unknown or not stated
			Puerto Rico			1	White
						2	Black
						9	Unknown or not stated
						0	Other (not classified as White or Black)
192-194	3	FILLER	**Filler**			Blank	
195	1	UFHISP	F**ather's Hispanic Origin**				
				570	U,R	0	Non-Hispanic
							Mexican
							Puerto Rican
						3	Cuban
						4	Central American
						5	Other and Unknown Hispanic
						9	Origin unknown or not stated
196	1	FRACEHISP	**Father's Race/Hisp Origin**	570	U,R	1	Mexican

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Position	Len	Field	Description	Reporting Flag Position	Vers*	Values	Definition
						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
197-198	2	FILLER	**Filler**			Blank	
199-200	2	UFRACE	**Father's Race**				
			United States			01	White
						02	Black
						03	American Indian & Alaskan Natives
						04	Chinese
						05	Japanese
						06	Hawaiian (includes part Hawaiian)
				U		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 18-68 for areas that do not report them separately.
						99	Unknown or not stated
						Blank	Not on certificate
			Puerto Rico			01	White
						03	Black
						00	Other races not classified white or black
						99	Unknown or not stated
						Blank	Not on certificate
			Guam			01	White
						02	Black
						03	American Indian & Alaskan Natives
						04	Chinese

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Position	Len	Field	Description	Reporting Flag Position	Vers*	Values	Definition
						05	Japanese
						06	Hawaiian (includes part Hawaiian)
						07	Filipino
						08	Other Asian or Pacific Islander
						58	Guamanian
						99	Unknown or not stated
						Blank	Not on certificate
			All other Territories			01	White
						02	Black
						03	American Indian & Alaskan Natives
						04	Chinese
						05	Japanese
						06	Hawaiian (includes part Hawaiian)
						07	Filipino
						08	Other Asian or Pacific Islander
						99	Unknown or not stated
						Blank	Not on certificate
201-203	3	FILLER	**Filler**			Blank	
204-205	2	PRIORLIVE	**Prior Births Now Living**		U,R	00-30	Number of children still living from previous live births.
						99	Unknown or not stated
206-207	2	PRIORDEAD	**Prior Births Now Dead**		U,R	00-30	Number of children dead from previous live births.
						99	Unknown or not stated
208-209	2	PRIORTERM	**Prior Other Terminations**		U,R	00-30	Number other terminations
						99	Unknown or not stated
210-211	2	LBO	**Live Birth Order**		U,R	01-31	Sum of all previous live births (now living and now dead) plus this one.
						99	Unknown or not stated
212	1	LBO_REC	**Live Birth Order Recode**		U,R	1-7	Number of live birth order. 8 or more live births
						9	Unknown or not stated
213-214	2	FILLER	**Filler**			Blank	
215-216	2	TBO	**Total Birth Order**		U,R	01-40	Sum of all previous pregnancies plus this one

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						99	Unknown or not stated
217	1	TBO_REC	**Total Birth Order Recode**		U,R	1-7	Number of total birth order. 8 or more total births
						9	Unknown or not stated
218-219	2	FILLER	**Filler**			Blank	
220-221	2	DLLB_MM	**Date of Last Live Birth – Month**		U,R	01	January
						02	February
						03	March
						04	April
						05	May
						06	June
						07	July
						08	August
						09	September
						10	October
						11	November
						12	December
						88	Not applicable
						99	Unknown or not stated
222-225	4	DLLB_YY	**Date of Last Live Birth – Year**		U,R	nnnn	Year of last live birth
						8888	Not applicable
						9999	Unknown or not stated
226-244	19	FILLER	**Filler**			Blank	
245-246	2	PRECARE	**Month Prenatal Care Began**	668	R	00	No prenatal care
						01-10	Month prenatal care began
						99	Unknown or not stated
						Blank	Not on certificate
247	1	PRECARE_REC	**Month Prenatal Care Began Recode**	668	R	1	1st to 3rd month
							4th to 6th month
							7th to final month
8							No prenatal care
						5	Unknown or not stated

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Position	Len	Field	Description	Reporting Flag Position	Vers*	Values	Definition
						Blank	Not on certificate
248-255	8	FILLER	**Filler**			Blank	
256-257	2	MPCB	**Month Prenatal Care Began**				
				669	U	00	No prenatal care
						01-10	Month prenatal care began
						99	Unknown or not stated
						Blank	Not on certificate
258	1	MPCB_REC6	**Month Prenatal Care Began Recode 6**				
				669	U	1	1st to 2nd month
							3rd month
							4th to 6th month
							7th to final month
							No prenatal care
						6	Unknown or not stated
						Blank	Not on certificate
259	1	MPCB_REC5	**Month Prenatal Care Began Recode 5**				
				669	U	1	1st trimester (1st to 3rd month)
							2nd trimester (4th to 6th month)
							3rd trimester (7th to final month)
							No prenatal care
						5	Unknown or not stated
						Blank	Not on certificate
260-269	10	FILLER	**Filler**			Blank	
270-271	2	UPREVIS	**Number of Prenatal Visits**		U,R	00-49	Number of prenatal visits
						99	Unknown or not stated
272-273	2	PREVIS_REC	**Number of Prenatal Visits Recode**		U,R	01	No visits
						02	1 to 2 visits
						03	3 to 4 visits
						04	5 to 6 visits
						05	7 to 8 visits
						06	9 to 10 visits
						07	11 to 12 visits
						08	13 to 14 visits

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Position	Len	Field	Description	Reporting Flag Position	Vers*	Values	Definition
						09	15 to 16 visits
						10	17 to 18 visits
						11	19 or more visits
						12	Unknown or not stated
274-275	2	FILLER	**Filler**			Blank	
276-277	2	WTGAIN	**Weight Gain**	648	U,R	00-97	Weight gain in pounds
						98	98 pounds and over
						99	Unknown or not stated
278	1	WTGAIN_REC	**Weight Gain Recode**	648	U,R	1	Less than 16 pounds
						2	16 to 20 pounds
						3	21 to 25 pounds
						4	26 to 30 pounds
						5	31 to 35 pounds
						6	36 to 40 pounds
						7	41 to 45 pounds
						8	46 or more pounds
						9	Unknown or not stated
279	1	U_APNCU	**Adequacy of Prenatal Care Utilization Index**	669		1	Inadequate
							Intermediate
							Adequate
							Adequate+
						5	Unknown
						Blank	Not on certificate
280	1	DFPC_IMP	**Day of Date First Prenatal Care Imputed**		R	Blank	Day of date first prenatal care not imputed
						1	Day of date first prenatal care imputed
281-283	3	FILLER	**Filler**			Blank	
284-285	2	CIG_1	**Cigarettes 1st Trimester**	575	R	00-97	Number of cigarettes daily
						98	98 or more cigarettes daily
						99	Unknown or not stated
						Blank	Not on certificate
286-287	2	CIG_2	**Cigarettes 2nd Trimester**	575	R	00-97	Number of cigarettes daily
						98	98 or more cigarettes daily

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Position	Len	Field	Description	Reporting Flag Position	Vers*	Values	Definition
						99	Unknown or not stated
						Blank	Not on certificate
288-289	2	CIG_3	**Cigarettes 3rd Trimester**	575	R	00-97	Number of cigarettes daily
						98	98 or more cigarettes daily
						99	Unknown or not stated
						Blank	Not on certificate
290	1	TOBUSE	**Tobacco Use**	667	U	1	Yes
							No
						9	Unknown or not stated
						Blank	Not on certificate
291-292	2	CIGS	**Cigarettes per Day**		U	00-97	Number of cigarettes daily
						98	98 or more cigarettes daily
						99	Unknown or not stated
						Blank	Not on certificate
293	1	UCIG_REC6	**Cigarette Recode (Unrevised)**		U	0	Non-smoker
							1 to 5 cigarettes daily
							6 to 10 cigarettes daily
						3	11 to 20 cigarettes daily
						4	21 to 40 cigarettes daily
							41 or more cigarettes daily
						6	Unknown or not stated
						Blank	Not on certificate
294	1	CIG_REC	**Cigarette Recode (Revised)**	575	R	Y	Yes
							No
						U	Unknown or not stated
						Blank	Not on certificate
295	1	ALCOHOL	**Alcohol Use**	649	U	1	Yes
							No
						9	Unknown or not stated
						Blank	Not on certificate
296-297	2	DRINKS	**Drinks per Week**	649	U	00-97	Number of drinks weekly
						98	98 or more drinks weekly
						99	Unknown or not stated
						Blank	Not on certificate

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Position	Len	Field	Description	Reporting Flag Position	Vers*	Values	Definition
298	1	DRINKS_REC	**Drinks Recode**	649	U	0	Non drinker
						1	1 drink per week
						2	2 drinks per week
						3	3-4 drinks per week
						4	5 or more drinks per week
						5	Unknown or not stated
						Blank	Not on certificate
299-327	29	FILLER	**Filler**			Blank	
328-344	17	**Risk Factors**					
		The checkbox items indented below follow this structure:				1	Yes
		The version is all 1989 Standard unless otherwise noted.				2	No
						8	Not on certificate
						9	Unknown
						Blank	Not on certificate
328	1	URF_ANEMIA	Anemia	681			
329	1	URF_CARDC	Cardiac	682			
330	1	URF_LUNG	Acute or Chronic Lung Disease	683			
331	1	URF_DIAB	Diabetes	684	U,R		
332	1	URF_GEN	Genital Herpes	685			
333	1	URF_HYDR	Hydramnios / Oligohydramnios	686			
334	1	URF_HEMO	Hemoglobinopathy	687			
335	1	URF_CHYPER	Cronic Hypertension	688	U,R		
336	1	URF_PHYPER	Prepregnacny Associated Hypertension	689	U,R		
337	1	URF_ECLAM	Eclampsia	690	U,R		
338	1	URF_INCERV	Incompetent Cervix	691			
339	1	URF_PRE4000	Previous Infant 4000+ Grams	692			
340	1	URF_PRETERM	Previous Preterm Small for Gestation	693			
341	1	URF_RENAL	Renal Disease	694			
342	1	URF_RH	Rh Sensitization	695			
343	1	URF_UTERINE	Uterine Bleeding	696			
344	1	URF_OTHER	Other medical risk factors	697			
345-354	10	FILLER	**Filler**			Blank	
355-361	7	**Obstetric Procedures**					
		The checkbox items indented below follow this structure:				1	Yes
		The version is all 1989 Standard unless otherwise noted.				2	No
						9	Unknown or not stated

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						Blank	Not on certificate
355	1	UOP_AMNIO	Amniocentesis	701			
356	1	UOP_MONIT	Electronic Fetal Monitoring	702			
357	1	UOP_INDUC	Induction of Labor	703	U,R		
358	1	UOP_STIML	Stimulation of Labor	704			
359	1	UOP_TOCOL	Tocolysis	705	U,R		
360	1	UOP_ULTRA	Ultrasound	706			
361	1	UOP_OTHER	Other Obstetric Procedures	707			
362-373	12	FILLER	**Filler**			Blank	
374-389	16	**Complications of Labor and Delivery**					
		The checkbox items indented below follow this structure:				1	Yes
		The version is all 1989 Standard unless otherwise noted.				2	No
						9	Unknown or not stated
						Blank	Not on certificate
374	1	ULD_FEBR	Febrile	711			
375	1	ULD_MECO	Meconium	712	U,R		
376	1	ULD_RUPTR	Premature Rupture of Membrane	713			
377	1	ULD_ABRUP	Abruptio Placenta	714			
378	1	ULD_PREPLA	Placenta Previa	715			
379	1	ULD_EXCBL	Other Excessive Bleeding	716			
380	1	ULD_SEIZ	Seizures During Labor	717			
381	1	ULD_PRECIP	Precipitous Labor	718	U,R		
382	1	ULD_PROLG	Prolonged Labor	719			
383	1	ULD_DYSFN	Dysfunctional Labor	720			
384	1	ULD_BREECH	Breech	721	U,R		
385	1	ULD_CEPHAL	Cephalopelvic Disproportion	722			
386	1	ULD_CORD	Cord Prolapse	723			
387	1	ULD_ANEST	Anesthetic Comlications	724			
388	1	ULD_DISTR	Fetal Distress	725			
389	1	ULD_OTHER	Other Complications	726			
390-394	5	FILLER	**Filler**			Blank	
395-400	6	**Method of Delivery**					
		The checkbox items indented below follow this structure:			U,R	1	Yes
						2	No
						9	Unknown or not stated
						Blank	Not on certificate
395	1	UME_VAG	Vaginal	730			

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Position	Len	Field	Description	Reporting Flag Position	Vers*	Values	Definition
396	1	UME_VBAC	Vaginal after C-Section	731			
397	1	UME_PRIMC	Primary C-Section	732			
398	1	UME_REPEC	Repeat C-Section	733			
399	1	UME_FORCP	Forceps	734			
400	1	UME_VAC	Vacuum	735			
401	1	DMETH_REC	**Delivery Method Recode**		U,R	1	Vaginal (excludes vaginal after previous C-section)
						2	Vaginal after previous c-section
							Primary C-section
							Repeat C-section
							Not stated
						6	Vaginal (unknown if previous c-section) (2003 Standard only)
						7	C-section (unknown if previous c-section) (2003 Standard only)
402-407	6	FILLER	**Filler**			Blank	
408	1	ATTEND	**Attendent**		U,R	1	Doctor of Medicine (MD)
							Doctor of Osteopathy (DO)
							Certified Nurse Midwife (CNM)
							Other Midwife
							Other
						9	Unknown or not stated
409-414	6	FILLER	**Filler**			Blank	
415	2	APGAR5	**Five Minute APGAR Score**	574	U,R	00-10	A score of 0-10
						99	Unknown or not stated
417	1	APGAR5R	**Five Minute APGAR Recode**	574	U,R	1	A score of 0-3
							A score of 4-6
							A score of 7-8
							A score of 9-10
						5	Unknown or not stated
418-422	5	FILLER	**Filler**			Blank	
423	1	DPLURAL	**Plurality Recode**		U,R	1	Single
							Twin

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						3	Triplet
						4	Quadruplet
						5	Quintuplet or higher
424	1	FILLER	**Filler**			Blank	
425	1	IMP_PLUR	**Plurality Imputed**		U,R	Blank	Plurality is not imputed
							Plurality is imputed
426-435	10	FILLER	**Filler**			Blank	
436	1	SEX	**Sex of Infant**		U,R	M	Male
							Female
437	1	IMP_SEX	**Imputed Sex**		U,R	Blank	Infant Sex not Imputed
							Infant Sex is Imputed
438-439	2	DLMP_MM	**Last Normal Menses – Month**		U,R	01	January
						02	February
						03	March
						04	April
						05	May
						06	June
						07	July
						08	August
						09	September
						10	October
						11	November
						12	December
						99	Unknown or not stated
440-441	2	DLMP_DD	**Last Normal Menses – Day**		U,R	01-31	As applicable to month of LMP
						99	Unknown or not stated
442-445	4	DLMP_YY	**Last Normal Menses – Year**		U,R	nnnn	Year of last normal menses
						9999	Unknown or not stated
446-447	2	ESTGEST	**Obstetric/ Clinical Gestation Est.**	573	U,R	00-98	Estimated weeks of gestation
						99	Unknown or not stated
448-450	3	FILLER	**Filler**			Blank	

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Position	Len	Field	Description	Reporting Flag Position	Vers*	Values	Definition
451-452	2	COMBGEST	**Gestation – Detail in Weeks**		U,R	17-47 99	17th through 47th week of Gestation Unknown
453-454	2	GESTREC10	**Gestation Recode 10**		U,R	01 02 03 04 05 06 07 08 09 10	Under 20 weeks 20-27 weeks 28-31 weeks 32-35 weeks 36 weeks 37-39 weeks 40 weeks 41 weeks 42 weeks and over Unknown
455	1	GESTREC3	**Gestation Recode 3**		U,R	1 2 3	Under 37 weeks 37 weeks and over Not stated
456	1	OBGEST_FLG	**Clinical Estimate of Gestation Used Flag**		U,R	Blank 1	Clinical Estimate is not used Clinical Estimate is used
457	1	GEST_IMP	**Gestation Imputed Flag**		U,R	Blank 1	Gestation is not imputed Gestation is imputed
458-466	9	FILLER	**Filler**			Blank	
467-470	4	BRTHWGT	**Birth Weight – Detail in Grams**			U,R 9999	0227-8165 Number of grams Not stated birth weight
471-472	2	BWTR12	**Birth Weight Recode 14**		U,R	01 02 03 04 05 06 07 08 09 10 11	499 grams or less 500 – 749 grams 750 - 999 grams 1000 - 1249 grams 1250 – 1499 grams 1500 – 1999 grams 2000 – 2499 grams 2500 – 2999 grams 3000 – 3400 grams 3500 – 3999 grams 4000 – 4499 grams

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						12	4500 – 4999 grams
						13	5000 – 8165 grams
						14	Not Stated
473	1	BWTR4	**Birth Weight Recode 4**		U,R	1	1499 grams or less
						2	1500 – 2499 grams
						3	2500 grams or more
						4	Unknown or not stated
474	1	FILLER	**Filler**			Blank	
475	1	BWTIMP	**Imputed Birth Weight Flag**		U	Blank	Birth Weight is not imputed
						1	Birth Weight is imputed
476-482	7	FILLER	**Filler**			Blank	
483-491	9	**Abnormal Conditions of the Newborn**					
		The checkbox items indented below follow this structure:				1	Complication reported
						2	Complication not reported
						9	Complication not classifiable
						Blank	Not on certificate
483	1	UAB_ANEM	Anemia	U	740		
484	1	UAB_INJURY	Birth Injury		741		
485	1	UAB_ALCOH	Fetal Alcohol Syndrome		742		
486	1	UAB_HYAL	Hyaline Membrane Disease		743		
487	1	UAB_MECON	Meconium Aspiration Syndrome		744		
488	1	UAB_VENL30	Assisted Ventilation < 30 min		745		
489	1	UAB_VEN30M	Assisted Ventilation >= 30 min		746		
490	1	UAB_NSEIZ	Seizures		747		
491	1	UAB_OTHER	Other Abnormal Conditions		748		
492-503	12	FILLER	**Filler**			Blank	
504-525	22	**Congenital Anomalies of the Newborn**					
		The checkbox items indented below follow this structure:				1	Anomaly reported
		The version is all 1989 Standard unless otherwise noted.				2	Anomaly not reported
						9	Anomaly not classifiable
						Blank	Not on certificate
504	1	UCA_ANEN	Anencephalus		752	U,R	
505	1	UCA_SPINA	Spina Bifida / Meningocele	U	753	U,R	

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506	1	UCA_HYDRO	Hydrocephalus	754			
507	1	UCA_MICRO	Microcephalus	755			
508	1	UCA_NERV	Other Central Nervous System Anomalies	756			
509	1	UCA_HEART	Heart Malformations	757			
510	1	UCA_CIRC	Other Circulatory / Respiratory Anomalies	758			
511	1	UCA_RECTAL	Rectal Atresia / Stenosis	759			
512	1	UCA_TRACH	Tracheo-Esophageal Fistula	760			
513	1	UCA_OMPHA	Omphalocele / Gastroschisis	761	U,R		
514	1	UCA_GASTRO	Other Gastrointestinal Anomalies	762			
515	1	UCA_GENITAL	Malformed Genitalia	763			
516	1	UCA_RENAL	Renal Agenesis	764			
517	1	UCA_UROGEN	Other Urogenital Anomalies	765			
518	1	UCA_CELFTLP	Cleft Lip / Palate	766	U,R		
519	1	UCA_ADACTY	Polydactyly / Syndactyly / Adactyly	767			
520	1	UCA_CLUBFT	Club Foot	768			
521	1	UCA_HERNIA	Diaphramatic Hernia	769			
522	1	UCA_MUSCU	Other Musculoskeletal Anomalies	770			
523	1	UCA_DOWNS	Downs Syndrome	771	U,R		
524	1	UCA_CHROM	Other Chromosomal Anomalies	772			
525	1	UCA_OTHER	Other Congenital Anomalies	773			
526-568	43	FILLER	**Filler**			Blank	
569-773	184	**Flag File for Reporting Flags** The reporting flags must be invoked to generate accurate numbers by residence. This coding structure allows for four possible outcomes for the two years of birth in the period file (see text Linked Introduction text).				0 1 2 3	Reporting in neither the current or previous year Reporting in both the current and previous year Reporting in the previous but not in the current year Reporting in the current but not the previous year
569	1	F_MORIGIN	Origin of Mother		U,R		
570	1	F_FORIGIN	Origin of Father		U,R		
571	1	F_MEDUC	Education of Mother		R		
572	1	FILLER	**Filler**			Blank	
573	1	F_CLINEST	Clinical Estimate of Gestation		U,R		
574	1	F_APGAR5	Five minute APGAR		U,R		
575	1	F_TOBACO	Tobacco use		R		
576-646	71	FILLER	**Filler**			Blank	
647	1	F_MED	Mother's Education		U		

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648	1	F_WTGAIN	Weight Gain		U,R		
649	1	F_ALCOL	Alcohol use		U		
650	1	F_API	API Codes		U		
651-666	16	FILLER	**Filler**			Blank	
667	1	F_TOBAC	Tobacco Use		U		
668	1	F_MPCB	Month Prenatal Care Began		R		
669	1	F_MPCB_U	Month Prenatal Care Began		U		
670-680	11	FILLER	**Filler**			Blank	
681	1	F_URF_ANEMIA	Anemia		U		
682	1	F_URF_CARDIAC	Cardiac Disease		U		
683	1	F_URF_LUNG	Acute or Chronic Lung Disease		U		
684	1	F_URF_DIABETES	Diabetes		U		
685	1	F_URF_HERPES	Genital Herpes		U		
686	1	F_URF_HYDRA	Hydramnios/Oligohydramnios		U		
687	1	F_URF_HEMO	Hemoglobinopathy		U		
688	1	F_URF_CHYPER	Chronic Hypertension		U		
689	1	F_URF_PHYPER	Pregnancy-Associated Hypertension		U		
690	1	F_URF_ECLAMP	Eclampsia		U		
691	1	F_URF_INCERVIX	Incompetent Cervix		U		
692	1	F_URF_PRE4000	Previous Infant 4000+ Grams		U		
693	1	F_URF_PRETERM	Previous Preterm or Small for Gestation Infant		U		
694	1	F_URF_RENAL	Renal Disease		U		
695	1	F_URF_RH	Rh Sensitization		U		
696	1	F_URF_UTERINE	Uterine Bleeding		U		
697	1	F_URF_OTHERMR	Other Medical Risk Factors		U		
698-700	3	FILLER	**Filler**				
701	1	F_UOB_AMNIO	Amniocentesis		U		
702	1	F_UOB_MONITOR	Electronic Fetal Monitoring		U		
703	1	F_UOB_INDUCT	Induction of Labor		U		
704	1	F_UOB_STIMUL	Stimulation of Labor		U		
705	1	F_UOB_TOCOL	Tocolysis		U		
706	1	F_UOB_ULTRAS	Ultrasound		U		
707	1	F_UOB_OTHEROB	Other Obstetric Procedures		U		
708-710	3	FILLER	**Filler**				
711	1	F_ULD_FEBRILE	Febrile		U		
712	1	F_ULD_MECONIUM	Meconium		U		
713	1	F_ULD_RUPTURE	Premature Rupture of Membrane		U		
714	1	F_ULD_ABRUPTIO	Abruptio Placenta		U		
715	1	F_ULD_PREPLACE	Placenta Previa		U		
716	1	F_ULD_EXCEBLD	Other Excessive Bleeding		U		
717	1	F_ULD_SEIZURE	Seizures During Labor		U		

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718	1	F_ULD_PRECIP	Precipitous Labor		U		
719	1	F_ULD_PROLONG	Prolonged Labor		U		
720	1	F_ULD_DYSFUNC	Dysfunctional Labor		U		
721	1	F_ULD_BREECH	Breech		U		
722	1	F_ULD_CEPHALO	Cephalopelvic Disproportion		U		
723	1	F_ULD_CORD	Cord Prolapse		U		
724	1	F_ULD_ANESTHE	Anesthetic Complications		U		
725	1	F_ULD_DISTRESS	Fetal Distress		U		
726	1	F_ULD_OTHERLD	Other Complications		U		
727	3	FILLER	**Filler**				
730	1	F_U_VAGINAL	Vaginal		U		
731	1	F_U_VBAC	Vaginal After C-Section		U		
732	1	F_U_PRIMAC	Primary C-Section		U		
733	1	F_U_REPEAC	Repeat C-Section		U		
734	1	F_U_FORCEP	Forceps		U		
735	1	F_U_VACUUM	Vacuum		U		
736-739	4	FILLER	**Filler**				
740	1	F_UAB_ANEMIA	Anemia		U		
741	1	F_UAB_INJURY	Birth Injury		U		
742	1	F_UAB_ALCOSYN	Fetal Alcohol Syndrome		U		
743	1	F_UAB_HYALINE	Hyaline Membrane Disease		U		
744	1	F_UAB_MECONSYN	Meconium Aspiration Syndrome		U		
745	1	F_UAB_VENL30	Assisted Ventilation < 30 min		U		
746	1	F_UAB_VEN30M	Assisted Ventilation >= 30 min		U		
747	1	F_UAB_NSEIZ	Seizures		U		
748	1	F_UAB_OTHERAB	Other Abnormal Conditions		U		
749-751	3	FILLER	**Filler**				
752	1	F_UCA_ANEN	Anencephalus		U		
753	1	F_UCA_SPINA	Spina Bifida		U		
754	1	F_UCA_HYDRO	Hydrocephalus		U		
755	1	F_UCA_MICROCE	Microcephalus		U		
756	1	F_UCA_NERVOUS	Other Central Nervous System Anomalies		U		
757	1	F_UCA_HEART	Heart Malformations		U		
758	1	F_UCA_CIRCUL	Other Circulatory/Respiratory Anomalies		U		
759	1	F_UCA_RECTAL	Rectal Atresia/Stenosis		U		
760	1	F_UCA_TRACHEO	Tracheo-Esophageal Fistula		U		
761	1	F_UCA_OMPHALO	Omphalocele/Gastroschisis		U		
762	1	F_UCA_GASTRO	Other Gastrointestinal Anomalies		U		
763	1	F_UCA_GENITAL	Malformed Genitalia		U		
764	1	F_UCA_RENALAG	Renal Agenesis		U		
765	1	F_UCA_UROGEN	Other Urogenital Anomalies		U		

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Position	Len	Field	Description	Reporting Flag Position	Vers*	Values	Definition
766	1	F_UCA_CLEFTLP	Cleft Lip/Palate		U		
767	1	F_UCA_ADACTYL	Polydactyly/Syndactyly/Adactyly		U		
768	1	F_UCA_CLUB	Club Foot		U		
769	1	F_UCA_HERNIA	Diaphramatic Hernia		U		
770	1	F_UCA_MUSCULO	Other Musculoskeletal Anomalies		U		
771	1	F_UCA_DOWNS	Downs Syndrome		U		
772	1	F_UCA_CHROMO	Other Chromosomal Anomalies		U		
773	1	F_UCA_OTHRCON	Other Congenital Anomalies		U		
774-799	26	FILLER	**Filler**			Blank	
800-823	24	**Mother's Race Edited**			R**	100-999 A00-R99	Mother's Race Edited Code
800	3	MRACE1E					
803	3	MRACE2E					
806	3	MRACE3E					
809	3	MRACE4E					
812	3	MRACE5E					
815	3	MRACE6E					
818	3	MRACE7E					
821	3	MRACE8E					
** Also includes unrevised States that report multiple race.							
824-834	11	FILLER	**Filler**			Blank	
835-858	24	**Father's Race Edited**			R**	100-999 A00-R99	Father's Race Edited Code
835	3	FRACE1E					
838	3	FRACE2E					
841	3	FRACE3E					
844	3	FRACE4E					
847	3	FRACE5E					
850	3	FRACE6E					
853	3	FRACE7E					
856	3	FRACE8E					
** Also includes unrevised States that report multiple race.							
859-867	9	FILLER	**Filler**			Blank	
868	1	FLGND	Flag indicating records in both numerator and denominator file		U,R	1	Record in both files

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Position	Len	Field	Description	Reporting Flag Position	Vers*	Values	Definition
						Blank	Record not in numerator file

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

869-871	3	FILLER	**Filler**			Blank	
872-874	3	AGED	Age at Death in Days			000-365	Number of days

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Position	Len	Field	Description	Reporting Flag Position	Vers*	Values	Definition
875	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)
876-877	2	AGER22	Infant age recode 22			Blank	Age 1 year and over or not stated
						01	Under 1 hour (includes not stated hours and minutes)
						02	1 – 23 hours
						03	1 day (includes not stated days)
						04	2 days
						05	3 days
						06	4 days
						07	5 days
						08	6 days
						09	7 days (includes not stated weeks)
						10	14 – 20 days
						11	21 – 27 days
						12	1 month (includes not stated months)
						13	2 months
						14	3 months
						15	4 months
						16	5 months
						17	6 months
						18	7 months
						19	8 months
						20	9 months
						21	10 months
						22	11 months
878	1	MANNER	Manner of Death			1	Accident
						2	Suicide
						3	Homicide
						4	Pending investigation
						5	Could not determine
						6	Self-inflicted
						7	Natural
						Blank	Not specified
879	1	DISPO	Method of Disposition			B	Burial
						C	Cremation

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Position	Len	Field	Description	Reporting Flag Position	Vers*	Values	Definition
						D	Donation
						E	Entombment
						R	Removal from State
						O	Other
						U	Unknown
880	1	AUTOPSY	Autopsy			Y	Yes
						N	No
						U	Unknown
881	1	FILLER	**Filler**			Blank	
882	1	PLACE	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	Cause other than W00-Y34, except Y06.- and Y07.-
883	1	FILLER	**Filler**			Blank	
884-891		**UNDERLYING CAUSE OF DEATH**					
884-887	4	UC0D	ICD Code (10th Revision) See the International Classification of Diseases, 1992 Revision, Volume 1.				
888	1	FILLER	**Filler**			Blank	
889-891	3	UCODR130	130 Infant Cause Recode			001-158 Code Range	
892	1	FILLER	**Filler**			Blank	
893-900	8	RECWT	Record Weight (no weights computed for possessions file)			1.XXXXXX	
901-902	2	FILLER	**Filler**			Blank	

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Position	Len	Field	Description	Reporting Flag Position	Vers*	Values	Definition
903-1148	281	**MULTIPLE CONDITIONS**					
903-904	2	EANUM	Number of Entity-Axis Conditions			00-20	Code range
905-1148	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 See Table 1 for a complete list of codes				
905-911	7		1st Condition				
912-918	7		2nd Condition				
919-925	7		3rd Condition				
926-932	7		4th Condition				
933-939	7		5th Condition				
940-946	7		6th Condition				
947-953	7		7th Condition				
954-960	7		8th Condition				
961-967	7		9th Condition				
968-974	7		10th Condition				
975-981	7		11th Condition				
982-988	7		12th Condition				
989-995	7		13th Condition				
996-1002	7		14th Condition				

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Position	Len	Field	Description	Reporting Flag Position	Vers*	Values	Definition
1003-1009	7		15th Condition				
1010-1016	7		16th Condition				
1017-1023	7		17th Condition				
1024-1030	7		18th Condition				
1031-1037	7		19th Condition				
1038-1044	7		20th Condition				
1045-1046	2	FILLER	**Filler**			Blank	
1047-1048	2	RANUM	Number of Record-Axis Conditions			00-20	Code range
1049-1148	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 See Table 1 for a complete list of codes				
1049-1053	5		1st Condition				
1054-1058	5		2nd Condition				
1059-1063	5		3rd Condition				
1064-1068	5		4th Condition				
1069-1073	5		5th Condition				
1074-1078	5		6th Condition				
1079-1083	5		7th Condition				
1084-1088	5		8th Condition				
1089-1093	5		9th Condition				
1094-1098	5		10th Condition				
1099-1103	5		11th Condition				
1104-1108	5		12th Condition				
1109-1113	5		13th Condition				
1114-1118	5		14th Condition				
1119-1123	5		15th Condition				
1124-1128	5		16th Condition				
1129-1133	5		17th Condition				
1134-1138	5		18th Condition				
1139-1143	5		19th Condition				
1144-1148	5		20th Condition				

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Position	Len	Field	Description	Reporting Flag Position	Vers*	Values	Definition
1149-1150	2	FILLER	**Filler**			Blank	
1151	1	RESSTATD	Death Resident Status				
			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 U.S.
						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 U.S.
			Puerto Rico Occurrence			1	RESIDENTS Territory and County-equivalent of Occurrence and Residence are the same.
						2	INTRASTATE NONRESIDENTS Territory of Occurrence and Residence are the same, but County-equivalent is different.
						3	INTERTERRITORY NONRESIDENTS Territory of occurrence and residence are different, but both are a Territory.
						4	FOREIGN RESIDENTS Occurred in Puerto Rico to a resident of any other place.
			Virgin Islands Occurrence			1	RESIDENTS Territory and County-equivalent of Occurrence and Residence are the same.
						2	INTRASTATE NONRESIDENTS Territory of Occurrence and Residence are the same, but County-equivalent is different.
						3	INTERTERRITORY NONRESIDENTS Territory of occurrence and residence are different, but both are a Territory.
						4	FOREIGN RESIDENTS Occurred in Virgin Islands to a resident of any other place.
			Guam Occurrence			1	RESIDENTS

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Position	Len	Field	Description	Reporting Flag Position	Vers*	Values	Definition
							Occurred in Guam to a resident of Guam or to a resident of the U.S.
						3	INTERTERRITORY NONRESIDENTS Territory of occurrence and residence are different, but both are a Territory.
						4	FOREIGN RESIDENTS Occurred in Guam to a resident of any place other than Guam or the U.S.
1152-1185	34		FEDERAL INFORMATION PROCESSING STANDARDS (FIPS) GEOGRAPHIC CODES 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. Some geographic codes have been changed to reflect the results of the 2000 Census.				
1152-1159	8		PLACE OF OCCURRENCE of Death				
1152-1153	2	STOCCFIPD	State of Occurrence (FIPS) of Death				
			United States			AL	Alabama
						AK	Alaska
						AZ	Arizona
						AR	Arkansas
						CA	California
						CO	Colorado
						CT	Connecticut
						DE	Delaware
						DC	District of Columbia
						FL	Florida
						GA	Georgia
						HI	Hawaii
						ID	Idaho
						IL	Illinois
						IN	Indiana
						IA	Iowa
						KS	Kansas
						KY	Kentucky
						LA	Louisiana
						ME	Maine

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Position	Len	Field	Description	Reporting Flag Position	Vers*	Values	Definition
						MD	Maryland
						MA	Massachusetts
						MI	Michigan
						MN	Minnesota
						MS	Mississippi
						MO	Missouri
						MT	Montana
						NE	Nebraska
						NV	Nevada
						NH	New Hampshire
						NJ	New Jersey
						NM	New Mexico
						NY	New York
						NC	North Carolina
						ND	North Dakota
						OH	Ohio
						OK	Oklahoma
						OR	Oregon
						PA	Pennsylvania
						RI	Rhode Island
						SC	South Carolina
						SD	South Dakota
						TN	Tennessee
						TX	Texas
						UT	Utah
						VT	Vermont
						VA	Virginia
						WA	Washington
						WV	West Virginia
						WI	Wisconsin
						WY	Wyoming
			Puerto Rico			PR	Puerto Rico
			Virgin Islands			VI	Virgin Islands
			Guam			GU	Guam
1154-1155	3	CNTOCFIPD	**County of Occurrence (FIPS) of Death** Counties and county equivalents (independent and coextensive cities) are numbered alphabetically within each State and identify each county. (Note: To uniquely identify				

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Position	Len	Field	Description	Reporting Flag Position	Vers*	Values	Definition
			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.				
						001-nnn	Code range
						999	County with less than 250,000
1157-1158	2	ESTATOCD	**Expanded State of Occurrence Code of Death** This item is designed to separately identify New York City records (YC) from other New York State records. Note: YC is not an official FIPS code.				
			United States			AL	Alabama
						AK	Alaska
						AZ	Arizona
						AR	Arkansas
						CA	California
						CO	Colorado
						CT	Connecticut
						DE	Delaware
						DC	District of Columbia
						FL	Florida
						GA	Georgia
						HI	Hawaii
						ID	Idaho
						IL	Illinois
						IN	Indiana
						IA	Iowa
						KS	Kansas
						KY	Kentucky
						LA	Louisiana
						ME	Maine
						MD	Maryland
						MA	Massachusetts
						MI	Michigan
						MN	Minnesota
						MS	Mississippi
						MO	Missouri
						MT	Montana
						NE	Nebraska
						NV	Nevada

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Position	Len	Field	Description	Reporting Flag Position	Vers*	Values	Definition
						NH	New Hampshire
						NJ	New Jersey
						NM	New Mexico
						NY	New York
						YC	New York City
						NC	North Carolina
						ND	North Dakota
						OH	Ohio
						OK	Oklahoma
						OR	Oregon
						PA	Pennsylvania
						RI	Rhode Island
						SC	South Carolina
						SD	South Dakota
						TN	Tennessee
						TX	Texas
						UT	Utah
						VT	Vermont
						VA	Virginia
						WA	Washington
						WV	West Virginia
						WI	Wisconsin
						WY	Wyoming
			Puerto Rico			PR	Puerto Rico
			Virgin Islands			VI	Virgin Islands
			Guam			GU	Guam
1159	1	CNTOCPPD	**Population Size of County of Occurrence of Death** Based on the results of the 2000 Census				
						0	County of 1,000,000 or more
						1	County of 500,000 to 1,000,000
						2	County of 250,000 to 500,000
						9	County of less than 250,000
1160-1185	26		PLACE OF RESIDENCE Refer to the Geographic Code Outline further back in this document for a detailed list of areas and codes. Beginning with 2003 data, some areas started reporting additional codes				

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Position	Len	Field	Description	Reporting Flag Position	Vers*	Values	Definition
			for foreign residents.				
1160-1161	2	STRESFIPD	**State of Residence (FIPS)**				
			US Occurrence			ZZ	Foreign residents
						AL	Alabama
						AK	Alaska
						AZ	Arizona
						AR	Arkansas
						CA	California
						CO	Colorado
						CT	Connecticut
						DE	Delaware
						DC	District of Columbia
						FL	Florida
						GA	Georgia
						HI	Hawaii
						ID	Idaho
						IL	Illinois
						IN	Indiana
						IA	Iowa
						KS	Kansas
						KY	Kentucky
						LA	Louisiana
						ME	Maine
						MD	Maryland
						MA	Massachusetts
						MI	Michigan
						MN	Minnesota
						MS	Mississippi
						MO	Missouri
						MT	Montana
						NE	Nebraska
						NV	Nevada
						NH	New Hampshire
						NJ	New Jersey
						NM	New Mexico
						NY	New York
						NC	North Carolina
						ND	North Dakota
						OH	Ohio

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Position	Len	Field	Description	Reporting Flag Position	Vers*	Values	Definition
						OK	Oklahoma
						OR	Oregon
						PA	Pennsylvania
						RI	Rhode Island
						SC	South Carolina
						SD	South Dakota
						TN	Tennessee
						TX	Texas
						UT	Utah
						VT	Vermont
						VA	Virginia
						WA	Washington
						WV	West Virginia
						WI	Wisconsin
						WY	Wyoming
			Territories			PR	Puerto Rico
						VI	Virgin Islands
						GU	Guam
						AS	American Samoa
						MP	Northern Marianas
			Puerto Rico Occurrence			PR	Puerto Rico
						AL-WY, VI,AS,GU, MP,ZZ	Foreign residents: refer to U.S. for specific code structure.
			Virgin Islands Occurrence			VI	Virgin Islands
						AL-WY, PR,AS,GU, MP, ZZ	Foreign residents: refer to U.S. for specific code structure.
			Guam Occurrence			GU	Guam
						AL-WY	U.S. resident. Also considered a resident of Guam.
						PR,AS, VI,MP, ZZ	Foreign residents: refer to U.S. for specific code structure.
1162-1163	2	FILLER	Filler				
1164-1165	2	DRCNTY	**State/Country of Residence of Death Recode**				

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Position	Len	Field	Description	Reporting Flag Position	Vers*	Values	Definition
			See Country of Residence (location 1162-1163) for detailed Country information. Note: Canada (CC) and Remainder of world (YY) are not official FIPS codes.				
			United States Occurrence			AL	Alabama
						AK	Alaska
						AZ	Arizona
						AR	Arkansas
						CA	California
						CO	Colorado
						CT	Connecticut
						DE	Delaware
						DC	District of Columbia
						FL	Florida
						GA	Georgia
						HI	Hawaii
						ID	Idaho
						IL	Illinois
						IN	Indiana
						IA	Iowa
						KS	Kansas
						KY	Kentucky
						LA	Louisiana
						ME	Maine
						MD	Maryland
						MA	Massachusetts
						MI	Michigan
						MN	Minnesota
						MS	Mississippi
						MO	Missouri
						MT	Montana
						NE	Nebraska
						NV	Nevada
						NH	New Hampshire
						NJ	New Jersey
						NM	New Mexico
						NY	New York
						NC	North Carolina
						ND	North Dakota
						OH	Ohio
						OK	Oklahoma

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Position	Len	Field	Description	Reporting Flag Position	Vers*	Values	Definition
						OR	Oregon
						PA	Pennsylvania
						RI	Rhode Island
						SC	South Carolina
						SD	South Dakota
						TN	Tennessee
						TX	Texas
						UT	Utah
						VT	Vermont
						VA	Virginia
						WA	Washington
						WV	West Virginia
						WI	Wisconsin
						WY	Wyoming
			Territorial residents			PR	Puerto Rico
						VI	Virgin Islands
						GU	Guam
						AS	American Samoa
						MP	Northern Marianas
			Foreign residents			CC	Canada
						MX	Mexico
						CU	Cuba
						YY	Remainder of the world
			Puerto Rico Occurrence			PR	Puerto Rico
						AL-ZZ	Foreign residents: refer to U.S. for specific code structure.
			Virgin Islands Occurrence			VI	Virgin Islands
						AL-ZZ	Foreign residents: refer to U.S. for specific code structure.
			Guam Occurrence			GU	Guam
						AL-WY	U.S. resident. Also considered a resident of Guam
						PR,VI,AS, MP,ZZ	Foreign residents: refer to U.S. for specific code structure.
1166-1168	3	CNTYRFPD	**County of Residence (FIPS) of Death** Counties and county equivalents (independent and coextensive cities) are numbered alphabetically within each State and identify each county. (Note: To uniquely				

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Position	Len	Field	Description	Reporting Flag Position	Vers*	Values	Definition
			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.				
						000	Foreign residents
						001-nnn	Code range
						999	County with less than 250,000
1169-1173	5	DRCITY	**City of Residence (FIPS) of Death** A complete list of cities is shown in the Geographic code outline further back in this document. Effective with the 1994 data year, the FIPS place code has been added to the Mortality record.				
						00000	Foreign residents
						00001-nnnnn	code range
						99999	Cities of less than 250,000 population
1174	1	DRCITYPOP	**Population Size of City of Residence** Based on the results of the 2000 Census.				
						0	Place of 1,000,000 or more
						1	Place of 500,000 to 1,000,000
						2	Place of 250,000 to 500,000
						9	Place of less than 250,000
						Z	Foreign residents
1175	1	METRRESD	**Metropolitan - Nonmetropolitan County of Residence** NOTE: Guam and the Virgin Islands do not have any metropolitan areas.				
						1	Metropolitan county
						2	Nonmetropolitan county
						Z	Foreign residents
1176-1177	2	DRSTATE	**Expanded State of Residence of Death Code** This item is designed to separately identify New York City records (YC) from other New York State records. Note: YC, CC, and YY are not official FIPS codes.				
			United States Occurrence			AL	Alabama

U,R Includes data based on both the 1989 Revision of the U.S. Certificate of Live Birth (unrevised), and the 2003 Revision of the U.S. Certificate of Live Birth (revised).
U Includes data based on the 1989 Revision of U.S. Certificate of Live Birth; excludes data based on the 2003 Revision.
R Includes data based on the 2003 Revision of U.S. Certificate of Live Birth; excludes data based on the 1989 Revision.

Position	Len	Field	Description	Reporting Flag Position	Vers*	Values	Definition
						AK	Alaska
						AZ	Arizona
						AR	Arkansas
						CA	California
						CO	Colorado
						CT	Connecticut
						DE	Delaware
						DC	District of Columbia
						FL	Florida
						GA	Georgia
						HI	Hawaii
						ID	Idaho
						IL	Illinois
						IN	Indiana
						IA	Iowa
						KS	Kansas
						KY	Kentucky
						LA	Louisiana
						ME	Maine
						MD	Maryland
						MA	Massachusetts
						MI	Michigan
						MN	Minnesota
						MS	Mississippi
						MO	Missouri
						MT	Montana
						NE	Nebraska
						NV	Nevada
						NH	New Hampshire
						NJ	New Jersey
						NM	New Mexico
						NY	New York
						YC	New York City
						NC	North Carolina
						ND	North Dakota
						OH	Ohio
						OK	Oklahoma
						OR	Oregon
						PA	Pennsylvania
						RI	Rhode Island
						SC	South Carolina

U,R Includes data based on both the 1989 Revision of the U.S. Certificate of Live Birth (unrevised), and the 2003 Revision of the U.S. Certificate of Live Birth (revised).
U Includes data based on the 1989 Revision of U.S. Certificate of Live Birth; excludes data based on the 2003 Revision.
R Includes data based on the 2003 Revision of U.S. Certificate of Live Birth; excludes data based on the 1989 Revision.

Position	Len	Field	Description	Reporting Flag Position	Vers*	Values	Definition
						SD	South Dakota
						TN	Tennessee
						TX	Texas
						UT	Utah
						VT	Vermont
						VA	Virginia
						WA	Washington
						WV	West Virginia
						WI	Wisconsin
						WY	Wyoming
			Territorial residents			PR	Puerto Rico
						VI	Virgin Islands
						GU	Guam
						AS	American Samoa
						MP	Northern Marianas
			Foreign residents			CC	Canada
						MX	Mexico
						CU	Cuba
						YY	Remainder of the world
			Puerto Rico Occurrence			PR	Puerto Rico
						AL-ZZ	Foreign residents: refer to U.S. for specific code structure.
			Virgin Islands Occurrence			VI	Virgin Islands
						AL-ZZ	Foreign residents: refer to U.S. for specific code structure.
			Guam Occurrence			GU	Guam
						AL-WY	U.S. resident. Also considered a resident of Guam.
						PR,VI,AS, MP,ZZ	Foreign residents: refer to U.S. for specific code structure.
1178-1181	4	SMSARFIPD	**PMSA/MSA of Residence of Death(FIPS)** Primary Metropolitan Statistical Areas and Metropolitan Statistical Areas are those defined by the U.S. Office of Management and Budget (OMB) as of 2000. For New England, the New England County Metropolitan Areas (NECMA) are used.				
						0000	Nonmetropolitan counties or foreign residents
						0040-	

U,R Includes data based on both the 1989 Revision of the U.S. Certificate of Live Birth (unrevised), and the 2003 Revision of the U.S. Certificate of Live Birth (revised).
U Includes data based on the 1989 Revision of U.S. Certificate of Live Birth; excludes data based on the 2003 Revision.
R Includes data based on the 2003 Revision of U.S. Certificate of Live Birth; excludes data based on the 1989 Revision.

Position	Len	Field	Description	Reporting Flag Position	Vers*	Values	Definition
						9360	Code range
1182	1	CNTRSPPD	**Population Size of County of Residence of Death** Based on the results of the 2000 Census				
						0	County of 1,000,000 or more
						1	County of 500,000 to 1,000,000
						2	County of 250,000 to 500,000
						9	County of less than 250,000
							Foreign residents
1183	1	POPSMASD	**PMSA/MSA Population Size of Residence** Based on the results of the 2000 Census				
						1	Area of 250,000 or more
						2	Area of less than 250,000
						9	Nonmetropolitan area
						Z	Foreign residents
1184-1185	2	CMSAD	**CMSA of Residence of Death(FIPS)** Consolidated Metropolitan Statistical Areas are groupings of certain Primary Metropolitan Statistical Areas and are defined by the U.S. Office of Management and Budget (OMB) as of 2000.				
			All Areas			00	Not a CMSA
			United States Occurrence			07	Boston - Worcester-Lawrence, MA-NH-ME-CT, CMSA
						14	Chicago - Gary-Kenosha, IL-IN-WI, CMSA
						21	Cincinnati - Hamilton, OH-KY-IN, CMSA
						28	Cleveland - Akron, OH, CMSA
						31	Dallas - Fort Worth, TX, CMSA
						34	Denver - Boulder-Greeley, CO, CMSA
						35	Detroit - Ann Arbor-Flint, MI, CMSA
						42	Houston - Galveston-Brazoria, TX, CMSA
						49	Los Angeles -Riverside- Orange County, CA, CMSA
		Z				56	Miami - Fort Lauderdale, FL, CMSA
						63	Milwaukee - Racine, WI, CMSA
						70	New York -Northern New Jersey-Long Island, NY-NJ-CT-PA, CMSA
						77	Philadelphia - Wilmington-Atlantic City, PA-NJ-DE-MD, CMSA
						79	Portland - Salem, OR-WA, CMSA

U,R Includes data based on both the 1989 Revision of the U.S. Certificate of Live Birth (unrevised), and the 2003 Revision of the U.S. Certificate of Live Birth (revised).
U Includes data based on the 1989 Revision of U.S. Certificate of Live Birth; excludes data based on the 2003 Revision.
R Includes data based on the 2003 Revision of U.S. Certificate of Live Birth; excludes data based on the 1989 Revision.

Position	Len	Field	Description	Reporting Flag Position	Vers*	Values	Definition
						82	Sacramento - Yolo, CA, CMSA
						84	San Francisco -Oakland-San Jose, CA, CMSA
						91	Seattle - Tacoma-Bremerton, WA, CMSA
						97	Washington - Baltimore, DC-MD-VA-WV, CMSA
			Puerto Rico Occurrence			87	San Juan -Caguas-Arecibo, PR, CMSA
1186	1	HOSPD	**Place of Death and Decendent's 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	Decedent's home
						5	Hospice facility
						6	Nursing home/long term care
						7	Other
						9	Place of death unknown
1187	1	WEEKDAYD	**Day of Week of Death**				
						1	Sunday
						2	Monday
							Tuesday
							Wednesday
							Thursday
							Friday
							Saturday
						9	Unknown
1188-1191	4	DTHYR	**Year of Death**			2004	2004
1192-1257	66	FILLER	**Filler**			Blank	
1258-1259	2	DOD_MM	**Month of Death**				
						01	January
						02	February
						03	March
						04	April
						05	May
						06	June

U,R Includes data based on both the 1989 Revision of the U.S. Certificate of Live Birth (unrevised), and the 2003 Revision of the U.S. Certificate of Live Birth (revised).
U Includes data based on the 1989 Revision of U.S. Certificate of Live Birth; excludes data based on the 2003 Revision.
R Includes data based on the 2003 Revision of U.S. Certificate of Live Birth; excludes data based on the 1989 Revision.

Position	Len	Field	Description	Reporting Flag Position	Vers*	Values	Definition
						07	July
						08	August
						09	September
						10	October
						11	November
						12	December

U,R Includes data based on both the 1989 Revision of the U.S. Certificate of Live Birth (unrevised), and the 2003 Revision of the U.S. Certificate of Live Birth (revised).
U Includes data based on the 1989 Revision of U.S. Certificate of Live Birth; excludes data based on the 2003 Revision.
R Includes data based on the 2003 Revision of U.S. Certificate of Live Birth; excludes data based on the 1989 Revision.

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
	089	Madison
	097	Mobile
02		Alaska
		Anchorage, coext. with Anchorage city
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
	087	Santa Cruz
	095	Solano
	097	Sonoma
	099	Stanislaus
	107	Tulare
	111	Ventura

State	County	State and County Name
08		Colorado
	001	Adams
	005	Arapahoe
	013	Boulder
	031	Denver, coext. with Denver city
	041	El Paso
	059	Jefferson
	069	Larimer
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
	021	Collier
	031	Duval
	033	Escambia
	057	Hillsborough
	071	Lee
	081	Manatee
	083	Marion
	086	Miami-Dade
	095	Orange
	099	Palm Beach
	101	Pasco
	103	Pinellas
	105	Polk
	115	Sarasota
	117	Seminole
	127	Volusia

State	County	State and County Name
13		Georgia
	067	Cobb
	089	De Kalb
	121	Fulton
	135	Gwinnett
15		Hawaii
	003	Honolulu
16		Idaho
	001	Ada
17		Illinois
	031	Cook
	043	Du Page
	089	Kane
	097	Lake
	111	McHenry
	119	Madison
	163	St. Clair
	197	Will
	201	Winnebago
18		Indiana
	003	Allen
	089	Lake
	097	Marion
	141	St. Joseph
19		Iowa
	153	Polk
20		Kansas
	091	Johnson
	173	Sedgwick
21		Kentucky
	067	Fayette, coext. with Lexington-Fayette
	111	Jefferson

State	County	State and County Name
22		Louisiana
	017	Caddo
	033	East Baton Rouge
	051	Jefferson
	071	Orleans, coext. with New Orleans city
23		Maine
	005	Cumberland
24		Maryland
	003	Anne Arundel
	005	Baltimore
	031	Montgomery
	033	Prince George's
	510	Baltimore city
25		Massachusetts
	005	Bristol
	009	Essex
	013	Hampden
	017	Middlesex
	021	Norfolk
	023	Plymouth
	027	Worcester
26		Michigan
	049	Genesee
	065	Ingham
	081	Kent
	099	Macomb
	125	Oakland
	161	Washtenaw
	163	Wayne
27		Minnesota
	003	Anoka
	037	Dakota
	053	Hennepin
	123	Ramsey
28		Mississippi
	049	Hinds

State	County	State and County Name
29		Missouri
	095	Jackson
	183	St. Charles
	189	St. Louis
	510	St. Louis city
30		Montana
31		Nebraska
	055	Douglas
	109	Lancaster
32		Nevada
	003	Clark
	031	Washoe
33		New Hampshire
	011	Hillsborough
	015	Rockingham
34		New Jersey
	001	Atlantic
	003	Bergen
	005	Burlington
	007	Camden
	013	Essex
	015	Gloucester
	017	Hudson
	021	Mercer
	023	Middlesex
	025	Monmouth
	027	Morris
	029	Ocean
	031	Passaic
	035	Somerset
	039	Union
35		New Mexico
	001	Bernalillo

State	County	State and County Name
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
	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
40		Oklahoma
	109	Oklahoma
	143	Tulsa

State	County	State and County Name
41		Oregon
	005	Clackamas
	039	Lane
	047	Marion
	051	Multnomah
	067	Washington
42		Pennsylvania
	003	Allegheny
	011	Berks
	017	Bucks
	029	Chester
	043	Dauphin
	045	Delaware
	049	Erie
	071	Lancaster
	077	Lehigh
	079	Luzerne
	091	Montgomery
	095	Northampton
	101	Philadelphia, coext. with Philadelphia city
	129	Westmoreland
	133	York
44		Rhode Island
	007	Providence
45		South Carolina
	019	Charleston
	045	Greenville
	079	Richland
	083	Spartanburg
46		South Dakota
47		Tennessee
	037	Davidson
	065	Hamilton
	093	Knox
	157	Shelby

State	County	State and County Name
48		Texas
	029	Bexar
	061	Cameron
	085	Collin
	113	Dallas
	121	Denton
	141	El Paso
	157	Fort Bend
	167	Galveston
	201	Harris
	215	Hidalgo
	245	Jefferson
	339	Montgomery
	355	Nueces
	439	Tarrant
	453	Travis
49		Utah
	035	Salt Lake
	049	Utah
51		Virginia
	041	Chesterfield
	059	Fairfax
	087	Henrico
	153	Prince William
	810	Virginia Beach city
53		Washington
	033	King
	053	Pierce
	061	Snohomish
	063	Spokane
55		Wisconsin
	025	Dane
	079	Milwaukee
	133	Waukesha

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
AK		Alaska
	03000	Anchorage
AZ		Arizona
	46000	Mesa
	55000	Phoenix
	77000	Tucson
AR		Arkansas
CA		California
	02000	Anaheim
	27000	Fresno
	43000	Long Beach
	44000	Los Angeles
	53000	Oakland
	62000	Riverside
	64000	Sacramento
	66000	San Diego
	67000	San Francisco
	68000	San Jose
	69000	Santa Ana
CO		Colorado
	04000	Aurora
	16000	Colorado Springs
	20000	Denver
CT		Connecticut
DE		Delaware
DC		District of Columbia
	50000	Washington
FL		Florida
	35000	Jacksonville
	45000	Miami
	71000	Tampa
GA		Georgia
	04000	Atlanta

State	City/Place	State and City/Place Name
HI		Hawaii
	17000	Honolulu
ID		Idaho
IL		Illinois
	14000	Chicago
IN		Indiana
	36003	Indianapolis
KS		Kansas
	79000	Wichita
KY		Kentucky
	46027	Lexington-Fayette
	48000	Louisville
LA		Louisiana
	55000	New Orleans
MD		Maryland
	04000	Baltimore
MA		Massachusetts
	07000	Boston
MI		Michigan
	22000	Detroit
MN		Minnesota
	43000	Minneapolis
	58000	St. Paul
MO		Missouri
	38000	Kansas City
	65000	St. Louis
NB		Nebraska
	37000	Omaha
NV		Nevada
	40000	Las Vegas

State	City/Place	State and City/Place Name
NJ		New Jersey
	51000	Newark
NM		New Mexico
	02000	Albuquerque
NY		New York
	51000	Brooklyn borough, Kings county
	51000	Bronx borough, Bronx county
	11000	Buffalo
	51000	Manhattan borough, New York county
	51000	Queens borough, Queens county
	51000	Staten Island borough, Richmond county
NC		North Carolina
	12000	Charlotte
	55000	Raleigh
OH		Ohio
	15000	Cincinnati
	16000	Cleveland
	18000	Columbus
	77000	Toledo
OK		Oklahoma
	55000	Oklahoma City
	75000	Tulsa, part
	75000	Tulsa, part
OR		Oregon
	59000	Portland
PA		Pennsylvania
	60000	Philadelphia
	61000	Pittsburgh
TN		Tennessee
	48000	Memphis
	52006	Nashville-Davidson

State	City/Place	State and City/Place Name
TX		Texas
	04000	Arlington
	05000	Austin
	17000	Corpus Christ
	19000	Dallas
	24000	El Paso
	27000	Fort Worth
	35000	Houston
	65000	San Antonio
VA		Virginia
	82000	Virginia Beach
WA		Washington
	63000	Seattle
WI		Wisconsin
	53000	Milwaukee
WY		Wyoming
PR	00000	Puerto Rico
VI	00000	Virgin Islands
GU	00000	Guam
00	00000	Canada
00	00000	Cuba
00	00000	Mexico
00	00000	Remainder of the World

Listing of Primary Metropolitan Statistical Areas
Identified in the Linked Data Set
and their Component Counties
United States

Primary and Metropolitan Statistical Areas Established in 1990
Effective with 2002 and Adapted for Use by DVS
United States

Vital Statistics Codes				FIPS Codes		
P/MSA	State	County	P/MSA Name and County Components	P/MSA	State	Cnty
002			Akron, OH, PMSA	0080		
	OH		Ohio		OH	
		067	Portage			133
		077	Summit			153
004			Albany-Schenectady-Troy, NY, MSA	0160		
	NY		New York		NY	
		001	Albany			001
		027	Montgomery			057
		039	Rensselaer			083
		042	Saratoga			091
		043	Schenectady			093
		044	Schoharie			095
005			Albuquerque, NM, MSA	0200		
	NM		New Mexico		NM	
		001	Bernalillo			001
		024	Sandoval			043
		033	Valencia			061
007			Allentown-Bethlehem-Easton, PA, MSA	0240		
	PA		Pennsylvania		PA	
		013	Carbon			025
		039	Lehigh			077
		048	Northampton			095
010			Anchorage, AK, MSA	0380		
	AK		Alaska		AK	
		003	Anchorage			020
011			Ann Arbor, MI, PMSA	0440		
	MI		Michigan		MI	
		046	Lenawee			091
		047	Livingston			093
		081	Washtenaw			161

013		Appleton-Oshkosh-Neenah, WI, MSA	0460		
	WI	Wisconsin		WI	
	008	Calumet			015
	045	Outagamie			087
	071	Winnebago			139
016		Atlanta, GA, MSA	0520		
	GA	Georgia		GA	
	007	Barrow			013
	008	Bartow			015
	022	Carroll			045
	028	Cherokee			057
	031	Clayton			063
	033	Cobb			067
	038	Coweta			077
	044	De Kalb			089
	048	Douglas			097
	056	Fayette			113
	058	Forsyth			117
	060	Fulton			121
	067	Gwinnett			135
	075	Henry			151
	107	Newton			217
	110	Paulding			223
	112	Pickens			227
	122	Rockdale			247
	126	Spalding			255
	147	Walton			297
017		Atlantic-Cape May, NJ, PMSA	0560		
	NJ	New Jersey		NJ	
	001	Atlantic			001
	005	Cape May			009
018		Augusta-Aiken, GA-SC, MSA	0600		
	GA	Georgia		GA	
	036	Columbia			073
	094	McDuffie			189
	121	Richmond			245
	SC	South Carolina		SC	
	002	Aiken			003
	019	Edgefield			037
019		Austin-San Marcos, TX, MSA	0640		
	TX	Texas		TX	
	011	Bastrop			021
	028	Caldwell			055
	105	Hays			209
	227	Travis			453
	246	Williamson			491

Primary and Metropolitan Statistical Areas Established in 1990
Effective with 2002 and Adapted for Use by DVS
United States - con.

020			Bakersfield, CA, MSA	0680			
	CA		California		CA		
		015	Kern			029	
021			Baltimore, MD, PMSA	0720			
	MD		Maryland		MD		
		002	Anne Arundel			003	
		003	Baltimore			005	
		004	Baltimore city			510	
		007	Carroll			013	
		013	Harford			025	
		014	Howard			027	
		018	Queen Anne's			035	
024			Baton Rouge, LA, MSA	0760			
	LA		Louisiana		LA		
		003	Ascension			005	
		017	East Baton Rouge			033	
		032	Livingston			063	
		061	West Baton Rouge			121	
025			Beaumont-Port Arthur, TX, MSA	0840			
	TX		Texas		TX		
		100	Hardin			199	
		123	Jefferson			245	
		181	Orange			361	
028			Bergen-Passaic, NJ, PMSA	0875			
	NJ		New Jersey		NJ		
		002	Bergen			003	
		016	Passaic			031	
030			Biloxi-Gulfport-Pascagoula, MS, MSA	0920			
	MS		Mississippi		MS		
		023	Hancock			045	
		024	Harrison			047	
		030	Jackson			059	
031			Binghamton, NY, MSA	0960			
	NY		New York		NY		
		003	Broome			007	
		050	Tioga			107	

Primary and Metropolitan Statistical Areas Established in 1990
Effective with 2002 and Adapted for Use by DVS
United States- con.

032			Birmingham, AL, MSA	1000		
	AL		Alabama		AL	
		005	Blount			009
		037	Jefferson			073
		058	St. Clair			115
		059	Shelby			117
033			Bismarck, ND, MSA	1010		
	ND		North Dakota		ND	
		008	Burleigh			015
		030	Morton			059
036			Boise City, ID, MSA	1080		
	ID		Idaho		ID	
		001	Ada			001
		014	Canyon			027
037			Boston-Worcester-Lawrence-Lowell-Brockton, MA-NH	1123		
	MA		Massachusetts		MA	
		003	Bristol			005
		005	Essex			009
		009	Middlesex			017
		011	Norfolk			021
		012	Plymouth			023
		013	Suffolk			025
		014	Worcester			027
	NH		New Hampshire		NH	
		006	Hillsborough			011
		008	Rockingham			015
		009	Strafford			017
038			Boulder-Longmont, CO, PMSA	1125		
	CO		Colorado		CO	
		007	Boulder			013
041			Brownsville-Harlingen-San Benito, TX, MSA	1240		
	TX		Texas		TX	
		031	Cameron			061
043			Buffalo-Niagara Falls, NY, MSA	1280		
	NY		New York		NY	
		014	Erie			029
		030	Niagara			063

045			Canton-Massillon, OH, MSA	1320		
	OH		Ohio		OH	
		010	Carroll			019
		076	Stark			151
046			Casper, WY, MSA	1350		
	WY		Wyoming		WY	
		013	Natrona			025
049			Charleston-North Charleston, SC, MSA	1440		
	SC		South Carolina		SC	
		008	Berkeley			015
		010	Charleston			019
		018	Dorchester			035
050			Charleston, WV, MSA	1480		
	WV		West Virginia		WV	
		020	Kanawha			039
		040	Putnam			079
051			Charlotte-Gastonia-Rock Hill, NC-SC, MSA	1520		
	NC		North Carolina		NC	
		013	Cabarrus			025
		036	Gaston			071
		055	Lincoln			109
		060	Mecklenburg			119
		080	Rowan			159
		090	Union			179
	SC		South Carolina		SC	
		046	York			091
053			Chattanooga, TN-GA, MSA	1560		
	GA		Georgia		GA	
		023	Catoosa			047
		041	Dade			083
		146	Walker			295
	TN		Tennessee		TN	
		033	Hamilton			065
		058	Marion			115
054			Cheyenne, WY, MSA	1580		
	WY		Wyoming		WY	
		011	Laramie			021

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055			Chicago, IL, PMSA	1600		
	IL		Illinois		IL	
		016	Cook			031
		019	De Kalb			037
		022	Du Page			043
		032	Grundy			063
		045	Kane			089
		047	Kendall			093
		049	Lake			097
		056	McHenry			111
		099	Will			197
057			Cincinnati, OH-KY-IN, PMSA	1640		
	IN		Indiana		IN	
		015	Dearborn			029
		058	Ohio			115
	KY		Kentucky		KY	
		008	Boone			015
		019	Campbell			037
		039	Gallatin			077
		041	Grant			081
		059	Kenton			117
		096	Pendleton			191
	OH		Ohio		OH	
		008	Brown			015
		013	Clermont			025
		031	Hamilton			061
		083	Warren			165
059			Cleveland-Lorain-Elyria, OH, PMSA	1680		
	OH		Ohio		OH	
		004	Ashtabula			007
		018	Cuyahoga			035
		028	Geauga			055
		043	Lake			085
		047	Lorain			093
		052	Medina			103
060			Colorado Springs, CO, MSA	1720		
	CO		Colorado		CO	
		021	El Paso			041
062			Columbia, SC, MSA	1760		
	SC		South Carolina		SC	
		032	Lexington			063
		040	Richland			079

063			Columbus, GA-AL, MSA	1800	
	AL		Alabama		AL
		057	Russell		113
	GA		Georgia		GA
		026	Chattahoochee		053
		072	Harris		145
		106	Muscogee		215
064			Columbus, OH, MSA	1840	
	OH		Ohio		OH
		021	Delaware		041
		023	Fairfield		045
		025	Franklin		049
		045	Licking		089
		049	Madison		097
		065	Pickaway		129
065			Corpus Christi, TX, MSA	1880	
	TX		Texas		TC
		178	Nueces		355
		205	San Patricio		409
067			Dallas, TX, PMSA	1920	
	TX		Texas		TX
		043	Collin		085
		057	Dallas		113
		061	Denton		121
		070	Ellis		139
		107	Henderson		213
		116	Hunt		231
		129	Kaufman		257
		199	Rockwall		397
069			Davenport-Moline-Rock Island, IA-IL, MSA	1960	
	IL		Illinois		IL
		037	Henry		073
		081	Rock Island		161
	IA		Iowa		IA
		082	Scott		163
070			Dayton-Springfield, OH, MSA	2000	
	OH		Ohio		OH
		012	Clark		023
		029	Greene		057
		055	Miami		109
		057	Montgomery		113
071			Daytona Beach, FL, MSA	2020	
	FL		Florida		FL
		018	Flagler		035
		064	Volusia		127

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074			Denver, CO, PMSA		2080		
	CO		Colorado			CO	
		001	Adams				001
		003	Arapahoe				005
		016	Denver				031
		018	Douglas				035
		030	Jefferson				059
075			Des Moines, IA, MSA		2120		
	IA		Iowa			IA	
		025	Dallas				049
		077	Polk				153
		091	Warren				181
076			Detroit, MI, PMSA		2160		
	MI		Michigan			MI	
		044	Lapeer				087
		050	Macomb				099
		058	Monroe				115
		063	Oakland				125
		074	St. Clair				147
		082	Wayne				163
078			Dover, DE, MSA		2190		
	DE		Delaware			DE	
		001	Kent				001
079			Dubuque, IA, MSA		2200		
	IA		Iowa			IA	
		031	Dubuque				061
081			Dutchess County, NY, PMSA		2281		
	NY		New York			NY	
		013	Dutchess				027

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083		El Paso, TX, MSA	2320		
	TX	Texas		TX	
	071	El Paso			141
085		Elmira, NY, MSA	2335		
	NY	New York		NY	
	007	Chemung			015
086		Enid, OK, MSA	2340		
	OK	Oklahoma		OK	
	024	Garfield			047
087		Erie, PA, MSA	2360		
	PA	Pennsylvania		PA	
	025	Erie			049
088		Eugene-Springfield, OR, MSA	2400		
	OR	Oregon		OR	
	020	Lane			039
089		Evansville-Henderson, IN-KY, MSA	2440		
	IN	Indiana		IN	
	065	Posey			129
	082	Vanderburgh			163
	087	Warrick			173
	KY	Kentucky		KY	
	051	Henderson			101
091		Fayetteville, NC, MSA	2560		
	NC	North Carolina		NC	
	026	Cumberland			051
092		Fayetteville-Springdale-Rogers, AR, MSA	2580		
	AR	Arkansas		AR	
	004	Benton			007
	072	Washington			143
093		Flint, MI, PMSA	2640		
	MI	Michigan		MI	
	025	Genesee			049

096			Fort Collins-Loveland, CO, MSA	2670			
	CO		Colorado		CO		
		035	Larimer			069	
097			Fort Lauderdale, FL, PMSA	2680			
	FL		Florida		FL		
		006	Broward			011	
098			Fort Myers-Cape Coral, FL, MSA	2700			
	FL		Florida		FL		
		036	Lee				
099			Fort Pierce-Port St. Lucie, FL, MSA	2710			
	FL		Florida		FL		
		043	Martin			085	
		056	St. Lucie			111	
102			Fort Wayne, IN, MSA	2760			
	IN		Indiana		IN		
		001	Adams			001	
		002	Allen			003	
		017	De Kalb			033	
		035	Huntington			069	
		090	Wells			179	
		092	Whitley			183	
103			Fort Worth-Arlington, TX, PMSA	2800			
	TX		Texas		TX		
		111	Hood			221	
		126	Johnson			251	
		184	Parker			367	
		220	Tarrant			439	
104			Fresno, CA, MSA	2840			
	CA		California		CA		
		010	Fresno			019	
		020	Madera			039	
107			Galveston-Texas City, TX, PMSA	2920			
	TX		Texas		TX		
		084	Galveston			167	

108			Gary, IN, PMSA	2960		
	IN		Indiana		IN	
		045	Lake			089
		064	Porter			127
111			Grand Forks, ND-MN, MSA	2985		
	MN		Minnesota		MN	
		060	Polk			119
	ND		North Dakota		ND	
		018	Grand Forks			
112			Grand Rapids-Muskegon-Holland, MI, MSA	3000		
	MI		Michigan		MI	
		003	Allegan			005
		041	Kent			081
		061	Muskegon			121
		070	Ottawa			139
113			Great Falls, MT, MSA	3040		
	MT		Montana		MT	
		007	Cascade			013
116			Greensboro--Winston-Salem--High Point, NC, MSA	3120		
	NC		North Carolina		NC	
		001	Alamance			001
		029	Davidson			057
		030	Davie			059
		034	Forsyth			067
		041	Guilford			081
		076	Randolph			151
		085	Stokes			169
		099	Yadkin			197
118			Greenville-Spartanburg-Anderson, SC, MSA	3160		
	SC		South Carolina		SC	
		004	Anderson			007
		011	Cherokee			021
		023	Greenville			045
		039	Pickens			077
		042	Spartanburg			083

120			Hamilton-Middletown, OH, PMSA	3200	
	OH		Ohio		OH
		009	Butler		017
121			Harrisburg-Lebanon-Carlisle, PA, MSA	3240	
	PA		Pennsylvania		PA
		021	Cumberland		041
		022	Dauphin		043
		038	Lebanon		075
		050	Perry		099
122			Hartford, CT, NECMA	3283	
	CT		Connecticut		CT
		002	Hartford		003
		004	Middlesex		007
		007	Tolland		013
124			Hickory-Morganton, NC, MSA	3290	
	NC		North Carolina		NC
		002	Alexander		003
		012	Burke		023
		014	Caldwell		027
		018	Catawba		
125			Honolulu, HI, MSA	3320	
	HI		Hawaii		HI
		002	Honolulu		003
127			Houston, TX, PMSA	3360	
	TX		Texas		TX
		036	Chambers		071
		079	Fort Bend		157
		101	Harris		201
		146	Liberty		291
		170	Montgomery		339
		237	Waller		473
128			Huntington-Ashland, WV-KY-OH, MSA	3400	
	KY		Kentucky		KY
		010	Boyd		019
		022	Carter		043
		045	Greenup		089
	OH		Ohio		OH
		044	Lawrence		087
	WV		West Virginia		WV
		006	Cabell		011
		050	Wayne		099
129			Huntsville, AL, MSA	3440	
	AL		Alabama		AL
		042	Limestone		083
		045	Madison		089

130			Indianapolis, IN, MSA	3480		
	IN		Indiana		IN	
		006	Boone			011
		029	Hamilton			057
		030	Hancock			059
		032	Hendricks			063
		041	Johnson			081
		048	Madison			095
		049	Marion			097
		055	Morgan			109
		073	Shelby			145
133			Jackson, MS, MSA	3560		
	MS		Mississippi		MS	
		025	Hinds			049
		045	Madison			089
		061	Rankin			121
135			Jacksonville, FL, MSA	3600		
	FL		Florida		FL	
		010	Clay			019
		016	Duval			031
		045	Nassau			089
		055	St. Johns			109
139			Jersey City, NJ, PMSA	3640		
	NJ		New Jersey		NJ	
		009	Hudson			017
140			Johnson City-Kingsport-Bristol, TN-VA, MSA	3660		
	TN		Tennessee		TN	
		010	Carter			019
		037	Hawkins			073
		082	Sullivan			163
		086	Unicoi			171
		090	Washington			179
	VA		Virginia		VA	
		015	Bristol city			520
		115	Scott			169
		129	Washington			191

143			Kalamazoo-Battle Creek, MI, MSA	3720		
	MI		Michigan		MI	
		013	Calhoun			025
		039	Kalamazoo			077
		080	Van Buren			159
145			Kansas City, MO-KS, MSA	3760		
	KA		Kansas		KS	
		046	Johnson			091
		052	Leavenworth			103
		061	Miami			121
		105	Wyandotte			209
	MI		Missouri		MO	
		019	Cass			037
		024	Clay			047
		025	Clinton			049
		048	Jackson			095
		054	Lafayette			107
		083	Platte			165
		089	Ray			177
147			Killeen-Temple, TX, MSA	3810		
	TX		Texas		TX	
		014	Bell			027
		050	Coryell			
148			Knoxville, TN, MSA	3840		
	TN		Tennessee		TN	
		001	Anderson			001
		005	Blount			009
		047	Knox			093
		053	Loudon			105
		078	Sevier			155
		087	Union			173

151			Lafayette, LA, MSA	3880		
	LA		Louisiana		LA	
		001	Acadia			001
		028	Lafayette			055
		049	St. Landry			097
		050	St. Martin			099
154			Lakeland-Winter Haven, FL, MSA	3980		
	FL		Florida		FL	
		053	Polk			105
155			Lancaster, PA, MSA	4000		
	PA		Pennsylvania		PA	
		036	Lancaster			071
156			Lansing-East Lansing, MI, MSA	4040		
	MI		Michigan		MI	
		019	Clinton			037
		023	Eaton			045
		033	Ingham			065
159			Las Vegas, NV-AZ, MSA	4120		
	AZ		Arizona		AZ	
		009	Mohave			015
	NV		Nevada		NV	
		003	Clark			003
		013	Nye			023
160			Lawrence, KS, MSA	4150		
	KS		Kansas		KS	
		023	Douglas			045
163			Lexington, KY, MSA	4280		
	KY		Kentucky		KY	
		009	Bourbon			017
		025	Clark			049
		034	Fayette			067
		057	Jessamine			113
		076	Madison			151
		105	Scott			209
		120	Woodford			239

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165			Lincoln, NE, MSA	4360		
	NE		Nebraska		NE	
		055	Lancaster			109
166			Little Rock-North Little Rock, AR, MSA	4400		
	AR		Arkansas		AR	
		023	Faulkner			045
		043	Lonoke			085
		060	Pulaski			119
		063	Saline			125
168			Los Angeles-Long Beach, CA, PMSA	4480		
	CA		California		CA	
		019	Los Angeles			037
169			Louisville, KY-IN, MSA	4520		
	IN		Indiana		IN	
		010	Clark			019
		022	Floyd			043
		031	Harrison			061
		072	Scott			143
	KY		Kentucky		KY	
		015	Bullitt			029
		056	Jefferson			111
		093	Oldham			185
172			Macon, GA, MSA	4680		
	GA		Georgia		GA	
		011	Bibb			021
		076	Houston			153
		084	Jones			169
		111	Peach			225
		143	Twiggs			289
173			Madison, WI, MSA	4720		
	WI		Wisconsin		WI	
		013	Dane			025

175		McAllen-Edinburg-Mission, TX, MSA	4880		
	TX	Texas		TX	
	108	Hidalgo			215
177		Melbourne-Titusville-Palm Bay, FL, MSA	4900		
	FL	Florida		FL	
	005	Brevard			009
178		Memphis, TN-AR-MS, MSA	4920		
	AR	Arkansas		AR	
	018	Crittenden			035
	MS	Mississippi		MS	
	017	De Soto			033
	TN	Tennessee		TN	
	024	Fayette			047
	079	Shelby			157
	084	Tipton			167
180		Miami, FL, PMSA	5000		
	FL	Florida		FL	
	013	Dade			025
181		Middlesex-Somerset-Hunterdon, NJ, PMSA	5015		
	NJ	New Jersey		NJ	
	010	Hunterdon			019
	012	Middlesex			023
	018	Somerset			035
182		Milwaukee-Waukesha, WI, PMSA	5080		
	WI	Wisconsin		WI	
	041	Milwaukee			079
	046	Ozaukee			089
	067	Washington			131
	068	Waukesha			133
183		Minneapolis-St. Paul, MN-WI, MSA	5120		
	MN	Minnesota		MN	
	002	Anoka			003
	010	Carver			019
	013	Chisago			025
	019	Dakota			037
	027	Hennepin			053
	030	Isanti			059
	062	Ramsey			123
	070	Scott			139
	071	Sherburne			141
	082	Washington			163
	086	Wright			171
	WI	Wisconsin		WI	
	048	Pierce			093
	056	St. Croix			109
184		Mobile, AL, MSA	5160		
	AL	Alabama		AL	
	002	Baldwin			003
	049	Mobile			097

185		Modesto, CA, MSA	5170		
	CA	California		CA	
	050	Stanislaus			099
186		Monmouth-Ocean, NJ, PMSA	5190		
	NJ	New Jersey		NJ	
	013	Monmouth			025
	015	Ocean			029
188		Montgomery, AL, MSA	5240		
	AL	Alabama		AL	
	001	Autauga			001
	026	Elmore			051
	051	Montgomery			101
191		Naples, FL, MSA	5345		
	FL	Florida		FL	
	011	Collier			021
192		Nashville, TN, MSA	5360		
	TN	Tennessee		TN	
	011	Cheatham			021
	019	Davidson			037
	022	Dickson			043
	074	Robertson			147
	075	Rutherford			149
	083	Sumner			165
	094	Williamson			187
	095	Wilson			189
193		Nassau-Suffolk, NY, PMSA	5380		
	NY	New York		NY	
	028	Nassau			059
	048	Suffolk			103
194		New Haven-Bridgeport-Stamford-Danbury-Waterbury, CT, NECMA	5483		
	CT	Connecticut		CT	
	001	Fairfield			001
	005	New Haven			009
195		New London-Norwich, CT, NECMA	5523		
	CT	Connecticut		CT	
	006	New London			011
196		New Orleans, LA, MSA	5560		
	LA	Louisiana		LA	
	026	Jefferson			051
	036	Orleans			071
	038	Plaquemines			075
	044	St. Bernard			087
	045	St. Charles			089
	047	St. James			093
	048	St. John the Baptist			095
	052	St. Tammany			103

197			New York, NY, PMSA	5600		
	NY		New York		NY	
		029	New York city			005
		038	Putnam			079
		040	Rockland			087
		056	Westchester			119
198			Newark, NJ, PMSA	5640		
	NJ		New Jersey		NJ	
		007	Essex			013
		014	Morris			027
		019	Sussex			037
		020	Union			039
		021	Warren			041
199			Newburgh, NY-PA, PMSA	5660		
	NY		New York		NY	
		034	Orange			071
	PA		Pennsylvania		PA	
		052	Pike			103
200			Norfolk-Virginia Beach-Newport News, VA-NC, MSA	5720		
	NC		North Carolina		NC	
		027	Currituck			053
	VA		Virginia		VA	
		026	Chesapeake city			550
		052	Gloucester			073
		058	Hampton city			650
		065	Isle of Wight			093
		066	James City			095
		081	Mathews			115
		087	Newport News city			700
		088	Norfolk city			710
		098	Poquoson city			735
		099	Portsmouth city			740
		123	Suffolk city			800
		127	Virginia Beach city			810
		132	Williamsburg city			830
		136	York			199
201			Oakland, CA, PMSA	5775		
	CA		California		CA	
		001	Alameda			001
		007	Contra Costa			013
202			Ocala, FL, MSA	5790		
	FL		Florida		FL	
		042	Marion			083
204			Oklahoma City, OK, MSA	5880		
	OK		Oklahoma		OK	
		009	Canadian			017
		014	Cleveland			027
		042	Logan			083
		044	McClain			087
		055	Oklahoma			109
		063	Pottawatomie			125

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206			Omaha, NE-IA, MSA	5920			
	IA		Iowa		IA		
		078	Pottawattamie				155
	NE		Nebraska		NE		
		013	Cass				025
		028	Douglas				055
		077	Sarpy				153
		089	Washington				177
207			Orange County, CA, PMSA	5945			
	CA		California		CA		
		030	Orange				059
208			Orlando, FL, MSA	5960			
	FL		Florida		FL		
		035	Lake				069
		048	Orange				095
		049	Osceola				097
		059	Seminole				117
209			Owensboro, KY, MSA	5990			
	KY		Kentucky		KY		
		030	Daviess				059
212			Pensacola, FL, MSA	6080			
	FL		Florida		FL		
		017	Escambia				033
		057	Santa Rosa				113
213			Peoria-Pekin, IL, MSA	6120			
	IL		Illinois		IL		
		072	Peoria				143
		090	Tazewell				179
		102	Woodford				203
214			Philadelphia, PA-NJ, PMSA	6160			
	NJ		New Jersey		NJ		
		003	Burlington				005
		004	Camden				007
		008	Gloucester				015
		017	Salem				033
	PA		Pennsylvania		PA		
		009	Bucks				017
		015	Chester				029
		023	Delaware				045
		046	Montgomery				091
		051	Philadelphia				101
215			Phoenix-Mesa, AZ, MSA	6200			
	AZ		Arizona		AZ		
		008	Maricopa				013
		012	Pinal				021
216			Pine Bluff, AR, MSA	6240			
	AR		Arkansas		AR		
		035	Jefferson				069

217			Pittsburgh, PA, MSA	6280		
	PA		Pennsylvania		PA	
		002	Allegheny			003
		004	Beaver			007
		010	Butler			019
		026	Fayette			051
		063	Washington			125
		065	Westmoreland			129
218			Pittsfield, MA, NECMA	6323		
	MA		Massachusetts		MA	
		002	Berkshire			003
219			Portland, ME, NECMA	6403		
	ME		Maine		ME	
		003	Cumberland			005
220			Portland-Vancouver, OR-WA, PMSA	6440		
	OR		Oregon		OR	
		003	Clackamas			005
		005	Columbia			009
		026	Multnomah			051
		034	Washington			067
		036	Yamhill			071
	WA		Washington		WA	
		006	Clark			011
221			Providence-Warwick-Pawtucket, RI, NECMA	6483		
	RI		Rhode Island		RI	
		001	Bristol			001
		002	Kent			003
		004	Providence			007
		005	Washington			009
222			Provo-Orem, UT, MSA	6520		
	UT		Utah		UT	
		025	Utah			049
226			Raleigh-Durham-Chapel Hill, NC, MSA	6640		
	NC		North Carolina		NC	
		019	Chatham			037
		032	Durham			063
		035	Franklin			069
		051	Johnston			101
		068	Orange			135
		092	Wake			183
227			Rapid City, SD, MSA	6660		
	SD		South Dakota		SD	
		051	Pennington			103

228			Reading, PA, MSA	6680		
	PA		Pennsylvania		PA	
		006	Berks			011
230			Reno, NV, MSA	6720		
	NV		Nevada		NV	
		016	Washoe			031
232			Richmond-Petersburg, VA, MSA	6760		
	VA		Virginia		VA	
		023	Charles City			036
		027	Chesterfield			041
		030	Colonial Heights city			570
		037	Dinwiddie			053
		053	Goochland			075
		059	Hanover			085
		061	Henrico			087
		064	Hopewell city			670
		086	New Kent			127
		096	Petersburg city			730
		100	Powhatan			145
		102	Prince George			149
		108	Richmond city			760
233			Riverside-San Bernardino, CA, PMSA	6780		
	CA		California		CA	
		033	Riverside			065
		036	San Bernardino			071
236			Rochester, NY, MSA	6840		
	NY		New York		NY	
		018	Genesee			037
		024	Livingston			051
		026	Monroe			055
		033	Ontario			069
		035	Orleans			073
		055	Wayne			117
237			Rockford, IL, MSA	6880		
	IL		Illinois		IL	
		004	Boone			007
		071	Ogle			141
		101	Winnebago			201

239			Sacramento, CA, PMSA	6920		
	CA		California		CA	
		009	El Dorado			017
		031	Placer			061
		034	Sacramento			067
240			Saginaw-Bay City-Midland, MI, MSA	6960		
	MI		Michigan		MI	
		009	Bay			017
		056	Midland			111
		073	Saginaw			145
243			St. Louis, MO-IL, MSA	7040		
	MO		Illinois		IL	
		014	Clinton			027
		042	Jersey			083
		060	Madison			119
		067	Monroe			133
		082	St. Clair			163
	IL		Missouri		MO	
		036	Franklin			071
		050	Jefferson			099
		057	Lincoln			113
		092	St. Charles			183
		095	St. Louis			189
		096	St. Louis city			510
		110	Warren			219
244			Salem, OR, PMSA	7080		
	OR		Oregon		OR	
		024	Marion			047
		027	Polk			053
245			Salinas, CA, MSA	7120		
	CA		California		CA	
		027	Monterey			053
246			Salt Lake City-Ogden, UT, MSA	7160		
	UT		Utah		UT	
		006	Davis			011
		018	Salt Lake			035
		029	Weber			057

248			San Antonio, TX, MSA	7240		
	TX		Texas		TX	
		015	Bexar			029
		046	Comal			091
		094	Guadalupe			187
		247	Wilson			493
249			San Diego, CA, MSA	7320		
	CA		California		CA	
		037	San Diego			073
250			San Francisco, CA, PMSA	7360		
	CA		California		CA	
		021	Marin			041
		038	San Francisco			075
		041	San Mateo			081
251			San Jose, CA, PMSA	7400		
	CA		California		CA	
		043	Santa Clara			085
253			Santa Barbara-Santa Maria-Lompoc, CA, MSA	7480		
	CA		California		CA	
		042	Santa Barbara			083
254			Santa Cruz-Watsonville, CA, PMSA	7485		
	CA		California		CA	
		044	Santa Cruz			087
256			Santa Rosa, CA, PMSA	7500		
	CA		California		CA	
		049	Sonoma			097
257			Sarasota-Bradenton, FL, MSA	7510		
	FL		Florida		FL	
		041	Manatee			081
		058	Sarasota			115
258			Savannah, GA, MSA	7520		
	GA		Georgia		GA	
		015	Bryan			029
		025	Chatham			051
		051	Effingham			103
259			Scranton--Wilkes-Barre--Hazleton, PA, MSA	7560		
	PA		Pennsylvania		PA	
		019	Columbia			037
		035	Lackawanna			069
		040	Luzerne			079
		066	Wyoming			131
260			Seattle-Bellevue-Everett, WA, PMSA	7600		
	WA		Washington		WA	
		015	Island			029
		017	King			033
		031	Snohomish			061

264			Shreveport-Bossier City, LA, MSA	7680		
	LA		Louisiana		LA	
		008	Bossier			015
		009	Caddo			017
		060	Webster			119
267			South Bend, IN, MSA	7800		
	IN		Indiana		IN	
		071	St. Joseph			141
268			Spokane, WA, MSA	7840		
	WA		Washington		WA	
		032	Spokane			063
270			Springfield, MO, MSA	7920		
	MO		Missouri		MO	
		022	Christian			043
		039	Greene			077
		113	Webster			225
271			Springfield, MA, NECMA	8003		
	MA		Massachusetts		MA	
		007	Hampden			013
		008	Hampshire			015

274		Stockton-Lodi, CA, MSA	8120		
	CA	California		CA	
	039	San Joaquin			077
276		Syracuse, NY, MSA	8160		
	NY	New York		NY	
	005	Cayuga			011
	025	Madison			053
	032	Onondaga			067
	036	Oswego			075
277		Tacoma, WA, PMSA	8200		
	WA	Washington		WA	
	027	Pierce			053
278		Tallahassee, FL, MSA	8240		
	FL	Florida		FL	
	020	Gadsden			039
	037	Leon			073
279		Tampa-St. Petersburg-Clearwater, FL, MSA	8280		
	FL	Florida		FL	
	027	Hernando			053
	029	Hillsborough			057
	051	Pasco			101
	052	Pinellas			103
282		Toledo, OH, MSA	8400		
	OH	Ohio		39	
	026	Fulton			051
	048	Lucas			095
	087	Wood			173
284		Trenton, NJ, PMSA	8480		
	NJ	New Jersey		NJ	
	011	Mercer			021
285		Tucson, AZ, MSA	8520		
	AZ	Arizona		AZ	
	011	Pima			019

286			Tulsa, OK, MSA	8560		
	OK		Oklahoma		OK	
		019	Creek			037
		057	Osage			113
		066	Rogers			131
		072	Tulsa			143
		073	Wagoner			145
289			Utica-Rome, NY, MSA	8680		
	NY		New York		NY	
		021	Herkimer			043
		031	Oneida			065
290			Vallejo-Fairfield-Napa, CA, PMSA	8720		
	CA		California		CA	
		028	Napa			055
		048	Solano			095
291			Ventura, CA, PMSA	8735		
	CA		California		CA	
		056	Ventura			111
292			Victoria, TX, MSA	8750		
	TX		Texas		TX	
		235	Victoria			469
294			Visalia-Tulare-Porterville, CA, MSA	8780		
	CA		California		CA	
		054	Tulare			107
296			Washington, DC-MD-VA-WV, PMSA	8840		
	DC		Dist. of Columbia		DC	
		001	District of Columbia			001
	MD		Maryland		MD	
		005	Calvert			009
		009	Charles			017
		011	Frederick			021
		016	Montgomery			031
		017	Prince George's			033
	VA		Virginia		VA	
		003	Alexandria city			510
		008	Arlington			013
		028	Clarke			043
		033	Culpeper			047
		040	Fairfax			059
		041	Fairfax city			600
		042	Falls Church city			610
		043	Fauquier			061
		049	Fredericksburg city			630
		068	King George			099

		073	Loudoun		107
		078	Manassas city		683
		079	Manassas Park city		685
		103	Prince William		153
		120	Spotsylvania		177
		121	Stafford		179
		128	Warren		187
	WV		West Virginia	WV	
		002	Berkeley		003
		019	Jefferson		037
299			West Palm Beach-Boca Raton, FL, MSA	8960	
	FL		Florida	FL	
		050	Palm Beach		099
301			Wichita, KS, MSA	9040	
	KS		Kansas	KS	
		008	Butler		015
		040	Harvey		079
		087	Sedgwick		173
304			Wilmington-Newark, DE-MD, PMSA	9160	
	DE		Delaware	DE	
		002	New Castle		003
	MD		Maryland	MD	
		008	Cecil		015

Primary and Metropolitan Statistical Areas Established in 1990
Effective with 2002 and Adapted for Use by DVS
United States - con.

308			York, PA, MSA	9280	
	PA		Pennsylvania	PA	
		067	York		133
309			Youngstown-Warren, OH, MSA	9320	
	OH		Ohio	OH	
		015	Columbiana		029
		050	Mahoning		099
		078	Trumbull		155

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***** 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)

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***** 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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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)

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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 of birth and by state of residence at birth
United States, Puerto Rico, Virgin Islands, and Guam, 2004 Period Data.
(Residence of birth is of the mother)

	Live births		Infant deaths			
			Unweighted		Weighted 1/	
State	Occurence	Residence	Occurence	Residence	Occurence	Residence
United States /2	4118951	4112055	27612	27553	27920	27860
Alabama	58383	59510	515	516	516	517
Alaska	10268	10338	63	68	63	68
Arizona	93876	93663	622	624	628	630
Arkansas	37840	38573	296	323	296	323
California	545764	544845	2745	2736	2821	2812
Colorado	68797	68503	455	427	455	427
Connecticut	42545	42095	227	229	227	229
Delaware	12080	11369	104	98	104	98
Dist of Columbia	14794	7933	160	97	160	97
Florida	218218	218053	1548	1528	1550	1530
Georgia	140118	138850	1193	1183	1194	1184
Hawaii	18297	18281	99	104	101	106
Idaho	21949	22532	129	136	130	137
Illinois	177417	180778	1288	1344	1301	1357
Indiana	87942	87142	672	672	687	687
Iowa	38527	38438	179	194	180	195
Kansas	40449	39669	284	291	284	291
Kentucky	54085	55720	344	378	346	380
Louisiana	65582	65370	690	665	699	674
Maine	13733	13944	80	79	80	79
Maryland	70538	74629	580	631	580	631
Massachusetts	79405	78484	380	372	385	377
Michigan	128588	129776	985	982	986	983
Minnesota	70618	70625	348	325	349	326
Mississippi	41562	42827	397	420	401	424
Missouri	78591	77765	630	580	632	582
Montana	11526	11519	56	53	56	53
Nebraska	26446	26332	177	171	178	172
Nevada	34780	35200	214	215	218	219
New Hampshire	14198	14565	78	79	81	82
New Jersey	112233	115253	596	625	612	640
New Mexico	27798	28384	166	181	169	184
New York	127465	130879	782	795	803	815
New York City	124097	119068	727	721	727	722
North Carolina	120590	119847	1049	1046	1049	1046
North Dakota	9408	8189	43	48	43	48
Ohio	149502	148955	1147	1104	1164	1120
Oklahoma	50223	51306	403	405	405	407
Oregon	46454	45678	264	247	267	250
Pennsylvania	144498	144748	1067	1045	1072	1050
Rhode Island	13582	12779	75	68	76	69
South Carolina	54232	56590	497	525	497	525
South Dakota	11803	11338	97	90	97	90
Tennessee	84855	79642	758	684	760	686
Texas	387337	381293	2322	2310	2406	2393
Utah	51835	50670	278	263	280	265
Vermont	6262	6599	30	29	30	29
Virginia	101826	103933	746	764	746	764
Washington	81390	81747	435	449	436	450
West Virginia	21305	20880	160	158	160	158
Wisconsin	69014	70146	399	416	400	417
Wyoming	6326	6807	33	60	33	60
Foreign Residents	-	6896	-	59	-	59
Puerto Rico	51239	51146	410	406	410	406
Virgin Islands	1673	1593	9	12	9	12
Guam	3424	3407	40	39	40	39

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.

Documentation Table 2. Live births,infant deaths and infant mortality rates by race of mother, sex and birthweight of child: United States, 2004 Period Data.

[Infant death 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	4112055	6,953	11,659	12,321	14,245	16,805	65,821	205,623	3778051	577
Infant deaths	27,860	5,907	5,602	1,921	966	758	1,800	2,264	8,528	113
Infant mortality rate	6.78	849.56	480.49	155.91	67.81	45.11	27.35	11.01	2.26	195.84
Male										
Live births	2104663	3,571	5,897	6,417	7,264	8,459	31,997	94,615	1946137	306
Infant deaths	15,653	3,086	3,253	1,202	543	434	961	1,177	4,926	72
Infant mortality rate	7.44	864.18	551.64	187.31	74.75	51.31	30.03	12.44	2.53	235.29
Female										
Live births	2007392	3,382	5,762	5,904	6,981	8,346	33,824	111,008	1831914	271
Infant deaths	12,207	2,822	2,349	719	422	325	838	1,087	3,602	42
Infant mortality rate	6.08	834.42	407.67	121.78	60.45	38.94	24.78	9.79	1.97	154.98
White										
Both sexes										
Live births	3222929	3,927	6,914	7,800	9,360	11,418	45,976	143,361	2993755	418
Infant deaths	18,257	3,353	3,430	1,215	631	513	1,291	1,535	6,213	77
Infant mortality rate	5.66	853.83	496.09	155.77	67.41	44.93	28.08	10.71	2.08	184.21
Male										
Live births	1650698	1,996	3,575	4,099	4,820	5,855	22,624	66,202	1541312	215
Infant deaths	10,277	1,734	2,016	778	343	295	677	809	3,578	47
Infant mortality rate	6.23	868.74	563.92	189.80	71.16	50.38	29.92	12.22	2.32	218.60
Female										
Live births	1572231	1,931	3,339	3,701	4,540	5,563	23,352	77,159	1452443	203
Infant deaths	7,981	1,619	1,413	437	288	219	613	726	2,635	30
Infant mortality rate	5.08	838.43	423.18	118.08	63.44	39.37	26.25	9.41	1.81	147.78
Black										
Both sexes										
Live births	616,076	2,728	4,199	3,893	4,108	4,406	15,912	48,006	532,699	125
Infant deaths	8,162	2,306	1,908	599	282	202	408	586	1,839	32
Infant mortality rate	13.25	845.31	454.39	153.87	68.65	45.85	25.64	12.21	3.45	256.00
Male										
Live births	313,897	1,442	2,059	1,975	2,032	2,115	7,441	21,684	275,077	72
Infant deaths	4,581	1,242	1,087	351	168	115	225	300	1,072	21
Infant mortality rate	14.59	861.30	527.93	177.72	82.68	54.37	30.24	13.84	3.90	291.67
Female										
Live births	302,179	1,286	2,140	1,918	2,076	2,291	8,471	26,322	257,622	53
Infant deaths	3,581	1,064	821	248	114	88	183	286	767	11
Infant mortality rate	11.85	827.37	383.64	129.30	54.91	38.41	21.60	10.87	2.98	*

Documentation Table 2. Live births,infant deaths and infant mortality rates by race of mother, sex and birthweight of child: United States, 2004 Period Data.

[Infant death 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	43,927	54	107	105	143	172	653	2,061	40,622	10
Infant deaths	371	43	45	22	11	4	22	45	178	0
Infant mortality rate	8.45	796.30	420.56	209.52	*	*	33.69	21.83	4.38	*
Male										
Live births	22,293	23	49	61	75	81	337	962	20,700	5
Infant deaths	212	16	24	19	7	2	14	20	110	0
Infant mortality rate	9.51	*	489.80	*	*	*	*	20.79	5.31	*
Female										
Live births	21,634	31	58	44	68	91	316	1,099	19,922	5
Infant deaths	158	27	21	3	4	2	8	25	68	0
Infant mortality rate	7.30	870.97	362.07	*	*	*	*	22.75	3.41	*
Asian or Pacific Islander										
Both sexes										
Live births	229,123	244	439	523	634	809	3,280	12,195	210,975	24
Infant deaths	1,070	206	219	85	41	39	79	97	299	4
Infant mortality rate	4.67	844.26	498.86	162.52	64.67	48.21	24.09	7.95	1.42	*
Male										
Live births	117,775	110	214	282	337	408	1,595	5,767	109,048	14
Infant deaths	583	94	125	54	25	22	44	48	167	4
Infant mortality rate	4.95	854.55	584.11	191.49	74.18	53.92	27.59	8.32	1.53	*
Female										
Live births	111,348	134	225	241	297	401	1,685	6,428	101,927	10
Infant deaths	487	112	94	31	16	16	34	50	133	0
Infant mortality rate	4.37	835.82	417.78	128.63	*	*	20.18	7.78	1.30	*

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

Documentation Table 3

Live births, infant deaths, and infant mortality rates by birthweight, race of mother, and gestational age:
United states, 2004 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	4,112,055	30,673	50,975	238,531	188,180	2,130,486	800,506	377,187	252,543	42,974
Infant deaths	27,860	12,604	2,294	2,619	1,069	5,561	1,574	782	725	631
Infant mortality rate	6.78	410.92	45.00	10.98	5.68	2.61	1.97	2.07	2.87	14.68
Less then 2,500 grams										
Live births	333,427	29,608	39,191	113,813	38,735	84,882	11,534	5,310	6,157	4,197
Infant deaths	19,218	12,581	2,185	1,931	535	1,172	195	100	135	385
Infant mortality rate	57.64	424.92	55.75	16.97	13.81	13.81	16.91	18.83	21.93	91.73
Less then 500 grams										
Live births	6,953	6,503	226	17	2	11	1	4	5	184
Infant deaths	5,907	5,597	144	10	1	8	1	2	5	140
Infant mortality rate	849.56	860.68	637.17	*	*	*	*	*	*	760.87
500-749 grams										
Live births	11,659	9,914	1,332	128	12	21	4	7	8	233
Infant deaths	5,602	5,047	391	37	2	4	2	4	4	111
Infant mortality rate	480.49	509.08	293.54	289.06	*	*	*	*	*	476.39
750-999 grams										
Live births	12,321	7,514	3,920	467	30	116	34	24	23	193
Infant deaths	1,921	1,404	391	63	3	15	2	-	4	39
Infant mortality rate	155.91	186.85	99.74	134.90	*	*	*	-	*	202.07
1,000-1,249 grams										
Live births	14,245	3,127	7,880	2,208	165	395	111	73	88	198
Infant deaths	966	316	430	133	19	37	7	5	4	13
Infant mortality rate	67.81	101.06	54.57	60.24	*	93.67	*	*	*	*
1,250-1,499 grams										
Live births	16,805	935	8,808	5,292	387	710	164	96	151	262
Infant deaths	758	101	319	219	26	55	11	4	8	15
Infant mortality rate	45.11	108.02	36.22	41.38	67.18	77.46	*	*	*	*
1,500-1,999 grams										
Live births	65,821	1,002	12,544	35,911	5,515	7,578	1,078	549	822	822
Infant deaths	1,800	89	373	731	177	289	55	22	33	31
Infant mortality rate	27.35	88.82	29.74	20.36	32.09	38.14	51.02	40.07	40.15	37.71
2,000-2,499 grams										
Live births	205,623	613	4,481	69,790	32,624	76,051	10,142	4,557	5,060	2,305
Infant deaths	2,264	26	137	738	306	763	117	63	77	37
Infant mortality rate	11.01	42.41	30.57	10.57	9.38	10.03	11.54	13.82	15.22	16.05
2,500-2,999 grams										
Live births	730,045	1,065	4,288	61,121	69,909	425,262	89,886	37,281	33,660	7,573
Infant deaths	3,039	23	53	396	305	1,578	339	147	158	40
Infant mortality rate	4.16	21.60	12.36	6.48	4.36	3.71	3.77	3.94	4.69	5.28
3,000-3,499 grams										
Live births	1,573,831	-	5,049	41,674	55,315	904,716	315,088	137,616	98,471	15,902
Infant deaths	3,272	-	42	204	164	1,756	565	257	235	49
Infant mortality rate	2.08	-	8.32	4.90	2.96	1.94	1.79	1.87	2.39	3.08

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, 2004 period data

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

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	1,125,055	-	2,447	17,517	19,537	563,573	286,621	140,410	83,823	11,127
Infant deaths	1,699	-	13	67	49	828	366	206	141	30
Infant mortality rate	1.51	-	*	3.82	2.51	1.47	1.28	1.47	1.68	2.70
4,000-4,499 grams										
Live births	299,196	-	-	3,763	3,952	131,287	83,781	47,760	25,629	3,024
Infant deaths	424	-	-	16	12	195	91	60	43	8
Infant mortality rate	1.42	-	-	*	*	1.49	1.09	1.26	1.68	*
4,500-4,999 grams										
Live births	44,917	-	-	550	642	18,488	12,446	7,973	4,337	481
Infant deaths	69	-	-	5	3	23	15	10	9	3
Infant mortality rate	1.54	-	-	*	*	1.24	*	*	*	*
5,000 grams or more										
Live births	5,007	-	-	93	90	2,278	1,150	837	466	93
Infant deaths	24	-	-	-	2	10	3	3	3	3
Infant mortality rate	4.79	-	-	-	*	*	*	*	*	*
Not stated										
Live births	577	-	-	-	-	-	-	-	-	577
Infant deaths	113	-	-	-	-	-	-	-	-	113
Infant mortality rate	195.84	-	-	-	-	-	-	-	-	195.84
White										
Total										
Live births	3,222,929	18,362	34,778	175,002	142,506	1,674,287	639,194	303,733	200,659	34,408
Infant deaths	18,257	7,446	1,503	1,811	760	4,026	1,142	574	538	459
Infant mortality rate	5.66	405.51	43.22	10.35	5.33	2.40	1.79	1.89	2.68	13.34
Less then 2,500 grams										
Live births	228,756	17,710	26,575	81,531	27,143	57,189	7,725	3,637	4,244	3,002
Infant deaths	11,968	7,434	1,422	1,324	369	861	129	67	90	273
Infant mortality rate	52.32	419.76	53.51	16.24	13.59	15.06	16.70	18.42	21.21	90.94
Less then 500 grams										
Live births	3,927	3,644	136	8	1	10	1	3	2	122
Infant deaths	3,353	3,159	80	5	1	8	1	1	2	95
Infant mortality rate	853.83	866.90	588.24	*	*	*	*	*	*	778.69
500-749 grams										
Live births	6,914	5,787	826	81	9	14	4	7	6	180
Infant deaths	3,430	3,064	241	27	2	4	2	4	3	83
Infant mortality rate	496.09	529.46	291.77	333.33	*	*	*	*	*	461.11
750-999 grams										
Live births	7,800	4,643	2,552	315	15	88	23	19	14	131
Infant deaths	1,215	872	255	41	2	14	2	-	2	27
Infant mortality rate	155.77	187.81	99.92	130.16	*	*	*	-	*	206.11
1,000-1,249 grams										
Live births	9,360	2,066	5,139	1,482	99	258	79	41	57	139
Infant deaths	631	198	279	98	11	27	4	3	3	7
Infant mortality rate	67.41	95.84	54.29	66.13	*	104.65	*	*	*	*

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, 2004 period data

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

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	11,418	587	6,021	3,578	270	482	122	71	93	194
Infant deaths	513	68	207	150	19	38	7	4	6	14
Infant mortality rate	44.93	115.84	34.38	41.92	*	78.84	*	*	*	*
1,500-1,999 grams										
Live births	45,976	593	8,944	25,222	3,822	5,119	726	390	580	580
Infant deaths	1,291	58	262	522	129	220	38	16	23	23
Infant mortality rate	28.08	97.81	29.29	20.70	33.75	42.98	52.34	*	39.66	39.66
2,000-2,499 grams										
Live births	143,361	390	2,957	50,845	22,927	51,218	6,770	3,106	3,492	1,656
Infant deaths	1,535	14	98	481	204	550	75	38	51	24
Infant mortality rate	10.71	*	33.14	9.46	8.90	10.74	11.08	12.23	14.60	14.49
2,500-2,999 grams										
Live births	522,822	652	2,736	45,365	52,323	302,827	62,851	26,445	23,965	5,658
Infant deaths	2,109	12	42	275	226	1,069	237	103	112	32
Infant mortality rate	4.03	*	15.35	6.06	4.32	3.53	3.77	3.89	4.67	5.66
3,000-3,499 grams										
Live births	1,226,188	-	3,562	30,926	43,487	708,468	243,838	106,958	76,193	12,756
Infant deaths	2,384	-	29	147	119	1,280	400	186	183	41
Infant mortality rate	1.94	-	8.14	4.75	2.74	1.81	1.64	1.74	2.40	3.21
3,500-3,999 grams										
Live births	941,407	-	1,905	13,684	15,706	473,563	239,873	117,364	69,880	9,432
Infant deaths	1,314	-	9	47	35	641	288	160	108	25
Infant mortality rate	1.40	-	*	3.43	2.23	1.35	1.20	1.36	1.55	2.65
4,000-4,499 grams										
Live births	259,811	-	-	2,996	3,253	114,281	72,908	41,544	22,173	2,656
Infant deaths	331	-	-	12	7	151	73	46	36	6
Infant mortality rate	1.27	-	-	*	*	1.32	1.00	1.11	1.62	*
4,500-4,999 grams										
Live births	39,286	-	-	439	521	16,058	11,002	7,050	3,806	410
Infant deaths	59	-	-	5	2	18	12	10	8	3
Infant mortality rate	1.50	-	-	*	*	*	*	*	*	*
5,000 grams or more										
Live births	4,241	-	-	61	73	1,901	997	735	398	76
Infant deaths	15	-	-	-	1	6	3	2	1	2
Infant mortality rate	*	-	-	-	*	*	*	*	*	*
Not stated										
Live births	418	-	-	-	-	-	-	-	-	418
Infant deaths	77	-	-	-	-	-	-	-	-	77
Infant mortality rate	184.21	-	-	-	-	-	-	-	-	184.21
Black										
Total										
Live births	616,076	10,834	13,385	49,549	34,259	310,684	107,687	49,480	36,068	4,130
Infant deaths	8,162	4,576	663	651	241	1,221	350	166	151	145
Infant mortality rate	13.25	422.37	49.53	13.14	7.03	3.93	3.25	3.35	4.19	35.11

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, 2004 period data

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

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 then 2,500 grams										
Live births	83,252	10,492	10,519	25,641	8,922	21,004	3,026	1,344	1,526	778
Infant deaths	6,291	4,567	639	493	129	250	59	26	32	95
Infant mortality rate	75.57	435.28	60.75	19.23	14.46	11.90	19.50	19.35	20.97	122.11
Less then 500 grams										
Live births	2,728	2,581	83	8	1	-	-	-	3	52
Infant deaths	2,306	2,202	59	5	-	-	-	-	3	37
Infant mortality rate	845.31	853.16	710.84	*	-	-	-	-	*	711.54
500-749 grams										
Live births	4,199	3,678	433	39	3	4	-	-	1	41
Infant deaths	1,908	1,748	126	9	-	-	-	-	-	25
Infant mortality rate	454.39	475.26	290.99	*	-	-	-	-	-	609.76
750-999 grams										
Live births	3,893	2,501	1,166	125	12	20	10	4	9	46
Infant deaths	599	454	113	19	1	-	-	-	2	9
Infant mortality rate	153.87	181.53	96.91	*	*	-	-	-	*	*
1,000-1,249 grams										
Live births	4,108	898	2,320	602	56	121	29	22	25	35
Infant deaths	282	99	131	28	7	9	3	1	-	4
Infant mortality rate	68.65	110.24	56.47	46.51	*	*	*	*	-	*
1,250-1,499 grams										
Live births	4,406	296	2,323	1,378	86	185	33	21	45	39
Infant deaths	202	26	95	58	3	14	3	-	2	1
Infant mortality rate	45.85	87.84	40.90	42.09	*	*	*	-	*	*
1,500-1,999 grams										
Live births	15,912	341	2,946	8,574	1,331	1,958	277	136	181	168
Infant deaths	408	26	90	159	43	54	16	4	7	8
Infant mortality rate	25.64	76.25	30.55	18.54	32.31	27.58	*	*	*	*
2,000-2,499 grams										
Live births	48,006	197	1,248	14,915	7,433	18,716	2,677	1,161	1,262	397
Infant deaths	586	11	26	215	75	172	37	21	18	11
Infant mortality rate	12.21	*	20.83	14.42	10.09	9.19	13.82	18.09	*	*
2,500-2,999 grams										
Live births	148,523	342	1,279	12,177	13,109	86,515	19,121	7,758	7,318	904
Infant deaths	753	9	9	96	61	413	83	33	41	8
Infant mortality rate	5.07	*	*	7.88	4.65	4.77	4.34	4.25	5.60	*
3,000-3,499 grams										
Live births	234,900	-	1,195	8,177	8,828	131,382	47,522	20,853	15,563	1,380
Infant deaths	709	-	12	46	36	376	128	59	46	4
Infant mortality rate	3.02	-	*	5.63	4.08	2.86	2.69	2.83	2.96	*
3,500-3,999 grams										
Live births	119,908	-	392	2,866	2,809	58,835	30,077	15,021	9,155	753
Infant deaths	291	-	2	13	10	141	62	37	23	2
Infant mortality rate	2.43	-	*	*	*	2.40	2.06	2.46	2.51	*

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, 2004 period data

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

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	25,271	-	-	584	493	11,071	6,920	3,880	2,168	155
Infant deaths	72	-	-	2	2	34	16	10	6	2
Infant mortality rate	2.85	-	-	*	*	3.07	*	*	*	*
4,500-4,999 grams										
Live births	3,602	-	-	84	85	1,625	926	555	301	26
Infant deaths	5	-	-	-	1	3	1	-	-	-
Infant mortality rate	*	-	-	-	*	*	*	-	-	-
5,000 grams or more										
Live births	495	-	-	20	13	252	95	69	37	9
Infant deaths	8	-	-	-	1	4	-	-	2	1
Infant mortality rate	*	-	-	-	*	*	-	-	*	*
Not stated										
Live births	125	-	-	-	-	-	-	-	-	125
Infant deaths	32	-	-	-	-	-	-	-	-	32
Infant mortality rate	256.00	-	-	-	-	-	-	-	-	256.00
American Indian[1]										
Total										
Live births	43,927	325	616	2,897	2,110	21,811	8,263	4,217	3,312	376
Infant deaths	371	101	29	53	24	98	32	15	14	3
Infant mortality rate	8.45	310.77	47.08	18.29	11.37	4.49	3.87	*	*	*
Less then 2,500 grams										
Live births	3,295	297	390	1,086	369	892	107	52	72	30
Infant deaths	193	101	28	36	12	10	-	2	3	-
Infant mortality rate	58.57	340.07	71.79	33.15	*	*	-	*	*	-
Less then 500 grams										
Live births	54	52	2	-	-	-	-	-	-	-
Infant deaths	43	42	1	-	-	-	-	-	-	-
Infant mortality rate	796.30	807.69	*	-	-	-	-	-	-	-
500-749 grams										
Live births	107	90	15	-	-	-	-	-	-	2
Infant deaths	45	40	5	-	-	-	-	-	-	-
Infant mortality rate	420.56	444.44	*	-	-	-	-	-	-	-
750-999 grams										
Live births	105	63	36	4	-	1	1	-	-	-
Infant deaths	22	14	7	1	-	-	-	-	-	-
Infant mortality rate	209.52	*	*	*	-	-	-	-	-	-
1,000-1,249 grams										
Live births	143	44	68	18	1	5	-	2	2	3
Infant deaths	11	5	5	1	-	-	-	-	-	-
Infant mortality rate	*	*	*	*	-	-	-	-	-	-
1,250-1,499 grams										
Live births	172	20	83	41	11	11	2	1	2	1
Infant deaths	4	-	2	-	1	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, 2004 period data

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

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	653	23	121	345	51	87	12	5	4	5
Infant deaths	22	-	4	14	1	-	-	2	1	-
Infant mortality rate	33.69	-	*	*	*	-	-	*	*	-
2,000-2,499 grams										
Live births	2,061	5	65	678	306	788	92	44	64	19
Infant deaths	45	-	4	20	10	9	-	-	2	-
Infant mortality rate	21.83	-	*	29.50	*	*	-	-	*	-
2,500-2,999 grams										
Live births	7,180	28	82	752	707	3,909	868	379	395	60
Infant deaths	52	-	1	10	8	23	7	2	1	-
Infant mortality rate	7.24	-	*	*	*	5.88	*	*	*	-
3,000-3,499 grams										
Live births	16,271	-	89	663	644	9,078	3,035	1,397	1,220	145
Infant deaths	70	-	-	5	2	39	14	5	2	2
Infant mortality rate	4.30	-	-	*	*	4.30	*	*	*	*
3,500-3,999 grams										
Live births	12,571	-	55	310	297	6,005	3,057	1,610	1,149	88
Infant deaths	39	-	-	1	1	17	9	4	6	1
Infant mortality rate	3.10	-	-	*	*	*	*	*	*	*
4,000-4,499 grams										
Live births	3,802	-	-	67	75	1,585	1,005	659	376	35
Infant deaths	11	-	-	1	1	7	-	1	1	-
Infant mortality rate	*	-	-	*	*	*	-	*	*	-
4,500-4,999 grams										
Live births	696	-	-	13	15	292	165	110	93	8
Infant deaths	4	-	-	-	-	1	2	-	1	-
Infant mortality rate	*	-	-	-	-	*	*	-	*	-
5,000 grams or more										
Live births	102	-	-	6	3	50	26	10	7	-
Infant deaths	1	-	-	-	-	-	-	1	-	-
Infant mortality rate	*	-	-	-	-	-	-	*	-	-
Not stated										
Live births	10	-	-	-	-	-	-	-	-	10
Infant deaths	-	-	-	-	-	-	-	-	-	-
Infant mortality rate	-	-	-	-	-	-	-	-	-	-
Asian or Pacific Islander										
Total										
Live births	229,123	1,152	2,196	11,083	9,305	123,704	45,362	19,757	12,504	4,060
Infant deaths	1,070	481	99	104	45	216	51	27	22	25
Infant mortality rate	4.67	417.53	45.08	9.38	4.84	1.75	1.12	1.37	1.76	6.16
Less then 2,500 grams										
Live births	18,124	1,109	1,707	5,555	2,301	5,797	676	277	315	387
Infant deaths	766	479	95	77	25	51	7	5	10	18
Infant mortality rate	42.26	431.92	55.65	13.86	10.86	8.80	*	*	*	*

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, 2004 period data

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

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 then 500 grams										
Live births	244	226	5	1	-	1	-	1	-	10
Infant deaths	206	194	4	-	-	-	-	1	-	7
Infant mortality rate	844.26	858.41	*	-	-	-	-	*	-	*
500-749 grams										
Live births	439	359	58	8	-	3	-	-	1	10
Infant deaths	219	195	19	1	-	-	-	-	1	3
Infant mortality rate	498.86	543.18	*	*	-	-	-	-	*	*
750-999 grams										
Live births	523	307	166	23	3	7	-	1	-	16
Infant deaths	85	64	16	1	-	1	-	-	-	3
Infant mortality rate	162.52	208.47	*	*	-	*	-	-	-	*
1,000-1,249 grams										
Live births	634	119	353	106	9	11	3	8	4	21
Infant deaths	41	14	15	6	1	1	-	1	1	2
Infant mortality rate	64.67	*	*	*	*	*	-	*	*	*
1,250-1,499 grams										
Live births	809	32	381	295	20	32	7	3	11	28
Infant deaths	39	7	15	11	3	1	1	-	-	-
Infant mortality rate	48.21	*	*	*	*	*	*	-	-	-
1,500-1,999 grams										
Live births	3,280	45	533	1,770	311	414	63	18	57	69
Infant deaths	79	4	17	35	4	15	1	-	2	-
Infant mortality rate	24.09	*	*	19.77	*	*	*	-	*	-
2,000-2,499 grams										
Live births	12,195	21	211	3,352	1,958	5,329	603	246	242	233
Infant deaths	97	1	8	22	17	32	5	3	6	2
Infant mortality rate	7.95	*	*	6.56	*	6.00	*	*	*	*
2,500-2,999 grams										
Live births	51,520	43	191	2,827	3,770	32,011	7,046	2,699	1,982	951
Infant deaths	125	2	1	15	9	73	12	8	4	-
Infant mortality rate	2.43	*	*	*	*	2.28	*	*	*	-
3,000-3,499 grams										
Live births	96,472	-	203	1,908	2,356	55,788	20,693	8,408	5,495	1,621
Infant deaths	110	-	1	6	6	61	23	7	4	2
Infant mortality rate	1.14	-	*	*	*	1.09	1.11	*	*	*
3,500-3,999 grams										
Live births	51,169	-	95	657	725	25,170	13,614	6,415	3,639	854
Infant deaths	55	-	2	5	2	29	7	5	4	1
Infant mortality rate	1.07	-	*	*	*	1.15	*	*	*	*
4,000-4,499 grams										
Live births	10,312	-	-	116	131	4,350	2,948	1,677	912	178
Infant deaths	9	-	-	1	2	2	2	2	-	-
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, 2004 period data

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

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	1,333	-	-	14	21	513	353	258	137	37
Infant deaths	1	-	-	-	-	1	-	-	-	-
Infant mortality rate	*	-	-	-	-	*	-	-	-	-
5,000 grams or more										
Live births	169	-	-	6	1	75	32	23	24	8
Infant deaths	-	-	-	-	-	-	-	-	-	-
Infant mortality rate	-	-	-	-	-	-	-	-	-	-
Not stated										
Live births	24	-	-	-	-	-	-	-	-	24
Infant deaths	4	-	-	-	-	-	-	-	-	4
Infant mortality rate	*	-	-	-	-	-	-	-	-	*

-/ Quality zero.
*/Figure does not meet standard of reliability or precision; based on fewer than 20 death 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, 2004 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)	4,112,055	27,860	18,602	14,836	3,766	9,258
Rate		6.78	4.52	3.61	0.92	2.25
Less than 2,500 grams	333,427	19,218	15,582	13,028	2,554	3,637
Rate		57.64	46.73	39.07	7.66	10.91
Less than 500 grams	6,953	5,907	5,748	5,583	165	159
Rate		849.56	826.69	802.96	23.73	22.87
500-749 grams	11,659	5,602	4,784	3,851	933	819
Rate		480.49	410.33	330.30	80.02	70.25
750-999 grams	12,321	1,921	1,432	1,000	432	489
Rate		155.91	116.22	81.16	35.06	39.69
1,000-1,249 grams	14,245	966	697	478	219	269
Rate		67.81	48.93	33.56	15.37	18.88
1,250-1,499 grams	16,805	758	525	383	142	233
Rate		45.11	31.24	22.79	8.45	13.86
1,500-1,999 grams	65,821	1,800	1,195	924	271	605
Rate		27.35	18.16	14.04	4.12	9.19
2,000-2,499 grams	205,623	2,264	1,200	808	392	1,064
Rate		11.01	5.84	3.93	1.91	5.17
2,500-2,999 grams	730,045	3,039	1,176	688	487	1,864
Rate		4.16	1.61	0.94	0.67	2.55
3,000-3,499 grams	1,573,831	3,272	998	593	405	2,274
Rate		2.08	0.63	0.38	0.26	1.44
3,500-3,999 grams	1,125,055	1,699	551	302	249	1,149
Rate		1.51	0.49	0.27	0.22	1.02
4,000-4,499 grams	299,196	424	143	87	56	281
Rate		1.42	0.48	0.29	0.19	0.94
4,500-4,999 grams	44,917	69	34	23	11	34
Rate		1.54	0.76	0.51	*	0.76
5,000 grams or more	5,007	24	13	12	1	11
Rate		4.79	*	*	*	*
Not stated	577	113	104	102	2	9
Rate		195.84	180.24	176.78	*	*

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, 2004 period data -Cont

[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).....	3,222,929	18,257	12,178	9,674	2,504	6,080
Rate.....		5.66	3.78	3.00	0.78	1.89
Less than 2,500 grams.....	228,756	11,968	9,879	8,276	1,603	2,089
Rate.....		52.32	43.19	36.18	7.01	9.13
Less than 500 grams.....	3,927	3,353	3,278	3,189	89	75
Rate.....		853.83	834.73	812.07	22.66	19.10
500-749 grams.....	6,914	3,430	3,003	2,462	541	427
Rate.....		496.09	434.34	356.09	78.25	61.76
750-999 grams.....	7,800	1,215	956	687	269	259
Rate.....		155.77	122.56	88.08	34.49	33.21
1,000-1,249 grams.....	9,360	631	487	341	145	144
Rate.....		67.41	52.03	36.43	15.49	15.38
1,250-1,499 grams.....	11,418	513	373	273	100	140
Rate.....		44.93	32.67	23.91	8.76	12.26
1,500-1,999 grams.....	45,976	1,291	901	711	191	389
Rate.....		28.08	19.60	15.46	4.15	8.46
2,000-2,499 grams.....	143,361	1,535	881	613	268	654
Rate.....		10.71	6.15	4.28	1.87	4.56
2,500-2,999 grams.....	522,822	2,109	868	520	348	1,241
Rate.....		4.03	1.66	0.99	0.67	2.37
3,000-3,499 grams.....	1,226,188	2,384	770	469	302	1,614
Rate.....		1.94	0.63	0.38	0.25	1.32
3,500-3,999 grams.....	941,407	1,314	438	241	197	876
Rate.....		1.40	0.47	0.26	0.21	0.93
4,000-4,499 grams.....	259,811	331	114	71	43	217
Rate.....		1.27	0.44	0.27	0.17	0.84
4,500-4,999 grams.....	39,286	59	31	22	9	27
Rate.....		1.50	0.79	0.56	*	0.69
5,000 grams or more.....	4,241	15	8	7	1	7
Rate.....		*	*	*	*	*
Not stated.....	418	77	69	68	1	8
Rate.....		184.21	165.07	162.68	*	*

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, 2004 period data -Cont

[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).....	616,076	8,162	5,505	4,413	1,092	2,657
Rate.....		13.25	8.94	7.16	1.77	4.31
Less than 2,500 grams.....	83,252	6,291	4,941	4,107	834	1,350
Rate.....		75.57	59.35	49.33	10.02	16.22
Less than 500 grams.....	2,728	2,306	2,227	2,156	71	79
Rate.....		845.31	816.35	790.32	26.03	28.96
500-749 grams.....	4,199	1,908	1,555	1,199	357	353
Rate.....		454.39	370.33	285.54	85.02	84.07
750-999 grams.....	3,893	599	399	261	139	199
Rate.....		153.87	102.49	67.04	35.71	51.12
1,000-1,249 grams.....	4,108	282	171	105	66	111
Rate.....		68.65	41.63	25.56	16.07	27.02
1,250-1,499 grams.....	4,406	202	117	84	33	86
Rate.....		45.85	26.55	19.06	7.49	19.52
1,500-1,999 grams.....	15,912	408	230	162	68	178
Rate.....		25.64	14.45	10.18	4.27	11.19
2,000-2,499 grams.....	48,006	586	242	142	100	345
Rate.....		12.21	5.04	2.96	2.08	7.19
2,500-2,999 grams.....	148,523	753	243	131	112	510
Rate.....		5.07	1.64	0.88	0.75	3.43
3,000-3,499 grams.....	234,900	709	176	89	88	532
Rate.....		3.02	0.75	0.38	0.37	2.26
3,500-3,999 grams.....	119,908	291	82	38	44	209
Rate.....		2.43	0.68	0.32	0.37	1.74
4,000-4,499 grams.....	25,271	72	23	11	12	49
Rate.....		2.85	0.91	*	*	1.94
4,500-4,999 grams.....	3,602	5	2	1	1	3
Rate.....		*	*	*	*	*
5,000 grams or more.....	495	8	5	5	-	3
Rate.....		*	*	*	-	*
Not stated.....	125	32	31	30	1	1
Rate.....		256.00	248.00	240.00	*	*

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, 2004 period data -Cont

[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).....	43,927	371	187	149	38	184
Rate.....		8.45	4.26	3.39	0.87	4.19
Less than 2,500 grams.....	3,295	193	149	126	22	44
Rate.....		58.57	45.22	38.24	6.68	13.35
Less than 500 grams.....	54	43	43	42	1	-
Rate.....		796.30	796.30	777.78	*	-
500-749 grams.....	107	45	39	34	5	6
Rate.....		420.56	364.49	317.76	*	*
750-999 grams.....	105	22	19	14	5	3
Rate.....		209.52	*	*	*	*
1,000-1,249 grams.....	143	11	9	9	-	2
Rate.....		*	*	*	-	*
1,250-1,499 grams.....	172	4	2	1	1	2
Rate.....		*	*	*	*	*
1,500-1,999 grams.....	653	22	12	11	1	10
Rate.....		33.69	*	*	*	*
2,000-2,499 grams.....	2,061	45	24	15	9	21
Rate.....		21.83	11.64	*	*	10.19
2,500-2,999 grams.....	7,180	52	15	6	9	37
Rate.....		7.24	*	*	*	5.15
3,000-3,499 grams.....	16,271	70	13	9	4	57
Rate.....		4.30	*	*	*	3.50
3,500-3,999 grams.....	12,571	39	7	5	2	32
Rate.....		3.10	*	*	*	2.55
4,000-4,499 grams.....	3,802	11	2	2	-	9
Rate.....		*	*	*	-	*
4,500-4,999 grams.....	696	4	1	-	1	3
Rate.....		*	*	-	*	*
5,000 grams or more.....	102	1	-	-	-	1
Rate.....		*	-	-	-	*
Not stated.....	10	-	-	-	-	-
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, 2004 period data -Cont

[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).....	229,123	1,070	733	601	132	337
Rate.....		4.67	3.20	2.62	0.58	1.47
Less than 2,500 grams.....	18,124	766	613	518	95	153
Rate.....		42.26	33.82	28.58	5.24	8.44
Less than 500 grams.....	244	206	200	196	4	6
Rate.....		844.26	819.67	803.28	*	*
500-749 grams.....	439	219	186	156	30	33
Rate.....		498.86	423.69	355.35	68.34	75.17
750-999 grams.....	523	85	58	39	19	27
Rate.....		162.52	110.90	74.57	*	51.63
1,000-1,249 grams.....	634	41	30	23	7	11
Rate.....		64.67	47.32	36.28	*	*
1,250-1,499 grams.....	809	39	33	25	8	5
Rate.....		48.21	40.79	30.90	*	*
1,500-1,999 grams.....	3,280	79	52	41	11	27
Rate.....		24.09	15.85	12.50	*	8.23
2,000-2,499 grams.....	12,195	97	54	39	15	44
Rate.....		7.95	4.43	3.20	*	3.61
2,500-2,999 grams.....	51,520	125	50	32	18	75
Rate.....		2.43	0.97	0.62	*	1.46
3,000-3,499 grams.....	96,472	110	39	27	12	71
Rate.....		1.14	0.40	0.28	*	0.74
3,500-3,999 grams.....	51,169	55	24	17	6	31
Rate.....		1.07	0.47	*	*	0.61
4,000-4,499 grams.....	10,312	9	4	3	1	5
Rate.....		*	*	*	*	*
4,500-4,999 grams.....	1,333	1	-	-	-	1
Rate.....		*	-	-	-	*
5,000 grams or more.....	169	-	-	-	-	-
Rate.....		-	-	-	-	-
Not stated.....	24	4	4	4	-	-
Rate.....		*	*	*	-	-

See footnotes at end of table.

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

Documentation Table 5

Infant deaths and infant mortality rates by age of death, birthweight, and race of mother for 10 major causes of infant death: United states, 2004 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 100,000 live births]

Cause of death, birthweight, and race of mother	Live Births	Total Infant	Total Neonatal	Early Neonatal	Late Neonatal	Post-Neonatal
All races						
All birthweights						
All causes	4,112,055	27,860	18,602	14,836	3,766	9,258
		677.52	452.38	360.79	91.58	225.14
Congenital malformations (Q00-Q99)		5,636	4,023	3,110	913	1,613
		137.06	97.83	75.63	22.20	39.23
Short gestation and low birthweight nec (P07)		4,610	4,493	4,369	124	117
		112.11	109.26	106.25	3.02	2.85
Sudden infant death syndrome (R95)		2,247	216	38	177	2,031
		54.64	5.25	0.92	4.30	49.39
Maternal complications of pregnancy (P01)		1,706	1,692	1,669	23	14
		41.49	41.15	40.59	0.56	*
Accidents (unintentional injures) (V01-X59)		1,054	115	25	90	939
		25.63	2.80	0.61	2.19	22.84
Complications of placenta, cord, membranes (P02)		1,032	1,022	986	36	10
		25.10	24.85	23.98	0.88	*
Respiratory distress of newborn (P22)		878	820	628	192	57
		21.35	19.94	15.27	4.67	1.39
Bacterial sepsis of newborn (P36)		830	783	317	466	47
		20.18	19.04	7.71	11.33	1.14
Neonatal hemorrhage (P50-P52, P54)		619	602	400	202	17
		15.05	14.64	9.73	4.91	*
Diseases of the circulatory system (I00-I99)		591	197	109	88	394
		14.37	4.79	2.65	2.14	9.58
All other causes		8,657	4,639	3,185	1,454	4,018
		210.53	112.81	77.46	35.36	97.71
Less then 2,500 grams						
All causes	333,427	19,218	15,582	13,028	2,554	3,637
		5,763.78	4,673.29	3,907.30	765.98	1,090.79
Congenital malformations (Q00-Q99)		3,426	2,728	2,279	450	697
		1,027.51	818.17	683.51	134.96	209.04
Short gestation and low birthweight nec (P07)		4,501	4,391	4,270	121	110
		1,349.92	1,316.93	1,280.64	36.29	32.99
Sudden infant death syndrome (R95)		490	53	8	45	436
		146.96	15.90	*	13.50	130.76
Maternal complications of pregnancy (P01)		1,666	1,652	1,631	21	14
		499.66	495.46	489.16	6.30	*
Accidents (unintentional injures) (V01-X59)		171	30	12	18	141
		51.29	9.00	*	*	42.29
Complications of placenta, cord, membranes (P02)		927	920	896	24	7
		278.02	275.92	268.72	7.20	*
Respiratory distress of newborn (P22)		850	799	611	188	51
		254.93	239.63	183.25	56.38	15.30
Bacterial sepsis of newborn (P36)		756	711	282	429	44
		226.74	213.24	84.58	128.66	13.20
Neonatal hemorrhage (P50-P52, P54)		568	555	369	185	13
		170.35	166.45	110.67	55.48	*

See footnotes at end of table.

Documentation Table 5

Infant deaths and infant mortality rates by age of death, birthweight, and race of mother for 10 major causes of infant death: United states, 2004 period data -Cont

[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 100,000 live births]

Cause of death, birthweight, and race of mother	Live Births	Total Infant	Total Neonatal	Early Neonatal	Late Neonatal	Post-Neonatal
All races						
Diseases of the circulatory system (I00-I99).....		316	112	66	46	204
		94.77	33.59	19.79	13.80	61.18
All other causes.....		5,548	3,630	2,604	1,026	1,918
		1,663.93	1,088.69	780.98	307.71	575.24
2,500 grams or more						
All causes 3,778,051		8,528	2,916	1,706	1,210	5,612
		225.72	77.18	45.16	32.03	148.54
Congenital malformations (Q00-Q99).....		2,205	1,290	827	463	915
		58.36	34.14	21.89	12.25	24.22
Short gestation and low birthweight nec (P07).....		46	41	38	3	5
		1.22	1.09	1.01	*	*
Sudden infant death syndrome (R95).....		1,756	162	30	132	1,594
		46.48	4.29	0.79	3.49	42.19
Maternal complications of pregnancy (P01).....		30	30	28	2	-
		0.79	0.79	0.74	*	-
Accidents (unintentional injures) (V01-X59).....		882	85	13	71	798
		23.35	2.25	*	1.88	21.12
Complications of placenta, cord, membranes (P02).....		96	93	81	12	3
		2.54	2.46	2.14	*	*
Respiratory distress of newborn (P22).....		27	21	17	4	6
		0.71	0.56	*	*	*
Bacterial sepsis of newborn (P36).....		74	71	33	37	3
		1.96	1.88	0.87	0.98	*
Neonatal hemorrhage (P50-P52, P54).....		52	48	30	17	4
		1.38	1.27	0.79	*	*
Diseases of the circulatory system (I00-I99).....		275	85	43	42	190
		7.28	2.25	1.14	1.11	5.03
All other causes.....		3,086	991	565	426	2,094
		81.68	26.23	14.95	11.28	55.43
Not stated birthweight						
All causes	577	113	104	102	2	9
		19,584.06	18,024.26	17,677.64	*	*
Congenital malformations (Q00-Q99).....		5	4	4	-	1
		*	*	*	-	*
Short gestation and low birthweight nec (P07).....		63	61	61	-	2
		10,918.54	10,571.92	10,571.92	-	*
Sudden infant death syndrome (R95).....		1	-	-	-	1
		*	-	-	-	*
Maternal complications of pregnancy (P01).....		11	11	11	-	-
		*	*	*	-	-
Accidents (unintentional injures) (V01-X59).....		-	-	-	-	-
		-	-	-	-	-
Complications of placenta, cord, membranes (P02).....		9	9	9	-	-
		*	*	*	-	-
Respiratory distress of newborn (P22).....		-	-	-	-	-
		-	-	-	-	-

See footnotes at end of table.

Documentation Table 5

Infant deaths and infant mortality rates by age of death, birthweight, and race of mother for 10 major causes of infant death: United states, 2004 period data -Cont

[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 100,000 live births]

Cause of death, birthweight, and race of mother	Live Births	Infant	Total Neonatal	Early Neonatal	Late Neonatal	Post-Neonatal
All races						
Bacterial sepsis of newborn (P36).....		1	1	1	-	-
		*	*	*	-	-
Neonatal hemorrhage (P50-P52, P54).....		-	-	-	-	-
		-	-	-	-	-
Diseases of the circulatory system (I00-I99).....		-	-	-	-	-
		-	-	-	-	-
All other causes.....		23	18	16	2	5
		3,986.14	*	*	*	*
White						
All birthweights						
All causes 3,222,929		18,257	12,178	9,674	2,504	6,080
		566.47	377.86	300.16	77.69	188.65
Congenital malformations (Q00-Q99).....		4,291	3,130	2,453	677	1,161
		133.14	97.12	76.11	21.01	36.02
Short gestation and low birthweight nec (P07).....		2,617	2,557	2,495	62	61
		81.20	79.34	77.41	1.92	1.89
Sudden infant death syndrome (R95).....		1,500	152	29	123	1,348
		46.54	4.72	0.90	3.82	41.83
Maternal complications of pregnancy (P01).....		1,003	995	981	13	8
		31.12	30.87	30.44	*	*
Accidents (unintentional injures) (V01-X59).....		726	89	20	68	637
		22.53	2.76	0.62	2.11	19.76
Complications of placenta, cord, membranes (P02).....		682	677	654	23	5
		21.16	21.01	20.29	0.71	*
Respiratory distress of newborn (P22).....		561	527	414	113	34
		17.41	16.35	12.85	3.51	1.05
Bacterial sepsis of newborn (P36).....		510	481	199	282	29
		15.82	14.92	6.17	8.75	0.90
Neonatal hemorrhage (P50-P52, P54).....		410	398	263	135	12
		12.72	12.35	8.16	4.19	*
Diseases of the circulatory system (I00-I99).....		390	144	80	64	247
		12.10	4.47	2.48	1.99	7.66
All other causes.....		5,567	3,029	2,085	944	2,538
		172.73	93.98	64.69	29.29	78.75
Less then 2,500 grams						
All causes	228,756	11,968	9,879	8,276	1,603	2,089
		5,231.78	4,318.58	3,617.83	700.75	913.20
Congenital malformations (Q00-Q99).....		2,604	2,128	1,799	329	476
		1,138.33	930.25	786.43	143.82	208.08
Short gestation and low birthweight nec (P07).....		2,545	2,490	2,432	59	55
		1,112.54	1,088.50	1,063.14	25.79	24.04
Sudden infant death syndrome (R95).....		289	32	5	27	257
		126.34	13.99	*	11.80	112.35
Maternal complications of pregnancy (P01).....		970	962	950	12	8
		424.03	420.54	415.29	*	*

See footnotes at end of table.

Documentation Table 5

Infant deaths and infant mortality rates by age of death, birthweight, and race of mother for 10 major causes of infant death: United states, 2004 period data -Cont

[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 100,000 live births]

Cause of death, birthweight, and race of mother	Live Births	Total Infant	Early Neonatal	Late Neonatal	Post-Neonatal
White					
Accidents (unintentional injures) (V01-X59).....		94 41.09	21 9.18	9 *	12 *	73 31.91
Complications of placenta, cord, membranes (P02).....		592 258.79	588 257.04	573 250.49	15 *	4 *
Respiratory distress of newborn (P22).....		535 233.87	507 221.63	397 173.55	110 48.09	28 12.24
Bacterial sepsis of newborn (P36).....		451 197.15	423 184.91	170 74.31	253 110.60	27 11.80
Neonatal hemorrhage (P50-P52, P54).....		373 163.06	365 159.56	241 105.35	124 54.21	8 *
Diseases of the circulatory system (I00-I99).....		189 82.62	82 35.85	53 23.17	29 12.68	107 46.77
All other causes.....		3,326 1,453.95	2,281 997.13	1,648 720.42	633 276.71	1,046 457.26
2,500 grams or more						
All causes 2,993,755		6,213 207.53	2,230 74.49	1,330 44.43	900 30.06	3,983 133.04
Congenital malformations (Q00-Q99).....		1,683 56.22	999 33.37	651 21.75	348 11.62	684 22.85
Short gestation and low birthweight nec (P07).....		34 1.14	30 1.00	27 0.90	3 *	4 *
Sudden infant death syndrome (R95).....		1,210 40.42	120 4.01	24 0.80	96 3.21	1,090 36.41
Maternal complications of pregnancy (P01).....		24 0.80	24 0.80	23 0.77	1 *	- -
Accidents (unintentional injures) (V01-X59).....		632 21.11	67 2.24	11 *	56 1.87	565 18.87
Complications of placenta, cord, membranes (P02).....		83 2.77	82 2.74	74 2.47	8 *	1 *
Respiratory distress of newborn (P22).....		26 0.87	20 0.67	17 *	3 *	6 *
Bacterial sepsis of newborn (P36).....		59 1.97	57 1.90	27 0.90	29 0.97	2 *
Neonatal hemorrhage (P50-P52, P54).....		37 1.24	33 1.10	22 0.73	11 *	4 *
Diseases of the circulatory system (I00-I99).....		201 6.71	62 2.07	27 0.90	35 1.17	139 4.64
All other causes.....		2,223 74.25	736 24.58	426 14.23	310 10.35	1,487 49.67
Not stated birthweight						
All causes	418	77 18,421.05	69 16,507.18	68 16,267.94	1 *	8 *
Congenital malformations (Q00-Q99).....		4 *	3 *	3 *	- -	1 *
Short gestation and low birthweight nec (P07).....		39 9,330.14	37 8,851.67	37 8,851.67	- -	2 *

See footnotes at end of table.

Documentation Table 5

Infant deaths and infant mortality rates by age of death, birthweight, and race of mother for 10 major causes of infant death: United states, 2004 period data -Cont

[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 100,000 live births]

Cause of death, birthweight, and race of mother	Live Births	Infant	Total Neonatal	Early Neonatal	Late Neonatal	Post-Neonatal
White						
Sudden infant death syndrome (R95).....		-	-	-	-	-
		-	-	-	-	-
Maternal complications of pregnancy (P01).....		9	9	9	-	-
		*	*	*	-	-
Accidents (unintentional injures) (V01-X59).....		-	-	-	-	-
		-	-	-	-	-
Complications of placenta, cord, membranes (P02).....		7	7	7	-	-
		*	*	*	-	-
Respiratory distress of newborn (P22).....		-	-	-	-	-
		-	-	-	-	-
Bacterial sepsis of newborn (P36).....		1	1	1	-	-
		*	*	*	-	-
Neonatal hemorrhage (P50-P52, P54).....		-	-	-	-	-
		-	-	-	-	-
Diseases of the circulatory system (I00-I99).....		-	-	-	-	-
		-	-	-	-	-
All other causes.....		17	12	11	1	5
		*	*	*	*	*
Black						
All birthweights						
All causes	616,076	8,162	5,505	4,413	1,092	2,657
		1,324.84	893.56	716.31	177.25	431.28
Congenital malformations (Q00-Q99).....		1,018	669	478	191	349
		165.24	108.59	77.59	31.00	56.65
Short gestation and low birthweight nec (P07).....		1,790	1,740	1,685	55	49
		290.55	282.43	273.51	8.93	7.95
Sudden infant death syndrome (R95).....		648	59	9	50	588
		105.18	9.58	*	8.12	95.44
Maternal complications of pregnancy (P01).....		623	617	608	9	6
		101.12	100.15	98.69	*	*
Accidents (unintentional injures) (V01-X59).....		280	23	4	19	257
		45.45	3.73	*	*	41.72
Complications of placenta, cord, membranes (P02).....		302	297	284	13	5
		49.02	48.21	46.10	*	*
Respiratory distress of newborn (P22).....		289	267	195	72	22
		46.91	43.34	31.65	11.69	3.57
Bacterial sepsis of newborn (P36).....		279	265	98	167	14
		45.29	43.01	15.91	27.11	*
Neonatal hemorrhage (P50-P52, P54).....		164	162	108	54	2
		26.62	26.30	17.53	8.77	*
Diseases of the circulatory system (I00-I99).....		155	44	23	21	111
		25.16	7.14	3.73	3.41	18.02
All other causes.....		2,614	1,361	921	440	1,254
		424.30	220.91	149.49	71.42	203.55
Less then 2,500 grams						
All causes	83,252	6,291	4,941	4,107	834	1,350
		7,556.58	5,934.99	4,933.21	1,001.78	1,621.58

See footnotes at end of table.

Documentation Table 5

Infant deaths and infant mortality rates by age of death, birthweight, and race of mother for 10 major causes of infant death: United states, 2004 period data -Cont

[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 100,000 live births]

Cause of death, birthweight, and race of mother	Live Births	Infant	Total Neonatal	Early Neonatal	Late Neonatal	Post-Neonatal
Black						
Congenital malformations (Q00-Q99)		624	451	355	95	173
		749.53	541.73	426.42	114.11	207.80
Short gestation and low birthweight nec (P07)		1,757	1,709	1,654	55	48
		2,110.46	2,052.80	1,986.74	66.06	57.66
Sudden infant death syndrome (R95)		189	21	3	18	168
		227.02	25.22	*	*	201.80
Maternal complications of pregnancy (P01)		615	609	601	8	6
		738.72	731.51	721.90	*	*
Accidents (unintentional injures) (V01-X59)		72	8	2	6	64
		86.48	*	*	*	76.88
Complications of placenta, cord, membranes (P02)		287	284	275	9	3
		344.74	341.13	330.32	*	*
Respiratory distress of newborn (P22)		288	266	195	71	22
		345.94	319.51	234.23	85.28	26.43
Bacterial sepsis of newborn (P36)		267	253	94	159	14
		320.71	303.90	112.91	190.99	*
Neonatal hemorrhage (P50-P52, P54)		157	155	105	50	2
		188.58	186.18	126.12	60.06	*
Diseases of the circulatory system (I00-I99)		102	25	10	15	77
		122.52	30.03	*	*	92.49
All other causes		1,933	1,160	814	346	773
		2,321.87	1,393.36	977.75	415.61	928.51
2,500 grams or more						
All causes	532,699	1,839	532	275	257	1,306
		345.22	99.87	51.62	48.24	245.17
Congenital malformations (Q00-Q99)		393	217	122	95	175
		73.78	40.74	22.90	17.83	32.85
Short gestation and low birthweight nec (P07)		11	10	10	-	1
		*	*	*	-	*
Sudden infant death syndrome (R95)		458	38	6	32	419
		85.98	7.13	*	6.01	78.66
Maternal complications of pregnancy (P01)		6	6	5	1	-
		*	*	*	*	-
Accidents (unintentional injures) (V01-X59)		209	15	2	13	194
		39.23	*	*	*	36.42
Complications of placenta, cord, membranes (P02)		13	11	7	4	2
		*	*	*	*	*
Respiratory distress of newborn (P22)		1	1	-	1	-
		*	*	-	*	-
Bacterial sepsis of newborn (P36)		12	12	4	8	-
		*	*	*	*	-
Neonatal hemorrhage (P50-P52, P54)		7	7	3	4	-
		*	*	*	*	-
Diseases of the circulatory system (I00-I99)		53	19	13	6	34
		9.95	*	*	*	6.38
All other causes		676	195	103	92	481
		126.90	36.61	19.34	17.27	90.29

See footnotes at end of table.

Documentation Table 5

Infant deaths and infant mortality rates by age of death, birthweight, and race of mother for 10 major causes of infant death: United states, 2004 period data -Cont

[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 100,000 live births]

Cause of death, birthweight, and race of mother	Live Births	Infant	Total Neonatal	Early Neonatal	Late Neonatal	Post-Neonatal
Black						
Not stated birthweight						
All causes	125	32 25,600.00	31 24,800.00	30 24,000.00	1 *	1 *
Congenital malformations (Q00-Q99)		1 *	1 *	1 *	- -	- -
Short gestation and low birthweight nec (P07)		21 16,800.00	21 16,800.00	21 16,800.00	- -	- -
Sudden infant death syndrome (R95)		1 *	- -	- -	- -	1 *
Maternal complications of pregnancy (P01)		2 *	2 *	2 *	- -	- -
Accidents (unintentional injures) (V01-X59)		- -	- -	- -	- -	- -
Complications of placenta, cord, membranes (P02)		2 *	2 *	2 *	- -	- -
Respiratory distress of newborn (P22)		- -	- -	- -	- -	- -
Bacterial sepsis of newborn (P36)		- -	- -	- -	- -	- -
Neonatal hemorrhage (P50-P52, P54)		- -	- -	- -	- -	- -
Diseases of the circulatory system (I00-I99)		- -	- -	- -	- -	- -
All other causes		5 *	5 *	4 *	1 *	- -
American Indian[1]						
All birthweights						
All causes	43,927	371 844.58	187 425.71	149 339.20	38 86.51	184 418.88
Congenital malformations (Q00-Q99)		89 202.61	57 129.76	47 107.00	10 *	31 70.57
Short gestation and low birthweight nec (P07)		29 66.02	28 63.74	25 56.91	3 *	1 *
Sudden infant death syndrome (R95)		44 100.17	2 *	- -	2 *	42 95.61
Maternal complications of pregnancy (P01)		12 *	12 *	12 *	- -	- -
Accidents (unintentional injures) (V01-X59)		21 47.81	1 *	- -	1 *	20 45.53
Complications of placenta, cord, membranes (P02)		14 *	14 *	14 *	- -	- -
Respiratory distress of newborn (P22)		7 *	7 *	6 *	1 *	- -
Bacterial sepsis of newborn (P36)		8 *	8 *	3 *	5 *	- -

See footnotes at end of table.

Documentation Table 5

Infant deaths and infant mortality rates by age of death, birthweight, and race of mother for 10 major causes of infant death: United states, 2004 period data -Cont

[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 100,000 live births]

Cause of death, birthweight, and race of mother	Live Births	Infant	Total Neonatal	Early Neonatal	Late Neonatal	Post-Neonatal
American Indian[1]						
Neonatal hemorrhage (P50-P52, P54).....		8 *	8 *	6 *	2 *	- -
Diseases of the circulatory system (I00-I99).....		8 *	1 *	- -	1 *	7 *
All other causes.....		130 295.95	48 109.27	35 79.68	13 *	82 186.67
Less then 2,500 grams						
All causes	3,295	193 5,857.36	149 4,522.00	126 3,823.98	22 667.68	44 1,335.36
Congenital malformations (Q00-Q99).....		49 1,487.10	40 1,213.96	36 1,092.56	4 *	9 *
Short gestation and low birthweight nec (P07).....		28 849.77	27 819.42	24 728.38	3 *	1 *
Sudden infant death syndrome (R95).....		6 *	- -	- -	- -	6 *
Maternal complications of pregnancy (P01).....		12 *	12 *	12 *	- -	- -
Accidents (unintentional injures) (V01-X59).....		4 *	- -	- -	- -	4 *
Complications of placenta, cord, membranes (P02).....		14 *	14 *	14 *	- -	- -
Respiratory distress of newborn (P22).....		7 *	7 *	6 *	1 *	- -
Bacterial sepsis of newborn (P36).....		8 *	8 *	3 *	5 *	- -
Neonatal hemorrhage (P50-P52, P54).....		8 *	8 *	6 *	2 *	- -
Diseases of the circulatory system (I00-I99).....		5 *	1 *	- -	1 *	4 *
All other causes.....		51 1,547.80	31 940.82	25 758.73	6 *	20 606.98
2,500 grams or more						
All causes	40,622	178 438.19	38 93.55	22 54.16	16 *	139 342.18
Congenital malformations (Q00-Q99).....		39 96.01	17 *	11 *	6 *	22 54.16
Short gestation and low birthweight nec (P07).....		1 *	1 *	1 *	- -	- -
Sudden infant death syndrome (R95).....		38 93.55	2 *	- -	2 *	36 88.62
Maternal complications of pregnancy (P01).....		- -	- -	- -	- -	- -
Accidents (unintentional injures) (V01-X59).....		17 *	1 *	- -	1 *	16 *
Complications of placenta, cord, membranes (P02).....		- -	- -	- -	- -	- -

See footnotes at end of table.

Documentation Table 5

Infant deaths and infant mortality rates by age of death, birthweight, and race of mother for 10 major causes of infant death: United states, 2004 period data -Cont

[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 100,000 live births]

Cause of death, birthweight, and race of mother	Live Births	Infant	Total Neonatal	Early Neonatal	Late Neonatal	Post-Neonatal
American Indian[1]						
Respiratory distress of newborn (P22).....		-	-	-	-	-
		-	-	-	-	-
Bacterial sepsis of newborn (P36).....		-	-	-	-	-
		-	-	-	-	-
Neonatal hemorrhage (P50-P52, P54).....		-	-	-	-	-
		-	-	-	-	-
Diseases of the circulatory system (I00-I99).....		3	-	-	-	3
		*	-	-	-	*
All other causes.....		79	17	10	7	62
		194.48	*	*	*	152.63
Not stated birthweight						
All causes	10	-	-	-	-	-
		-	-	-	-	-
Congenital malformations (Q00-Q99).....		-	-	-	-	-
		-	-	-	-	-
Short gestation and low birthweight nec (P07).....		-	-	-	-	-
		-	-	-	-	-
Sudden infant death syndrome (R95).....		-	-	-	-	-
		-	-	-	-	-
Maternal complications of pregnancy (P01).....		-	-	-	-	-
		-	-	-	-	-
Accidents (unintentional injures) (V01-X59).....		-	-	-	-	-
		-	-	-	-	-
Complications of placenta, cord, membranes (P02).....		-	-	-	-	-
		-	-	-	-	-
Respiratory distress of newborn (P22).....		-	-	-	-	-
		-	-	-	-	-
Bacterial sepsis of newborn (P36).....		-	-	-	-	-
		-	-	-	-	-
Neonatal hemorrhage (P50-P52, P54).....		-	-	-	-	-
		-	-	-	-	-
Diseases of the circulatory system (I00-I99).....		-	-	-	-	-
		-	-	-	-	-
All other causes.....		-	-	-	-	-
		-	-	-	-	-
Asian or Pacific Islander						
All birthweights						
All causes	229,123	1,070	733	601	132	337
		467.00	319.92	262.30	57.61	147.08
Congenital malformations (Q00-Q99).....		239	167	131	35	72
		104.31	72.89	57.17	15.28	31.42
Short gestation and low birthweight nec (P07).....		174	168	164	4	6
		75.94	73.32	71.58	*	*
Sudden infant death syndrome (R95).....		55	2	-	2	53
		24.00	*	-	*	23.13

See footnotes at end of table.

Documentation Table 5

Infant deaths and infant mortality rates by age of death, birthweight, and race of mother for 10 major causes of infant death: United states, 2004 period data -Cont

[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 100,000 live births]

Cause of death, birthweight, and race of mother	Live Births	Infant	Total Neonatal	Early Neonatal	Late Neonatal	Post-Neonatal
Asian or Pacific Islander						
Maternal complications of pregnancy (P01).....		69	69	68	1	-
		30.11	30.11	29.68	*	-
Accidents (unintentional injures) (V01-X59).....		26	2	1	1	24
		11.35	*	*	*	10.47
Complications of placenta, cord, membranes (P02).....		34	34	34	-	-
		14.84	14.84	14.84	-	-
Respiratory distress of newborn (P22).....		20	19	13	6	1
		8.73	*	*	*	*
Bacterial sepsis of newborn (P36).....		33	29	17	12	4
		14.40	12.66	*	*	*
Neonatal hemorrhage (P50-P52, P54).....		37	34	23	11	3
		16.15	14.84	10.04	*	*
Diseases of the circulatory system (I00-I99).....		37	8	6	2	29
		16.15	*	*	*	12.66
All other causes.....		345	201	143	57	144
		150.57	87.73	62.41	24.88	62.85
Less then 2,500 grams						
All causes	18,124	766	613	518	95	153
		4,226.44	3,382.26	2,858.09	524.17	844.18
Congenital malformations (Q00-Q99).....		148	110	89	21	38
		816.60	606.93	491.06	115.87	209.67
Short gestation and low birthweight nec (P07).....		171	165	161	4	6
		943.50	910.40	888.32	*	*
Sudden infant death syndrome (R95).....		5	-	-	-	5
		*	-	-	-	*
Maternal complications of pregnancy (P01).....		69	69	68	1	-
		380.71	380.71	375.19	*	-
Accidents (unintentional injures) (V01-X59).....		2	1	1	-	1
		*	*	*	-	*
Complications of placenta, cord, membranes (P02).....		34	34	34	-	-
		187.60	187.60	187.60	-	-
Respiratory distress of newborn (P22).....		20	19	13	6	1
		110.35	*	*	*	*
Bacterial sepsis of newborn (P36).....		30	27	15	12	3
		165.53	148.97	*	*	*
Neonatal hemorrhage (P50-P52, P54).....		29	26	17	9	3
		160.01	143.46	*	*	*
Diseases of the circulatory system (I00-I99).....		20	4	3	1	16
		110.35	*	*	*	*
All other causes.....		237	157	117	40	80
		1,307.66	866.25	645.55	220.70	441.40
2,500 grams or more						
All causes	210,975	299	116	79	37	184
		141.72	54.98	37.45	17.54	87.21
Congenital malformations (Q00-Q99).....		90	57	43	14	34
		42.66	27.02	20.38	*	16.12

See footnotes at end of table.

Documentation Table 5

Infant deaths and infant mortality rates by age of death, birthweight, and race of mother for 10 major causes of infant death: United states, 2004 period data -Cont

[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 100,000 live births]

Cause of death, birthweight, and race of mother	Live Births	Total Infant	Total Neonatal	Early Neonatal	Late Neonatal	Post-Neonatal
Asian or Pacific Islander						
Short gestation and low birthweight nec (P07).....		-	-	-	-	-
		-	-	-	-	-
Sudden infant death syndrome (R95).....		50	2	-	2	48
		23.70	*	-	*	22.75
Maternal complications of pregnancy (P01).....		-	-	-	-	-
		-	-	-	-	-
Accidents (unintentional injures) (V01-X59).....		24	1	-	1	23
		11.38	*	-	*	10.90
Complications of placenta, cord, membranes (P02).....		-	-	-	-	-
		-	-	-	-	-
Respiratory distress of newborn (P22).....		-	-	-	-	-
		-	-	-	-	-
Bacterial sepsis of newborn (P36).....		3	2	2	-	1
		*	*	*	-	*
Neonatal hemorrhage (P50-P52, P54).....		7	7	5	2	-
		*	*	*	*	-
Diseases of the circulatory system (I00-I99).....		17	4	3	1	13
		*	*	*	*	*
All other causes.....		107	43	25	17	65
		50.72	20.38	11.85	*	30.81
Not stated birthweight						
All causes	24	4	4	4	-	-
		*	*	*	-	-
Congenital malformations (Q00-Q99).....		-	-	-	-	-
		-	-	-	-	-
Short gestation and low birthweight nec (P07).....		3	3	3	-	-
		*	*	*	-	-
Sudden infant death syndrome (R95).....		-	-	-	-	-
		-	-	-	-	-
Maternal complications of pregnancy (P01).....		-	-	-	-	-
		-	-	-	-	-
Accidents (unintentional injures) (V01-X59).....		-	-	-	-	-
		-	-	-	-	-
Complications of placenta, cord, membranes (P02).....		-	-	-	-	-
		-	-	-	-	-
Respiratory distress of newborn (P22).....		-	-	-	-	-
		-	-	-	-	-
Bacterial sepsis of newborn (P36).....		-	-	-	-	-
		-	-	-	-	-
Neonatal hemorrhage (P50-P52, P54).....		-	-	-	-	-
		-	-	-	-	-
Diseases of the circulatory system (I00-I99).....		-	-	-	-	-
		-	-	-	-	-
All other causes.....		1	1	1	-	-
		*	*	*	-	-

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

Documentation Table 6. Unlinked infant deaths by race, age at death, and state of residence: United States and each state, 2004

[Infant deaths are under 1 year. Neonatal death are under 28 days; early neonatal, 0-6 days; late neonatal, 7-27 days; and postneonatal, 28 days through 11 months. Data in this table is for infant deaths in 2004 that are not included in the linked file because they were not linked with their corresponding birth certificates. See methodology section. Residence is of infant decedent; race is from death certificate]

State and race of child 1/	Infant	Total neonatal	Early neonatal	Late neonatal	Postneonatal
United States /2					
Total	308	226	199	27	82
White	191	144	132	12	47
Black	100	72	60	12	28
Alabama					
Total	-	-	-	-	-
White	-	-	-	-	-
Black	-	-	-	-	-
Alaska					
Total	-	-	-	-	-
White	-	-	-	-	-
Black	-	-	-	-	-
Arizona					
Total	8	3	1	2	5
White	5	2	1	1	3
Black	1	-	-	-	1
Arkansas					
Total	1	-	-	-	1
White	1	-	-	-	1
Black	-	-	-	-	-
California					
Total	87	69	63	6	18
White	65	52	48	4	13
Black	13	11	10	1	2
Colorado					
Total	-	-	-	-	-
White	-	-	-	-	-
Black	-	-	-	-	-
Connecticut					
Total	-	-	-	-	-
White	-	-	-	-	-
Black	-	-	-	-	-
Delaware					
Total	-	-	-	-	-
White	-	-	-	-	-
Black	-	-	-	-	-
Dist of Columbia					
Total	-	-	-	-	-
White	-	-	-	-	-
Black	-	-	-	-	-
Florida					
Total	3	1	-	1	2
White	1	-	-	-	1
Black	2	1	-	1	1
Georgia					
Total	-	-	-	-	-
White	-	-	-	-	-
Black	-	-	-	-	-
Hawaii					
Total	-	-	-	-	-
White	-	-	-	-	-
Black	-	-	-	-	-

Documentation Table 6. Unlinked infant deaths by race, age at death, and state of residence: United States and each state, 2004

[Infant deaths are under 1 year. Neonatal death are under 28 days; early neonatal, 0-6 days; late neonatal, 7-27 days; and postneonatal, 28 days through 11 months. Data in this table is for infant deaths in 2004 that are not included in the linked file because they were not linked with their corresponding birth certificates. See methodology section. Residence is of infant decedent; race is from death certificate]

State and race of child 1/	Infant	Total neonatal	Early neonatal	Late neonatal	Postneonatal
Idaho					
Total	1	-	-	-	1
White	1	-	-	-	1
Black	-	-	-	-	-
Illinois					
Total	31	15	11	4	16
White	13	8	6	2	5
Black	17	7	5	2	10
Indiana					
Total	4	2	2	-	2
White	3	2	2	-	1
Black	1	-	-	-	1
Iowa					
Total	-	-	-	-	-
White	-	-	-	-	-
Black	-	-	-	-	-
Kansas					
Total	-	-	-	-	-
White	-	-	-	-	-
Black	-	-	-	-	-
Kentucky					
Total	2	2	2	-	-
White	2	2	2	-	-
Black	-	-	-	-	-
Louisiana					
Total	10	5	4	1	5
White	4	1	1	-	3
Black	6	4	3	1	2
Maine					
Total	-	-	-	-	-
White	-	-	-	-	-
Black	-	-	-	-	-
Maryland					
Total	-	-	-	-	-
White	-	-	-	-	-
Black	-	-	-	-	-
Massachusetts					
Total	12	6	5	1	6
White	9	5	5	-	4
Black	3	1	-	1	2
Michigan					
Total	-	-	-	-	-
White	-	-	-	-	-
Black	-	-	-	-	-
Minnesota					
Total	-	-	-	-	-
White	-	-	-	-	-
Black	-	-	-	-	-
Mississippi					
Total	3	-	-	-	3
White	1	-	-	-	1
Black	2	-	-	-	2

Documentation Table 6. Unlinked infant deaths by race, age at death, and state of residence: United States and each state, 2004

[Infant deaths are under 1 year. Neonatal death are under 28 days; early neonatal, 0-6 days; late neonatal, 7-27 days; and postneonatal, 28 days through 11 months. Data in this table is for infant deaths in 2004 that are not included in the linked file because they were not linked with their corresponding birth certificates. See methodology section. Residence is of infant decedent; race is from death certificate]

State and race of child 1/	Infant	Total neonatal	Early neonatal	Late neonatal	Postneonatal
Missouri					
Total	1	1	1	-	-
White	1	1	1	-	-
Black	-	-	-	-	-
Montana					
Total	-	-	-	-	-
White	-	-	-	-	-
Black	-	-	-	-	-
Nebraska					
Total	1	1	1	-	-
White	1	1	1	-	-
Black	-	-	-	-	-
Nevada					
Total	1	-	-	-	1
White	-	-	-	-	-
Black	1	-	-	-	1
New Hampshire					
Total	-	-	-	-	-
White	-	-	-	-	-
Black	-	-	-	-	-
New Jersey					
Total	15	15	14	1	-
White	9	9	8	1	-
Black	5	5	5	-	-
New Mexico					
Total	-	-	-	-	-
White	-	-	-	-	-
Black	-	-	-	-	-
New York					
Total	17	14	13	1	3
White	9	8	8	-	1
Black	6	5	5	-	1
New York City					
Total	3	2	2	-	1
White	3	2	2	-	1
Black	-	-	-	-	-
North Carolina					
Total	-	-	-	-	-
White	-	-	-	-	-
Black	-	-	-	-	-
North Dakota					
Total	-	-	-	-	-
White	-	-	-	-	-
Black	-	-	-	-	-
Ohio					
Total	17	11	9	2	6
White	10	8	7	1	2
Black	6	2	1	1	4
Oklahoma					
Total	4	1	-	1	3
White	4	1	-	1	3
Black	-	-	-	-	-

Documentation Table 6. Unlinked infant deaths by race, age at death, and state of residence: United States and each state, 2004

[Infant deaths are under 1 year. Neonatal death are under 28 days; early neonatal, 0-6 days; late neonatal, 7-27 days; and postneonatal, 28 days through 11 months. Data in this table is for infant deaths in 2004 that are not included in the linked file because they were not linked with their corresponding birth certificates. See methodology section. Residence is of infant decedent; race is from death certificate]

State and race of child 1/	Infant	Total neonatal	Early neonatal	Late neonatal	Postneonatal
Oregon					
Total	1	-	-	-	1
White	1	-	-	-	1
Black	-	-	-	-	-
Pennsylvania					
Total	4	3	3	-	1
White	1	1	1	-	-
Black	3	2	2	-	1
Rhode Island					
Total	-	-	-	-	-
White	-	-	-	-	-
Black	-	-	-	-	-
South Carolina					
Total	-	-	-	-	-
White	-	-	-	-	-
Black	-	-	-	-	-
South Dakota					
Total	-	-	-	-	-
White	-	-	-	-	-
Black	-	-	-	-	-
Tennessee					
Total	1	1	1	-	-
White	1	1	1	-	-
Black	-	-	-	-	-
Texas					
Total	80	73	66	7	7
White	46	40	38	2	6
Black	33	33	28	5	-
Utah					
Total	-	-	-	-	-
White	-	-	-	-	-
Black	-	-	-	-	-
Vermont					
Total	-	-	-	-	-
White	-	-	-	-	-
Black	-	-	-	-	-
Virginia					
Total	-	-	-	-	-
White	-	-	-	-	-
Black	-	-	-	-	-
Washington					
Total	1	1	1	-	-
White	-	-	-	-	-
Black	1	1	1	-	-
West Virginia					
Total	-	-	-	-	-
White	-	-	-	-	-
Black	-	-	-	-	-
Wisconsin					
Total	-	-	-	-	-
White	-	-	-	-	-
Black	-	-	-	-	-

Documentation Table 6. Unlinked infant deaths by race, age at death, and state of residence: United States and each state, 2004

[Infant deaths are under 1 year. Neonatal death are under 28 days; early neonatal, 0-6 days; late neonatal, 7-27 days; and postneonatal, 28 days through 11 months. Data in this table is for infant deaths in 2004 that are not included in the linked file because they were not linked with their corresponding birth certificates. See methodology section. Residence is of infant decedent; race is from death certificate]

State and race of child 1/	Infant	Total neonatal	Early neonatal	Late neonatal	Postneonatal
Wyoming					
Total	-	-	-	-	-
White	-	-	-	-	-
Black	-	-	-	-	-
Foreign Residents					
Total	-	-	-	-	-
White	-	-	-	-	-
Black	-	-	-	-	-
Puerto Rico					
Total	2	-	-	-	2
White	1	-	-	-	1
Black	1	-	-	-	1
Virgin Islands					
Total	-	-	-	-	-
White	-	-	-	-	-
Black	-	-	-	-	-
Guam					
Total	-	-	-	-	-
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.

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Infant Mortality Statistics from the 2004 Period Linked Birth/Infant Death Data Set

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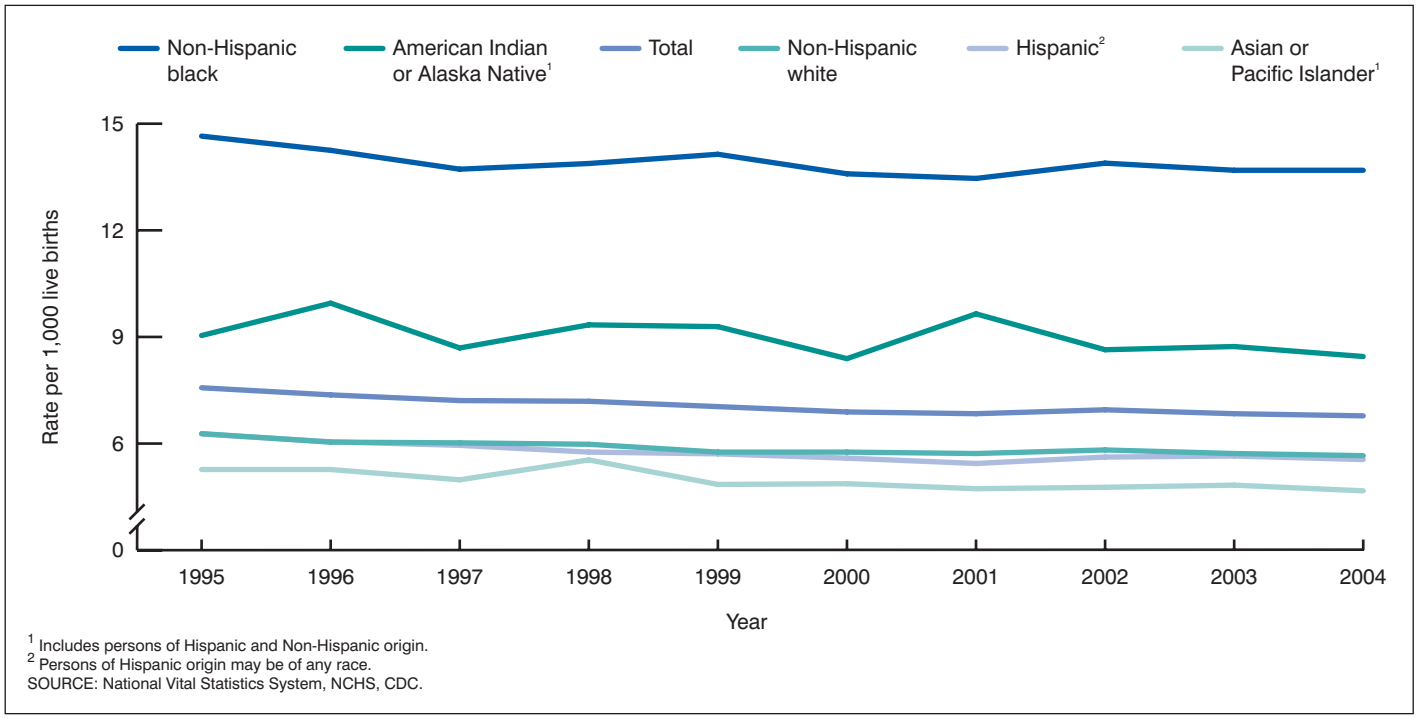
Abstract

Objectives—This report presents 2004 period infant mortality statistics from the linked birth/infant death data file by a variety of maternal and infant characteristics. The linked file differs from the mortality file, which is based entirely on death certificate data.

Methods—Descriptive tabulations of data are presented and interpreted. Excluding rates by cause of death, the infant mortality rate is now published with two decimal places.

Results—The U.S. infant mortality rate was 6.78 infant deaths per 1,000 live births in 2004 compared with 6.84 in 2003. Infant mortality rates ranged from 4.67 per 1,000 live births for Asian and Pacific Islander mothers to 13.60 for non-Hispanic black mothers. Among Hispanics, rates ranged from 4.55 for Cuban mothers to 7.82 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 were born in multiple births. Infant mortality was also higher for male infants and infants born preterm or at low birthweight. The neonatal mortality rate declined from 4.63 in 2003 to 4.52 in 2004 while the postneonatal mortality rate was essentially unchanged. Infants born at the lowest gestational ages and birthweights have a large impact on overall U.S. infant mortality. More than one-half (55 percent) of all infant deaths in the United States in 2004 occurred to the



[1] Includes persons of Hispanic and Non-Hispanic origin.
[2] Persons of Hispanic origin may be of any race.
SOURCE: National Vital Statistics System, NCHS, CDC.

Figure 1. Infant mortality rates by race and ethnicity, 1995–2004

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2 percent of infants born at less than 32 weeks of gestation. Still, infant mortality rates for late preterm (34–36 weeks of gestation) infants were three times those for term (37–41 week) infants. The three leading causes of infant death—Congenital malformations, low birthweight, and SIDS—taken together accounted for 45 percent all infant deaths. Results from a new analysis of preterm-related causes of death show that 36.5 percent of infant deaths in 2004 were due to preterm-related causes. The preterm-related infant mortality rate for non-Hispanic black mothers was 3.5 times higher, and the rate for Puerto Rican mothers was 75 percent higher than for non-Hispanic white mothers.

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

Introduction

This report presents infant mortality data from the 2004 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, Puerto Rico, the Virgin Islands, or Guam during 2004. 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, maternal age, live-birth order, mother's marital status, mother's place of birth, age at death, and underlying cause of death (Tables 1–8, A–E, and Figures 1–4). 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. Several states have implemented the 2003 revised birth certificate. Three key data items are considered noncomparable between the 1989 and 2003 revisions: trimester of pregnancy prenatal care began, maternal educational attainment, and maternal smoking during pregnancy (2). They are not shown or discussed in the same detail as in previous years. Another report, based on data from the vital statistics mortality file, provides further information on trends in infant mortality and on causes of infant death (3). Some rates calculated from the mortality file differ from those published using the linked birth/infant death file (linked file). The linked file is used for analysis and for calculating infant mortality rates by race and ethnicity, which are more accurately measured from the birth certificate. A more detailed discussion of the differences in the number of infant deaths and infant mortality rates between the linked file and the mortality file is presented in the "Technical Notes."

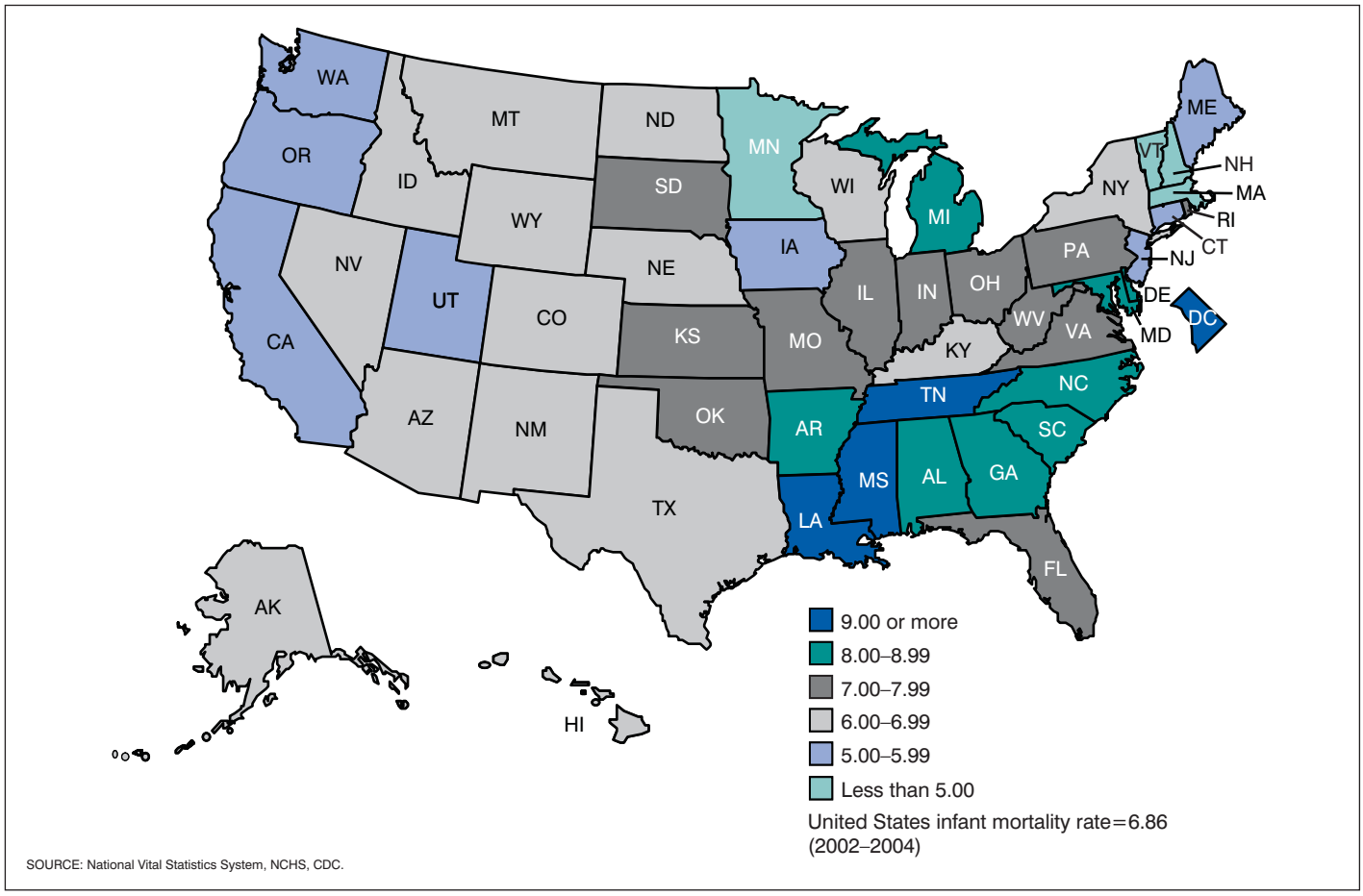


Figure 2. Infant mortality rates by state, 2002–2004

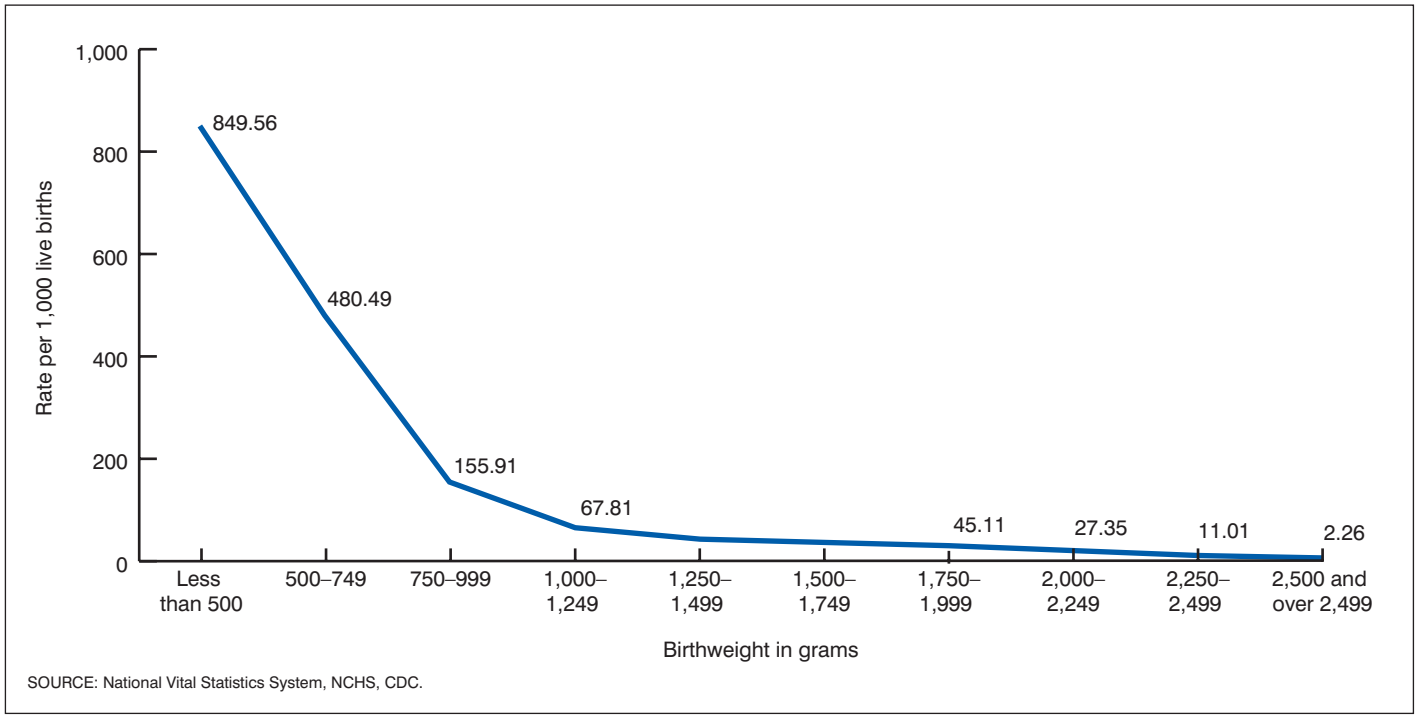


Figure 3. Infant mortality rates by birthweight: United States, 2004

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 (VSCP), each state provided to the Centers for Disease Control and Prevention's (CDC) 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 2004. When the birth and death occurred in different states, the state of death was responsible 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 computer lists of unlinked infant death records and records with inconsistent data between the birth and death certificates to each state. State additions and corrections were incorporated, and a final national linked file was produced. In 2004, 98.9 percent of all infant death records were successfully matched to their corresponding birth records. Records were weighted to adjust for the 1.1 percent of infant death records that were not linked to their corresponding birth certificates (see the "Technical Notes").

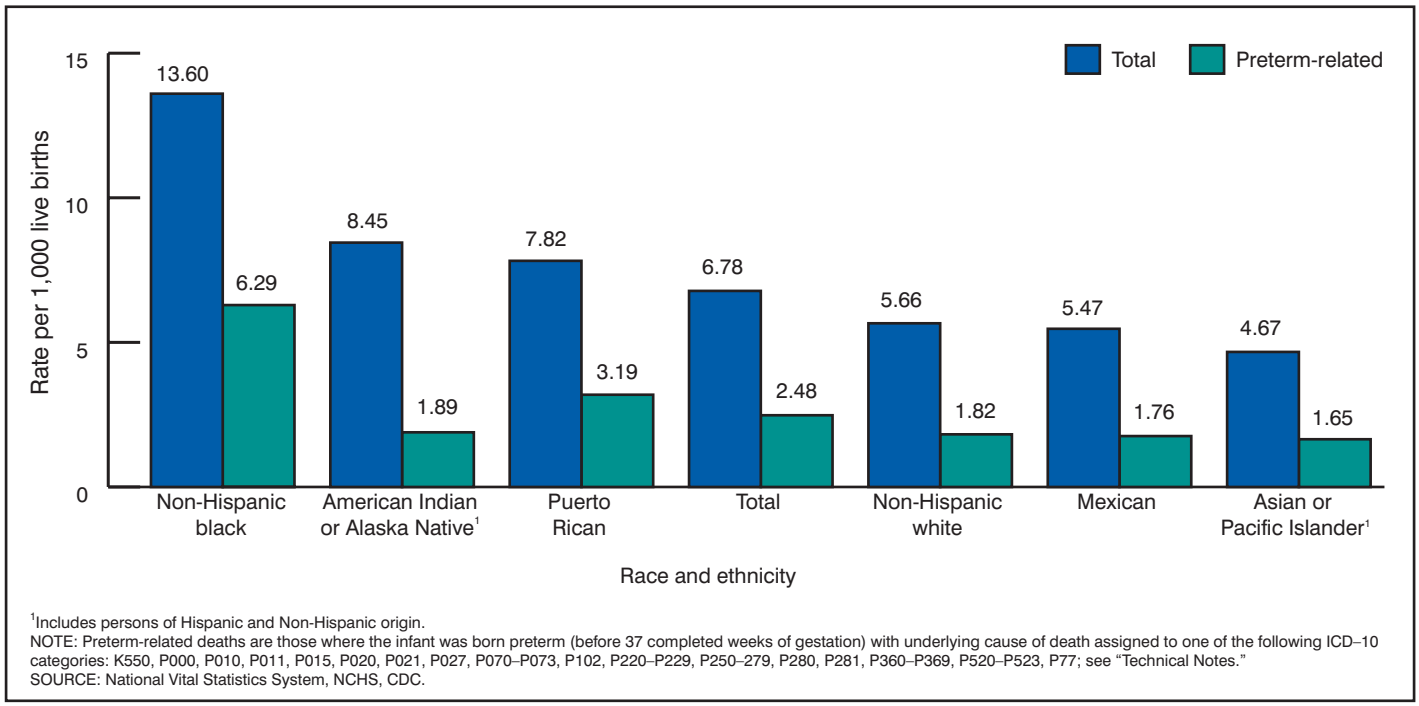
Information on births by age, race, or marital status of mother is imputed if it is not reported on the birth certificate. These items were not reported for less than 1 percent of U.S. births in 2004 (2).

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 as 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). Issues of this report for data years previous to 1999 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). Issues related to comparability between ICD revisions are discussed in the "Technical Notes." A new grouping of preterm-related causes of death was added to the report this year; see "Technical Notes."

This report includes data for seven states, Idaho, Kentucky, New York (but not New York City), Pennsylvania, South Carolina, Tennessee, and Washington, that implemented the 2003 revision of the U.S. Standard Certificate of Live Birth on either January 1, 2003, or January 1, 2004, (revised). Two additional States, Florida and New Hampshire, implemented the revision in 2004 but after January 1. The remaining reporting areas include data that are based on the 1989 revision of the U.S. Standard Certificate of Live Birth (unrevised). Revised and unrevised data are combined when comparable. See *Births: Final Data for 2004* for more information (2).

Data for educational attainment, prenatal care, and tobacco use, although collected on both the revised and unrevised certificates are not considered to be comparable between revisions. For educational attainment and prenatal care, unrevised data for 41 States, New York City, and the District of Columbia are included in this report. For tobacco use, unrevised data for 40 states, New York City, and the District of Columbia are included as California did not report tobacco use in 2004; see "Technical Notes."



[1]Includes persons of Hispanic and Non-Hispanic origin.
NOTE: Preterm-related deaths are those where the infant was born preterm (before 37 completed weeks of gestation) with underlying cause of death assigned to one of the following ICD–10 categories: K550, P000, P010, P011, P015, P020, P021, P027, P070–P073, P102, P220–P229, P250–279, P280, P281, P360–P369, P520–P523, P77; see "Technical Notes."
SOURCE: National Vital Statistics System, NCHS, CDC.

Figure 4. Total and preterm-related infant mortality rates by race and ethnicity of mother: United States, 2004

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 here by race and detailed Hispanic origin of mother. The linked file is particularly useful for computing accurate infant mortality rates for this purpose because the race and Hispanic origin 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 file, 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). Thus, standard infant mortality rates can be based on inconsistent race information. In addition, race information from the birth certificate reported by the mother is generally considered to be more reliable than that from the death certificate where the race and ethnicity 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 and ethnic specific infant mortality rates between the two data files (3,6).

The 2003 revision of the U.S. Standard Certificate of Live Birth allows the reporting of more than one race (multiple races) for each parent (7). Information on this change is presented in a recent report (2). Fifteen states reported multiple race on their birth certificate for either part or all of 2004. To provide uniformity and comparability of the data, multiple race is imputed to a single race see "Technical Notes."

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

The overall 2004 infant mortality rate from the linked file was 6.78 infant deaths per 1,000 live births, lower but not significantly than the rate in 2003 (6.84) but the lowest rate ever reported (Table C) (the overall rate in 2004 was 6.79 from the mortality file). Infant mortality rates for race and Hispanic origin groups were not significantly different in 2004 compared with 2003 (Figure 1 and Table C). The neonatal mortality rate declined from 4.63 in 2003 to 4.52 in 2004. The postneonatal mortality rate was essentially unchanged over the same time period.

Although the infant mortality rate was 10 percent lower in 2004 than in 1995 (7.57), the rate has not declined much since 2000 (6.89)

(Table C). During this 9-year period, decreases have been observed for all race and ethnic groups, although not all had significant declines. Significant declines were observed for infants of Central and South American (16 percent), Puerto Rican (12 percent), Asian or Pacific Islander (11 percent), non-Hispanic white (10 percent), Mexican (9 percent), and non-Hispanic black mothers (7 percent).

Infant mortality by race and Hispanic origin of mother

As in past years, there continues to be a wide variation in infant mortality rates by race and Hispanic origin of mother (8). The highest rate, 13.60 per 1,000 live births, was for infants of non-Hispanic black mothers, nearly three times greater than the lowest rate of 4.55 for infants of Cuban mothers. Rates were also fairly high for infants of American Indian (8.45) and Puerto Rican (7.82) mothers (Tables A–C). Rates were intermediate, but all below the U.S. rate, for infants of non-Hispanic white (5.66) and Mexican mothers (5.47). Central and South American (4.65) and Asian or Pacific Islanders mothers (4.67) also had low rates (Tables A–C).

Infant mortality by state

Between 2003 and 2004 an equal number of states had decreases and increases in the infant mortality rate, although almost all these changes were not statistically significant. One state had a significant increase, Louisiana (12 percent), and two, Hawaii and Michigan, had significant declines of 24 and 12 percent, respectively (detailed data not shown). To obtain statistically reliable rates by race and Hispanic origin, 3 years of data were combined (Figure 2 and Table 3). Infant mortality rates ranged from 10.32 for Mississippi to 4.68 for Vermont. The highest rate noted (11.42) was for the District of Columbia (DC); 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.

For infants of non-Hispanic black mothers, mortality rates ranged from 17.57 in Wisconsin to 8.75 in Minnesota. For infants of non-Hispanic white mothers, West Virginia had the highest infant mortality rate (7.67) and New Jersey had the lowest rate (3.80). The rate for DC was 3.76. For infants of American Indian and Asian or Pacific Islander mothers, mortality rates could be reliably computed for only 15 and 29 states, respectively.

For infants of American Indian mothers, mortality rates ranged from 13.51 in South Dakota to 6.29 in California. Overall, infant mortality rates for infants of Asian or Pacific Islander mothers were the lowest, ranging from 7.76 in South Carolina to 3.46 in Massachusetts.

Sex of infant

In 2004, the overall infant mortality rate for female infants was 6.08 per 1,000, 18 percent lower than the rate for male infants (7.44). Infant mortality rates were higher for male than female infants in each race group (Table 1). Among Hispanics, this difference was not significant for infants of Central and South American mothers (Table 2).

Multiple births

For multiple births, the infant mortality rate was 30.46, more than five times the rate of 5.94 for single births (Tables 1 and 2). Infant mortality rates for multiple births were higher than rates for single births for all race and Hispanic-origin groups, except for Cubans for whom rates could not be reliably computed due to small numbers of events.

The risk of infant death increases with the increasing number of infants in the pregnancy. In 2004, the infant mortality rate for twins (28.70) was nearly five times the rate for single births (5.94). The rate for triplets (55.53) was nine times, and the rate for quadruplets (166.74) was 28 times higher than the rate for single births (tabular data not shown). A reliable infant mortality rate for quintuplet and higher order births could not be computed due to small numbers of infant deaths for that category. Changes in infant mortality rates from 2003–2004 for specific plurality categories were not statistically significant.

Multiple pregnancy can lead to an accentuation of maternal risks and complications associated with pregnancy (2,9,10). For example, multiple births are much more likely to be born preterm and at low birthweight than single births (2,9,10). The higher risk profile of multiple births has a substantial impact on overall infant mortality (9,11,12). For example, in 2004 multiples accounted for 3 percent of all live births, but 15 percent of all infant deaths in the United States (Table 1).

Age at death

In 2004, more than two-thirds of all infant deaths (18,602 out of 27,860) occurred during the neonatal period (from birth through 27 days of age). In 2004, the neonatal mortality rate of 4.52 deaths per 1,000 live births was more than 2 percent lower than the 2003 rate of 4.63. The 2004 postneonatal (28 days to under 1 year) mortality rate (2.25) was essentially unchanged from the previous year (2.22).

The neonatal mortality rate for infants of non-Hispanic black mothers (9.13) was more than twice those for non-Hispanic white (3.70), Asian or Pacific Islander (3.20), Mexican (3.74), Central and South American (3.43), and Cuban women (2.81). Neonatal mortality rates for Puerto Rican (5.34) and American Indian (4.26) women were intermediate between these two groups. Infants of non-Hispanic black and American Indian mothers had the highest postneonatal mortality rates of any group (4.47 and 4.19, respectively)—more than twice those for non-Hispanic white, Asian or Pacific Islander, Mexican, and Central and South American women. Postneonatal mortality rates were intermediate for Puerto Rican women (2.48) (Tables A and B).

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 and/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 (13–17).

Because of their much greater risk of death, infants born at the lowest birthweights and gestational ages have a large impact on overall U.S. infant mortality. For example, infants born weighing less than 1,000

Table A. Infant, neonatal, and postneonatal deaths and mortality rates by race of mother: United States, 2004 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	4,112,055	27,860	18,602	9,258	6.78	4.52	2.25
White	3,222,929	18,257	12,178	6,080	5.66	3.78	1.89
Black	616,076	8,162	5,505	2,657	13.25	8.94	4.31
American Indian[1]	43,927	371	187	184	8.45	4.26	4.19
Asian or Pacific Islander	229,123	1,070	733	337	4.67	3.20	1.47

[1]Includes Aleuts and Eskimos.

NOTES: 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. Race and Hispanic origin are reported separately on birth certificates. Race categories are consistent with the 1977 Office of Management and Budget standards. Fifteen states reported multiple-race data on the birth certificate for 2004. The multiple-race data for these states were bridged to the single-race categories of the 1977 standards for comparability with other states; see reference 2.

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, 2004 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]	4,112,055	27,860	18,602	9,258	6.78	4.52	2.25
Total Hispanic	946,349	5,248	3,627	1,621	5.55	3.83	1.71
Mexican	677,621	3,705	2,535	1,170	5.47	3.74	1.73
Puerto Rican	61,221	479	327	152	7.82	5.34	2.48
Cuban	14,943	68	42	26	4.55	2.81	1.74
Central and South American	143,520	667	492	175	4.65	3.43	1.22
Other and unknown Hispanic	49,044	330	232	98	6.73	4.73	2.00
Non-Hispanic total[2]	3,133,128	22,203	14,633	7,570	7.09	4.67	2.42
Non-Hispanic white	2,296,684	13,001	8,499	4,502	5.66	3.70	1.96
Non-Hispanic black	578,774	7,869	5,283	2,586	13.60	9.13	4.47
Not stated	32,578	409	341	68	. . .	. . .	. . .

. . . 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. Race and Hispanic origin are reported separately on birth certificates. Race categories are consistent with the 1977 Office of Management and Budget standards. Persons of Hispanic origin may be of any race. In this table Hispanic women are classified only by place of origin; non-Hispanic women are classified by race; see reference 2.

Table C. Infant mortality rates by race and Hispanic origin of mother: United States, 1995–2004 linked files

Race and Hispanic origin of mother	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	Percent Change 1995 to 2004	Percent Change 2003 to 2004
All races	7.57	7.30	7.21	7.19	7.04	6.89	6.84	6.95	6.84	6.78	–10.4**	–0.9
White	6.30	6.07	6.05	5.96	5.79	5.71	5.69	5.79	5.72	5.66	–10.2**	–1.0
Black	14.58	14.13	13.69	13.80	13.99	13.48	13.34	13.81	13.50	13.25	–9.1**	–1.9
American Indian[1]	9.04	9.95	8.69	9.34	9.29	8.30	9.65	8.64	8.73	8.45	–6.5	–3.2
Asian or Pacific Islander	5.27	5.20	4.98	5.54	4.85	4.87	4.73	4.77	4.83	4.67	–11.4**	–3.3
Hispanic	6.27	6.05	5.95	5.76	5.71	5.59	5.44	5.62	5.65	5.55	–11.5**	–1.8
Mexican	6.03	5.84	5.83	5.60	5.51	5.43	5.22	5.42	5.49	5.47	–9.3**	–0.4
Puerto Rican	8.88	8.60	7.86	7.78	8.35	8.21	8.53	8.20	8.18	7.82	–11.9**	–4.4
Cuban	5.29	5.07	5.51	3.63	4.66	4.54	4.28	3.72	4.57	4.55	–14.0	–0.4
Central and South American	5.52	5.02	5.45	5.28	4.68	4.64	4.98	5.06	5.04	4.65	–15.8**	–7.7
Non-Hispanic white	6.28	6.04	6.02	5.98	5.76	5.70	5.72	5.80	5.70	5.66	–9.9**	–0.7
Non-Hispanic black	14.65	14.20	13.72	13.88	14.14	13.59	13.46	13.89	13.60	13.60	–7.2**	0.0

** Significant at $p < .05$.

[1]Includes Aleuts and Eskimos.

NOTES: Race and Hispanic origin are reported separately on birth certificates. Race categories are consistent with the 1977 Office of Management and Budget standards. Persons of Hispanic origin may be of any race. In this table Hispanic women are classified only by place of origin; non-Hispanic women are classified by race. Fifteen states reported multiple-race data on the birth certificate for 2004. The multiple-race data for these states were bridged to the single-race categories of the 1977 standards for comparability with other states; see reference 2.

grams accounted for only 0.8 percent of births, but nearly one-half (48.4 percent) of all infant deaths in the United States in 2004 (Table D). Conversely, 91.9 percent of infants born in the United States in 2004 weighed 2,500 grams or more, but these infants accounted for only 30.7 percent of infant deaths. A similar pattern is found when data by period of gestation were examined. Births at less than 28 weeks of gestation accounted for 0.8 percent of all live births, and 46.3 percent of all infant deaths in the United States in 2004 (tabular data not shown).

The percent of preterm and low birthweight births has been increasing steadily since the mid-1980s (2). A portion of the increase is related to an increase in multiple births (in part due to increases in the use of assisted reproductive therapies (ART)), and to changes in the medical management of pregnancy (i.e., increases in cesarean section and induction of labor for preterm infants) (2, 18–20).

The percentage of infants born at low birthweight (less than 2,500 grams) varied greatly by race and ethnicity, from a low of 6.5 percent for births to Mexican mothers to a high of 13.8 percent for births to non-Hispanic black mothers (Tables 4 and 5). The percent of preterm births (those born before 37 completed weeks of gestation) ranged from 10.5 percent for births to Asian or Pacific Islander mothers to 17.9 percent for births to non-Hispanic black mothers. These differences in low birthweight and preterm births in turn are major factors in the differences in infant mortality rates.

For all race and ethnic groups studied, infant mortality rates were much higher for low birthweight infants (57.64) than for infants with birthweights of 2,500 grams or more (2.26). Overall, the infant mortality rate for very low birthweight infants (those with birthweights of less than 1,500 grams) was 244.50, more than 100 times the rate for infants with birthweights of 2,500 grams or more (Table 6). At least 85 percent of infants with birthweights of less than 500 grams (1 lb. 1 oz. or less) died within the first year of life (Figure 3 and Table 6). Reporting of deaths among these very small infants may be incomplete (data not shown). An infant's chances of survival increase rapidly with increasing birthweight. Infant mortality rates were lowest at birthweights of 3,000–4,999 grams (Table 6).

The infant mortality rate for very low birthweight infants declined by 3 percent from 252.00 in 2003 to 244.50 in 2004. Previously, the infant mortality rate for very low birthweight infants had increased from 2000–2003. The rate in 2004 was similar to the rate in 2000 and 2001. The percentage of live births born at very low birthweight has been edging upwards, from 1.45 percent of live births in 2000 to 1.51 percent of births in 2004, as has the percentage of infant deaths (from 52.1 percent in 2000 to 54.4 percent in 2004) (Table D). Trends in birthweight specific infant mortality rates for the period 1995 to 2004 are shown in Table 6. Overall rates have generally declined during this period; declines were larger for higher birthweights. For the total population, non-Hispanic white, non-Hispanic black, and Hispanic mothers, declines were generally largest for infants weighing 2,500–4,499 grams (Table 6).

In 2004, the infant mortality rate for very preterm infants (less than 32 weeks of gestation) was 182.45, 76 times the rate of 2.39 for term infants (Tables 1 and 2). The infant mortality rate for very preterm infants declined by 3 percent from 188.24 in 2003. Previously, the infant mortality rate for very preterm infants had increased by 4 percent from 180.95 in 2000 (12). Although the highest risk of death is found for the most preterm infants, infants born shortly before term (at 34–36 weeks of gestation) have mortality rates three times those for term infants (37–41 weeks). Even within the term period, infants born at 37–39 weeks of gestation have mortality rates 30 percent higher than those born at 40–41 weeks of gestation.

Prenatal care

This report includes data on the timing of prenatal care based on the 1989 Revision of the U.S. Standard Certificate of Live Birth (unrevised data) as reported by 41 States, New York City, and the District of Columbia; see "Technical Notes."

Although difficult to measure, the timing and quality of prenatal care received by the mother during pregnancy can be important to the infant's subsequent health and survival (21–24). Early comprehensive prenatal care can promote healthier pregnancies by providing health behavior advice, early detection and treatment of risk factors and symptoms, and monitoring (21,22). The initiation and subsequent utilization of prenatal care is also viewed as an indicator for access to care (24).

In 2004, for the 41-state reporting area for which comparable data are available, the mortality rate for infants of mothers who began prenatal care after the first trimester of pregnancy or had no care at all, was 8.35 per 1,000 (Table E). This rate was 37 percent higher than the rate for infants of mothers whose care began in the first trimester (6.11).

Maternal age

Infant mortality rates vary with maternal age; infants of teenage mothers and mothers aged 40 and over have the highest rates (9.75 and 8.81, respectively). The lowest rates are for infants of mothers in their late twenties and early thirties (Tables 1 and 2).

In 2004, among births to teenagers, infants of the youngest mothers (under 15 years) had the highest rate (17.11). The rate for infants of mothers aged 15–17 years was 10.37; the rate for infants of mothers aged 18–19 years was 9.28 (tabular data not shown).

Within racial and ethnic subgroups, among groups for which rates could be reliably computed, infant mortality rates for births to non-Hispanic white mothers under 20 years of age were higher than for mothers aged 40 and over. In contrast, for Mexican mothers, rates for births to the oldest mothers were higher than rates for infants of teenagers.

Studies suggest that the higher mortality risk for infants of younger mothers may be related to socioeconomic factors as well as biologic immaturity (25); young maternal age might be a marker for poverty (26). Among older mothers, especially for those having a first-time birth, infants are at an increased risk of prematurity and low birthweight and thus tend to have higher infant mortality rates (27). Multiple births are also a well known risk factor for infant mortality in older mothers (2).

Maternal education

Information on educational attainment is reported on both the 2003 Standard Certificate of Live Birth (revised) and 1989 Standard Certificate of Live Birth (unrevised) (2). However, the format of the education item on the revised standard certificate substantively differs from that of the unrevised standard certificate leading to non-comparable data (see "Technical Notes"). For 2004, unrevised data are available for 41 states, New York City, and the District of Columbia (80 percent of all 2004 births).

Table D. Selected perinatal events by birthweight: United States, 1999–2004 linked files

Year	Total	Low birthweight										
			Very low birthweight						Moderately low birthweight			
		Total low birthweight	Total very low birthweight	Less than 500 grams	500–749 grams	750–999 grams	1,000–1,249 grams	1,250–1,499 grams	Total moderately low birthweight	1,500–1,999 grams	2,000–2,499 grams	2,500 grams or more
						Infant mortality rate[1]						
2004	6.78	57.64	244.50	849.56	480.49	155.91	67.81	45.11	14.97	27.35	11.01	2.26
2003	6.84	59.04	252.00	865.44	476.68	163.72	69.31	46.03	14.99	27.88	10.90	2.29
2002	6.95	59.54	250.75	861.95	489.64	155.13	70.30	45.69	15.15	26.51	11.53	2.39
2001	6.84	58.60	244.37	855.04	476.76	154.13	73.75	45.64	15.16	27.24	11.29	2.42
2000	6.89	59.40	244.26	846.08	476.25	155.84	77.35	45.59	15.78	28.28	11.74	2.47
1999	7.04	60.48	246.96	855.97	485.45	151.56	69.85	48.73	15.96	28.76	11.82	2.52
						Number of infant deaths[2]						
2004	27,860	19,218	15,155	5,907	5,602	1,921	966	758	4,064	1,800	2,264	8,528
2003	27,995	19,223	15,247	6,110	5,489	1,947	945	755	3,975	1,781	2,194	8,603
2002	27,970	18,758	14,885	5,844	5,528	1,831	956	726	3,873	1,636	2,237	8,840
2001	27,523	18,151	14,345	5,515	5,283	1,826	1,001	719	3,806	1,658	2,148	8,989
2000	27,960	18,299	14,365	5,420	5,325	1,861	1,033	726	3,933	1,721	2,212	9,259
1999	27,864	18,273	14,380	5,408	5,507	1,779	930	756	3,893	1,714	2,179	9,197
						Percent distribution of infant deaths[3]						
2004	100.0	68.98	54.40	21.20	20.11	6.90	3.47	2.72	14.59	6.46	8.13	30.61
2003	100.0	68.67	54.46	21.83	19.61	6.95	3.38	2.70	14.20	6.36	7.84	30.73
2002	100.0	67.97	53.93	21.17	20.03	6.63	3.46	2.63	14.03	5.93	8.11	32.03
2001	100.0	66.88	52.86	20.32	19.47	6.73	3.69	2.65	14.02	6.11	7.91	33.12
2000	100.0	66.40	52.13	19.67	19.32	6.75	3.75	2.63	14.27	6.25	8.03	33.60
1999	100.0	66.52	52.35	19.69	20.05	6.48	3.39	2.75	14.17	6.24	7.93	33.48
						Number of births[2]						
2004	4,112,055	333,427	61,983	6,953	11,659	12,321	14,245	16,805	271,444	65,821	205,623	3,778,051
2003	4,090,007	325,619	60,505	7,060	11,515	11,892	13,635	16,403	265,114	63,891	201,223	3,763,758
2002	4,021,825	315,028	59,361	6,780	11,290	11,803	13,599	15,889	255,667	61,705	193,962	3,705,556
2001	4,026,036	309,760	58,702	6,450	11,081	11,847	13,572	15,752	251,058	60,858	190,200	3,714,965
2000	4,058,882	308,074	58,810	6,406	11,181	11,942	13,355	15,926	249,264	60,864	188,400	3,748,046
1999	3,959,417	302,113	58,227	6,318	11,344	11,738	13,314	15,513	243,886	59,599	184,287	3,654,764
						Percent distribution of births[3]						
2004	100.0	8.11	1.51	0.17	0.28	0.30	0.35	0.41	6.60	1.60	5.00	91.88
2003	100.0	7.96	1.48	0.17	0.28	0.29	0.33	0.40	6.48	1.56	4.92	92.02
2002	100.0	7.84	1.48	0.17	0.28	0.29	0.34	0.40	6.36	1.53	4.82	92.16
2001	100.0	7.70	1.46	0.16	0.28	0.29	0.34	0.39	6.24	1.51	4.73	92.30
2000	100.0	7.60	1.45	0.16	0.28	0.29	0.33	0.39	6.15	1.50	4.64	92.40
1999	100.0	7.64	1.47	0.16	0.29	0.30	0.34	0.39	6.16	1.51	4.66	92.36

[1]Infant mortality rates are deaths less than 1 year per 1,000 live births in specified group.

[2]Infant deaths and births with not stated birthweight included in totals.

[3]Infant deaths and births with not stated birthweight are subtracted from the total number of events used as denominators for percentage computations.

For the 41-state reporting area described previously, the infant mortality rate for mothers who completed 16 or more years of school was 4.17 in 2004. This rate was 49 percent lower than the rate for mothers who completed less than 12 years of education (8.12) (Table E).

Infant mortality rates generally decreased with increasing educational level. This pattern may reflect the effects of more education as well as socioeconomic differences; women with more education tend to have higher income levels (28).

Live birth order

Infant mortality rates were generally higher for first births than for second births, and then generally increased as birth order increased (Tables 1 and 2). Overall, the infant mortality rate for first births (6.74) was 13 percent higher than for second births (5.99). The rate for fifth and higher order births (10.64) was 72 percent higher than the rate for second births. The higher parities and therefore the highest order births (5th child and above) are more likely to be associated with older maternal age, multiple births, and lower socioeconomic status (2,29).

Marital status

Marital status may be a marker for the presence or absence of social, emotional, and financial resources (30, 31). Infants of mothers who are not married have been shown to be at higher risk for poor outcomes (32,33). In 2004, infants of married mothers had an infant mortality rate of 5.30 per 1,000, 44 percent lower than the rate for infants of unmarried mothers (9.43) (Tables 1 and 2). Within each race and Hispanic origin group, infants of unmarried mothers had higher rates of mortality and with the exception of Cuban and Central and South American infants, these differences were significant.

Nativity

In 2004 the infant mortality rate for mothers born in the 50 states and the District of Columbia (7.14) was 39 percent higher than the rate for mothers born elsewhere (5.12). Among race and Hispanic origin groups for whom infant mortality rates could be calculated all had higher infant mortality rates for mothers born in the 50 states and the District of Columbia (the difference was not significant for Puerto Rican, Cuban, and Central and South American mothers—the latter two have almost no difference) (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 migration selectivity, social support, and risk behaviors (34). 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 (35).

Maternal smoking

Data on maternal smoking during pregnancy are shown for 40 states, New York City, and the District of Columbia (unrevised data); see "Technical Notes." For this area, the infant mortality rate for infants of mothers who smoked was 11.14, 70 percent higher than the rate of 6.54 for nonsmokers (Table E).

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 (36,37). Maternal smoking has also been shown to increase the risk of respiratory infections and inhibit allergic immune responses in infants (38,39).

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 2004 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 17 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 Accidents (unintentional injuries), accounted for 6 and 4 percent, respectively, of all infant deaths in 2004. Together the five leading causes accounted for 55 percent of all infant deaths in the United States in 2003. The order of the top four leading causes was the same as in 2003. The fifth leading cause of death in 2004 was unintentional injuries, which was ranked sixth in 2003. Complications of placenta, cord and membranes (cord complications) was the fifth leading cause in 2003, but dropped to sixth in 2004.

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

Infant mortality rates for Congenital malformations, SIDS, and maternal complications were basically unchanged from 2003–2004. The rate for low birthweight decreased by 5 percent, while the rate for unintentional injuries increased by 11 percent from 2003 to 2004. Much of the increase for unintentional injuries was in the accidental suffocation subcategories, although changes in reporting might have also had an impact on these categories (40–42).

When examined by race and ethnicity, none of the race and ethnic groups shown in Table 7 had significant changes in cause-specific infant mortality rates from 2003–2004, except for unintentional injuries, which increased for infants of Mexican mothers, although their rates were still substantially lower than those for non-Hispanic white women.

When differences between cause-specific infant mortality rates were examined by race and ethnicity, infant mortality rates from Congenital malformations were 30 percent higher for non-Hispanic black, 57 percent higher for American Indian, and 11 percent higher for Mexican than for non-Hispanic white women, while the rate for Asian or Pacific Islander women was 19 percent lower.

Infants of non-Hispanic black mothers had the highest mortality rates from low birthweight. The rate for non-Hispanic black mothers was

Table E. Infant mortality rates for trimester of pregnancy prenatal care began, smoking status during pregnancy, and education of mother: 41 states, the District of Columbia, and New York City for 2003 and 2004

Characteristic	2004	2003
Prenatal care:		
Prenatal care beginning in the 1st trimester	6.11	6.13
Prenatal care beginning after the 1st trimester or no care	8.35	8.67
Prenatal care beginning in the 2nd or 3rd trimester	6.62	7.01
No prenatal care	33.68	33.15
Smoking status:[1]		
Smoker	10.95	11.14
Nonsmoker	6.47	6.54
Education of mother:		
0–11 years	8.12	8.36
12 years	7.55	7.58
13–15 years	6.21	6.19
16 or more years	4.17	4.23

[1]Excludes data for California, which did not report smoking status on the birth certificate.

NOTE: Data are based on the 1989 Revision of the U.S. Standard Certificate of Live Birth and exclude data from Florida, Idaho, Kentucky, New Hampshire, New York State, (excluding New York City), Pennsylvania, South Carolina, Tennessee and Washington.

nearly four times the rate for non-Hispanic white mothers. The rate for Puerto Rican mothers was nearly double the rate for non-Hispanic white mothers.

SIDS rates were highest for non-Hispanic black and American Indian mothers—2.1 and 1.9 times those for non-Hispanic white mothers, respectively. As most SIDS deaths occur during the postneonatal period, the high SIDS rates for infants of non-Hispanic black and American Indian mothers accounted for much of their elevated risk of postneonatal mortality. Compared with non-Hispanic white mothers, SIDS rates were 49 percent lower for Asian or Pacific Islander mothers, 51 percent lower for Mexican mothers, and 70 percent lower for Central and South American mothers.

For maternal complications (which include incompetent cervix, premature rupture of membranes, and multiple pregnancy, for example), infants of non-Hispanic black mothers had the highest mortality rates—3.2 times those for non-Hispanic white mothers. The higher percent of non-Hispanic black infants born at low birthweight may help to explain their higher infant mortality rates from these causes, which occur predominantly among low birthweight infants. Infant mortality rates from maternal complications were 23 percent lower for Mexican than for non-Hispanic white women.

Compared with non-Hispanic white women, infant mortality rates from unintentional injuries were 87 percent and 83 percent higher for American Indian and non-Hispanic black women, respectively, while infant mortality rates from unintentional injuries were 44 percent and 36 percent lower for Asian or Pacific Islander and Mexican women, respectively.

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

For American Indian mothers, 26 percent of their elevated infant mortality rate, when compared with non-Hispanic white mothers, can be accounted for by their higher rate of Congenital malformations, 17 percent by differences in SIDS, and 8 percent by differences in unintentional injuries. Thus, if American Indian infant mortality rates for these three causes could be reduced to non-Hispanic white levels, the difference in the infant mortality rate between American Indian and non-Hispanic white mothers would be reduced by 51 percent.

Similarly, 35 percent of the difference between Puerto Rican and non-Hispanic white infant mortality rates can be accounted for by differences in low birthweight. Thus, if Puerto Rican infant mortality from low birthweight could be reduced to non-Hispanic white levels, the difference in the infant mortality rate between Puerto Rican and non-Hispanic white infants would be reduced by 35 percent. 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.

Preterm-related causes of death

A new table has been added to this report to monitor infant mortality for preterm-related causes of death (Table 8). It is difficult, using traditional analyses of the leading causes of infant death, to assess the overall impact of preterm related infant deaths on infant mortality. In particular, the category "Disorders related to short gestation and low birthweight, not elsewhere classified" includes the phrase "not elsewhere classified" thereby indicating that many other preterm-related infant deaths are classified to other ICD categories. In 2006, CDC authors published an article that attempted to capture this impact by examining the 20 leading causes of infant death and identifying and grouping together causes with a direct, etiological connection to preterm birth (43). For an underlying cause of death to be considered preterm-related, 75 percent or more of infants whose deaths were attributed to that cause had to be born at less than 37

weeks of gestation, and the cause of death had to be a direct consequence of preterm birth based on a clinical evaluation and review of the literature (43).

For the purposes of this report, the previous analysis was extended by examining all of the remaining categories of infant death (outside of the 20 leading causes) to develop a comprehensive list of preterm-related causes of death. The comprehensive list of preterm-related ICD codes is shown in Table 8. Please note that even this more comprehensive listing is probably an underestimate of the total impact of preterm-related infant death, as some ICD categories (notably those beginning with the words "Other" and "All other") had a high percentage of preterm infant deaths but lacked sufficient specificity to be able to establish the etiologic connection to prematurity with any degree of certainty.

Table 8 shows trends in preterm-related infant mortality by race and Hispanic origin of mother from 1999 (the first year that ICD–10 was implemented in the United States) to 2004. In 2004, 36.5 percent of all infant deaths in the United States were preterm related. Preterm-related infant deaths accounted for 10,180 of the total of 27,860 infant deaths that year. In 1999, 35.4 percent of all infant deaths in the United States were preterm-related.

The impact of preterm-related infant deaths varied considerably by maternal race and ethnicity. In 2004, nearly one-half (46 percent) of infant deaths to non-Hispanic black women, and 41 percent of infant deaths to Puerto Rican women were due to preterm-related causes, while the percentage was somewhat lower for other race and ethnic groups (Table 8).

Preterm-related infant mortality rates varied considerably by race and ethnicity of the mother (Figure 4 and Table 8). Preterm-related infant mortality rates were 3.5 times higher for non-Hispanic black (6.29) than for non-Hispanic white (1.82) mothers. It is important to note that, in 2004, the preterm-related infant mortality rate for non-Hispanic black mothers was higher than the total infant mortality rate for non-Hispanic white, Mexican, and Asian or Pacific Islander women. The preterm-related infant mortality rate for Puerto Rican (3.19) mothers was 75 percent higher than for non-Hispanic white mothers. Preterm-related infant mortality rates for American Indian (1.89), Mexican (1.76), and Asian or Pacific Islander (1.65) women were not significantly different from those for non-Hispanic white women.

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List of detailed tables

Table 1. Infant mortality rates, live births, and infant deaths, by selected characteristics and race of mother: United States, 2004 linked file

Characteristics	All races	Race of mother			
		White	Black	American Indian[1]	Asian or Pacific Islander
	Infant mortality rates per 1,000 live births in specified group				
Total	6.78	5.66	13.25	8.45	4.67
Age at death:					
Total neonatal	4.52	3.78	8.94	4.26	3.20
Early neonatal (less than 7 days)	3.61	3.00	7.16	3.39	2.62
Late neonatal (7–27 days)	0.92	0.78	1.77	0.87	0.58
Postneonatal	2.25	1.89	4.31	4.19	1.47
Sex:					
Male	7.44	6.23	14.59	9.51	4.95
Female	6.08	5.08	11.85	7.30	4.37
Plurality:					
Single births	5.94	4.96	11.67	7.68	4.14
Plural births	30.46	25.77	55.35	37.00	23.13
Birthweight:					
Less than 2,500 grams	57.64	52.32	75.57	58.57	42.26
Less than 1,500 grams	244.50	231.92	273.97	216.87	222.73
1,500–2,499 grams	14.97	14.93	15.55	24.69	11.37
2,500 grams or more	2.26	2.08	3.45	4.38	1.42
Period of gestation:					
Less than 32 weeks	182.45	168.40	216.28	139.21	173.24
32–33 weeks	16.06	15.52	17.37	24.45	15.90
34–36 weeks	7.32	6.83	9.19	13.61	5.85
37–41 weeks	2.39	2.19	3.71	4.23	1.56
37–39 weeks	2.61	2.40	3.93	4.49	1.75
40–41 weeks	2.00	1.82	3.28	3.77	1.20
42 weeks or more	2.87	2.68	4.19	*	1.76
Age of mother:					
Under 20 years	9.75	8.31	13.90	8.80	9.84
20–24 years	7.69	6.45	12.81	8.86	5.51
25–29 years	5.95	4.89	12.89	7.74	4.32
30–34 years	5.47	4.62	13.30	7.86	3.90
35–39 years	6.24	5.43	13.85	7.35	4.38
40–54 years	8.81	7.72	16.14	*	8.29
Live-birth order:					
1	6.74	5.69	13.41	7.07	4.69
2	5.99	5.06	11.94	8.47	4.49
3	6.48	5.52	11.82	6.75	4.58
4	8.17	6.59	14.89	12.83	4.34
5 or more	10.64	8.38	17.79	11.16	7.03
Marital status:					
Married	5.30	4.86	11.26	6.71	4.28
Unmarried	9.43	7.49	14.15	9.50	6.78
Mother's place of birth:					
Born in the 50 states and DC	7.14	5.76	13.77	8.58	5.94
Born elsewhere	5.12	4.88	8.50	*	4.33

See footnotes at end of table.

Table 1. Infant mortality rates, live births, and infant deaths, by selected characteristics and race of mother: United States, 2004 linked file—Con.

Characteristics	All races	Race of mother			
		White	Black	American Indian[1]	Asian or Pacific Islander
	Live births				
Total	4,112,055	3,222,929	616,076	43,927	229,123
Sex:					
Male	2,104,663	1,650,698	313,897	22,293	117,775
Female	2,007,392	1,572,231	302,179	21,634	111,348
Plurality:					
Single births	3,972,560	3,113,164	593,853	42,819	222,724
Plural births	139,495	109,765	22,223	1,108	6,399
Birthweight:					
Less than 2,500 grams	333,427	228,756	83,252	3,295	18,124
Less than 1,500 grams	61,983	39,419	19,334	581	2,649
1,500–2,499 grams	271,444	189,337	63,918	2,714	15,475
2,500 grams or more	3,778,051	2,993,755	532,699	40,622	210,975
Not stated	577	418	125	10	24
Period of gestation:					
Less than 32 weeks	81,648	53,140	24,219	941	3,348
32–33 weeks	64,766	46,258	14,734	818	2,956
34–36 weeks	361,945	271,250	69,074	4,189	17,432
37–41 weeks	3,308,179	2,617,214	467,851	34,291	188,823
37–39 weeks	2,130,486	1,674,287	310,684	21,811	123,704
40–41 weeks	1,177,693	942,927	157,167	12,480	65,119
42 weeks or more	252,543	200,659	36,068	3,312	12,504
Not stated	42,974	34,408	4,130	376	4,060
Age of mother:					
Under 20 years	422,043	300,858	105,620	7,843	7,722
20–24 years	1,034,455	788,264	200,399	15,130	30,662
25–29 years	1,104,486	880,871	147,858	10,717	65,040
30–34 years	965,663	780,368	99,083	6,488	79,724
35–39 years	475,607	384,917	50,044	2,994	37,652
40–54 years	109,801	87,651	13,072	755	8,323
Live-birth order:					
1	1,630,923	1,276,937	233,028	15,270	105,688
2	1,319,426	1,050,100	177,850	12,036	79,440
3	693,933	549,428	108,509	7,849	28,147
4	273,589	209,194	51,113	4,287	8,995
5 or more	175,551	124,065	41,585	4,213	5,688
Not stated	18,633	13,205	3,991	272	1,165
Marital status:					
Married	2,641,864	2,239,470	192,124	16,551	193,719
Unmarried	1,470,191	983,459	423,952	27,376	35,404
Mother's place of birth:					
Born in the 50 states and DC	3,103,356	2,506,578	515,905	41,470	39,403
Born elsewhere	992,227	706,019	95,413	2,317	188,478
Not stated	16,472	10,332	4,758	140	1,242

See footnotes at end of table.

Table 1. Infant mortality rates, live births, and infant deaths, by selected characteristics and race of mother: United States, 2004 linked file—Con.

Characteristics	All races	Race of mother			
		White	Black	American Indian[1]	Asian or Pacific Islander
	Infant deaths				
Total	27,860	18,257	8,162	371	1,070
Age at death:					
Total neonatal	18,602	12,178	5,505	187	733
Early neonatal (less than 7 days)	14,836	9,674	4,413	149	601
Late neonatal (7–27 days)	3,766	2,504	1,092	38	132
Postneonatal	9,258	6,080	2,657	184	337
Sex:					
Male	15,653	10,277	4,581	212	583
Female	12,207	7,981	3,581	158	487
Plurality:					
Single births	23,611	15,428	6,932	329	922
Plural births	4,249	2,829	1,230	41	148
Birthweight:					
Less than 2,500 grams	19,218	11,968	6,291	193	766
Less than 1,500 grams	15,155	9,142	5,297	126	590
1,500–2,499 grams	4,064	2,826	994	67	176
2,500 grams or more	8,528	6,213	1,839	178	299
Not stated	113	77	32	–	4
Period of gestation:					
Less than 32 weeks	14,897	8,949	5,238	131	580
32–33 weeks	1,040	718	256	20	47
34–36 weeks	2,648	1,853	635	57	102
37–41 weeks	7,918	5,741	1,737	145	294
37–39 weeks	5,561	4,026	1,221	98	216
40–41 weeks	2,357	1,715	516	47	78
42 weeks or more	725	538	151	14	22
Not stated	631	459	145	3	25
Age of mother:					
Under 20 years	4,114	2,501	1,468	69	76
20–24 years	7,953	5,082	2,568	134	169
25–29 years	6,576	4,307	1,906	83	281
30–34 years	5,281	3,602	1,318	51	311
35–39 years	2,969	2,089	693	22	165
40–54 years	967	677	211	11	69
Live-birth order:					
1	10,994	7,265	3,126	108	496
2	7,898	5,317	2,123	102	357
3	4,498	3,033	1,283	53	129
4	2,234	1,379	761	55	39
5 or more	1,867	1,040	740	47	40
Not stated	368	224	129	5	10
Marital status:					
Married	13,999	10,894	2,164	111	830
Unmarried	13,861	7,364	5,998	260	240
Mother's place of birth:					
Born in the 50 states and DC	22,143	14,449	7,105	356	234
Born elsewhere	5,083	3,447	811	10	816
Not stated	634	362	247	5	20

* Figure does not meet standards of reliability or precision; based on fewer than 20 deaths in the numerator.

– Quanity zero.

[1]Includes Aleuts and Eskimos.

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 group for rate computations. Race and Hispanic origin are reported separately on birth certificates. Race categories are consistent with the 1977 Office of Management and Budget standards. In this table all women (including Hispanic women) are classified only according to their race. Fifteen states reported multiple-race data on the birth certificate for 2004. The multiple-race data for these states were bridged to the single-race categories of the 1977 standards for comparability with other states; see reference 2.

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, 2004 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	6.78	5.55	5.47	7.82	4.55	4.65	6.73	7.09	5.66	13.60
Age at death:										
Total neonatal	4.52	3.83	3.74	5.34	2.81	3.43	4.73	4.67	3.70	9.13
Early neonatal (less than 7 days)	3.61	3.04	2.98	4.02	2.28	2.71	3.83	3.72	2.93	7.31
Late neonatal (7–27 days)	0.92	0.80	0.76	1.32	*	0.72	0.90	0.95	0.77	1.82
Postneonatal	2.25	1.71	1.73	2.48	1.74	1.22	2.00	2.42	1.96	4.47
Sex:										
Male	7.44	6.04	5.96	9.09	4.51	4.99	6.93	7.79	6.24	15.00
Female	6.08	5.03	4.95	6.48	4.60	4.29	6.51	6.35	5.05	12.14
Plurality:										
Single births	5.94	5.01	4.95	7.06	3.41	4.13	6.35	6.18	4.89	12.00
Plural births	30.46	28.90	29.85	32.22	*	25.23	21.26	30.48	24.89	55.71
Birthweight:										
Less than 2,500 grams	57.64	56.45	58.25	55.92	45.89	50.20	55.63	57.38	50.05	76.01
Less than 1,500 grams	244.50	245.41	251.93	229.94	235.90	224.22	255.49	242.04	222.98	274.34
1,500–2,499 grams	14.97	15.16	16.36	12.25	*	12.26	15.67	14.89	14.79	15.67
2,500 grams or more	2.26	1.81	1.80	2.56	*	1.35	2.52	2.39	2.18	3.54
Period of gestation:										
Less than 32 weeks	182.45	162.52	163.32	172.65	181.47	150.52	161.01	185.81	168.29	217.31
32–33 weeks	16.06	14.65	15.16	*	*	12.68	*	16.42	15.73	17.60
34–36 weeks	7.32	6.20	6.38	7.57	*	4.72	7.21	7.60	7.05	9.25
37–41 weeks	2.39	1.96	1.95	2.82	*	1.60	2.44	2.52	2.28	3.82
37–39 weeks	2.61	2.18	2.16	2.92	*	1.79	2.70	2.73	2.50	4.04
40–41 weeks	2.00	1.60	1.59	2.64	*	1.28	1.88	2.11	1.89	3.39
42 weeks or more	2.87	2.41	2.47	*	*	2.07	*	3.03	2.80	4.35
Age of mother:										
Under 20 years	9.75	6.67	6.41	9.85	*	4.96	8.18	11.17	9.56	14.19
20–24 years	7.69	5.34	5.31	7.42	*	4.25	5.93	8.49	6.94	13.15
25–29 years	5.95	4.82	4.60	7.75	*	4.46	5.93	6.26	4.88	13.31
30–34 years	5.47	5.28	5.39	6.86	*	4.34	6.67	5.45	4.37	13.66
35–39 years	6.24	6.26	6.50	5.92	*	5.33	7.55	6.15	5.15	14.08
40–54 years	8.81	10.02	9.94	*	*	8.45	*	8.58	7.12	16.49
Live-birth order:										
1	6.74	5.80	5.84	8.86	3.58	4.16	7.21	6.94	5.61	13.77
2	5.99	4.81	4.81	6.01	4.77	4.39	4.62	6.28	5.13	12.28
3	6.48	4.89	4.77	6.14	*	4.49	6.37	7.02	5.79	12.18
4	8.17	6.09	5.68	8.38	*	6.55	9.45	9.01	6.83	15.39
5 or more	10.64	8.63	8.15	14.32	*	8.24	10.44	11.44	8.20	18.11
Marital status:										
Married	5.30	5.08	5.16	6.70	4.01	4.36	4.97	5.30	4.76	11.58
Unmarried	9.43	6.08	5.85	8.54	5.65	4.95	8.70	10.78	8.42	14.49
Mother's place of birth:										
Born in the 50 states and DC	7.14	6.19	6.02	8.08	4.55	4.57	6.32	7.25	5.69	13.91
Born elsewhere	5.12	5.05	5.10	7.05	4.56	4.64	4.66	5.12	3.96	9.40

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, 2004 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	4,112,055	946,349	677,621	61,221	14,943	143,520	49,044	3,133,128	2,296,684	578,774	32,578
Sex:											
Male	2,104,663	482,923	345,241	31,448	7,765	73,371	25,098	1,605,129	1,178,139	294,732	16,611
Female	2,007,392	463,426	332,380	29,773	7,178	70,149	23,946	1,527,999	1,118,545	284,042	15,967
Plurality:											
Single births	3,972,560	925,275	663,653	59,359	14,363	140,032	47,868	3,015,920	2,207,747	557,592	31,365
Plural births	139,495	21,074	13,968	1,862	580	3,488	1,176	117,208	88,937	21,182	1,213
Birthweight:											
Less than 2,500 grams	333,427	64,443	43,792	6,026	1,155	9,641	3,829	266,141	166,029	79,911	2,843
Less than 1,500 grams	61,983	11,556	7,788	1,209	195	1,726	638	49,777	28,114	18,641	650
1,500–2,499 grams	271,444	52,887	36,004	4,817	960	7,915	3,191	216,364	137,915	61,270	2,193
2,500 grams or more	3,778,051	881,852	633,800	55,184	13,788	133,871	45,209	2,866,694	2,130,476	498,773	29,505
Not stated	577	54	29	11	*	8	6	293	179	90	230
Period of gestation:											
Less than 32 weeks	81,648	16,355	11,211	1,587	259	2,385	913	64,523	37,246	23,294	770
32–33 weeks	64,766	14,406	10,157	1,113	235	2,130	771	49,871	32,295	14,038	489
34–36 weeks	361,945	80,177	56,439	5,812	1,413	12,072	4,441	279,066	193,103	65,637	2,702
37–41 weeks	3,308,179	749,757	535,127	48,296	12,138	115,200	38,996	2,533,153	1,883,739	438,385	25,269
37–39 weeks	2,130,486	473,195	336,871	30,865	8,100	72,162	25,197	1,641,418	1,211,397	292,300	15,873
40–41 weeks	1,177,693	276,562	198,256	17,431	4,038	43,038	13,799	891,735	672,342	146,085	9,396
42 weeks or more	252,543	63,916	45,821	4,201	859	9,670	3,365	186,762	138,457	33,564	1,865
Not stated	42,974	21,738	18,866	212	39	2,063	558	19,753	11,844	3,856	1,483
Age of mother:											
Under 20 years	422,043	135,400	103,423	10,764	1,168	12,100	7,945	283,789	170,272	100,019	2,854
20–24 years	1,034,455	279,746	207,535	19,552	2,758	35,073	14,828	747,380	517,148	188,762	7,329
25–29 years	1,104,486	254,358	182,306	15,235	3,875	40,624	12,318	841,593	631,727	138,093	8,535
30–34 years	965,663	177,762	121,408	9,917	4,341	33,399	8,697	779,789	604,040	92,646	8,112
35–39 years	475,607	81,021	51,985	4,728	2,243	17,829	4,236	390,138	304,085	46,946	4,448
40–54 years	109,801	18,062	10,964	1,025	558	4,495	1,020	90,439	69,412	12,308	1,300
Live-birth order:											
1	1,630,923	338,736	232,512	23,695	6,989	56,267	19,273	1,279,649	946,010	218,586	12,538
2	1,319,426	288,730	203,589	18,962	5,238	45,800	15,141	1,021,378	767,723	166,674	9,318
3	693,933	183,929	137,421	10,750	1,885	25,402	8,471	505,052	369,822	101,861	4,952
4	273,589	81,237	62,828	4,535	502	9,774	3,598	190,311	129,847	48,341	2,041
5 or more	175,551	50,422	39,262	3,002	252	5,702	2,204	123,568	74,793	39,751	1,561
Not stated	18,633	3,295	2,009	277	77	575	357	13,170	8,489	3,561	2,168
Marital status:											
Married	2,641,864	506,808	371,553	23,864	9,985	75,241	26,165	2,113,768	1,734,145	177,792	21,288
Unmarried	1,470,191	439,541	306,068	37,357	4,958	68,279	22,879	1,019,360	562,539	400,982	11,290
Mother's place of birth:											
Born in the 50 states and DC	3,103,356	347,781	246,022	40,989	7,029	18,161	35,580	2,731,272	2,156,291	502,041	24,303
Born elsewhere	992,227	596,489	430,701	19,858	7,895	125,161	12,874	388,924	132,788	72,628	6,814
Not stated	16,472	2,079	898	374	19	198	590	12,932	7,605	4,105	1,461

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, 2004 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	27,860	5,248	3,705	479	68	667	330	22,203	13,001	7,869	409
Age at death:											
Total neonatal	18,602	3,627	2,535	327	42	492	232	14,634	8,499	5,283	341
Early neonatal (less than 7 days)	14,836	2,874	2,018	246	34	389	188	11,652	6,727	4,230	310
Late neonatal (7–27 days)	3,766	753	517	81	8	103	44	2,982	1,772	1,053	31
Postneonatal	9,258	1,621	1,170	152	26	175	98	7,570	4,502	2,586	68
Sex:											
Male	15,653	2,918	2,058	286	35	366	174	12,502	7,349	4,420	233
Female	12,207	2,329	1,646	193	33	301	156	9,701	5,651	3,449	176
Plurality:											
Single births	23,611	4,639	3,288	419	49	579	304	18,630	10,787	6,689	342
Plural births	4,249	609	417	60	19	88	25	3,573	2,214	1,180	67
Birthweight:											
Less than 2,500 grams	19,219	3,638	2,551	337	53	484	213	15,270	8,309	6,074	310
Less than 1,500 grams	15,155	2,836	1,962	278	46	387	163	12,048	6,269	5,114	271
1,500–2,499 grams	4,064	802	589	59	7	97	50	3,222	2,040	960	39
2,500 grams or more	8,528	1,593	1,142	141	15	181	114	6,854	4,642	1,768	82
Not stated	113	17	11	1	–	2	3	79	50	26	17
Period of gestation:											
Less than 32 weeks	14,897	2,658	1,831	274	47	359	147	11,989	6,268	5,062	250
32–33 weeks	1,040	211	154	12	2	27	16	819	508	247	10
34–36 weeks	2,648	497	360	44	4	57	32	2,121	1,362	607	30
37–41 weeks	7,918	1,472	1,044	136	14	184	95	6,373	4,297	1,675	73
37–39 weeks	5,561	1,030	729	90	13	129	68	4,489	3,024	1,180	42
40–41 weeks	2,357	443	315	46	1	55	26	1,884	1,273	495	30
42 weeks or more	725	154	113	8	1	20	12	566	388	146	5
Not stated	631	254	203	4	–	20	27	336	178	133	41
Age of mother:											
Under 20 years	4,114	903	663	106	9	60	65	3,170	1,628	1,419	41
20–24 years	7,953	1,493	1,102	145	9	149	88	6,344	3,590	2,482	116
25–29 years	6,576	1,225	838	118	15	181	73	5,267	3,085	1,838	83
30–34 years	5,281	938	654	68	14	145	58	4,246	2,637	1,266	97
35–39 years	2,969	507	338	28	14	95	32	2,401	1,567	661	61
40–54 years	967	181	109	14	7	38	13	776	494	203	10
Live-birth order:											
1	10,994	1,966	1,358	210	25	234	139	8,879	5,304	3,011	149
2	7,898	1,389	979	114	25	201	70	6,413	3,936	2,046	97
3	4,498	900	655	66	12	114	54	3,547	2,140	1,241	51
4	2,234	495	357	38	2	64	34	1,715	887	744	24
5 or more	1,867	435	320	43	2	47	23	1,414	613	720	18
Not stated	368	62	36	8	2	7	9	236	121	107	69
Marital status:											
Married	13,999	2,574	1,916	160	40	328	130	11,213	8,263	2,059	211
Unmarried	13,861	2,673	1,789	319	28	338	199	10,990	4,738	5,810	198
Mother's place of birth:											
Born in the 50 states and DC	22,143	2,152	1,481	331	32	83	225	19,791	12,274	6,985	200
Born elsewhere	5,083	3,015	2,198	140	36	581	60	1,993	526	683	76
Not stated	634	81	26	7	–	3	45	420	201	202	133

* Figure does not meet standards 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.

NOTES: 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. Race and Hispanic origin are reported separately on birth certificates. Race categories are consistent with the 1977 Office of Management and Budget standards. Persons of Hispanic origin may be of any race. In this table Hispanic women are classified only by place of origin; non-Hispanic women are classified by race. See reference 2.

Table 3. Infant mortality rates by race and Hispanic origin of mother: United States and each state, Puerto Rico, Virgin Islands, and Guam, 2002–2004 linked files

[By place of residence]

State	Total	Race and Hispanic origin of mother						
		Race				Hispanic origin		
		White	Black	American Indian[1]	Asian or Pacific Islander	Hispanic	Non-Hispanic white	Non-Hispanic black
	Infant mortality rates per 1,000 live births in specified group							
United States[2]	6.86	5.73	13.51	8.60	4.76	5.60	5.72	13.70
Alabama	8.82	6.74	13.50	*	*	7.94	6.67	13.49
Alaska	6.36	4.93	*	9.41	*	*	5.11	*
Arizona	6.55	6.22	10.62	8.25	6.69	6.46	6.00	11.06
Arkansas	8.47	7.37	13.11	*	*	6.02	7.56	13.17
California	5.25	4.84	11.32	6.29	4.21	5.05	4.59	11.33
Colorado	6.11	5.58	16.52	*	6.39	6.67	5.14	16.30
Connecticut	5.75	4.98	12.00	*	*	7.13	4.39	12.14
Delaware	8.88	6.92	14.91	*	*	6.16	7.07	15.03
District of Columbia	11.42	5.08	14.81	*	*	7.93	3.76	15.49
Florida	7.33	5.67	12.79	8.27	5.99	5.11	5.84	13.12
Georgia	8.65	6.32	13.70	*	5.80	6.17	6.32	13.64
Hawaii	6.95	5.06	14.82	*	7.34	7.06	4.60	15.04
Idaho	6.14	6.09	*	*	*	6.15	6.08	*
Illinois	7.53	5.87	15.52	*	4.58	6.04	5.90	15.51
Indiana	7.78	6.78	14.94	*	5.36	6.93	6.93	15.00
Iowa	5.36	5.14	10.47	*	*	5.83	5.11	10.37
Kansas	7.04	6.44	13.91	*	6.20	6.22	6.57	14.05
Kentucky	6.94	6.46	11.52	*	*	6.25	6.51	11.57
Louisiana	9.95	6.96	14.03	*	6.99	5.09	7.20	14.01
Maine	5.01	4.95	*	*	*	*	4.91	*
Maryland	8.09	5.51	13.33	*	4.16	5.67	5.46	13.62
Massachusetts	4.80	4.24	9.53	*	3.46	6.59	3.87	10.23
Michigan	8.09	6.33	16.81	*	5.05	7.31	6.21	16.76
Minnesota	4.85	4.46	8.86	8.81	3.55	4.97	4.39	8.75
Mississippi	10.32	6.82	14.69	*	*	*	6.93	14.69
Missouri	7.95	6.77	14.72	*	6.83	8.23	6.68	14.79
Montana	6.42	6.00	*	8.39	*	*	5.79	*
Nebraska	6.34	5.70	15.86	*	*	6.18	5.46	16.18
Nevada	6.00	5.27	13.22	*	5.16	4.52	5.78	12.98
New Hampshire	4.93	4.79	*	*	*	*	4.75	*
New Jersey	5.62	4.31	11.48	*	4.23	5.76	3.80	12.22
New Mexico	6.11	5.82	*	6.96	*	5.52	6.46	*
New York	6.08	4.89	11.18	11.03	3.77	5.52	4.71	11.72
North Carolina	8.35	6.15	15.44	11.10	5.20	6.63	6.06	15.37
North Dakota	6.48	6.00	*	8.69	*	*	5.94	*
Ohio	7.74	6.31	15.50	*	4.66	7.92	6.27	15.57
Oklahoma	7.95	7.21	13.98	7.81	*	6.06	7.46	13.79
Oregon	5.59	5.37	9.98	11.07	5.28	4.55	5.58	10.06
Pennsylvania	7.40	6.25	14.04	*	4.69	7.46	5.98	13.89
Rhode Island	6.40	5.83	10.41	*	*	6.27	5.41	11.57
South Carolina	8.98	6.24	14.26	*	7.76	6.36	6.25	14.40
South Dakota	7.11	5.79	*	13.51	*	*	5.84	*
Tennessee	9.05	6.91	17.02	*	6.16	5.96	7.02	17.34
Texas	6.37	5.51	12.22	*	4.22	5.51	5.87	12.21
Utah	5.26	5.07	*	*	7.33	6.58	4.83	*
Vermont	4.68	4.67	*	*	*	*	4.71	*
Virginia	7.48	5.77	13.67	*	4.83	5.15	5.82	13.86
Washington	5.62	5.28	9.20	10.53	5.23	5.44	5.07	9.24
West Virginia	7.98	7.74	14.02	*	*	*	7.67	13.61
Wisconsin	6.43	5.16	17.56	9.66	6.47	6.05	5.09	17.57
Wyoming	6.99	6.65	*	*	*	*	6.77	*
Puerto Rico	9.05	8.88	10.54	– – –	– – –	– – –	– – –	– – –
Virgin Islands	6.13	*	5.95	*	*	*	*	*
Guam	9.63	*	*	*	10.03	*	*	*

* Figure does not meet standards 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.

NOTES: Race and Hispanic origin are reported separately on birth certificates. Race categories are consistent with the 1977 Office of Management and Budget standards. Persons of Hispanic origin may be of any race. In this table Hispanic women are classified only by place of origin; non-Hispanic women are classified by race. Fifteen states reported multiple-race data on the birth certificate for 2004. The multiple-race data for these states were bridged to the single-race catergories of the 1977 standards for comparability with other states; see reference 2.

Table 4. Percent of live births with selected maternal and infant characteristics by race of mother: United States, 2004 linked file

Characteristic	All races	White	Black	American Indian[1]	Asian or Pacific Islander
Birthweight:					
Less than 1,500 grams	1.5	1.2	3.2	1.3	1.2
Less than 2,500 grams	8.1	7.1	13.7	7.5	7.9
Preterm births[2]	12.5	11.6	17.8	13.7	10.5
Births to mothers under 20 years	10.3	9.3	17.2	17.9	3.2
Fourth and higher order births	11.0	10.3	15.2	19.6	6.3
Births to unmarried mothers	35.8	30.2	69.2	62.6	14.8
Mothers born in the 50 states and DC	75.8	79.1	86.3	96.2	16.9

[1]Includes births to Aleuts and Eskimos.

[2]Born prior to 37 completed weeks of gestation.

NOTE: Fifteen states reported multiple-race data on the birth certificate for 2004. The multiple-race data for these states were bridged to the single-race categories of the 1977 standards for comparability with other states; see reference 2.

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, 2004 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	2.0	1.3	1.2	1.3	1.6	1.2	3.2
Less than 2,500 grams	8.1	6.8	6.5	9.8	7.7	6.7	7.8	8.5	7.2	13.8
Preterm births[3]	12.5	12.0	11.8	14.0	12.8	11.7	12.6	12.6	11.5	17.9
Births to mothers under 20 years	10.3	14.3	15.3	17.6	7.8	8.4	16.2	9.1	7.4	17.3
Fourth and higher order births	11.0	14.0	15.1	12.4	5.1	10.8	11.9	10.1	8.9	15.3
Births to unmarried mothers	35.8	46.4	45.2	61.0	33.2	47.6	46.6	32.6	24.5	69.3
Mothers born in the 50 states and DC	75.8	36.8	36.4	67.4	47.1	12.7	73.4	87.4	94.2	87.4

[1]Includes origin not stated

[2]Includes races other than black or white.

[3]Born prior to 37 completed weeks of gestation.

Table 6. Live births, infant, neonatal, and postneonatal deaths and mortality rates by race and Hispanic origin of mother and birthweight: United States, 2004 linked file, and percentage change in birthweight-specific infant mortality, 1995–2004 linked files

Race and birthweight	Number in 2004				Mortality rate per 1,000 live births in 2004			Percent change in infant mortality rate 1995–2004
	Live births	Infant deaths	Neonatal deaths	Postneonatal deaths	Infant	Neonatal	Postneonatal	
All races[1]	4,112,055	27,860	18,602	9,258	6.78	4.52	2.25	–10.4**
Less than 2,500 grams	333,427	19,218	15,582	3,637	57.64	46.73	10.91	–10.8**
Less than 1,500 grams	61,983	15,155	13,186	1,969	244.50	212.74	31.77	–8.9**
Less than 500 grams	6,953	5,907	5,748	159	849.56	826.69	22.87	–6.0**
500–749 grams	11,659	5,602	4,784	819	480.49	410.33	70.25	–9.0**
750–999 grams	12,321	1,921	1,432	489	155.91	116.22	39.69	–14.4**
1,000–1,249 grams	14,245	966	697	269	67.81	48.93	18.88	–20.7**
1,250–1,499 grams	16,805	758	525	233	45.11	31.24	13.86	–17.4**
1,500–1,999 grams	65,821	1,800	1,195	605	27.35	18.16	9.19	–17.5**
2,000–2,499 grams	205,623	2,264	1,200	1,064	11.01	5.84	5.17	–18.7**
2,500 grams or more	3,778,051	8,528	2,916	5,612	2.26	0.77	1.49	–23.6**
2,500–2,999 grams	730,045	3,039	1,176	1,864	4.16	1.61	2.55	–23.5**
3,000–3,499 grams	1,573,831	3,272	998	2,274	2.08	0.63	1.44	–27.5**
3,500–3,999 grams	1,125,055	1,699	551	1,149	1.51	0.49	1.02	–24.9**
4,000–4,499 grams	299,196	424	143	281	1.42	0.48	0.94	–22.0**
4,500–4,999 grams	44,917	69	34	34	1.54	0.76	0.76	–29.0**
5,000 grams or more	5,007	24	13	11	4.79	*	*	–42.6
Not stated	577	113	104	9	. . .	. . .	. . .	*
White	3,222,929	18,257	12,178	6,080	5.66	3.78	1.89	–10.2**
Less than 2,500 grams	228,756	11,968	9,879	2,089	52.32	43.19	9.13	–12.4**
Less than 1,500 grams	39,419	9,142	8,096	1,046	231.92	205.38	26.54	–11.0**
Less than 500 grams	3,927	3,353	3,278	75	853.83	834.73	19.10	–6.3
500–749 grams	6,914	3,430	3,003	427	496.09	434.34	61.76	–9.2**
750–999 grams	7,800	1,215	956	259	155.77	122.56	33.21	–19.2**
1,000–1,249 grams	9,360	631	487	144	67.41	52.03	15.38	–25.9**
1,250–1,499 grams	11,418	513	373	140	44.93	32.67	12.26	–19.0**
1,500–1,999 grams	45,976	1,291	901	389	28.08	19.60	8.46	–15.4**
2,000–2,499 grams	143,361	1,535	881	654	10.71	6.15	4.56	–21.8**
2,500 grams or more	2,993,755	6,213	2,230	3,983	2.08	0.74	1.33	–22.4**
2,500–2,999 grams	522,822	2,109	868	1,241	4.03	1.66	2.37	–23.7**
3,000–3,499 grams	1,226,188	2,384	770	1,614	1.94	0.63	1.32	–27.1**
3,500–3,999 grams	941,407	1,314	438	876	1.40	0.47	0.93	–23.1**
4,000–4,499 grams	259,811	331	114	217	1.27	0.44	0.84	–20.1**
4,500–4,999 grams	39,286	59	31	27	1.50	0.79	0.69	–26.1
5,000 grams or more	4,241	15	8	7	*	*	*	*
Not stated	418	77	69	8	. . .	. . .	. . .	*
Black	616,076	8,162	5,505	2,657	13.25	8.94	4.31	–9.1**
Less than 2,500 grams	83,252	6,291	4,941	1,350	75.57	59.35	16.22	–4.6**
Less than 1,500 grams	19,334	5,297	4,470	827	273.97	231.20	42.77	–4.1
Less than 500 grams	2,728	2,306	2,227	79	845.31	816.35	28.96	–5.5
500–749 grams	4,199	1,908	1,555	353	454.39	370.33	84.07	–9.0**
750–999 grams	3,893	599	399	199	153.87	102.49	51.12	–5.6
1,000–1,249 grams	4,108	282	171	111	68.65	41.63	27.02	–7.8
1,250–1,499 grams	4,406	202	117	86	45.85	26.55	19.52	–5.6
1,500–1,999 grams	15,912	408	230	178	25.64	14.45	11.19	–20.8**
2,000–2,499 grams	48,006	586	242	345	12.21	5.04	7.19	–9.2
2,500 grams or more	532,699	1,839	532	1,306	3.45	1.00	2.45	–24.0**
2,500–2,999 grams	148,523	753	243	510	5.07	1.64	3.43	–18.5**
3,000–3,499 grams	234,900	709	176	532	3.02	0.75	2.26	–26.3**
3,500–3,999 grams	119,908	291	82	209	2.43	0.68	1.74	–30.2**
4,000–4,499 grams	25,271	72	23	49	2.85	0.91	1.94	–34.5
4,500–4,999 grams	3,602	5	2	3	*	*	*	*
5,000 grams or more	495	8	5	3	*	*	*	*
Not stated	125	32	31	1	. . .	. . .	. . .	*

See footnotes at end of table.

Table 6. Live births, infant, neonatal, and postneonatal deaths and mortality rates by race and Hispanic origin of mother and birthweight: United States, 2004 linked file, and percentage change in birthweight-specific infant mortality, 1995–2004 linked files—Con.

Race and birthweight	Number in 2004				Mortality rate per 1,000 live births in 2004			Percent change in infant mortality rate 1995–2004
	Live births	Infant deaths	Neonatal deaths	Postneonatal deaths	Infant	Neonatal	Postneonatal	
American Indian[2]	43,927	371	187	184	8.45	4.26	4.19	–6.5
Less than 2,500 grams	3,295	193	149	44	58.57	45.22	13.35	1.7
Less than 1,500 grams	581	126	112	13	216.87	192.77	*	–8.4
Less than 500 grams	54	43	43	–	796.30	796.30	*	–10.4
500–749 grams	107	45	39	6	420.56	364.49	*	–31.0
750–999 grams	105	22	19	3	209.52	*	*	*
1,000–1,249 grams	143	11	9	2	*	*	*	*
1,250–1,499 grams	172	4	2	2	*	*	*	*
1,500–1,999 grams	653	22	12	10	33.69	*	*	*
2,000–2,499 grams	2,061	45	24	21	21.83	11.64	10.19	13.5
2,500 grams or more	40,622	178	38	139	4.38	0.94	3.42	–18.1
2,500–2,999 grams	7,180	52	15	37	7.24	*	5.15	–31.4
3,000–3,499 grams	16,271	70	13	57	4.30	*	3.50	–11.2
3,500–3,999 grams	12,571	39	7	32	3.10	*	2.55	–24.2
4,000–4,499 grams	3,802	11	2	9	*	*	*	*
4,500–4,999 grams	696	4	1	3	*	*	*	*
5,000 grams or more	102	1	–	1	*	*	*	*
Not stated	10	–	–	–	. . .	. . .	. . .	. . .
Asian or Pacific Islander	229,123	1,070	733	337	4.67	3.20	1.47	–11.6**
Less than 2,500 grams	18,124	766	613	153	42.26	33.82	8.44	–8.8
Less than 1,500 grams	2,649	590	508	83	222.73	191.77	31.33	–7.1
Less than 500 grams	244	206	200	6	844.26	819.67	*	–6.6
500–749 grams	439	219	186	33	498.86	423.69	75.17	–3.4
750–999 grams	523	85	58	27	162.52	110.90	51.63	–15.0
1,000–1,249 grams	634	41	30	11	64.67	47.32	*	–28.9
1,250–1,499 grams	809	39	33	5	48.21	40.79	*	–34.9
1,500–1,999 grams	3,280	79	52	27	24.09	15.85	8.23	–41.6**
2,000–2,499 grams	12,195	97	54	44	7.95	4.43	3.61	–23.7
2,500 grams or more	210,975	299	116	184	1.42	0.55	0.87	–34.3**
2,500–2,999 grams	51,520	125	50	75	2.43	0.97	1.46	–30.6**
3,000–3,499 grams	96,472	110	39	71	1.14	0.40	0.74	–40.9**
3,500–3,999 grams	51,169	55	24	31	1.07	0.47	0.61	–23.0
4,000–4,499 grams	10,312	9	4	5	*	*	*	*
4,500–4,999 grams	1,333	1	–	1	*	*	*	*
5,000 grams or more	169	–	–	–	*	*	*	*
Not stated	24	4	4	–	. . .	. . .	. . .	*
Hispanic	946,349	5,248	3,627	1,621	5.55	3.83	1.71	–11.5**
Less than 2,500 grams	64,443	3,638	3,000	638	56.45	46.55	9.90	–8.0**
Less than 1,500 grams	11,556	2,836	2,487	349	245.41	215.21	30.20	–6.8**
Less than 500 grams	1,194	978	954	24	819.10	798.99	20.10	–6.3
500–749 grams	2,257	1,109	982	127	491.36	435.09	56.27	–9.2
750–999 grams	2,362	396	296	100	167.65	125.32	42.34	–11.5
1,000–1,249 grams	2,656	195	141	55	73.42	53.09	20.71	–14.0
1,250–1,499 grams	3,087	158	114	43	51.18	36.93	13.93	–5.9
1,500–1,999 grams	12,333	372	262	110	30.16	21.24	8.92	–10.7
2,000–2,499 grams	40,554	430	251	179	10.60	6.19	4.41	–18.4**
2,500 grams or more	881,852	1,593	610	982	1.81	0.69	1.11	–27.6**
2,500–2,999 grams	166,211	531	238	293	3.19	1.43	1.76	–28.8**
3,000–3,499 grams	381,777	634	208	426	1.66	0.54	1.12	–27.2**
3,500–3,999 grams	259,067	329	119	209	1.27	0.46	0.81	–31.0**
4,000–4,499 grams	64,010	75	29	45	1.17	0.45	0.70	–22.5
4,500–4,999 grams	9,561	19	13	6	*	*	*	*
5,000 grams or more	1,226	5	2	3	*	*	*	*
Not stated	54	17	17	–	. . .	. . .	. . .	*

See footnotes at end of table.

Table 6. Live births, infant, neonatal, and postneonatal deaths and mortality rates by race and Hispanic origin of mother and birthweight: United States, 2004 linked file, and percentage change in birthweight-specific infant mortality, 1995–2004 linked files—Con.

Race and birthweight	Number in 2004				Mortality rate per 1,000 live births in 2004			Percent change in infant mortality rate 1995–2004
	Live births	Infant deaths	Neonatal deaths	Postneonatal deaths	Infant	Neonatal	Postneonatal	
Non-Hispanic white	2,296,684	13,001	8,499	4,502	5.66	3.70	1.96	–9.9**
Less than 2,500 grams	166,029	8,309	6,828	1,481	50.05	41.13	8.92	–14.9**
Less than 1,500 grams	28,114	6,269	5,559	711	222.98	197.73	25.29	–13.5**
Less than 500 grams	2,687	2,326	2,276	51	865.65	847.04	18.98	–6.1
500–749 grams	4,717	2,318	2,015	304	491.41	427.18	64.45	–10.3**
750–999 grams	5,512	823	660	163	149.31	119.74	29.57	–22.0**
1,000–1,249 grams	6,780	444	349	95	65.49	51.47	14.01	–28.9**
1,250–1,499 grams	8,418	358	260	98	42.53	30.89	11.64	–23.5**
1,500–1,999 grams	33,966	929	642	287	27.35	18.90	8.45	–17.0**
2,000–2,499 grams	103,949	1,111	628	483	10.69	6.04	4.65	–23.0**
2,500 grams or more	2,130,476	4,642	1,624	3,018	2.18	0.76	1.42	–20.4**
2,500–2,999 grams	361,064	1,595	634	961	4.42	1.76	2.66	–20.4**
3,000–3,499 grams	853,288	1,752	562	1,191	2.05	0.66	1.40	–26.0**
3,500–3,999 grams	686,773	989	320	669	1.44	0.47	0.97	–21.3**
4,000–4,499 grams	196,528	255	84	172	1.30	0.43	0.88	–18.2**
4,500–4,999 grams	29,796	39	18	21	1.31	*	0.70	–29.6
5,000 grams or more	3,027	10	6	4	*	*	*	*
Not stated	179	50	47	3	. . .	. . .	. . .	*
Non-Hispanic black	578,774	7,869	5,283	2,586	13.60	9.13	4.47	–7.2**
Less than 2,500 grams	79,911	6,075	4,759	1,316	76.02	59.55	16.47	–3.8**
Less than 1,500 grams	18,641	5,114	4,307	807	274.34	231.05	43.29	–3.8
Less than 500 grams	2,628	2,221	2,145	77	845.13	816.21	29.30	–5.6
500–749 grams	4,054	1,846	1,499	348	455.35	369.76	85.84	–8.4**
750–999 grams	3,756	579	386	193	154.15	102.77	51.38	–5.8
1,000–1,249 grams	3,964	271	165	106	68.37	41.62	26.74	–8.1
1,250–1,499 grams	4,239	196	113	84	46.24	26.66	19.82	–4.2
1,500–1,999 grams	15,313	393	222	171	25.66	14.50	11.17	–20.5**
2,000–2,499 grams	45,957	567	230	338	12.34	5.00	7.35	–8.0
2,500 grams or more	498,773	1,768	499	1,269	3.54	1.00	2.54	–22.5**
2,500–2,999 grams	141,296	723	228	495	5.12	1.61	3.50	–17.8**
3,000–3,499 grams	220,220	684	168	515	3.11	0.76	2.34	–24.5**
3,500–3,999 grams	110,552	278	74	204	2.51	0.67	1.85	–28.7**
4,000–4,499 grams	22,991	70	21	49	3.04	0.91	2.13	–31.4
4,500–4,999 grams	3,254	5	2	3	*	*	*	*
5,000 grams or more	460	8	5	3	*	*	*	*
Not stated	90	26	25	1	. . .	. . .	. . .	*

* Figure does not meet standards of reliability or precision; based on fewer than 20 deaths in the numerator.

** Significant at $p < .05$.

. . . Category not applicable.

– Quantity zero.

[1]Includes races other than white or black.

[2]Includes Aleuts and Eskimos.

NOTES: 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. Race and Hispanic origin are reported separately on birth certificates. Race categories are consistent with the 1977 Office of Management and Budget standards. Persons of Hispanic origin may be of any race. In this table Hispanic women are classified only by place of origin; non-Hispanic women are classified by race. Fifteen states reported multiple-race data on the birth certificate for 2004. The multiple-race data for these states were bridged to the single-race catergories of the 1977 standards for comparability with other states; see reference 2.

Table 7. Infant deaths and mortality rates for the five leading causes of infant death, by race and Hispanic origin of mother: United States, 2004 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			Non-Hispanic white			Non-Hispanic black[1]			American Indian[2,3]			Asian and Pacific Islander[4]		
	Rank	Number	Rate	Rank	Number	Rate	Rank	Number	Rate	Rank	Number	Rate	Rank	Number	Rate
All causes	...	27,860	677.5	...	13,001	566.1	...	7,869	1,359.6	...	371	844.6	...	1,070	467.0
Congenital malformations, deformations, and chromosomal abnormalities. (Q00–Q99)	1	5,636	137.1	1	2,969	129.3	2	969	167.4	1	89	202.6	1	239	104.3
Disorders related to short gestation and low birth weight, not elsewhere classified (P07)	2	4,610	112.1	2	1,770	77.1	1	1,720	297.2	3	29	66.0	2	174	75.9
Sudden infant death syndrome (R95)	3	2,247	54.6	3	1,240	54.0	3	642	110.9	2	44	100.2	4	55	24.0
Newborn affected by maternal complications of pregnancy (P01)	4	1,706	41.5	4	739	32.2	4	597	103.1	6	12	*	3	69	30.1
Accidents (unintentional injuries) (V01–X59)	5	1,054	25.6	5	589	25.6	7	271	46.8	4	21	47.8	9	26	11.4

Cause of death (Based on the *Tenth Revision International Classification of Diseases*, 1992)	Total Hispanic[5]			Mexican[6]			Puerto Rican[7]			Central and South American[8]		
	Rank	Number	Rate	Rank	Number	Rate	Rank	Number	Rate	Rank	Number	Rate
All causes	...	5,248	554.6	...	3,705	546.8	...	479	782.4	...	667	464.7
Congenital malformations, deformations, and chromosomal abnormalities. (Q00–Q99)	1	1,308	138.2	1	976	144.0	2	78	127.4	1	157	109.4
Disorders related to short gestation and low birth weight, not elsewhere classified (P07)	2	816	86.2	2	540	79.7	1	93	151.9	2	108	75.3
Sudden infant death syndrome (R95)	3	261	27.6	3	181	26.7	3	36	58.8	7	23	16.0
Newborn affected by maternal complications of pregnancy (P01)	4	256	27.1	4	168	24.8	4	31	50.6	3	37	25.8
Accidents (unintentional injuries) (V01–X59)	8	150	15.9	8	112	16.5	13	8	*	8	15	*

... Category not applicable.

* Figure does not meet standards of reliability or precision; based on fewer than 20 deaths in the numerator.

[1]For Non-Hispanic black women, Newborn affected by complications of placenta, cord and membranes was the fifth leading cause of death with 288 deaths and a rate of 49.8.

[2]Includes Aleuts and Eskimos.

[3]For American Indians, Newborn affected by complications of placenta, cord and membranes was the fifth leading cause of death; however with only 14 deaths, a reliable infant mortality rate could not be computed.

[4]For Asian or Pacific Islanders, Diseases of the circulatory system and Neonatal hemorrhage were tied for the fifth leading cause of death, with 37 deaths each and rates of 16.1.

[5]For Total Hispanic, Newborn affected by complications of placenta, cord and membranes was the fifth leading cause of death with 184 deaths and a rate of 19.4.

[6]For Mexicans, Newborn affected by complications of placenta, cord and membranes was the fifth leading cause of death with 130 deaths and a rate of 19.2.

[7]For Puerto Ricans, Respiratory distress of newborn was the fifth leading cause of death; however, with only 16 deaths, a reliable infant morality rate could not be computed.

[8]For Central and South Americans Respiratory distress of newborn was the fourth leading cause of death with 28 deaths and a rate of 19.5. Bacterial sepsis of newborn was the fifth leading cause of death with 27 deaths and a rate of 18.8.

NOTES: Reliable cause-specific infant mortality rates cannot be computed for Cubans because of the small number of infant deaths (68). Race and Hispanic origin are reported separately on birth certificates. Race categories are consistent with the 1977 Office of Management and Budget standards. Persons of Hispanic origin may be of any race. In this table Hispanic women are classified only by place of origin; non-Hispanic women are classified by race. Fifteen states reported multiple-race data on the birth certificate for 2004. The multiple-race data for these states were bridged to the single-race catergories of the 1977 standards for comparability with other states; see reference 2.

Table 8. Number of and percent of preterm-related infant deaths and preterm-related infant mortality rates by race and Hispanic origin of mother: United States, 1999–2004 linked files

Year	All races and origins	Non-Hispanic white	Non-Hispanic black	American Indian	Asian or Pacific Islander	Total Hispanic[1]	Mexican	Puerto Rican	Central and South American
				Number of preterm-related infant deaths					
2004	10,180	4,171	3,641	83	378	1,752	1,192	195	238
2003	10,331	4,358	3,615	91	364	1,761	1,163	200	256
2002	9,965	4,342	3,581	90	321	1,540	1,018	190	192
2001	9,767	4,289	3,561	79	280	1,436	951	196	189
2000	9,673	4,141	3,586	96	298	1,411	929	189	170
1999	9,865	4,285	3,669	100	260	1,408	879	216	153
				Percent of total infant deaths that are preterm-related					
2004	36.5	32.1	46.3	22.4	35.3	33.4	32.2	40.7	35.7
2003	36.9	32.9	46.1	24.2	34.1	34.2	32.4	41.8	37.4
2002	35.6	32.6	44.6	24.6	31.9	31.3	29.9	40.3	30.1
2001	35.5	32.2	44.9	19.6	29.6	31.0	29.8	39.9	31.3
2000	34.6	30.8	43.7	27.7	30.5	30.9	29.4	39.6	32.3
1999	35.4	31.7	44.1	26.8	29.7	32.3	29.5	45.3	31.7
				Preterm-related infant mortality rate[2]					
2004	2.48	1.82	6.29	1.89	1.65	1.85	1.76	3.19	1.66
2003	2.53	1.88	6.28	2.11	1.65	1.93	1.78	3.42	1.89
2002	2.48	1.89	6.19	2.12	1.52	1.76	1.62	3.31	1.52
2001	2.43	1.84	6.04	1.89	1.40	1.69	1.56	3.40	1.56
2000	2.38	1.75	5.93	2.30	1.49	1.73	1.60	3.25	1.50
1999	2.49	1.83	6.23	2.49	1.44	1.84	1.63	3.78	1.48

[1]Includes Cuban and other and unknown Hispanic. Cuban data was not shown separately because of small numbers of infant deaths.

[2]Rate per 1,000 live births in specified group.

NOTES: Preterm-related deaths are those where the infant was born preterm (before 37 completed weeks of gestation) with the underlying cause of death assigned to one of the following ICD-10 categories: K550, P000, P010, P011, P015, P020, P021, P027, P070-P073, P102, P220–229, P250–279, P280, P281, P360-P369, P520-P523, P77; see Technical Notes. Fifteen states reported multiple-race data on the birth certificate for 2004. The multiple-race data for these states were bridged to the single-race catergories of the 1977 standards for comparability with other states; see reference 2.

Technical Notes

Differences between period and cohort data

From 1983 to 1991, NCHS produced linked files in a birth cohort format (44). Beginning with 1995 data, linked files are produced first using a period format and then subsequently using a birth cohort format. The 2004 period linked file contains a numerator file that consists of all infant deaths occurring in 2004 that have been linked to their corresponding birth certificates, whether the birth occurred in 2003 or in 2004. In contrast, the 2004 birth cohort linked file will contain a numerator file that consists of all infant deaths to babies born in 2004 whether the death occurred in 2004 or 2005.

While the birth cohort format has methodological advantages, it creates 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.

For the 2004 file, NCHS accepted birth records that could be linked to infant deaths even if registered after the closure of the 2004 birth file (less than 100 cases). This improved the infant birth/death linkage and made the denominator file distinctly different from the official 2004 birth file.

Weighting

A record weight is added to the linked file to compensate for the 1.1 percent (in 2004) 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 96.7–100.0 percent with all but four areas—California, Massachusetts, New Jersey, and Texas at 97.5 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 occurrence at birth and age at death (less than 7 days, 7–27 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 2004 linked file started with 27,920 infant death records. Of these 27,920 records, 27,612 were linked; 308 were unlinked because corresponding birth certificates could not be identified. The 27,920 linked and unlinked records contained 60 records of infants whose mother's usual place of residence was outside of United States. These 60 records were excluded to derive a weighted total of 27,860 infant deaths. Thus, all total calculations for 2004 in this report used a weighted total of 27,860 infant deaths (Tables A–C, 1,2, and 6–8).

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

The overall infant mortality rate from the 2004 period linked file of 6.78 is nearly the same as the 2004 vital statistics mortality file (6.79)(3). The number of infant deaths differs slightly; the number in the mortality file was 27,936 (3). Differences in numbers of infant deaths between the two data sources are primarily due to geographic coverage differences, as 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 U.S. linked file, both the birth and death must occur in the 50 states and the District of Columbia (the territory linked file is a

Table I. Percentage of infant death records which were linked to their corresponding birth records: United States and each state, Puerto Rico, Virgin Islands, and Guam, 2004 linked file

State	Percent linked by state of occurrence of death
United States[1]	98.9
Alabama	100.0
Alaska	100.0
Arizona	98.7
Arkansas	99.7
California	96.9
Colorado	100.0
Connecticut	100.0
Delaware	100.0
District of Columbia	100.0
Florida	99.8
Georgia	100.0
Hawaii	100.0
Idaho	99.2
Illinois	97.6
Indiana	99.4
Iowa	100.0
Kansas	100.0
Kentucky	99.4
Louisiana	98.6
Maine	100.0
Maryland	100.0
Massachusetts	97.0
Michigan	100.0
Minnesota	100.0
Mississippi	99.2
Missouri	99.9
Montana	100.0
Nebraska	99.5
Nevada	99.5
New Hampshire	100.0
New Jersey	97.3
New Mexico	100.0
New York	98.7
North Carolina	100.0
North Dakota	100.0
Ohio	98.5
Oklahoma	99.0
Oregon	99.6
Pennsylvania	99.6
Rhode Island	100.0
South Carolina	100.0
South Dakota	100.0
Tennessee	99.9
Texas	96.7
Utah	100.0
Vermont	100.0
Virginia	100.0
Washington	99.8
West Virginia	100.0
Wisconsin	100.0
Wyoming	100.0
Puerto Rico	99.5
Virgin Islands	100.0
Guam	100.0

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

separate file). Also, 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.

The 1989 and 2003 Revisions of the U.S. Standard Certificates of Live Birth

This report includes 2004 data on items that are collected on *both* the 1989 Revision of the U.S. Standard Certificate of Live Birth (unrevised) and the 2003 Revision of the U.S. Standard Certificate of Live Birth (revised) (2). The 2003 revision is described in detail elsewhere (45–47). Seven states, Idaho, Kentucky, New York (excluding New York City), Pennsylvania, South Carolina, Tennessee, and Washington implemented the revised birth certificate as of January 1, 2004, or in 2003. Two additional states, Florida and New Hampshire, implemented the revised birth certificate in 2004, but after January 1. The nine revised states represent 20 percent of all 2004 births; the seven revised states that implemented as of January 1, 2004, represent 14 percent of all births.

Data for educational attainment, prenatal care, and tobacco use, although collected on both the revised and unrevised certificates, are not considered comparable between revisions. As discussed above, the 2004 period linked file contains all infant deaths in 2004 linked to their corresponding birth certificates, whether the birth occurred in 2003 or 2004. Therefore, complete revised data for these variables were only available from the two states (Pennsylvania and Washington) that revised as of January 1, 2003. Revised data for educational attainment, prenatal care, and tobacco use are not shown in this report as data from two states was deemed insufficient for national-level analysis. Future reports will include revised data for these items. Data items exclusive to either the 1989 or the 2003 birth certificate revision are not shown in this report.

Marital status

National estimates of births to unmarried women are based on two methods of determining marital status. In 2004, marital status was based on a direct question in 48 states and the District of Columbia. In the two States (Michigan and New York), which 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 2004* (2).

Multiple race

For the birth certificates in the 2004 data year, multiple race was reported by California, Florida (for births occurring from March 1, 2004, only), Hawaii, Idaho, Kentucky, Michigan (for births at selected facilities only), Minnesota, New Hampshire (for births occurring from July 19, 2004, only), New York State (excluding New York City), Ohio, Pennsylvania, South Carolina, Tennessee, Utah, and Washington (2). Data from the vital records of the remaining states, the District of Columbia, and New York City followed the 1977 OMB standards in which a single race is reported (48,49). In addition, these areas also report the minimum set of four races as stipulated in the 1977 standards, compared with the minimum of five races for the 1997 standards (2).

To provide uniformity and comparability of the data during the transition period, before multiple-race data are available for all reporting areas, it is necessary to bridge the responses of those who reported more than one race to a single race. Multiple race is imputed to a single race (one of the following: AIAN, API, black, or white) according to the combination of races, Hispanic origin, sex, and age indicated on the birth certificate (2).

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 (50,51).

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 5.9 percent of the births in 2004 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 0.04 percent of all birth records in 2004 (2).

For the linked file, not stated birthweight was imputed for 3,244 records or 0.08 percent of the birth records in 2004 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 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 (4.10 percent before imputation) than for live births (0.09 percent before imputation). The imputation reduced the percent of not stated records to 0.44 percent for infant deaths, and 0.01 percent for births. The not

stated birthweight cases in the natality/birth file, as distinct from the linked file, are not imputed (2).

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* (52,53).

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 (54,55).

About every 10–20 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 Tenth Revision of the *International Statistical Classification of Diseases and Related Health Problems* (ICD-10) (4); during the period 1979–98, causes were coded and classified according to the Ninth Revision (ICD-9) (5).

Changes in classification of causes of death due to these revisions may result in discontinuities in cause-of-death trends. Measures of this discontinuity are essential to the interpretation of mortality trends, and are discussed in detail in other NCHS publications (3, 56,57).

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 (58). 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 (J12–18)).

Preterm-related causes of death

This year, a new grouping of preterm-related causes of death was added to the report. This grouping attempts to identify causes of death that have a direct etiological connection to preterm birth, and does not include causes that are incidental to preterm birth (for example, a Motor vehicle accident to a preterm infant). For an underlying cause of death to be considered preterm-related, 75 percent or more of infants whose deaths were attributed to that cause had to be born preterm, and the cause of death had to be a direct consequence of preterm birth based on a clinical evaluation and review of the literature. Further detail on the development of this cause-of-death grouping is available in a related publication (59).

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. Rates per 1,000 live births display two digits after the decimal place to provides a more precise and sensitive measurement. For rates per 100,000 live births (by cause of death) the infant mortality rate is shown for one decimal place. Adding an additional decimal for rates per 100,000 does not increase precision as it does for rates per 1,000.

As stated previously, infant death records for the 50 states and the District of Columbia in the U.S. 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 (60). 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 (3). Estimates of relative standard errors (RSE's) 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 497 while the number of live births was 81,555 yielding an infant mortality rate of 6.09 infant deaths per 1,000 live births.

$$\text{The RSE of the deaths} = 100 \bullet \sqrt{\frac{1}{497}} = 4.49,$$

$$\text{while the RSE of the births} = 100 \bullet \sqrt{\frac{1}{81{,}555}} = 0.35.$$

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

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

The RSE of the IMR for the example above

$$= 100 \bullet \sqrt{\frac{1}{497} + \frac{1}{81{,}555}} = 4.50.$$

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:

$$\text{Lower: } 6.09 - \left(1.96 \bullet 6.09 \bullet \frac{4.50}{100}\right) = 5.55$$

$$\text{Upper: } 6.09 + \left(1.96 \bullet 6.09 \bullet \frac{4.50}{100}\right) = 6.63$$

Thus the chances are 95 out of 100 that the true IMR for Group A lies somewhere in the 5.55–6.63 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 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 53, the number of live births was 9,241, and the infant mortality rate was 5.74.

$$D_{adj} = \frac{(53 \bullet 9{,}241)}{(53 + 9{,}241)} = 53$$

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

$$\text{Lower: } 5.74 \bullet 0.74907 = 4.30$$

$$\text{Upper: } 5.74 \bullet 1.30802 = 7.51$$

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:

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

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 Center for Health Statistics (NCHS) at 1–866-441–6247. Data are also available in selected issues of the Vital and Health Statistics, Series 20 reports, the *National Vital Statistics Reports* (formerly the *Monthly Vital Statistics Report*) through NCHS. Additional unpublished tabulations are available from NCHS or through our Internet site at http://www.cdc.gov/nchs.

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			

Contents

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VITAL STATISTICS OF THE UNITED STATES

2004

NATALITY

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CENTERS FOR DISEASE CONTROL AND PREVENTION
NATIONAL CENTER FOR HEALTH STATISTICS

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Introduction

This Technical Appendix, published by the Centers for Disease Control and Prevention's National Center for Health Statistics (NCHS), is reprinted from "Vital Statistics of the United States, 2004, Volume I, Natality**"** [1]. Reference will be made to the "1999 Technical Appendix" for historical context and a more lengthy discussion of some variables, as well as the quality and completeness of the birth data [2]. This report supplements the "Technical Notes" section of "Births: Final data for 2004*"* [3] and is recommended for use with the public-use file for 2004 births, available on CD-ROM from NCHS [4], and the tabulated data of "Vital Statistics of the United States, 2004 Volume I, Natality" [1]**,** in addition to the Internet publication of tables for variables not included in the 2004 natality report.

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 [5]. A slightly expanded definition of live birth was recommended by the 1992 revision of the Model State Vital Statistics Act and Regulations [6], based on recommendations of a 1988 working group formed by the American Academy of Pediatrics and the American College of Obstetricians and Gynecologists [7] and is consistent with that currently used by the WHO in the ICD-10 [8] and the United Nations**:**

> "Live birth" means the complete expulsion or extraction from its mother of a product of human conception, irrespective of the duration of pregnancy, which, after such expulsion or extraction, 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. Heartbeats are to be distinguished from transient cardiac contractions; respirations are to be distinguished from fleeting respiratory efforts or gasps.

This definition distinguishes in precise terms a live birth from a fetal death [9,10]. Forty-eight registration areas use definitions of live births similar to this definition; five areas use a shortened definition; four have no formal definition of live birth. [9]. All states require the reporting of live births regardless of length of gestation or birth weight.

History of Birth-Registration Area

Currently the birth-registration system of the United States includes 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, 11].

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 consisting of individual records processed by the states, the District of Columbia, New York City, Puerto Rico, the Virgin Islands, American Samoa, and the Northern Marianas. NCHS receives these files from the registration offices of all states, the two cities and four territories through the Vital Statistics Cooperative Program. Information for Guam is obtained from paper copies of original birth certificates which is coded and keyed by NCHS. Data from American Samoa first became available in 1997; data 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 the natality file. Data for Puerto Rico, the Virgin Islands, Guam, American Samoa, and the Northern

Marianas are limited to births registered in these areas.

Standard certificates of live birth

The U.S. Standard Certificate of Live Birth, issued by the U.S. Department of Health and Human Services, has served for many years as the principal means for attaining uniformity in the content of the documents used to collect information on births in the United States. Every 10-15 years, the U.S. Standard Certificate of Live Birth is revised. Most state certificates conform closely in content to the standard certificate, but are modified to the extent required by the particular state's needs or by special provisions of the state's vital statistics law.

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, 11].

2003 revision — In 2003, a revised U.S. Standard Certificate of Live Birth was adopted, with initial implementation in two states (Pennsylvania and Washington). Five states, Idaho, Kentucky, New York (excluding New York City), South Carolina, and Tennessee implemented the revised birth certificate as of January 1, 2004. Two additional states, Florida and New Hampshire, implemented the revised birth certificate in 2004, but after January 1. The nine revised states represent 20 percent of all 2004 births; the seven states which revised as of January 1, 2004 represent 14 percent of all 2004 births. Full implementation in all states of the revised certificate will be phased in over several years. There are numerous new items on the 2003 certificate and modifications of old items. Examples of modified items include multiple race, educational attainment, smoking during pregnancy, and prenatal care. A few examples of new checkbox categories for old items are infertility treatment, NICU admission, and trial of labor prior to a cesarean delivery. The process of the 2003 revision and the revision contents are described elsewhere. [12,13].

A key aspect of the 2003 Revision of the United States Standard Certificate has been the re-engineering of the data collection and transmission system. The intent of the re-engineering is to improve data quality, speed of data collection and transmission, and to enhance standardization of data [14]. To encourage collection of data from the best sources, two worksheets have been developed: the Mother's Worksheet and the Facility Worksheet. In the Mother's Worksheet, data are directly obtained from the mother and include such data as race, Hispanic origin, educational attainment, etc. In the Facility Worksheet, data are obtained directly from medical records of the mother and infant for items such as date of last normal menses, risk factors, method of delivery, etc. To assist hospital staff in completing the Facility Worksheet, a comprehensive instruction manual was developed: *Guide to Completing the Facility Worksheets for the Certificate of Live Birth and Report of Fetal Death (2003 Revision)* [15].

The medical and health check boxes -- Both the 1989 and 2003 Standard Certificates of Live Birth use a checkbox format for collecting much of the medical and health information available on the birth certificate. This information includes items on pregnancy/medical risk factors, method of delivery, obstetric procedures, characteristics of labor and/or delivery, abnormal conditions of the newborn, and congenital anomalies of the child. However, a number of individual checkbox items included on the 1989 certificate were dropped from the revised certificate in 2003 (such as Rh sensitization, incompetent cervix, and amniocentesis). In addition, specifications for some check box items were modified for the 2003 revision resulting in data which are not comparable across revisions (for example: premature rupture of membranes and prolonged labor.) See table A and 2004 file documentation for reporting areas [4].

The report "Births: Final Data for 2004" includes items which are reported in both the 1989 and the 2003 Standard Certificate of Live Birth. Data items exclusive to either the 1989 (e.g. maternal anemia, ultrasound, and alcohol use) or the 2003 birth certificate revision (e.g. such as the use of infertility treatment and NICU admission) are not shown. Supplemental 2004 tables for data exclusive to the 1989 Revision are available on the NCHS website (www.cdc.gov/nchs). A forthcoming report will present selected information exclusive to the 2003 Revision.

The 2004 Natality Data File

The 2004 data file includes data items which are comparable between the 1989 and 2003 revisions of the U.S. Standard Certificate of Live Birth. The file also includes all data which are exclusive to the 1989 revision, such as febrile infant and cord prolapse. Additionally, the 2004 file also includes new checkbox response categories for selected items, such as number of previous cesarean deliveries and surfactants to newborn. Certain new data items exclusive to the 2003 revised certificate are not available on the file:

- date of last prenatal care visit
- 10-minute Apgar score
- mother's height
- infections present (5 items)
- whether infant was alive at time of report
- matching number for plural births
- source of payment for delivery
- WIC food receipt
- maternal morbidity (7 items)
- whether infant was breastfed at discharge.

The 1989 certificate was used in 41 states, the District of Columbia and the territories for *all* of 2004. Seven states used the 2003 certificate throughout the 2004 data year: Idaho, Kentucky, New York (excluding New York City), Pennsylvania, South Carolina, Tennessee and Washington. Florida used the 1989 revision during January and February, 2004; New Hampshire used the 1989 revision until July 19; starting March 1, Florida implemented the 2003 revision; New Hampshire did so on July 20.

One of the principal values of vital statistics data is realized through the presentation of rates that are computed by relating the vital events of a class to the population of a similarly defined class. Vital statistics and population statistics, therefore, must be 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 differences between the enumeration method of obtaining population data and the registration method of obtaining vital statistics data.

The general rules used to classify characteristics of live births are set forth in two NCHS manuals [16, 17]. The instruction materials are for states to use in coding the data items; they do not include NCHS recodes. Therefore, the file layout [4] is a better source of information on the code structure because it provides the exact codes, recodes and reporting flags that are available. 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 percentage of records that were not stated for each state, Puerto Rico, the Virgin Islands, Guam, American Samoa, and the Northern Marianas.

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 not included in tabulations by place of residence.

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 2004.

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 [18]. Recent experience suggests 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, 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 classified according to the exact place of occurrence.

Geographic classification

The rules followed in the classification of geographic areas for live births are contained in the instruction manual mentioned previously. The geographic code structure for the 2004 file is given in two manuals, "Vital Records Geographic Classification, 2003," and "Vital Records Geographic Classification, 2004. Federal Information Processing Standards (FIPS)." *NCHS Instruction Manual*, *Part 8*, [17] and [19]**.** The geographic code structure on the 2004 file is based on results of the 2000 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 non-metropolitan 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.

Demographic Characteristics

Hispanic origin, and race

Hispanic origin—Hispanic origin and race are reported separately on the birth certificate. Data for Hispanic subgroups are shown in most cases for five specific groups: Mexican, Puerto Rican, Cuban, Central and South American, and "other and unknown 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 in 2004 are reported as white as in previous years. 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. In tabulations that include Hispanic origin, 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.

Items asking for the Hispanic origin of the mother and the father have been included on the birth certificates of all states and the District of Columbia, the Virgin Islands, and Guam since 1993 [3]. Puerto Rico, American Samoa, and the Northern Marianas do not collect this information. In addition, Florida (for births occurring from March 1, 2004 only), Idaho, Kentucky, New Hampshire (for births occurring as of July 19, 2004 only), New York State (excluding New York City), Pennsylvania, South Carolina, Tennessee, and Washington, which used the 2003 revision of the U.S. Standard Certificate of Live Birth, permitted respondents to select one or more Hispanic origin categories [Figure 4-B]. Minnesota, which used the 1989 revised certificate, also allowed reporting of multiple Hispanic groups. These 10 revised states accounted for 13 percent of Hispanic births in the United States in 2004. The percentage of records for which Hispanic origin of the parents was not reported in 2004 is shown by state in table A.

The new Hispanic origin question asks that the respondent "check the box that best describes whether the mother or father is Spanish/Hispanic/Latina/o." Although only one response is asked for, multiple responses to this item are sometimes given. Therefore, the electronic State birth registration systems are designed to capture multiple responses to this item. If more than one box is checked, or if there is a literal entry and one or more boxes checked, the code for "Multiple Hispanic" is applied. These records are classified as "Other Hispanic" in NCHS data. The percentage of Hispanic mothers in the 10 revised states reporting more than one Hispanic origin group was 1.5 percent in 2004.

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 [20] to the extent that the births with Hispanic origin of mother not stated (0.8 percent in 2004) were actually to Hispanic mothers. The population with origin not stated was imputed. The effect on the rates is believed to be small.

Single, Multiple and "Bridged" race of mother and father—In 1997, the Office of Management and Budget (OMB) issued ''Revisions to the Standards for the

Classification of Federal Data on Race and Ethnicity'' which revised the ''1977 Statistical Policy Directive 15, Race and Ethnic Standards for Federal Statistics and Administrative Reporting'' [21, 22, 23]. These documents specify guidelines for collection, tabulation, and presentation of race and ethnicity data within the Federal statistical system. The 1997 revised standards incorporated two major changes designed to reflect the changing racial profile of the United States. First, the revision increased from four to five the minimum set of categories to be used by Federal agencies for identification of race. The 1977 standards required Federal agencies to report race-specific tabulations using a minimum set of four single-race categories: American Indian or Alaska Native (AIAN), Asian or Pacific Islander (API), Black, and White. The five categories for race specified in the 1997 standards are: American Indian or Alaska Native, Asian, Black or African American, Native Hawaiian or Other Pacific Islander, and White. The revised standards called for reporting of Asians separately from Native Hawaiians or Other Pacific Islanders. Collection of additional detail on race and ethnicity is permitted, as before, so long as the additional categories can be aggregated into the minimum categories. The revised standards also require Federal data collection programs to allow respondents to select *one or more race categories*.

For the 2000 decennial census, the U.S. Census Bureau collected race and ethnicity data in accordance with the 1997 revised standards. However, the National Vital Statistics System, which is based on data collected by the states, will not be fully compliant with the new standards until all of the states revise their birth certificates to reflect the new standards. Thus, beginning with the 2000 data year, the numerators (births) for birth rates are incompatible with the denominators (populations) (see "Population denominators"). In order to compute rates, it is necessary to ''bridge'' population data for multiple-race persons to single-race categories. This has been done for birth rates by race presented in this report. Once all states revise their birth registration systems to be compliant with the 1997 OMB standards, the use of ''bridged'' populations can be discontinued.

For the 2004 data year, multiple-race was reported by Florida (for births occurring from March 1, 2004 only), Idaho, Kentucky, New Hampshire (for births occurring from

July 19, 2004 only), New York State (excluding New York City), Pennsylvania, South Carolina, Tennessee and Washington, which used the 2003 revision of the U.S. Standard Certificate of Live Birth, as well as by California, Hawaii, Michigan (for births at selected facilities only), Minnesota, Ohio, and Utah, which used the 1989 revision of the U.S. Standard Certificate of Live Birth. These 15 states, which account for 43.0 percent of U.S. births in 2004, reported 1.8 percent of mothers as multiracial, with levels varying from 0.5 percent (New Hampshire) to 34.4 percent (Hawaii). Data from the vital records of the remaining 35 states and the District of Columbia followed the 1977 OMB standards in which a single race is reported [21]. In addition, these areas also report the minimum set of four races as stipulated in the 1977 standards [21], compared with the minimum of five races for the 1997 [22] standards.

In order to provide uniformity and comparability of the data during the transition period, before multiple-race data are available for all reporting areas, it is necessary to "bridge" the responses of those who reported more than one race to a single-race. The bridging procedure for multiple-race mothers and fathers is based on the procedure used to bridge the multiracial population estimates (see "Population denominators") [23, 24]. Multiple-race is imputed to a single race (one of the following: AIAN, API, Black, or White) according to the combination of races, Hispanic origin, sex, and age indicated on the birth certificate of the mother or father. The imputation procedure is described in detail elsewhere [25, 26].

As noted previously, the bridging procedure imputes multiple-race of mothers to one of the four minimum races stipulated in the 1977 OMB standards, that is, AIAN, API, Black, or White. Mothers of a specified Asian or Pacific Islander subgroup (that is, Chinese, Japanese, Hawaiian, or Filipino) in combination with another race (that is, AIAN, Black, and/or White) or another API subgroup cannot be imputed to a single API subgroup. API mothers are disproportionately represented in the 15 states reporting multiple-race (54.8 percent in 2004.) For both reports: "Births: Final Data for 2003" and "Births: Final Data for 2004", data are not shown for the specified API subgroups because the bridging technique cannot be applied in this detail [3, 23, 24]. However, data for the API subgroups, reported alone or in combination with other races and/or API subgroups, are available in the 2004 natality public-use data file. A forthcoming [27]

report describes characteristics of births in 2003 to single and multiple-race women

Race of mother is reported by 35 states and the District of Columbia in at least eight single-race categories: White, Black, American Indian or Alaska Native, Chinese, Japanese, Hawaiian, Filipino, and "other Asian or Pacific Islander" (API). Of these, six states (Illinois, Missouri, New Jersey, Texas, Virginia, and West Virginia) report data on the expanded API subgroups included in the "other API category" (Asian Indian, Korean, Samoan, Vietnamese, Guamanian, and remaining API). Finally, the fifteen states which report multiple-race data (California, Hawaii, Ohio, Pennsylvania, Utah, and Washington) report a minimum of fourteen categories (White, Black, American Indian or Alaska Native, Asian Indian, Chinese, Filipino, Japanese, Korean, Vietnamese, other Asian, Hawaiian, Guamanian, Samoan, and other Pacific Islander). For this report, as discussed above, the multiple-race combinations (for example, White and AIAN or Black and Chinese) were bridged to one of four broad categories (bridged White, bridged Black, bridged AIAN, and bridged API). Detailed data on race (single or multiple) as reported in these 15 states are available from the 2004 natality public use file.

In 2004, race of mother was not reported for 0.9 percent of births. In these cases, if the race of the father was known, the race of the father was assigned to the mother. When information was not available for either parent, the race of the mother was imputed according to the specific race of the mother on the preceding record with a known race of mother. This was necessary for just 0.7 percent of births in 2004.

Beginning with the 1989 data year, NCHS started tabulating its birth data primarily by race of the mother. In 1988 and prior years, births were tabulated by the race of the child, which was determined from the race of the parents as entered on the birth certificate. The reasons for this change are summarized in the 1999 Technical Appendix [2]. Trend data by race shown in this report are by race of mother for all years beginning with the 1980 data year. Text references to white births and white mothers or black births and black mothers are used interchangeably for ease in writing.

Age of mother

Beginning in 1989 a "Date of birth" item on the birth certificate replaced the "Age (at time of this birth)" item. Not all states revised this item, and, therefore, the age of mother either is derived from the reported month and year of birth or coded as stated on

the certificate. In 2004 age of mother was reported directly by four states (Nevada, North Dakota, Virginia, and Wyoming) and American Samoa.

From 1964 to 1996, births reported to occur to mothers younger than age 10 or older than age 49 years had age imputed according to the age of mother from the previous record with the same race and total birth order (total of live births and fetal deaths). Beginning in 1997, age of mother is imputed for ages 9 years or under and 55 years and over. A review and verification of unedited birth data for 1996 showed that the vast majority of births reported as occurring to women aged 50 years and older were to women aged 50-54 years. The numbers of births to women 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 [2].

Age–specific birth rates are based on populations of women by age, prepared by the U.S. Census Bureau. 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. Census Bureau in *Current Population Reports*. The 2000 Census of Population derived age in completed years as of April 1, 2000, from responses to questions on age at last birthday and month and year of birth, with the latter given preference. In the 1960, 1970, 1980, and 1990 Census of Population, age was also derived from month and year of birth. Age in completed years was asked in censuses before 1960. This was nearly the equivalent of the former birth certificate question, which the 1950 test of matched birth and census records confirmed by showing a high degree of consistency in reporting age in these two sources [28]. More recently, reporting of maternal age on the birth certificate was compared with reporting of age in a survey of women who had recently given birth. Reporting of age was very consistent between the two sources [29].

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 are shown in table 1-5 of "Vital Statistics of the

United States, 2001, Volume 1, Natality" [30], which is available on the Internet at**:** http://www.cdc.gov/nchs/datawh/statab/unpubd/natality/natab2001.htm

Not stated age or date of birth of mother— In 2004, age of mother was not reported on 0.02 percent of the records. Beginning in 1964 birth records with date of birth of mother and/or age of mother not stated have had age imputed according to the age of mother from the previous birth record of the same race and total-birth order (total of fetal deaths and live births). (See *NCHS Instruction Manual*, Part 12, page 9) [31]. 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 on birth certificates of children born to unmarried mothers, greatly inflating the number in the "Not stated" category 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 on 13.6 percent of the birth certificates in 2004, one-quarter 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 2004 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, 31].

Not stated birth order—All births tabulated in the "Not stated birth order" category are excluded from the computation of percentages. 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.

Marital status

National estimates of births to unmarried women are based on two methods of determining marital status. For 1994 through 1996 birth certificates in 45 states and the District of Columbia included a question about the mother's marital status. For the other states, marital status is inferred from information on the birth certificate. Beginning in 1997, the marital status of women giving birth in California and Nevada was determined by a direct question in the birth registration process. New York City also changed its procedures for inferring marital status in 1997. Beginning June 15, 1998, Connecticut discontinued inferring the mother's marital status and added a direct question on mother's marital status to the state's birth certificate.

In the two states (Michigan and New York) which used inferential procedures to compile birth statistics by marital status in 2004, 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. In recent years, a number of states have extended their efforts to identify the fathers when the parents are not married in order to enforce child support obligations. The presence of a paternity acknowledgment, therefore, is the most reliable indicator that the birth is nonmarital in the states not reporting this information directly; this is now the key indicator in the nonreporting states. Details of the changes in reporting procedures and the impact of the procedures on the data are described in previous reports [32, 33].

The mother's marital status was not reported in 2004 on 0.04 percent of the birth

records in the 48 states and the District of Columbia where this information is obtained by a direct question. Marital status was imputed for these records. If status was unknown and the father's age was known, then the mother was considered married. If the status was unknown, and the father's age unknown, then the mother was considered unmarried. This represents a change from the procedures in effect for 2002 and previous years. Prior to 2003, marital status for records with marital status not reported was imputed as "married." Because of the small number of records affected (2,216 births in 2004), the change in imputation procedures had essentially no impact on measures of nonmarital births.

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.

Educational attainment

Information on educational attainment is reported on both the 2003 Standard Certificate of Live Birth (revised) and 1989 Standard Certificate of Live Birth (unrevised). However, the format of the education item on the revised standard certificate substantively differs from that of the unrevised standard certificate.

The 2003 Certificate item asks for the highest degree or level of school completed at the time of the birth (e.g., high school diploma, some college credit but no degree, bachelor degree, etc.). By contrast, the 1989 Certificate asks for the highest grade of school completed by the mother. 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 or level. 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

In sum, education data for the states that have implemented the revised certificates are not directly comparable with the data for the states that are not yet using the revised certificate. For 2004, unrevised data are available for 41 states, New York City and the District of Columbia and part of the year for Florida and New Hampshire. Revised data are available for all of 2004 for 7 states (Idaho, Kentucky, New York State (excluding New York City), Pennsylvania, South Carolina, Tennessee, and Washington) and part of the year for Florida and New Hampshire.

"Births: Final Data for 2004," provides separate tabulations for the revised and unrevised educational attainment items; see table D. Table A of this Appendix indicates that education was not stated in 2.0 percent of the unrevised states; among the revised states, levels ranged from 0.8 to 7.5%.

Data on educational attainment are currently available only for the mother [2]. Beginning in 1995, NCHS discontinued collecting information on the educational attainment of the father.

Maternal and Infant Health Characteristics

Weight gain during pregnancy

Information on maternal weight gain is available from both the 1989 (unrevised) and the 2003 (revised) Standard Certificate of Live Birth. However, the item was modified. The unrevised question asks for "weight gained during pregnancy ____ lbs.", compared with the revised question, which asks for the pre-pregnancy weight of the mother and her weight at delivery.

In the 2004 file, unrevised data are available through the data year for 40 states, New York City, and the District of Columbia, while revised data are available for 7 states. Two states which had mid-year revisions, reported both revised and unrevised data. California did not report weight gain information.

The data from the revised certificate were combined with the data based on the 1989 revision to produce tabulations shown in tables 22 and 23 of the report "Birth: Final Data 2004" [3].

Weight gain in pregnancy is reported in pounds. A reported loss of weight is recorded as zero gain.

Pregnancy risk factors

Both the 2003 and 1989 certificates collect pregnancy risk information in the check box format. Ten medical risks which can affect pregnancy outcome are separately identified on the 2003 Standard Certificate of Live Birth (revised); sixteen on the 1989 Standard Certificate of Live Birth (unrevised). 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.

Four risk factors are comparable between certificates: diabetes, chronic hypertension, gestational hypertension, and eclampsia. Selected risk factors are shown in tables 23 to 25 of the report "Births: Final Data for 2004" [3]. Supplemental 2004 tables for risk factor data exclusive to the 1989 Revision are available on the NCHS website (www.cdc.gov/nchs); a forthcoming report will present risk factor information exclusive to the 2003 Revision.

The percent of birth records in which pregnancy risk factor items were not stated was 0.4. Definitions for revised and unrevised items are available elsewhere [3, 15].

Tobacco use during pregnancy

Information on smoking during pregnancy was reported on both the 2003 Certificate of Live Birth (revised) and the 1989 Certificate of Live Birth (unrevised). The format of the tobacco use item differs between certificates. Briefly stated, the 1989 revision asks a simple "yes/no" question on tobacco use during pregnancy and the average number of cigarettes per day with no specificity on timing during the pregnancy. In contrast, the 2003 revision asks for number of cigarettes smoked at different intervals before and during the pregnancy. If the mother reported smoking in any of the three trimesters of pregnancy she was recorded as a smoker.

In the file, for 40 States, New York City, and the District of Columbia, smoking status was based on the 1989 U.S. Standard Certificate (unrevised), while data for 6 states are drawn from the 2003 revision of the birth certificate (revised). Florida had a unique smoking use question in its 2003 revision which differed from both the standard revised

and unrevised version; resulting data were not comparable to either version. Florida used the standard 1989 revision question during January and February, 2004; New Hampshire used the 1989 revision until July 19; starting March 1, Florida implemented its own revised question; New Hampshire implemented the standard revised tobacco use question on July 20. California did not report tobacco use in 2004.

The births occurring where the unrevised question was used accounted for 67 percent of US births in 2004. The overall percent of birth records where tobacco use was not stated for the unrevised item was 1.1 percent.

In the report, Births: Final Data for 2004" [3] data are shown separately in table E for the areas using the unrevised certificate and for the areas using the revised certificate.

Alcohol use during pregnancy

Data on alcohol use are not collected in the 2003 Standard Certificate of Live Birth. Data on alcohol use during pregnancy from the 1989 Standard Certificate are available for 40 states for the full data year of 2004 and the initial months of 2004 for Florida and New Hampshire. Alcohol use data are not collected on California's birth certificate. Supplemental 2004 tables for data exclusive to the 1989 Revision, including alcohol use during pregnancy, are available on the NCHS website (www.cdc.gov/nchs).

Alcohol use during pregnancy is a major, independent risk factor and it is implicated as well in delayed infant and child development [34, 35]. Unfortunately, alcohol use is substantially underreported on the birth certificate, compared with data collected in nationally representative surveys of pregnant women. The birth certificate question on alcohol use from the 1989 revision is evidently not sensitive enough to measure this behavior accurately. The question's wording as well as the lack of specific time reference for the birth certificate questions are probable factors contributing to the underreporting. In addition, the stigma of maternal alcohol use likely contributes to the underreporting [36, 37].

Prenatal care

Information on the timing of prenatal care is available for both the revised and unrevised Certificates of Live Birth. However, the 2003 revision of the birth certificate introduced substantive changes in item wording and also to the sources of prenatal

information. The wording of the prenatal care item was modified to "Date of first prenatal visit" from "Month prenatal care began." In addition, the 2003 revision process resulted in recommendations that the prenatal care information be gathered from the prenatal care or medical records, whereas the 1989 revision did not recommend a source for these data. Accordingly, prenatal care data for the two revisions are not directly comparable.

For the complete data year 2004, unrevised data on prenatal care are available for 41 states, New York City and the District of Columbia. Revised data for 7 states (Idaho, Kentucky, New York State (excluding New York City), Pennsylvania, South Carolina, Tennessee, and Washington) are available for all of 2004. Florida and New Hampshire implemented the revised certificate after January 1, 2004.

As noted above, the revised prenatal care item is substantively different from the unrevised question. One result is that levels of utilization of prenatal care based on revised data are substantially lower than those based on unrevised data. For example, unrevised 2003 data for Kentucky indicate that 87.0 of residents began care in the first trimester of pregnancy in 2003. This compares with a level of 74.5 percent based on 2004 revised data. Much, if not all of the difference between 2003 and 2004 for Kentucky and other revised states, is related to changes in reporting and *not* to changes in prenatal care utilization. Prenatal care utilization results are shown separately according to the two revisions in tables E, 26(a) and 26(b) of the report "Birth: Final Data for 2004" [3].

The 2004 natality data file includes a variable, The Adequacy of Prenatal Care Utilization Index (APNCU). The APNCU is an alternative measure of prenatal care timing which takes into account the number of prenatal care visits and gestational age of the newborn at delivery [38, 39]. The index in the file is a 4 point scale ranging from "inadequate" to "adequate plus care". See table G of the report "Birth: Final Data for 2004" [3].

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.

Obstetric procedures

The 2003 Standard Certificate of Live Birth (revised) includes three specific check boxes for obstetric procedures; the 1989 certificate includes six procedures. Both certificates have a format which permits the selection of multiple procedures. Birth records with "Obstetric procedures" left blank are considered "not stated." Definitions for the unrevised procedures are adapted and abbreviated from a set of definitions compiled by a committee of Federal and State health statistics officials for the National Association for Public Health Statistics and Information Systems (NAPHSIS) [3]. Definitions for the revised items are included in the detailed facility worksheet guidebook for the 2003 revised certificate only [15]. Reporting areas and reporting completeness for obstetric procedures are indicated in table A of this Appendix.

Tables H and 25 of the report: "Births: Final Data for 2004" [3**]** provide data for the two procedures comparable to both certificates – tocolysis and induction of labor. Supplemental 2004 tables for obstetric procedures exclusive to the 1989 Revision are available on the NCHS website (www.cdc.gov/nchs). A forthcoming report will present selected obstetric procedure tables exclusive to the 2003 Revision.

Characteristics of labor and of delivery

The 2003 Standard Certificate of Live Birth (revised) includes nine specific check boxes for characteristics of labor and delivery; fifteen characteristics are reported on the 1989 (unrevised) certificate. Both certificates have a format which allows for the reporting of more than one characteristic and includes a choice of "none". Birth records with "characteristics" left blank are considered "not stated." Three characteristics: precipitous labor, breech position, and meconium staining are comparable between the two certificates. The percent of records on which labor and delivery items were not stated and notes on reporting areas are found in table A.

The complication rates for selected labor/delivery characteristics and their respective reporting areas are given in table 25 in the report "Birth: Final Data for 2004" [3]. Supplemental 2004 tables for characteristics of labor and delivery exclusive to the 1989 revision are available on the NCHS website (www.cdc.gov/nchs). A forthcoming report will present selected labor and delivery information exclusive to the 2003 revision.

Definitions for revised and unrevised items are available elsewhere [3, 15].

Place of delivery and attendant at birth

Both the 1989 and 2003 revisions of the U.S. Standard Certificate of Live Birth include separate categories for hospitals, freestanding birthing centers, residence, and clinic or doctor's office as the place of birth. In addition, the 2003 certificate queries whether the home birth was planned to be a home delivery.

For both the revised and unrevised certificates, four professional categories of attendants are medical doctors, doctors of osteopathy, certified nurse midwives, and other midwives. 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.

Additional information on births occurring outside of hospitals, and on birth attendants can be found elsewhere [2].

Tabulations of place of birth and birth attendant are found in table 27 of the report: "Births Final Data for 2004" [3].

Method of delivery

Information on the method of delivery is collected on both the 2003 Standard Certificate of Live Birth (revised) and the 1989 Standard Certificate of Live Birth (unrevised). However, the 2003 revised item is substantially modified from the 1989 item. The 1989 certificate includes, among others, direct questions on vaginal birth after previous cesarean section (VBAC), and primary or repeat cesarean delivery. In contrast, the revised certificate includes a direct question on previous cesarean delivery; whether the delivery was a primary cesarean or was a VBAC must be derived from a question on previous cesarean deliveries under the separate item "Risk Factors in this Pregnancy".

Despite substantive changes to the method of delivery item, the total numbers and percents of vaginal and cesarean deliveries appear to be very consistent between revisions. (See tables 28-30 from the report: "Birth: Final Data for 2004**"** [3]). However, information on whether the delivery is a VBAC, primary cesarean, or repeat cesarean appears to be less comparable. In brief, data for the revised states show higher- than-

expected VBAC and primary cesarean rates, and lower- than- expected repeat cesarean rates. These discontinuities are likely due to wording and formatting changes to the method of delivery item on the 2003 Revision of the U.S. Standard certificate of live birth. The changes to the method of delivery item appear to have a small impact (2-3 percent) on the national primary and VBAC rates shown in the 2004 natality report [3]. Measures which incorporate these data to compare changes across revisions for individual states should be interpreted with caution.

Information on forceps and vacuum delivery are also available from both revisions of the birth certificate; these data appear to be comparable between revisions. The 2003 revision item was also expanded to include questions on whether attempted forceps or vacuum deliveries were successful, and whether a trial of labor was attempted prior to cesarean delivery. These and other new data on method of delivery are available on the 2004 file and will be presented in a forthcoming report.

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 VBAC delivery rate 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.

Period of gestation

The period of gestation is defined as beginning with the first day of the last normal menstrual period (LMP) and ending with the day of the birth. The LMP is used as the initial date because it can be more accurately determined than the date of conception, which usually occurs 2 weeks after the LMP. LMP measurement is subject to error for several reasons, including imperfect maternal recall or misidentification of the LMP because of post-conception bleeding, delayed ovulation, or intervening early miscarriage.

Births occurring before 37 completed weeks of gestation are considered to be preterm for purposes of classification. At 37–41 weeks gestation, births are considered to be term, and at 42 completed weeks and over, post-term. These distinctions are according

to the ICD–9 and ICD–10 [8] definitions. See tables 31 and 32 in the 2004 natality report.

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, 40]. But reporting problems for this item persist and may occur more frequently among some subpopulations and among births with shorter gestations. Changes in reporting of this measure over time have apparently affected trends in preterm birth rates, particularly by race [41].

The 1989 revision of the U.S. Standard Certificate of Live Birth includes an item, "Clinical estimate of gestation" (CE); in the 2003 revision of the certificate, the item is "Obstetric estimate of gestation" (OE) – see definitions [15]. Both measures are in completed weeks. The OE and the CE are compared with length of gestation computed from the LMP date when the latter appears to be inconsistent with birthweight. This is done for normal weight births of apparently short gestations and very low birthweight births reported to be full term. The procedures are described in the NCHS instruction manuals, part 12, (see NCHS [31] for the 1989 revision; NCHS [42] for the 2003 revision). The clinical/obstetric estimate is reported by all areas except California for 2004.

The period of gestation for 5.9 percent of the births in 2004 was based on the clinical estimate of gestation. For 97 percent of these records, the clinical/obstetric estimate was used because the LMP date was not reported. For the remaining 3 percent, the clinical/obstetric estimate was used because it was compatible 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 1,302 births or 0.04 percent of all birth records in 2004, significantly higher than for 2003**.** Despite these edits, substantial incongruities in these data persist; research is ongoing to address these data deficiencies. Gestational age data are shown in tables 31 and 32 of the report: "Births: Final Data for

2004."

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 are consistent with the recommendations in the *International Classification of Diseases, Ninth Revision* (ICD–9) and the *International Classification of Diseases, Tenth Revision* (ICD–10) [8]. 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 *International Lists of Diseases and Causes of Death, Sixth Revision* [43]. Very low birthweight is defined as less than 1,500 grams.

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 birthweights are not reported are excluded from the computation of percentages. The panel that proposed the 2003 Revised Certificate recommended that birthweight be reported in grams rather than pounds for data entry [12].

Birthweight data are shown in tables 31, 32, 34-36 of the 2004 natality report [3].

Apgar score

The 1– and 5–minute Apgar scores were added to the U.S. Standard Certificate of Live Birth in 1978 to evaluate the condition of the newborn infant at 1 and 5 minutes after birth. The 2003 revised certificate asks for a 10 minute score if the 5 minute score was less than 6. The Apgar score is a measure of the need for resuscitation and a predictor of the infant's chances of surviving the first year of life. It is a summary measure of the infant's condition based on heart rate, respiratory effort, muscle tone, reflex irritability, and color. Each of these factors is given a score of 0, 1, or 2; the sum of these 5 values is the Apgar score, which ranges from 0 to 10. A score of 0 to 3 indicates an infant in need of resuscitation; a score of 4 to 6 is considered intermediate; a score of 7 or greater indicates that the neonate is in good to excellent physical condition.

Beginning in 1995, NCHS collected information only on the 5–minute Apgar score. Since 1991, the reporting area for the 5–minute Apgar score has been comprised of 48 states and the District of Columbia. California and Texas did not collect information on Apgar scores on their birth certificates. For 0.5 percent of the births in the reporting area, there were no Apgar scores reported. Five minute Apgar sores are given in Table L of the report: "Birth: Final Data for 2004" [3]. Revised data for the 10 minute score are not available in the 2004 file.

Plurality

Comparable plurality data are reported in the 2003 and 1989 Standard Certificates of Live Birth. In this file, plurality is classified as single, twin, triplet, quadruplet, and quintuplet and higher order births. Each record in the natality file represents an individual birth. For example, a record coded as a twin represents one birth in a twin delivery. Pairs or sets of twins or higher order multiple births are not identified in this file. The Matched Multiple Birth File 1995-2000 [44] includes information on sets of twin, triplet and quadruplets, thus allowing for the analysis of characteristics of sets of births and fetal deaths in multiple deliveries.

Numbers and rates of births by plurality are given in tables 37 -- 39 of the report: "Birth: Final Data for 2004" [3]. Records for which plurality is unknown are imputed as singletons. This occurred for 0.003 percent of all records for 2004.

Abnormal conditions of the newborn

Information on abnormal conditions of the newborn is obtained from the checkboxes on the 1989 and 2003 certificate revisions. There are seven specific abnormal conditions included on the 2003 revised birth certificate; eight are included on the 1989 certificate. 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.

There are no comparable abnormal conditions between the 1989 and 2003 certificate. However, both unrevised and revised items are included in the 2004 Natality Public Use File. Supplemental 2004 tables for abnormal conditions of the newborn exclusive to the 1989 Revision are available on the NCHS website (www.cdc.gov/nchs). A forthcoming report will present selected abnormal conditions information exclusive to the 2003 Revision. Definitions are available elsewhere [3, 15]. For information on reporting areas and for percent of birth records with conditions not stated, see table A.

Congenital anomalies of the newborn

Twelve specific anomalies or anomaly groups are collected on the 2003 Standard Certificate of Live Birth, 21 anomalies are collected on the 1989 Standard Certificate of Live Birth. The checkbox 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.

There are five congenital anomalies in common to the two revisions of the birth certificate: anencephalus, spina bifida/meningocele, omphalocele/gastroschisis, cleft lip/palate and Downs syndrome; see table 25 of the report "Births: Final Data for 2004" [3].

It is well documented that congenital anomalies, except for the most visible and most severe, are incompletely reported on birth certificates [45]. The completeness of reporting specific anomalies depends on how easily they are recognized in the short time between birth and birth-registration. For 1.2 of the birth records, there were incomplete check boxes for congenital anomalies.

Definitions for the revised and unrevised congenital anomalies are available elsewhere [3,15]. See table A for reporting areas and for percent of records for which data on congenital anomalies is not stated.

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

It is estimated that more than 99 percent of all births occurring in the United States in 2004 were registered. These estimates are based on the results of a national 1964–68 test of birth-registration completeness according to place of delivery (in or out of hospital) and race (white and non-white). This test has not been conducted more recently. A detailed discussion of the method and results of the 1964–68 birth-registration test is available [46]. Information on procedures for adjusting births for under registration (for cohort fertility tables) is presented elsewhere [2].

Completeness of reporting

Interpretation of these data must include evaluation of item completeness. The "Not stated" percentage is one measure of the quality of the data. Completeness of reporting varies among items and states. See table A for the percentage 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. The 2004 data for Alaska and the District of Columbia 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

reviews 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 the 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.

Computation of Rates and Other Measures

Population bases

Estimation by age, sex, race and Hispanic origin—Birth and fertility rates for 2004 shown in tables 1, 3–5, 7-9, 11, 14-15, 21, A, and B in the report: "Births: Final Data for 2004" [3] are computed using 2000 census-based post-censal (population) estimates as of July 1, 2004. These populations are shown in tables 4-2 and 4-3. The population estimates have been provided by the U.S. Census Bureau [47] and are based on the 2000 census counts by age, sex, race, and Hispanic origin, which have been modified to be consistent with Office of Management and Budget racial categories as of 1977 and historical categories for birth data. The modification procedures are described in detail elsewhere [48].

Birth and fertility rates by state shown in table 10 of the report: "Births: Final Data for 2004" [3] use 2000 census-based state-level post-censal population estimates provided by the U.S. Census Bureau [47**].** Rates by state shown in this report may differ from rates computed on the basis of other population estimates. Birth and fertility rates

by month shown in table 16 of the 2004 natality final report [3] are based on monthly population estimates. Rates for unmarried women shown in tables 18 and 19 of the 2004 natality final report [3] are based on distributions of the population by marital status as of March 2004 as reported by the U.S. Census Bureau in the March Current Population Survey (CPS) [49], which have been adjusted to July 2004 population levels [47] by the Division of Vital Statistics, NCHS [3]. Birth and fertility rates for the Hispanic population, shown in tables 5, 7, 8, 9, and 15 of the 2004 natality final report [3], are based on estimates of the total Hispanic population as of July 1, 2004 [47]. Rates for Hispanic subgroups are based on special population estimates that are presented in table 4-3. Information about allocation to Hispanic subgroups is presented elsewhere [50].

The populations by race used in this report were produced under a collaborative arrangement with the U.S. Census Bureau and are 2000 census-based post-censual estimates. Reflecting the new guidelines issued in 1997 by the Office of Management and Budget (OMB), the 2000 census included an option for individuals to report more than one race as appropriate for themselves and household members [22]. In addition, the 1997 OMB guidelines called for reporting of Asian persons separately from Native Hawaiians or other Pacific Islanders. In the 1977 OMB guidelines, data for Asian or Pacific Islander persons were collected as a single group [21]. Except for fifteen states, birth certificates currently report only one race for each parent in the categories specified in the 1977 OMB guidelines (see "Hispanic origin, race and national origin"). In addition, unrevised birth certificate data do not report Asians separately from Native Hawaiians or other Pacific Islanders. Thus, birth certificate data by race (the numerators for birth and fertility rates) currently are incompatible with the population data collected in the 2000 census (the denominators for the rates).

To produce birth and fertility rates for 2000 through 2004, it was necessary to ''bridge'' the population data for multiple race persons back to single race categories. In addition, the postcensal estimates were modified to be consistent with the 1977 OMB racial categories, that is, to report the data for Asian persons and Native Hawaiians or other Pacific Islanders as a combined category Asian or Pacific Islanders [51]. The procedures used to produce the ''bridged'' populations are described in separate publications [23,24]. In 2003, six states began reporting multiple race data; and in 2004,

15 states. Once all states revise their birth certificates to be compliant with the 1997 OMB standards, the use of ''bridged'' populations can be discontinued.

Populations used to calculate the rates for 1991–99 are based on population estimates as of July 1 of each year and were produced by the U.S. Census Bureau, with support from the National Cancer Institute [23, 47, 52, 53]. These intercensal population estimates for 1991-99 are based on the April 1, 2000 Census. The bridged rates for 1990 and 2000 are based on populations from the censuses in those years as of April 1.

Readers should keep in mind that the population data used to compile birth and fertility rates by race and ethnicity shown in this report are based on special estimation procedures, and are not actual counts. This is the case even for the 2000 populations that are based on the 2000 census. As a result, the estimation procedures used to develop these populations may contain some errors. Smaller populations, for example, American Indians, are likely to be affected much more than larger populations by potential measurement error [23]. While the nature and magnitude of error is unknown, the potential for error should be kept in mind when evaluating trends and differentials.

As more accurate information becomes available, further revisions of the estimates may be necessary. Additional information on the revised populations is available at: http://www.cdc.gov/nchs/about/major/dvs/popbridge/popbridge.htm .

Residential population base— Birth rates for the United States, individual states, and metropolitan areas are based on the total resident populations of the respective areas (table 4-4). Except as noted, these populations exclude the Armed Forces abroad but include the Armed Forces stationed in each area. The residential population of the birth- and death-registration states for 1900–1932 and for the United States for 1900–2004 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].

Small populations as denominators— An asterisk (*) is shown in place of any derived rate based on fewer than 20 births in the numerator, or a population denominator of less than 50 (unweighted) for decennial years and 75,000 (weighted) for all other years for the Hispanic subgroups. Rates based on populations below these minimum levels lack

sufficient reliability for analytic purposes.

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. 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 2000 can be computed by multiplying the reported rates by ratios from the 2000 census-level population adjusted for the estimated age-specific census over- and undercounts, which are shown in table E.

Cohort fertility tables

Various fertility measures for cohorts of women are computed from births adjusted for underregistration and population estimates corrected for under enumeration and misstatement of age. Data published after 1974 use revised population estimates prepared by the U.S. Census Bureau and have been expanded to include data for the two major racial groups. Heuser [54] has prepared a detailed description of the methods used in deriving these measures as well as more detailed data for earlier years. The series of cohort fertility tables are being revised to incorporate rates for black women and the revised intercensal population estimates of the 1990s. A publication is forthcoming.

Parity distribution—The percentage distribution of women by parity (number of children ever born alive to mother) is derived from cumulative birth rates by order of birth. The percentage of 0-parity women is found by subtracting the cumulative first birth rate from 1,000 and dividing by 10. The proportions of women at parities one through six are found from the following formula:

$$\text{Percent at N parity} = ((\text{cum. rate, order N}) - (\text{cum. rate, order N} + 1))/10$$

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

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

Total fertility rates

The total fertility rate is the sum of the birth rates by age of mother (in 5–year age groups) multiplied by 5. It is an age–adjusted rate because it is based on the assumption that there is the same number of women in each age group. The rate of 2,045.5 in 2004, for example, means that if a hypothetical group of 1,000 women were to have the same birth rates in each age group that were observed in the actual childbearing population in 2004, they would have a total of 2,046 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

The seasonally adjusted birth and fertility rates are computed from the X–11 variant of Census Method II [55]. 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. The fundamental technique is the same in that it is an adaptation of the ratio-to-moving-average method. Before 1964, the method of seasonal adjustment was based on the X–9 variant and other variants of Census Method II. A comparison of the Census Method II with the BLS Seasonal Factor Method shows the differences in the seasonal patterns of births to be negligible.

Computations of percentages, percentage distributions, and means

Births for which a particular characteristic is unknown were subtracted from the figures for total births that were used as denominators before percentages, percentage distributions, and means were computed. The percentage of records with missing information for each item is shown by state in table A. The mean age of mother is the arithmetic average of the age of mothers at the time of birth, computed directly from the frequency of births by age of mother. An asterisk is shown in place of any derived statistic based on fewer than 20 births in the numerator or denominator.

Computation of Measures of Variability

Random variation and significance testing for natality data

This detailed discussion of random variation and significance testing for natality

data is similar to that in the "Technical Notes" of "Births: Final data for 2004" [3]. The number of births reported for an area is essentially a complete count, because more than 99 percent of all births are registered. Although this number is not subject to sampling error, it may be affected by nonsampling errors such as mistakes in recording the mother's residence or age during the registration process.

When the number of births is used for analytic purposes (that is, for the comparison of numbers, rates, and percents over time, for different areas, or between different groups), the number of events that *actually* occurred can be thought of as one outcome in a large series of possible results that *could have* occurred under the same (or similar) circumstances. When considered in this way, the number of births is subject to random variation and a probable range of values estimated from the actual figures, according to certain statistical assumptions.

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

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

When the number of vital events is large, the distribution is assumed to follow a normal distribution (where the relative standard error is small). When the number of events is small and the probability of the event is small, the distribution is assumed to follow a Poisson probability distribution. Considerable caution should be observed in interpreting the occurrence of infrequent events.

95-percent confidence limits for numbers less than 100 -- When the number of births is less than 100 and the rate is small, the data are assumed to follow a Poisson probability distribution [56]. Confidence limits are estimated using the following formulas:

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

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

where:

B = number of births

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

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

Example

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

$$\text{Lower limit} = 47 \times 0.73476 = 35$$

$$\text{Upper limit} = 47 \times 1.32979 = 63$$

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

95-percent confidence limits for numbers of 100 or more — When the number of events is greater than 100, the data are assumed to approximate a normal distribution. Formulas for 95-percent confidence limits are:

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

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

where:

B = number of births

Example

Suppose that the number of first births to white women 40-44 years of age was

14,108. The 95-percent confidence limits for this number would be:

$$\begin{aligned}\text{Lower limit} &= 14{,}108 - \left(1.96 \times \sqrt{14{,}108}\right) \\ &= 14{,}108 - 233 \\ &= 13{,}875\end{aligned}$$

$$\begin{aligned}\text{Lower limit} &= 14{,}108 + \left(1.96 \times \sqrt{14{,}108}\right) \\ &= 14{,}108 + 233 \\ &= 14{,}341\end{aligned}$$

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

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

95-percent confidence limits for rates based on fewer than 100 events — As stated earlier, when the number of events in the numerator is less than 20 (or the population denominator is less than 50 for decennial years and 75,000 for all other years for an estimated subgroups), an asterisk (*) is shown in place of the rate because there were too few births or the population is too small to compute a statistically reliable rate. When the number of events in the numerator is greater than 20 but less than 100 (and the population denominator for the subgroups is above the minimum), the confidence interval for a rate can be estimated using the two formulas which follow and the values in table C.

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

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

where:

R = birth rate

L = the value in table C that corresponds to the number of events B

U = the value in table C that corresponds to the number of events B

Example

Suppose that the first birth rate for American Indian women 40-44 years of age was 0.50 per thousand, based on 47 births in the numerator. Using table C:

$$\text{Lower limit} = 0.50 \times 0.73476$$
$$= 0.37$$

$$\text{Upper limit} = 0.50 \times 1.32979$$
$$= 0.66$$

This means that the chances are 95 out of 100 that the actual first birth rate for American Indian women 40-44 years of age would be between 0.37 and 0.66.

95-percent confidence limits for rates when the numerator is 100 or more -- In this case, use the following formula for the birth rate R based on the number of births B:

$$\text{Lower limit} = R - \left(1.96 \times \left(R / \sqrt{B}\right)\right)$$

$$\text{Upper limit} = R + \left(1.96 \times \left(R / \sqrt{B}\right)\right)$$

where:

R = birth rate

B = number of births

Example

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

$$\begin{aligned}\text{Lower limit} &= 1.55 - \left(1.96 \times \left(1.55 / \sqrt{14{,}108}\right)\right) \\ &= 1.55 - 0.026 \\ &= 1.52\end{aligned}$$

$$\begin{aligned}\text{Upper limit} &= 1.55 + \left(1.96 \times \left(1.55 / \sqrt{14{,}108}\right)\right) \\ &= 1.55 + 0.026 \\ &= 1.58\end{aligned}$$

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

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

$$B \times p \geq 5 \text{ and } B \times q \geq 5$$

where:

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

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

binomial. The 95-percent confidence intervals are computed by the following formulas:

$$\text{Lower limit} = p - \left(1.96 \bullet \left(\sqrt{p \bullet q / B}\right)\right)$$

$$\text{Upper limit} = p + \left(1.96 \bullet \left(\sqrt{p \bullet q / B}\right)\right)$$

where:

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

Example

Suppose that the percent of births to Hispanic women in Arizona that were to unmarried women was 49.7 percent. This was based on 14,751 births in the numerator and 29,682 births in the denominator. First we test to make sure we can use the normal approximation of the binomial:

$$29{,}682 \times 0.497 = 14{,}752$$
$$29{,}682 \times (1 - 0.497) = 29{,}682 \times 0.503 = 14{,}930$$

Both 14,752 and 14,930 are greater than 5 so we can proceed. The 95-percent confidence interval would be:

$$\begin{aligned}\text{Lower limit} &= 0.497 - \left(1.96 \bullet \left(\sqrt{0.497 \bullet 0.503 / 29{,}682}\right)\right) \\ &= 0.497 - 0.006 \\ &= 0.491 \text{ or } 49.1 \text{ percent}\end{aligned}$$

$$\begin{aligned}\text{Upper limit} &= 0.497 + \left(1.96 \bullet \left(\sqrt{0.497 \bullet 0.503 / 29{,}682}\right)\right) \\ &= 0.497 + 0.006 \\ &= 0.503 \text{ or } 50.3 \text{ percent}\end{aligned}$$

This means that the chances are 95 out of 100 that the actual percent of births to unmarried Hispanic women in Arizona is between 49.1 and 50.3 percent.

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

Example

Suppose that the first birth rate for American Indian women 40-44 years of age was 0.70 per 1,000 in year X and 0.57 in year Y. Is the rate for year X significantly higher than the rate for year Y? The two rates are based on 63 events in year X and 54 events in year Y. Both rates are based on fewer than 100 events; therefore, the first step is to compute the confidence intervals for both rates.

	Lower Limit	Upper Limit
Year X	0.54	0.90
Year Y	0.43	0.74

These two confidence intervals overlap. Therefore, the first birth rate for American women 40-44 in year X is not significantly higher (at the 95-percent confidence level) than the rate in year Y.

This method of comparing confidence intervals 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 [57]. 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.

Significance testing when both rates are based on 100 or more events -- When both rates are based on 100 or more events, the difference between the two rates, irrespective of sign (+/-), 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.

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

where:

R_1	=	first rate
R_2	=	second rate
N_1	=	first number of births
N_2	=	second number of births

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

Example

Is the first birth rate for black women 40-44 years of age (1.08 per 1,000) significantly lower than the comparable rate for white women (1.55)? Both rates are based on more than 100 births (1,535 for black women and 14,108 for white women). The difference between the rates is 1.55 - 1.08 = 0.47. The statistic is then calculated as follows:

$$\begin{aligned}
&= 1.96 \times \sqrt{\frac{1.08^2}{1{,}535} + \frac{1.55^2}{14{,}108}} \\
&= 1.96 \times \sqrt{\left((1.166/1{,}535) + (2.403/14{,}108)\right)} \\
&= 1.96 \times \sqrt{0.00076 + 0.00017} \\
&= 1.96 \times \sqrt{0.00093} \\
&= 1.96 \times 0.03 \\
&= 0.06
\end{aligned}$$

The difference between the rates (0.47) is greater than this statistic (0.06). Therefore, the difference is statistically significant at the 95-percent confidence level.

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

$$B \times p \geq 5 \text{ and } B \times q \geq 5$$

where:

B = number of births in the denominator

p = percent divided by 100

q = 1 - p

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

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

where:

B_1 = number of births in the denominator of the first percent

B_2 = number of births in the denominator of the second percent

p = $\dfrac{B_1 \times p_1 + B_2 \times p_2}{B_1 + B_2}$

p_1 = the first percent divided by 100

p_2 = the second percent divided by 100

Example

Is the percent of births to Hispanic women that were to unmarried women higher in New Mexico (50.2) than in Arizona (49.7)? Suppose that the number in the denominator was 13,714 in New Mexico and 29,682 in Arizona. The necessary conditions are met for both percents (calculations not shown). The difference between the two percents is 0.502 - 0.497 = 0.005. The statistic is then calculated as follows:

$$1.96 \times \sqrt{0.499 \times (0.501) \times (0.000106609)}$$
$$= 1.96 \times \sqrt{0.000026652}$$
$$= 1.96 \times 0.005162563$$
$$= 0.010$$

The difference between the percents (0.005) is less than this statistic (0.010). Therefore, the difference is not statistically significant at the 95-percent confidence level.

Random variation and significance testing for population subgroups

This section presents information relevant to Hispanic subgroups (or generally speaking, any subgroup of the population for which survey data has been used for estimation of the denominator.) Birth and fertility rates for Mexicans, Puerto Ricans, Cubans, and "Other" Hispanic subgroups for 2004 are shown in tables 5,6, 8, and 15 of 2004 natality final report [3] and in tables 1-4 and 1-12 of "Vital Statistics of the United States, 2004, Part 1, Natality" (in preparation). Population estimates for Hispanic subgroups are derived from the U.S. Census Bureau's *Current Population Survey* (CPS) and adjusted to resident population control totals as shown in table 4-3 [47, 50]. As a result, the rates are subject to the variability of the denominator as well as the numerator. For these Hispanic subgroups (but not for all origin, total Hispanic, total non-Hispanic, non-Hispanic white, or non-Hispanic black populations), the following formulas are used for testing statistical significance in trends and differences:

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 = the factor which depends on whether an entire or a sampled population (like one from a Current Population Survey – CPS) is used, and the span of years represented. f equals 0.670 for a single year
a and b of the example are single year averages of the 2002 and 2003 CPS standard error parameters [58, 59]
a = -0.000096
b = 3,809
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:

$$\text{Lower limit} = 51.2 - 1.96 * 51.2 * \sqrt{\left(\frac{1}{13{,}088}\right) + 0.670 * \left[-0.000096 + \left(\frac{3{,}809}{255{,}399}\right)\right]}$$
$$= 51.2 - 1.96 * 51.2 * \sqrt{0.000076406 + (0.670 * 0.014914)}$$
$$= 51.2 - 1.96 * 51.2 * \sqrt{0.01000475}$$
$$= 51.2 - 1.96 * 51.2 * 0.100024$$
$$= 41.16$$

$$\text{Upper limit} = 51.2 + 1.96 * 51.2 * \sqrt{\left(\frac{1}{13{,}088}\right) + 0.670 * \left[-0.000096 + \left(\frac{3{,}809}{255{,}399}\right)\right]}$$
$$= 51.2 + 1.96 * 51.2 * \sqrt{0.000076406 + (0.670 * 0.014914)}$$
$$= 51.2 + 1.96 * 51.2 * \sqrt{0.01000475}$$
$$= 51.2 + 1.96 * 51.2 * 0.100024$$
$$= 61.24$$

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 41.16 and 61.24.

Approximate 95-percent confidence interval: less than 100 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,

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

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

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 = the factor which depends on whether an entire or a sampled population (like one from a Current Population Survey – CPS) is used, and the span of years represented. f equals 0.670 for a 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 the rate is based

NOTE: In the formulas above, the confidence limits are estimated from the non-sampling 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**.**

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:

$$\text{Lower limit} = 0.4 * 0.68419 * \left(1 - 2.576\sqrt{0.670\left(-0.000096 + \left(\frac{3{,}809}{87{,}892}\right)\right)}\right)$$
$$= 0.4 * 0.68419 * \left(1 - 2.576\sqrt{0.028972}\right)$$
$$= 0.4 * 0.68419 * \left(1 - (2.576 * 0.170211)\right)$$
$$= 0.4 * 0.68419 * 0.561536$$
$$= 0.154$$

$$\text{Upper limit} = 0.4 * 1.41047 * \left(1 + 2.576\sqrt{0.670\left(-0.000096 + \left(\frac{3{,}809}{87{,}892}\right)\right)}\right)$$
$$= 0.4 * 1.41047 * \left(1 + 2.576\sqrt{0.028972}\right)$$
$$= 0.4 * 1.41047 * \left(1 + (2.576 * 0.170211)\right)$$
$$= 0.4 * 1.41047 * 1.438464$$
$$= 0.812$$

This means that the chances are 95 out of 100 that the actual birth rate of Puerto Rican women 45–49 years of age lies between 0.15 and 0.81.

Significance testing for 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 value given by the formula below. This statistic equals 1.96 times the standard error for the difference between two rates.

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

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 Mexican mothers 15–19 years of age (R_1) is 94.5, based on 97,744 births and an estimated population of 1,033,878, and the birth rate for Puerto Rican mothers 15–19 years of age (R_2) is 61.4, based on 10,006 births and an estimated population of 162,899. Using the above formula, the z score is computed as follows:

$$= 1.96 * \sqrt{94.5^2 * \left[\left(\frac{1}{97,744}\right) + 0.670\left(-0.000096 + \frac{3,809}{1,033,878}\right)\right] + 61.4^2 * \left[\left(\frac{1}{10,006}\right) + 0.670\left(-0.000096 + \frac{3,809}{162,899}\right)\right]}$$

$$= 1.96 * \sqrt{8930.25 * (0.000010231 + 0.670 * 0.003589) + 3769.96(0.00009994 + 0.670 * 0.023287)}$$

$$= 1.96 * \sqrt{(8930.25 * 0.0024147) + (3769.96 * 0.015702)}$$

$$= 1.96 * \sqrt{21.563 + 59.20}$$

$$= 1.96 * 8.99$$

$$= 17.61$$

Since the difference between the two rates 33.1 is greater than the value above, the two rates are statistically significantly different at the 0.05 level of significance.

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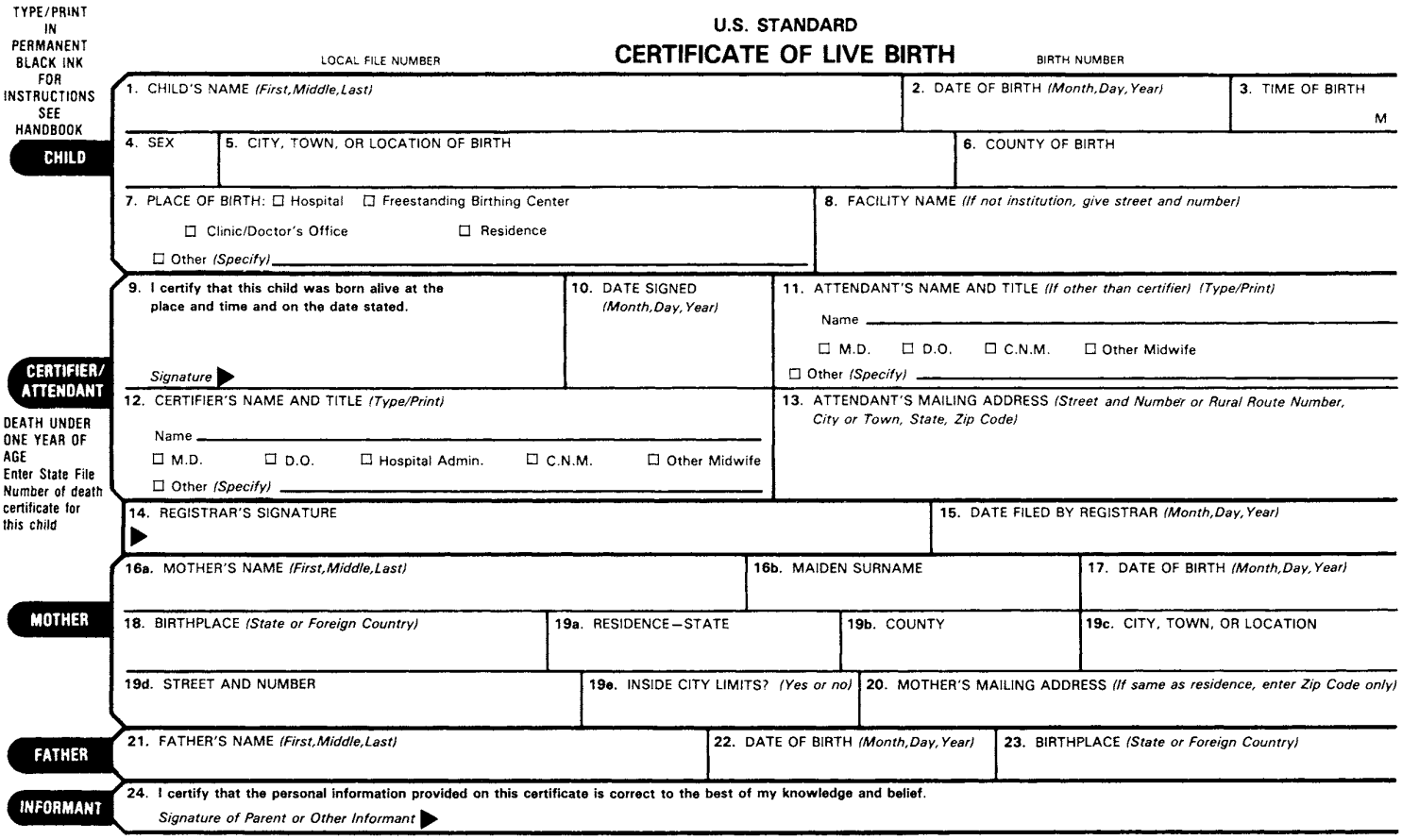
Figure 4–A. U.S. Standard Certificate of Live Birth: 1989 Revision



TYPE/PRINT IN PERMANENT BLACK INK FOR INSTRUCTIONS SEE HANDBOOK

U.S. STANDARD

CERTIFICATE OF LIVE BIRTH

LOCAL FILE NUMBER

BIRTH NUMBER

CHILD

1. CHILD'S NAME *(First, Middle, Last)*
2. DATE OF BIRTH *(Month, Day, Year)*
3. TIME OF BIRTH M
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)*
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)*

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

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* ▶

Figure 4–A. U.S. Standard Certificate of Live Birth: 1989 Revision - Con.

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)*			29. MOTHER MARRIED? (At birth, conception, or any time between) *(Yes or no)*	30. DATE LAST NORMAL MENSES BEGAN *(Month, Day, Year)*
	LIVE BIRTHS *(Do not include this child)*	OTHER TERMINATIONS *(Spontaneous and induced at any time after conception)*	31. MONTH OF PREGNANCY PRENATAL CARE BEGAN—First, Second, Third, etc. *(Specify)*	32. PRENATAL VISITS—Total Number *(If none, so state)*
MULTIPLE BIRTHS Enter State File Number for Mate(s) LIVE BIRTH(S)	28a. Now Living Number _____ ☐ None	28b. Now Dead Number _____ ☐ None	28d. Number _____ ☐ None	33. BIRTH WEIGHT *(Specify unit)*	34. CLINICAL ESTIMATE OF GESTATION *(Weeks)*
FETAL DEATH(S)	28c. DATE OF LAST LIVE BIRTH *(Month, Year)*		28e. DATE OF LAST OTHER TERMINATION *(Month, Year)*	35a. PLURALITY—Single, Twin, Triplet, etc. *(Specify)*	35b. IF NOT SINGLE BIRTH—Born First, Second, Third, etc. *(Specify)*

36. APGAR SCORE		37a. MOTHER TRANSFERRED PRIOR TO DELIVERY? ☐ No ☐ Yes If Yes, enter name of facility transferred **from:**
36a. 1 Minute	36b. 5 Minutes	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

U.S. STANDARD CERTIFICATE OF LIVE BIRTH

LOCAL FILE NO. BIRTH NUMBER:

CHILD

1. CHILD'S NAME (First, Middle, Last, Suffix) | 2. TIME OF BIRTH (24hr) | 3. SEX | 4. DATE OF BIRTH (Mo/Day/Yr)

5. FACILITY NAME (If not institution, give street and number) | 6. CITY, TOWN, OR LOCATION OF BIRTH | 7. COUNTY OF BIRTH

MOTHER

8a. MOTHER'S CURRENT LEGAL NAME (First, Middle, Last, Suffix) | 8b. DATE OF BIRTH (Mo/Day/Yr)

8c. MOTHER'S NAME PRIOR TO FIRST MARRIAGE (First, Middle, Last, Suffix) | 8d. BIRTHPLACE (State, Territory, or Foreign Country)

9a. RESIDENCE OF MOTHER-STATE | 9b. COUNTY | 9c. CITY, TOWN, OR LOCATION

9d. STREET AND NUMBER | 9e. APT. NO. | 9f. ZIP CODE | 9g. INSIDE CITY LIMITS? 9 Yes 9 No

FATHER

10a. FATHER'S CURRENT LEGAL NAME (First, Middle, Last, Suffix) | 10b. DATE OF BIRTH (Mo/Day/Yr) | 10c. BIRTHPLACE (State, Territory, or Foreign Country)

CERTIFIER

11. CERTIFIER'S NAME: _____

TITLE: 9 MD 9 DO 9 HOSPITAL ADMIN. 9 CNM/CM 9 OTHER MIDWIFE

9 OTHER (Specify)_____

12. DATE CERTIFIED _____/_____/_____ (MM/DD/YYYY)

13. DATE FILED BY REGISTRAR _____/_____/_____ (MM/DD/YYYY)

INFORMATION FOR ADMINISTRATIVE USE

MOTHER

14. MOTHER'S MAILING ADDRESS: 9 Same as residence, or: State: City, Town, or Location:

Street & Number: Apartment No.: Zip Code:

15. MOTHER MARRIED? (At birth, conception, or any time between) 9 Yes 9 No

IF NO, HAS PATERNITY ACKNOWLEDGMENT BEEN SIGNED IN THE HOSPITAL? 9 Yes 9 No

16. SOCIAL SECURITY NUMBER REQUESTED FOR CHILD? 9 Yes 9 No

17. FACILITY ID. (NPI)

18. MOTHER'S SOCIAL SECURITY NUMBER:

19. FATHER'S SOCIAL SECURITY NUMBER:

INFORMATION FOR MEDICAL AND HEALTH PURPOSES ONLY

MOTHER

20. MOTHER'S EDUCATION (Check the box that best describes the highest degree or level of school completed at the time of delivery)

9 8th grade or less
9 9th - 12th grade, no diploma
9 High school graduate or GED completed
9 Some college credit but no degree
9 Associate degree (e.g., AA, AS)
9 Bachelor's degree (e.g., BA, AB, BS)
9 Master's degree (e.g., MA, MS, MEng, MEd, MSW, MBA)
9 Doctorate (e.g., PhD, EdD) or Professional degree (e.g., MD, DDS, DVM, LLB, JD)

21. MOTHER OF HISPANIC ORIGIN? (Check the box that best describes whether the mother is Spanish/Hispanic/Latina. Check the "No" box if mother is not Spanish/Hispanic/Latina)

9 No, not Spanish/Hispanic/Latina
9 Yes, Mexican, Mexican American, Chicana
9 Yes, Puerto Rican
9 Yes, Cuban
9 Yes, other Spanish/Hispanic/Latina

(Specify)_____

22. MOTHER'S RACE (Check one or more races to indicate what the mother considers herself to be)

9 White
9 Black or African American
9 American Indian or Alaska Native (Name of the enrolled or principal tribe)_____
9 Asian Indian
9 Chinese
9 Filipino
9 Japanese
9 Korean
9 Vietnamese
9 Other Asian (Specify)_____
9 Native Hawaiian
9 Guamanian or Chamorro
9 Samoan
9 Other Pacific Islander (Specify)_____
9 Other (Specify)_____

FATHER

23. FATHER'S EDUCATION (Check the box that best describes the highest degree or level of school completed at the time of delivery)

9 8th grade or less
9 9th - 12th grade, no diploma
9 High school graduate or GED completed
9 Some college credit but no degree
9 Associate degree (e.g., AA, AS)
9 Bachelor's degree (e.g., BA, AB, BS)
9 Master's degree (e.g., MA, MS, MEng, MEd, MSW, MBA)
9 Doctorate (e.g., PhD, EdD) or Professional degree (e.g., MD, DDS, DVM, LLB, JD)

24. FATHER OF HISPANIC ORIGIN? (Check the box that best describes whether the father is Spanish/Hispanic/Latino. Check the "No" box if father is not Spanish/Hispanic/Latino)

9 No, not Spanish/Hispanic/Latino
9 Yes, Mexican, Mexican American, Chicano
9 Yes, Puerto Rican
9 Yes, Cuban
9 Yes, other Spanish/Hispanic/Latino

(Specify)_____

25. FATHER'S RACE (Check one or more races to indicate what the father considers himself to be)

9 White
9 Black or African American
9 American Indian or Alaska Native (Name of the enrolled or principal tribe)_____
9 Asian Indian
9 Chinese
9 Filipino
9 Japanese
9 Korean
9 Vietnamese
9 Other Asian (Specify)_____
9 Native Hawaiian
9 Guamanian or Chamorro
9 Samoan
9 Other Pacific Islander (Specify)_____
9 Other (Specify)_____

Mother's Name_____ Mother's Medical Record No._____

26. PLACE WHERE BIRTH OCCURRED (Check one)

9 Hospital
9 Freestanding birthing center
9 Home Birth: Planned to deliver at home? 9 Yes 9 No
9 Clinic/Doctor's office
9 Other (Specify)_____

27. ATTENDANT'S NAME, TITLE, AND NPI

NAME: _____ NPI:_____

TITLE: 9 MD 9 DO 9 CNM/CM 9 OTHER MIDWIFE

9 OTHER (Specify)_____

28. MOTHER TRANSFERRED FOR MATERNAL MEDICAL OR FETAL INDICATIONS FOR DELIVERY? 9 Yes 9 No

IF YES, ENTER NAME OF FACILITY MOTHER TRANSFERRED FROM:

_____

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MOTHER

29a. DATE OF FIRST PRENATAL CARE VISIT
_____/_____/_____ 9 No Prenatal Care
M M D D YYYY

29b. DATE OF LAST PRENATAL CARE VISIT
_____/_____/_____
M M D D YYYY

30. TOTAL NUMBER OF PRENATAL VISITS FOR THIS PREGNANCY
_____ (If none, enter "0".)

31. MOTHER'S HEIGHT
_____ (feet/inches)

32. MOTHER'S PREPREGNANCY WEIGHT
_____ (pounds)

33. MOTHER'S WEIGHT AT DELIVERY
_____ (pounds)

34. DID MOTHER GET WIC FOOD FOR HERSELF DURING THIS PREGNANCY? 9 Yes 9 No

35. NUMBER OF PREVIOUS LIVE BIRTHS (Do not include this child)

35a.Now Living
Number _____
9 None

35b. Now Dead
Number ____
9 None

36. NUMBER OF OTHER PREGNANCY OUTCOMES (spontaneous or induced losses or ectopic pregnancies)

36a. Other Outcomes
Number _____
9 None

37. CIGARETTE SMOKING BEFORE AND DURING PREGNANCY
For each time period, enter either the number of cigarettes or the number of packs of cigarettes smoked. IF NONE, ENTER "0".
Average number of cigarettes or packs of cigarettes smoked per day.

	# of cigarettes	OR	# of packs
Three Months Before Pregnancy	_____	OR	_____
First Three Months of Pregnancy	_____	OR	_____
Second Three Months of Pregnancy	_____	OR	_____
Third Trimester of Pregnancy	_____	OR	_____

38. PRINCIPAL SOURCE OF PAYMENT FOR THIS DELIVERY
9 Private Insurance
9 Medicaid
9 Self-pay
9 Other
(Specify) _____

35c. DATE OF LAST LIVE BIRTH
_____/_____
MM Y Y Y Y

36b. DATE OF LAST OTHER PREGNANCY OUTCOME
_____/_____
MM Y Y Y Y

39. DATE LAST NORMAL MENSES BEGAN
_____/_____/_____
M M D D Y Y Y Y

40. MOTHER'S MEDICAL RECORD NUMBER

MEDICAL AND HEALTH INFORMATION

41. RISK FACTORS IN THIS PREGNANCY (Check all that apply)

Diabetes
9 Prepregnancy (Diagnosis prior to this pregnancy)
9 Gestational (Diagnosis in this pregnancy)

Hypertension
9 Prepregnancy (Chronic)
9 Gestational (PIH, preeclampsia)
9 Eclampsia

9 Previous preterm birth

9 Other previous poor pregnancy outcome (Includes perinatal death, small-for-gestational age/intrauterine growth restricted birth)

9 Pregnancy resulted from infertility treatment-If yes, check all that apply:
9 Fertility-enhancing drugs, Artificial insemination or Intrauterine insemination
9 Assisted reproductive technology (e.g., in vitro fertilization (IVF), gamete intrafallopian transfer (GIFT))

9 Mother had a previous cesarean delivery
If yes, how many _____

9 None of the above

42. INFECTIONS PRESENT AND/OR TREATED DURING THIS PREGNANCY (Check all that apply)
9 Gonorrhea
9 Syphilis
9 Chlamydia
9 Hepatitis B
9 Hepatitis C
9 None of the above

43. OBSTETRIC PROCEDURES (Check all that apply)
9 Cervical cerclage
9 Tocolysis

External cephalic version:
9 Successful
9 Failed

9 None of the above

44. ONSET OF LABOR (Check all that apply)
9 Premature Rupture of the Membranes (prolonged, ≥12 hrs.)
9 Precipitous Labor (<3 hrs.)
9 Prolonged Labor (≥20 hrs.)
9 None of the above

45. CHARACTERISTICS OF LABOR AND DELIVERY (Check all that apply)
9 Induction of labor
9 Augmentation of labor
9 Non-vertex presentation
9 Steroids (glucocorticoids) for fetal lung maturation received by the mother prior to delivery
9 Antibiotics received by the mother during labor
9 Clinical chorioamnionitis diagnosed during labor or maternal temperature ≥38°C (100.4°F)
9 Moderate/heavy meconium staining of the amniotic fluid
9 Fetal intolerance of labor such that one or more of the following actions was taken: in-utero resuscitative measures, further fetal assessment, or operative delivery
9 Epidural or spinal anesthesia during labor
9 None of the above

46. METHOD OF DELIVERY

A. Was delivery with forceps attempted but unsuccessful?
9 Yes 9 No

B. Was delivery with vacuum extraction attempted but unsuccessful?
9 Yes 9 No

C. Fetal presentation at birth
9 Cephalic
9 Breech
9 Other

D. Final route and method of delivery (Check one)
9 Vaginal/Spontaneous
9 Vaginal/Forceps
9 Vaginal/Vacuum
9 Cesarean
If cesarean, was a trial of labor attempted?
9 Yes
9 No

47.MATERNAL MORBIDITY (Check all that apply)
(Complications associated with labor and delivery)
9 Maternal transfusion
9 Third or fourth degree perineal laceration
9 Ruptured uterus
9 Unplanned hysterectomy
9 Admission to intensive care unit
9 Unplanned operating room procedure following delivery
9 None of the above

NEWBORN INFORMATION

NEWBORN

48. NEWBORN MEDICAL RECORD NUMBER:

49. BIRTHWEIGHT (grams preferred, specify unit)
_____
9 grams 9 lb/oz

50. OBSTETRIC ESTIMATE OF GESTATION:
_____ (completed weeks)

51. APGAR SCORE:
Score at 5 minutes:_____
If 5 minute score is less than 6,
Score at 10 minutes: _____

52. PLURALITY - Single, Twin, Triplet, etc.
(Specify)_____

53. IF NOT SINGLE BIRTH - Born First, Second, Third, etc. (Specify)_____

54. ABNORMAL CONDITIONS OF THE NEWBORN (Check all that apply)
9 Assisted ventilation required immediately following delivery
9 Assisted ventilation required for more than six hours
9 NICU admission
9 Newborn given surfactant replacement therapy
9 Antibiotics received by the newborn for suspected neonatal sepsis
9 Seizure or serious neurologic dysfunction
9 Significant birth injury (skeletal fracture(s), peripheral nerve injury, and/or soft tissue/solid organ hemorrhage which requires intervention)
9 None of the above

55. CONGENITAL ANOMALIES OF THE NEWBORN (Check all that apply)
9 Anencephaly
9 Meningomyelocele/Spina bifida
9 Cyanotic congenital heart disease
9 Congenital diaphragmatic hernia
9 Omphalocele
9 Gastroschisis
9 Limb reduction defect (excluding congenital amputation and dwarfing syndromes)
9 Cleft Lip with or without Cleft Palate
9 Cleft Palate alone
9 Down Syndrome
9 Karyotype confirmed
9 Karyotype pending
9 Suspected chromosomal disorder
9 Karyotype confirmed
9 Karyotype pending
9 Hypospadias
9 None of the anomalies listed above

Mother's Name _____ Mother's Medical Record No. _____

56. WAS INFANT TRANSFERRED WITHIN 24 HOURS OF DELIVERY? 9 Yes 9 No
IF YES, NAME OF FACILITY INFANT TRANSFERRED TO:_____

57. IS INFANT LIVING AT TIME OF REPORT?
9 Yes 9 No 9 Infant transferred, status unknown

58. IS THE INFANT BEING BREASTFED AT DISCHARGE?
9 Yes 9 No

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NOTE: This recommended standard birth certificate is the result of an extensive evaluation process. Information on the process and resulting recommendations as well as plans for future activities is available on the Internet at: http://www.cdc.gov/nchs/vital_certs_rev.htm.

Table A. Percent of birth records on which specified items were not stated: United States and each State and territory, New York City and the District of Columbia, 2004
[By place of residence]

Area	Items common to both the 1989 and 2003 revisions of the U.S. Standard Certificate of Live Birth							
	All births	Place of birth	Attendant at birth	Mother's birthplace	Father's age	Father's race	Hispanic Origin	
							Mother	Father
Total of reporting areas [1]	4,112,052	0.0	0.2	0.4	13.6	16.0	0.8	14.1
Alabama	59,510	0.0	0.0	0.0	20.8	21.1	0.1	20.8
Alaska	10,338	-	0.9	0.5	9.2	14.2	11.6	20.9
Arizona	93,663	0.0	0.0	0.1	14.7	18.2	1.9	16.8
Arkansas	38,573	-	0.0	0.5	19.0	20.3	0.3	19.1
California	544,843	0.0	0.0	0.4	7.3	8.1	1.4	7.7
Colorado	68,503	-	0.0	0.5	8.1	8.8	0.0	8.8
Connecticut	42,095	0.0	0.1	0.5	10.6	11.8	0.3	10.9
Delaware	11,369	-	0.1	0.3	32.6	33.6	0.7	32.6
District of Columbia	7,933	-	0.0	0.0	35.7	44.1	0.4	35.7
Florida [2]	218,053	0.0	0.1	0.2	15.8	24.5	0.3	18.4
Georgia	138,849	0.0	0.0	0.2	17.0	17.7	1.6	18.4
Hawaii	18,281	-	0.1	0.2	8.6	12.3	0.2	8.6
Idaho	22,532	0.0	0.0	0.4	9.2	15.2	1.3	12.1
Illinois	180,778	0.0	0.0	0.2	13.7	15.2	0.1	15.0
Indiana	87,142	0.0	0.1	0.0	13.2	13.2	0.4	13.4
Iowa	38,438	-	-	0.0	14.0	15.5	0.3	15.7
Kansas	39,669	-	0.0	0.1	10.6	11.1	1.4	12.1
Kentucky	55,720	0.0	0.1	0.6	20.1	24.7	0.1	23.3
Louisiana	65,369	0.0	0.0	0.0	19.6	19.7	0.2	19.7
Maine	13,944	-	0.0	0.0	9.2	12.7	0.5	12.8
Maryland	74,628	0.0	0.0	0.1	13.4	19.4	0.1	15.5
Massachusetts	78,484	0.0	-	0.9	7.9	9.4	0.7	8.5
Michigan	129,776	0.0	0.1	0.2	14.6	16.9	2.7	18.6
Minnesota	70,624	-	0.1	0.3	12.1	18.2	1.4	13.9
Mississippi	42,827	0.0	0.1	0.1	20.7	20.7	0.1	20.7
Missouri	77,765	-	0.0	0.3	18.0	19.9	0.1	18.5
Montana	11,519	-	0.1	0.0	9.2	10.6	1.6	11.9
Nebraska	26,332	-	-	-	13.2	14.9	2.5	15.6
Nevada	35,200	-	0.0	0.5	22.4	24.0	1.0	22.8
New Hampshire [2]	14,565	-	0.0	0.2	6.4	8.6	3.5	7.6
New Jersey	115,253	0.0	0.1	0.1	7.6	9.0	0.1	7.8
New Mexico	28,384	-	0.0	1.6	19.7	19.6	0.0	19.6
New York(excluding NYC)	130,879	0.0	0.0	0.1	10.8	16.1	0.2	10.9
New York City	119,068	0.0	0.0	0.5	15.4	16.1	0.4	15.6
North Carolina	119,847	0.0	-	0.0	16.2	16.3	0.1	16.3
North Dakota	8,189	-	-	-	9.3	9.5	2.8	12.1
Ohio	148,954	0.4	0.0	0.5	16.2	19.9	0.5	16.9
Oklahoma	51,306	-	0.0	0.0	14.6	17.2	0.3	16.8
Oregon	45,678	-	-	0.1	10.2	4.9	0.3	4.9
Pennsylvania	144,748	0.0	4.6	3.9	6.6	11.0	1.2	5.9
Rhode Island	12,779	-	-	0.2	13.0	14.3	13.8	24.1
South Carolina	56,590	-	0.0	0.1	29.5	33.8	0.1	0.7
South Dakota	11,338	0.0	0.0	0.1	10.4	11.0	0.1	13.4
Tennessee	79,642	0.0	1.2	0.3	16.0	22.2	0.2	15.9
Texas	381,293	0.0	0.0	0.4	14.3	14.7	0.3	14.5
Utah	50,670	0.0	0.0	0.2	9.9	12.9	0.6	10.8
Vermont	6,599	-	-	0.4	7.6	10.0	1.1	10.7
Virginia	103,933	-	0.0	0.1	15.3	17.0	0.1	15.3
Washington	81,747	-	0.1	0.3	9.7	23.6	2.9	15.5
West Virginia	20,880	0.0	0.0	0.1	13.0	13.5	0.2	13.4
Wisconsin	70,146	0.0	0.0	0.1	30.8	30.9	0.1	30.9
Wyoming	6,807	-	0.0	0.1	16.0	16.4	0.3	16.2
Puerto Rico	51,127	-	0.1	-	3.2	4.3	---	---
Virgin Islands	1,574	-	0.3	-	21.0	22.1	4.3	60.7
Guam	3,410	0.1	0.4	0.4	22.3	22.6	1.5	27.8
American Samoa	1,714	0.2	-	3.9	36.4	36.5	---	---
Northern Marianas	1,355	-	0.5	-	8.9	9.0	---	---

See footnotes at end of table.

Table A. Percent of birth records on which specified items were not stated: United States and each State and territory, 2004 -- Con.
[By place of residence]

Area	Items common to both the 1989 and 2003 revisions of the U.S. Standard Certificate of Live Birth							
	Educational attainment of mother		Live-birth order	Length of gestation	Month prenatal care began		Number of prenatal visits	Weight gain
	Unrevised [3]	Revised [4]			Unrevised [3]	Revised [4]		
Total of reporting areas [1]	2.0	---	0.5	1.0	2.5	---	3.6	5.9
Alabama	0.7	---	0.0	0.1	0.7	---	0.2	1.6
Alaska	6.7	---	10.4	0.4	6.8	---	10.6	8.7
Arizona	1.4	---	0.1	0.1	0.1	---	0.7	12.5
Arkansas	1.9	---	0.2	0.2	2.7	---	2.2	8.9
California [5]	2.9	---	0.1	6.8	1.7	---	2.7	---
Colorado	1.1	---	0.1	0.0	1.8	---	2.0	3.0
Connecticut	1.2	---	0.0	0.0	1.5	---	1.0	1.1
Delaware	3.1	---	0.2	0.1	2.7	---	0.6	1.1
District of Columbia	8.0	---	0.2	0.2	11.1	---	15.8	13.7
Florida [2]	---	---	0.7	0.1	---	---	4.5	8.5
Georgia	3.3	---	0.1	0.1	2.6	---	1.4	6.5
Hawaii	1.2	---	0.0	0.2	3.4	---	2.8	13.3
Idaho	---	5.1	0.2	0.1	---	1.3	1.6	8.1
Illinois	1.6	---	0.3	0.2	5.6	---	5.9	6.4
Indiana	1.6	---	0.1	0.0	2.3	---	1.8	2.2
Iowa	0.2	---	0.1	0.1	0.2	---	0.3	0.7
Kansas	0.4	---	0.0	0.1	0.8	---	0.8	0.2
Kentucky	---	4.4	0.1	0.0	---	1.9	1.6	2.0
Louisiana	0.1	---	0.1	0.1	0.3	---	0.3	4.4
Maine	1.5	---	0.2	0.1	1.2	---	0.3	0.9
Maryland	1.5	---	0.1	0.1	1.9	---	2.3	3.1
Massachusetts	0.4	---	0.2	0.2	2.0	---	0.7	0.9
Michigan	2.6	---	0.4	0.1	3.7	---	4.8	7.1
Minnesota	1.9	---	0.5	0.2	4.2	---	5.3	10.4
Mississippi	4.3	---	0.1	0.2	5.2	---	3.6	5.7
Missouri	1.2	---	0.5	0.2	2.3	---	4.0	4.2
Montana	0.6	---	0.1	0.1	0.8	---	0.5	1.3
Nebraska	0.1	---	0.0	0.0	0.2	---	0.3	3.1
Nevada	2.7	---	1.3	0.6	7.7	---	10.3	8.9
New Hampshire [2]	---	---	0.5	0.3	---	---	2.8	8.7
New Jersey	2.2	---	0.1	0.1	2.0	---	1.0	0.9
New Mexico	3.2	---	1.0	0.3	6.0	---	6.3	11.2
New York(excluding NYC)	---	7.5	2.0	0.1	---	4.5	6.0	6.8
New York City	4.5	---	0.0	0.0	5.9	---	0.7	2.0
North Carolina	0.5	---	0.0	0.0	1.0	---	0.8	2.6
North Dakota	0.3	---	0.1	0.2	1.1	---	0.8	2.3
Ohio	2.4	---	0.3	0.1	4.9	---	9.1	3.8
Oklahoma	0.5	---	0.2	0.2	2.2	---	2.2	3.6
Oregon	2.9	---	0.0	0.0	1.6	---	0.2	1.9
Pennsylvania	---	3.0	1.3	0.8	---	6.7	9.6	13.0
Rhode Island	2.5	---	2.0	0.1	6.0	---	10.7	13.7
South Carolina	---	5.3	0.0	0.1	---	1.2	0.8	1.8
South Dakota	0.1	---	0.0	0.0	0.4	---	0.4	0.8
Tennessee	---	0.8	0.9	0.5	---	9.6	8.2	8.4
Texas	1.4	---	0.7	0.3	1.5	---	3.8	8.1
Utah	1.8	---	0.3	0.0	2.6	---	2.8	4.0
Vermont	5.9	---	0.2	0.0	8.3	---	0.6	2.0
Virginia	2.3	---	0.0	0.0	1.2	---	1.7	3.2
Washington	---	3.2	2.8	0.3	---	17.1	16.2	16.6
West Virginia	2.5	---	0.0	0.1	3.8	---	0.7	2.2
Wisconsin	0.4	---	0.0	0.0	0.3	---	0.5	2.2
Wyoming	1.1	---	0.0	0.0	0.8	---	0.5	1.9
Puerto Rico	0.3	---	0.1	0.0	0.2	---	0.1	0.0
Virgin Islands	1.0	---	1.3	-	0.1	---	2.6	13.0
Guam	1.4	---	2.3	0.1	1.1	---	1.5	2.8
American Samoa	---	---	-	---	---	---	---	---
Northern Marianas	8.1	---	5.4	0.7	4.4	---	4.0	---

See footnotes at end of table.

Table A. Percent of birth records on which specified items were not stated: United States and each State and territory, 2004 -- Con.

[By place of residence]

Area	Items common to both the 1989 and 2003 revisions of the U.S. Standard Certificate of Live Birth				
	Birthweight	5-minute apgar score	Tobacco use		Method of Delivery [6]
			Unrevised [3]	Revised [4]	
Total of reporting areas [1]	0.1	0.5	1.1	---	0.4
Alabama	0.1	0.2	0.6	---	0.7
Alaska	0.3	0.9	1.4	---	0.3
Arizona	0.1	0.4	1.7	---	0.4
Arkansas	0.1	3.2	1.5	---	0.5
California	0.0	---	---	---	0.0
Colorado	0.0	0.3	0.2	---	0.0
Connecticut	0.0	0.2	0.7	---	0.2
Delaware	0.1	0.2	2.5	---	0.0
District of Columbia	0.1	0.6	0.1	---	0.1
Florida [2,7]	0.0	0.3	---	---	0.2
Georgia	0.0	0.4	1.4	---	0.6
Hawaii	0.1	0.5	0.1	---	0.5
Idaho	0.0	0.6	---	3.8	0.2
Illinois	0.0	0.3	0.3	---	0.6
Indiana [8]	0.4	0.3	1.2	---	0.6
Iowa	0.1	0.3	0.1	---	0.8
Kansas	0.0	0.8	0.1	---	0.3
Kentucky	0.2	0.6	---	4.3	0.3
Louisiana	0.1	0.4	0.2	---	0.2
Maine	0.1	0.2	1.2	---	0.3
Maryland	0.0	0.3	0.4	---	0.4
Massachusetts	0.2	0.2	0.3	---	0.3
Michigan	0.1	0.3	2.9	---	0.6
Minnesota	0.0	0.3	2.3	---	0.9
Mississippi	0.1	0.4	0.4	---	0.6
Missouri	0.0	0.6	4.1	---	0.8
Montana	0.1	0.1	1.0	---	0.3
Nebraska	0.0	0.1	0.1	---	0.3
Nevada	0.0	1.5	2.2	---	0.9
New Hampshire [2]	0.2	0.4	---	---	0.5
New Jersey	0.0	0.2	1.8	---	0.8
New Mexico	0.3	3.7	1.7	---	0.4
New York(excluding NYC)	0.1	0.5	---	6.8	0.5
New York City	0.0	0.2	4.2	---	0.2
North Carolina	0.0	0.3	0.4	---	0.6
North Dakota	0.2	0.3	0.5	---	2.3
Ohio	0.0	0.2	0.9	---	0.8
Oklahoma	0.1	0.9	0.9	---	1.9
Oregon	0.0	0.4	2.5	---	0.7
Pennsylvania	0.4	1.2	---	4.1	0.1
Rhode Island	0.1	0.4	2.7	---	0.2
South Carolina	0.0	0.2	---	5.1	0.0
South Dakota [9]	0.0	0.2	0.1	---	0.6
Tennessee	0.4	3.2	---	1.0	0.0
Texas	0.1	---	0.2	---	0.9
Utah	0.0	0.2	1.0	---	0.5
Vermont	0.3	0.2	6.2	---	0.1
Virginia	0.1	0.1	1.1	---	0.6
Washington	0.4	0.4	---	3.2	0.0
West Virginia	0.0	0.2	1.9	---	0.3
Wisconsin	0.0	0.4	0.2	---	0.0
Wyoming	0.0	0.3	0.5	---	0.3
Puerto Rico	0.0	0.1	-	---	0.0
Virgin Islands	0.6	1.6	1.5	---	1.7
Guam	0.1	0.6	1.0	---	0.2
American Samoa	-	---	---	---	---
Northern Marianas [9]	0.4	1.5	6.4	---	3.4

See footnotes at end of table.

Table A. Percent of birth records on which specified items were not stated: United States and each State and territory, 2004 -- Con.

Area	Items common to both the 1989 and 2003 revisions of the U.S. Standard Certificate of Live Birth						
	Risk Factors in this Pregnancy				Characteristics of Labor and Delivery		
	Diabetes	P.A. Hypertension	Chronic Hypertension	Eclampsia	Menconium	Breech	Precipitous Labor
Total of reporting areas [1]	0.4	0.4	0.4	0.4	0.3	0.5	**0.4**
Alabama	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Alaska	9.5	9.5	9.5	9.5	9.5	9.5	**9.5**
Arizona	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Arkansas	0.1	0.1	0.1	0.1	0.0	0.0	**0.0**
California	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Colorado	0.0	0.0	0.0	0.0	-	-	**-**
Connecticut	0.1	0.1	0.1	0.1	0.0	0.0	**0.0**
Delaware	-	-	-	-	-	-	**-**
District of Columbia	0.0	0.0	0.0	0.0	-	-	**-**
Florida [2]	0.2	0.2	0.2	0.2	0.2	2.9	**0.3**
Georgia	0.4	0.4	0.4	0.4	0.0	0.0	**0.0**
Hawaii	0.0	0.0	0.0	0.0	-	-	**-**
Idaho	0.8	0.8	0.8	0.8	0.5	1.9	**0.6**
Illinois	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Indiana	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Iowa	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Kansas	0.1	0.1	0.1	0.1	0.0	0.0	**0.0**
Kentucky	0.4	0.4	0.4	0.4	0.4	0.9	**0.8**
Louisiana	0.1	0.1	0.1	0.1	0.1	0.1	**0.1**
Maine	0.1	0.1	0.1	0.1	0.1	0.1	**0.1**
Maryland	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Massachusetts	0.3	0.3	0.3	0.3	0.3	0.3	**0.3**
Michigan	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Minnesota	3.0	3.0	3.0	3.0	2.9	2.9	**2.9**
Mississippi	0.1	0.1	0.1	0.1	0.1	0.1	**0.1**
Missouri	0.1	0.1	0.1	0.1	0.1	0.1	**0.1**
Montana	-	-	-	-	0.0	0.0	**0.0**
Nebraska	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Nevada	2.8	2.8	2.8	2.8	2.9	2.9	**2.9**
New Hampshire [2]	0.0	0.0	0.0	0.0	0.5	1.7	**1.1**
New Jersey	0.3	0.3	0.3	0.3	0.1	0.1	**0.1**
New Mexico	0.0	0.0	0.0	0.0	-	-	**-**
New York(excluding NYC)	1.5	1.5	1.5	1.5	0.0	1.1	**2.9**
New York City	0.1	0.1	0.1	0.1	0.1	0.1	**0.1**
North Carolina	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
North Dakota	0.3	0.3	0.3	0.3	0.3	0.3	**0.3**
Ohio	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Oklahoma	4.8	4.8	4.8	4.8	5.4	5.4	**5.4**
Oregon	0.7	0.7	0.7	0.7	0.0	0.0	**0.0**
Pennsylvania	0.0	0.0	0.0	0.0	0.0	0.1	**0.1**
Rhode Island	1.9	1.9	1.9	1.9	1.8	1.8	**1.8**
South Carolina	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
South Dakota	-	-	-	-	0.0	0.0	**0.0**
Tennessee	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Texas	0.9	0.9	0.9	0.9	0.0	0.0	**0.0**
Utah	0.1	0.1	0.1	0.1	0.0	0.0	**0.0**
Vermont	0.0	0.0	0.0	0.0	0.1	0.3	**0.1**
Virginia	0.0	0.0	0.0	0.0	-	0.0	**0.0**
Washington	2.9	2.9	2.9	2.9	3.2	4.9	**3.6**
West Virginia	0.1	0.1	0.1	0.1	0.1	0.1	**0.1**
Wisconsin	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Wyoming	-	-	-	-	-	-	**-**
Puerto Rico	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Virgin Islands	4.5	4.5	4.5	4.5	5.7	5.7	**5.7**
Guam	1.1	1.1	1.1	1.1	0.5	0.5	**0.5**
American Samoa					---	---	**---**
Northern Marianas	0.0	0.0	0.0	0.0	6.0	6.0	**6.0**

See footnotes at end of table.

Table A. Percent of birth records on which specified items were not stated: United States and each State and territory, 2004 -- Con.

Area	Items common to both the 1989 and 2003 revisions of the U.S. Standard Certificate of Live Birth						
	Obstetric Procedures		Congenital Anomalies				
	Induction of Labor	Tocolysis	Anen-cephalus	Spina Bifida	Ompha-locele/Gas-tioschisis	Cleft Lip/ Palate	Down Syndrome
Total of reporting areas [1]	0.2	0.3	1.2	1.2		1.2	**1.2**
Alabama	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Alaska	6.4	6.5	11.9	11.9	11.9	11.9	**11.9**
Arizona	0.0	0.0	0.3	0.3	0.3	0.3	**0.3**
Arkansas	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
California	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Colorado	-	-	0.1	0.1	0.1	0.1	**0.1**
Connecticut	0.0	0.0	0.4	0.4	0.4	0.4	**0.4**
Delaware	-	-	-	-	-	-	**-**
District of Columbia	-	-	-	-	-	-	**-**
Florida [2]	0.2	0.0	0.5	0.5	0.5	0.5	**0.5**
Georgia	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Hawaii	0.0	0.0	-	-	-	-	**-**
Idaho	0.5	0.6	1.3	1.3	1.3	1.3	**1.3**
Illinois	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Indiana	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Iowa	0.0	0.0	0.1	0.1	0.1	0.1	**0.1**
Kansas	0.0	0.0	0.1	0.1	0.1	0.1	**0.1**
Kentucky	0.4	0.6	0.0	0.0	0.0	0.0	**0.0**
Louisiana	0.1	0.1	0.1	0.1	0.1	0.1	**0.1**
Maine	0.0	0.0	0.1	0.1	0.1	0.1	**0.1**
Maryland	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Massachusetts	0.2	0.2	0.6	0.6	0.6	0.6	**0.6**
Michigan	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Minnesota	1.6	1.6	4.6	4.6	4.6	4.6	**4.6**
Mississippi	0.0	0.0	0.1	0.1	0.1	0.1	**0.1**
Missouri	0.1	0.1	0.1	0.1	0.1	0.1	**0.1**
Montana	-	-	-	-	-	-	**-**
Nebraska	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Nevada	2.2	2.2	4.5	4.5	4.5	4.5	**4.5**
New Hampshire [2]	0.5	0.8	1.0	1.0	1.0	1.0	**1.0**
New Jersey	0.0	0.0	0.4	0.4	0.4	0.4	**0.4**
New Mexico	0.0	0.0	-	-	-	-	**-**
New York (excluding NYC)	0.0	1.8	2.5	2.5	2.5	2.5	**2.5**
New York City	0.0	0.0	0.2	0.2	0.2	0.2	**0.2**
North Carolina	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
North Dakota	0.4	0.4	0.4	0.4	0.4	0.4	**0.4**
Ohio	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Oklahoma	1.8	1.8	8.6	8.6	8.6	8.6	**8.6**
Oregon	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Pennsylvania	-	0.0	0.0	0.0	0.0	0.0	**0.0**
Rhode Island	2.0	2.0	3.9	3.9	3.9	3.9	**3.9**
South Carolina	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
South Dakota	-	-	0.0	0.0	0.0	0.0	**0.0**
Tennessee	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Texas	0.1	0.1	0.1	0.1	0.1	0.1	**0.1**
Utah	0.0	0.0	0.1	0.1	0.1	0.1	**0.1**
Vermont	0.1	0.2	0.2	0.2	0.2	0.2	**0.2**
Virginia	-	0.0	0.0	0.0	0.0	0.0	**0.0**
Washington	3.2	3.6	2.9	2.9	2.9	2.9	**2.9**
West Virginia	0.1	0.2	0.1	0.1	0.1	0.1	**0.1**
Wisconsin	0.0	0.0	0.1	0.1	0.1	0.1	**0.1**
Wyoming	-	-	0.0	0.0	0.0	0.0	**0.0**
Puerto Rico	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Virgin Islands	1.9	1.9	6.0	6.0	6.0	6.0	**6.0**
Guam	0.7	0.7	0.8	0.8	0.8	0.8	**0.8**
American Samoa	---	---	---	---	---	---	**---**
Northern Marianas	3.8	3.8	6.0	6.0	6.0	6.0	**6.0**

See footnotes at end of table.

Table A. Percent of birth records on which specified items were not stated: United States and each State and territory, 2004 -- Con.

Area	Items based on the 2003 US. Standard Certificate of Live Birth					
	Pregnancy Risk Factors	Obstetric Procedures	Onset of Labor	Charac-teristics of Labor and Delivery	Method of Delivery	Congenital Anomalies
Total of reporting areas [1]	---	---	---	---	---	---
Alabama	---	---	---	---	---	---
Alaska	---	---	---	---	---	---
Arizona	---	---	---	---	---	---
Arkansas	---	---	---	---	---	---
California	---	---	---	---	---	---
Colorado	---	---	---	---	---	---
Connecticut	---	---	---	---	---	---
Delaware	---	---	---	---	---	---
District of Columbia	---	---	---	---	---	---
Florida [2]	---	---	---	---	---	---
Georgia	---	---	---	---	---	---
Hawaii	---	---	---	---	---	---
Idaho	3.9	3.7	3.7	3.6	3.3	4.4
Illinois	---	---	---	---	---	---
Indiana	---	---	---	---	---	---
Iowa	---	---	---	---	---	---
Kansas	---	---	---	---	---	---
Kentucky	4.7	4.9	5.1	4.7	4.6	4.3
Louisiana	---	---	---	---	---	---
Maine	---	---	---	---	---	---
Maryland	---	---	---	---	---	---
Massachusetts	---	---	---	---	---	---
Michigan	---	---	---	---	---	---
Minnesota	---	---	---	---	---	---
Mississippi	---	---	---	---	---	---
Missouri	---	---	---	---	---	---
Montana	---	---	---	---	---	---
Nebraska	---	---	---	---	---	---
Nevada	---	---	---	---	---	---
New Hampshire [2]	---	---	---	---	---	---
New Jersey	---	---	---	---	---	---
New Mexico	---	---	---	---	---	---
New York(excluding NYC)	8.3	8.6	9.7	6.8	7.3	9.3
New York City	---	---	---	---	---	---
North Carolina	---	---	---	---	---	---
North Dakota	---	---	---	---	---	---
Ohio	---	---	---	---	---	---
Oklahoma	---	---	---	---	---	---
Oregon	---	---	---	---	---	---
Pennsylvania	2.2	2.2	2.2	2.2	2.3	2.2
Rhode Island	---	---	---	---	---	---
South Carolina	5.0	5.0	5.0	5.0	5.0	5.0
South Dakota	---	---	---	---	---	---
Tennessee	0.6	0.6	0.6	0.6	0.6	0.6
Texas	---	---	---	---	---	---
Utah	---	---	---	---	---	---
Vermont	---	---	---	---	---	---
Virginia	---	---	---	---	---	---
Washington	4.5	5.1	5.1	4.7	1.5	4.4
West Virginia	---	---	---	---	---	---
Wisconsin	---	---	---	---	---	---
Wyoming	---	---	---	---	---	---
Puerto Rico	---	---	---	---	---	---
Virgin Islands	---	---	---	---	---	---
Guam	---	---	---	---	---	---
American Samoa	---	---	---	---	---	---
Northern Marianas	---	---	---	---	---	---

See footnotes at end of table.

Table A. Percent of birth records on which specified items were not stated: United States and each State and territory, 2004 -- Con.

Area	Item based on the 1989 U.S. Standard Certificate of Live Birth					
	Alcohol use	Medical Risk Factors	Obstetric Procedures	Complica-tions of Labor/ Delivery	Abnormal Conditions of the Newborn	Congenital Anomalies
Total of reporting areas [1]	0.5	0.9	0.7	0.8	0.3	1.7
Alabama		0.6	0.6	0.6	0.0	0.6
Alaska	0.0	9.9	6.8	9.9	11.5	12.3
Arizona	1.1	0.0	0.0	0.0	0.0	0.3
Arkansas	1.8	1.3	1.3	1.3	0.0	1.3
California	0.4	0.0	0.0	0.0	0.0	0.0
Colorado	---	0.0	0.0	0.0	-	0.1
Connecticut	0.2	0.8	0.7	0.7	0.3	1.0
Delaware	0.1	2.5	2.5	2.5	-	2.5
District of Columbia	0.0	0.1	0.1	0.1	-	0.1
Florida [2]	0.1	---	---	---	---	---
Georgia	---	1.6	1.1	1.1	0.0	1.1
Hawaii	0.3	0.0	0.0	0.0	-	0.0
Idaho	0.1	---	---	---	---	---
Illinois	---	0.1	0.1	0.1	0.0	0.1
Indiana	0.1	1.0	1.0	1.0	0.0	1.0
Iowa	0.1	0.1	0.0	0.1	0.1	0.1
Kansas [10]	0.1	0.1	0.0	0.1	0.0	0.1
Kentucky	0.1	---	---	---	---	---
Louisiana	---	0.1	0.2	0.2	0.1	0.2
Maine	0.2	1.1	1.1	1.1	0.0	1.1
Maryland	0.2	0.3	0.3	0.3	0.0	0.3
Massachusetts	0.1	0.4	0.4	0.4	0.2	0.8
Michigan	0.2	0.0	0.0	0.0	0.0	0.0
Minnesota	3.0	3.0	1.6	3.0	4.5	4.6
Mississippi	2.4	4.0	4.0	4.0	0.1	4.0
Missouri	0.2	0.1	0.1	0.1	0.1	0.1
Montana	0.4	0.3	0.3	0.3	-	0.3
Nebraska [11]	0.9	0.1	0.0	0.1	0.0	0.0
Nevada	0.0	3.0	2.3	3.0	2.4	4.7
New Hampshire [2]	2.2	---	---	---	---	---
New Jersey	---	1.9	1.7	1.8	0.1	2.0
New Mexico	0.2	0.1	0.0	0.0	0.0	-
New York(excluding NYC)	1.8	---	---	---	---	---
New York City [12]	---	4.2	4.1	4.2	0.2	4.3
North Carolina	0.1	0.3	0.3	0.3	0.0	0.3
North Dakota	0.1	0.4	0.4	0.4	0.5	0.4
Ohio	0.8	0.6	0.6	0.6	0.0	0.6
Oklahoma	0.5	4.9	1.8	5.4	8.2	8.6
Oregon	0.9	2.3	1.6	1.6	0.0	1.6
Pennsylvania	1.0	---	---	---	---	---
Rhode Island	---	1.9	2.0	1.9	4.1	3.9
South Carolina	2.9	---	---	---	---	---
South Dakota	---	0.0	0.0	0.0	0.0	0.0
Tennessee	0.1	---	---	---	---	---
Texas [11,13,14]	---	0.9	0.1	0.0	0.1	0.1
Utah	0.2	0.2	0.1	0.1	0.1	0.2
Vermont	1.0	5.5	5.5	5.5	0.0	5.5
Virginia	0.5	1.1	1.1	1.1	0.1	1.1
Washington	0.0	---	---	---	---	---
West Virginia	---	1.7	1.7	1.7	0.2	1.7
Wisconsin [15]	0.4	0.0	0.0	0.0	0.1	0.1
Wyoming	0.2	0.3	0.3	0.3	-	0.3
	0.3					
Puerto Rico		0.0	0.0	0.0	0.0	0.0
Virgin Islands	0.0	4.5	1.9	5.7	6.7	6.0
Guam	1.6	1.1	0.7	0.5	0.6	0.8
American Samoa	1.7	---	---	---	---	---
Northern Marianas	---	-	3.8	6.0	6.1	6.0
	-					

See footnotes at end of table.

0.0 Quantity more than zero but less than 0.05.
---Data not available.
- Quantity zero.

[1] Excludes data for Puerto Rico, Virgin Islands, Guam, American Samoa, and the Commonwealth of the Northern Marianas.
[2] Florida and New Hampshire implemented the 2003 U.S. Standard Certificate of Live Birth in 2004, but after January 1, 2004.
[3] Includes data for states based on the 1989 U.S. Standard Certificate of Live birth; excludes data for states based on the 2003 U.S. Standard Certificate of Live Birth.
[4] Includes data for states based on the 2003 U.S. Standard Certificate of Live birth; excludes data from states based on the 1989 U.S. Standard Certificate of Live Birth.
[5] California reports date last normal menses began but does not report the clinical estimate of gestation.
[6] Not stated levels for states which implemented the 2003 U.S. Standard Certificate of Live Birth are derived from the item "Final route and method of delivery" only.
[7] The Florida tobacco use item is not consistent with the tobacco use items on either the 1989 or 2003 U.S Standard Certificates of Live Birth.
[8] Indiana reports tobacco use but does not report the average number of cigarettes smoked per day in standard categories.
[9] South Dakota and the Commonwealth of the Northern Marianas report tobacco use but do not report the average number of cigarettes smoked per day.
[10] Kansas does not report the Medical Risk Factor "Rh sensitization."
[11] Nebraska and Texas do not report the abnormal condition of the newborn "birth injury."
[12] New York City does not report the Abnormal Conditions of the Newborn "assisted ventilation less then 30 minutes and assisted ventilation of 30 minutes or more."
[13] Texas does not report the Medical Risk Factors "genital herpes and uterine bleeding."
[14] Texas does not report the Abnormal Conditions of the Newborn "anesthetic complications and fetal distress."
[15] Wisconsin does not report the Abnormal Condition of the Newborn "fetal alcohol syndrome."

Table B. Births by place of occurrence and residence for births occurring in the 50 states, the District of Columbia, and U.S. territories, 2004

Area	Number live births	
	Occurrence	Residence
United States 1/	4,118,907	4,112,052
Alabama	58,383	59,510
Alaska	10,268	10,338
Arizona	93,876	93,663
Arkansas	37,840	38,573
California	545,758	544,843
Colorado	68,797	68,503
Connecticut	42,545	42,095
Delaware	12,080	11,369
District of Columbia	14,794	7,933
Florida	218,218	218,053
Georgia	140,117	138,849
Hawaii	18,297	18,281
Idaho	21,949	22,532
Illinois	177,417	180,778
Indiana	87,942	87,142
Iowa	38,527	38,438
Kansas	40,449	39,669
Kentucky	54,085	55,720
Louisiana	65,572	65,369
Maine	13,733	13,944
Maryland	70,538	74,628
Massachusetts	79,405	78,484
Michigan	128,585	129,776
Minnesota	70,618	70,624
Mississippi	41,562	42,827
Missouri	78,591	77,765
Montana	11,526	11,519
Nebraska	26,446	26,332
Nevada	34,780	35,200
New Hampshire	14,198	14,565
New Jersey	112,232	115,253
New Mexico	27,798	28,384
New York	251,562	249,947
North Carolina	120,588	119,847
North Dakota	9,408	8,189
Ohio	149,481	148,954
Oklahoma	50,223	51,306
Oregon	46,454	45,678
Pennsylvania	144,498	144,748
Rhode Island	13,582	12,779
South Carolina	54,232	56,590
South Dakota	11,803	11,338
Tennessee	84,855	79,642
Texas	387,337	381,293
Utah	51,835	50,670
Vermont	6,262	6,599
Virginia	101,826	103,933
Washington	81,390	81,747
West Virginia	21,305	20,880
Wisconsin	69,014	70,146
Wyoming	6,326	6,807
Births occurring to US territorial residents		
Puerto Rico	-	51127
Virgin Islands	-	1574
Guam	-	3410
American Samoa	-	1714
Northern Marianas	-	1355

--- Data not available.
1/ Excludes data for the territories and foreign residents

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, 1900-1932, and United States, 1900-2004

[2004] National Center for Health Statistics. Postcensal estimates of the resident population of the United States as of July 1, 2004, by year, state and county, age, bridged race, sex, and Hispanic origin (vintage 2004). File pcen_v2004.txt (ASCII). Released September 8, 2005. Available at: http://www.cdc.gov/nchs/about/major/dvs/popbridge/datadoc.htm

[2004] US Census Bureau. Monthly postcensal resident population plus Armed Forces overseas, by single year of age, sex, race, and Hispanic origin. Available at: http://www.census.gov/popest/national/asrh/2004_nat_af.html

[2003] National Center for Health Statistics. Postcensal estimates of the resident population of the United States as of July 1, 2003, by year, state and county, age, bridged race, sex, and Hispanic origin (vintage 2003). File pcen_v2003_y03.txt (ASCII). Released September 14, 2004. Available at: http://www.cdc.gov/nchs/about/major/dvs/popbridge/datadoc.htm

[2002] National Center for Health. Postcensal estimates of the resident population of the United States as of July 1, 2002, by state and county, age, bridged race, sex, and Hispanic origin. File pcen v2002.txt. Internet released, August 1, 2003. Available at: http://www.cdc.gov/nchs/about/major/dvs/popbridge/popbridge.htm.

[2001] National Center for Health. Postcensal estimates of the resident population of the United States as of July 1, 2001, by state and county, age, bridged race, sex, and Hispanic origin. File pcen v2002.txt. Internet released, August 1, 2003. Available at: http://www.cdc.gov/nchs/about/major/dvs/popbridge/popbridge.htm.

[2001] National Center for Health. Postcensal estimates of the resident population of the United States as of July 1, 2001, by age, bridged race, sex, and Hispanic origin. File pcen v2001.txt. Internet released, January 12, 2003. Available at: http://www.cdc.gov/nchs/about/major/dvs/popbridge/popbridge.htm.

[2000] National Center for Health Statistics. Estimates of the April 1, 2000, United States resident population by state and county, age, sex, bridged race, and Hispanic origin, prepared under a collaborative arrangement with the U.S. Census Bureau. File br040100.txt. Internet released, January 12, 2003. Available at: http://www.cdc.gov/nchs/about/major/dvs/popbridge/popbridge.htm.

[1999] National Center for Health Statistics. Intercensal estimates of the July 1, 1999, United States resident population by state and county, age, sex, bridged race, and Hispanic origin, prepared under a collaborative arrangement with the U.S. Census Bureau. File icen1999.txt. Internet released, April 15, 2003. Available at: http://www.cdc.gov/nchs/about/major/dvs/popbridge/popbridge.htm.

[1998] National Center for Health Statistics. Intercensal estimates of the July 1,

1998, United States resident population by state and county, age, sex, bridged race, and Hispanic origin, prepared under a collaborative arrangement with the U.S. Census Bureau. File icen1999.txt. Internet released, April 15, 2003. Available at: http://www.cdc.gov/nchs/about/major/dvs/popbridge/popbridge.htm.

[1997] National Center for Health Statistics. Intercensal estimates of the July 1, 1997, United States resident population by state and county, age, sex, bridged race, and Hispanic origin, prepared under a collaborative arrangement with the U.S. Census Bureau. File icen1997.txt. Internet released, April 15, 2003. Available at: http://www.cdc.gov/nchs/about/major/dvs/popbridge/popbridge.htm.

[1996] National Center for Health Statistics. Intercensal estimates of the July 1, 1996, United States resident population by state and county, age, sex, bridged race, and Hispanic origin, prepared under a collaborative arrangement with the U.S. Census Bureau. File icen1996.txt. Internet released, April 15, 2003. Available at: http://www.cdc.gov/nchs/about/major/dvs/popbridge/popbridge.htm.

[1995] National Center for Health Statistics. Intercensal estimates of the July 1, 1995, United States resident population by state and county, age, sex, bridged race, and Hispanic origin, prepared under a collaborative arrangement with the U.S. Census Bureau. File icen1995.txt. Internet released, April 15, 2003. Available at: http://www.cdc.gov/nchs/about/major/dvs/popbridge/popbridge.htm.

[1994] National Center for Health Statistics. Intercensal estimates of the July 1, 1994, United States resident population by state and county, age, sex, bridged race, and Hispanic origin, prepared under a collaborative arrangement with the U.S. Census Bureau. File icen1994.txt. Internet released, April 15, 2003. Available at: http://www.cdc.gov/nchs/about/major/dvs/popbridge/popbridge.htm.

[1993] National Center for Health Statistics. Intercensal estimates of the July 1, 1993, United States resident population state and county, by age, sex, bridged race, and Hispanic origin, prepared under a collaborative arrangement with the U.S. Census Bureau. File icen1993.txt. Internet released, April 15, 2003. Available at: http://www.cdc.gov/nchs/about/major/dvs/popbridge/popbridge.htm.

[1992] National Center for Health Statistics. Intercensal estimates of the July 1, 1992, United States resident population by state and county, age, sex, bridged race, and Hispanic origin, prepared under a collaborative arrangement with the U.S. Census Bureau. File icen1992.txt. Internet released, April 15, 2003. Available at: http://www.cdc.gov/nchs/about/major/dvs/popbridge/popbridge.htm.

[1991] National Center for Health Statistics. Intercensal estimates of the July 1, 1991, United States resident population by state and county, age, sex, bridged race, and Hispanic origin, prepared under a collaborative arrangement with the U.S. Census Bureau. File icen1991.txt. Internet released, April 15, 2003. Available at: http://www.cdc.gov/nchs/about/major/dvs/popbridge/popbridge.htm.

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Table E. Percentage net undercount, by age, sex, and race/Hispanic origin: United States, April 1, 2000	
Characteristic	Estimate (%)
Total	-0.49
Age/sex	
10–17 Male and female	-1.32
18–29 Male	1.12
18–29 Female	-1.39
30–49 Male	2.01
30–49 Female	-0.60
50 years and over male	-0.80
50 years and over female	-2.53
Race/Hispanic origin	
Non-Hispanic white	-1.13
Non-Hispanic black	1.84
Hispanic	0.71

SOURCE: Fenstermaker D, Haines D. Summary of estimated net coverage. DSSD A.C.E. Revision II Memorandum Series #PP-54. Washington: U.S. Census Bureau. 2002.

Table 4–1. Population of birth- and death-registration states, 1900–1932,

and United States, 1900–2004

[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 States2/	Population residing in area	Number of States2/	Population residing in area
2004	293,906,517	293,655,404							
2003	291,028,156	290,810,789	1950	151,132,000	150,697,361	. . .	. . .	. . .	. . .
2002	288,600,204	288,368,706	1949	149,188,000	148,665,000	. . .	. . .	. . .	. . .
2001	285,024,000	284,796,887	1948	146,631,000	146,093,000	. . .	. . .	. . .	. . .
2000	281,652,000	281,421,906	1947	144,126,000	143,446,000	. . .	. . .	. . .	. . .
1999	279,294,713	279,040,168	1946	141,389,000	140,054,000	. . .	. . .	. . .	. . .
1998	276,115,288	275,854,104	1945	139,928,000	132,481,000	. . .	. . .	. . .	. . .
1997	272,911,760	272,646,925	1944	138,397,000	132,885,000	. . .	. . .	. . .	. . .
1996	269,667,391	269,394,284	1943	136,739,000	134,245,000	. . .	. . .	. . .	. . .
1995	266,557,091	266,278,393	1942	134,860,000	133,920,000	. . .	. . .	. . .	. . .
1994	263,435,673	263,125,821	1941	133,402,000	133,121,000	. . .	. . .	. . .	. . .
1993	260,255,352	259,918,588	1940	131,820,000	131,669,275	. . .	. . .	. . .	. . .
1992	256,894,189	256,514,224	1939	131,028,000	130,879,718	. . .	. . .	. . .	. . .
1991	253,492,503	252,980,941	1938	129,969,000	129,824,939	. . .	. . .	. . .	. . .
1990	249,225,000	248,709,873	1937	128,961,000	128,824,829	. . .	. . .	. . .	. . .
1989	247,342,000	246,819,000	1936	128,181,000	128,053,180	. . .	. . .	. . .	. . .
1988	245,021,000	244,499,000	1935	127,362,000	127,250,232	. . .	. . .	. . .	. . .
1987	242,804,000	242,289,000	1934	126,485,000	126,373,773	. . .	. . .	. . .	. . .
1986	240,651,000	240,133,000	1933	125,690,000	125,578,763	. . .	. . .	. . .	. . .
1985	238,466,000	237,924,000	1932	124,949,000	124,840,471	47	118,903,899	47	118,903,899
1984	236,348,000	235,825,000	1931	124,149,000	124,039,648	46	117,455,229	47	118,148,987
1983	234,307,000	233,792,000	1930	123,188,000	123,076,741	46	116,544,946	47	117,238,278
1982	232,188,000	231,664,000	1929		121,769,939	46	115,317,450	46	115,317,450
1981	229,966,000	229,466,000	1928		120,501,115	44	113,636,160	44	113,636,160
1980	227,061,000	226,545,805	1927		119,038,062	40	104,320,830	42	107,084,532
1979	225,055,000	224,567,000	1926		117,399,225	35	90,400,590	41	103,822,683
1978	222,585,000	222,095,000	1925		115,831,963	33	88,294,564	40	102,031,555
1977	220,239,000	219,760,000	1924		114,113,463	33	87,000,295	39	99,318,098
1976	218,035,000	217,563,000	1923		111,949,945	30	81,072,123	38	96,788,197
1975	215,973,000	215,465,000	1922		110,054,778	30	79,560,746	37	92,702,901
1974	213,854,000	213,342,000	1921		108,541,489	27	70,807,090	34	87,814,447

1973	211,909,000	211,357,000	1920		106,466,420	23	63,597,307	34	86,079,263
1972	209,896,000	209,284,000	1919	105,063,000	104,512,110	22	61,212,076	33	83,157,982
1971	207,661,000	206,827,000	1918	104,550,000	103,202,801	20	55,153,782	30	79,008,412
1970	204,270,000	203,211,926	1917	103,414,000	103,265,913	20	55,197,952	27	70,234,775
1969	202,677,000	201,385,000	1916		101,965,984	11	32,944,013	26	66,971,177
1968	200,706,000	199,399,000	1915		100,549,013	10	31,096,697	24	61,894,847
1967	198,712,000	197,457,000	1914		99,117,567	...	...	24	60,963,309
1966	196,560,000	195,576,000	1913		97,226,814	...	...	23	58,156,740
1965	194,303,000	193,526,000	1912		95,331,300	...	...	22	54,847,700
1964	191,889,000	191,141,000	1911		93,867,814	...	...	22	53,929,644
1963	189,242,000	188,483,000	1910		92,406,536	...	...	20	47,470,437
1962	186,538,000	185,771,000	1909		90,491,525	...	...	18	44,223,513
1961	183,691,000	182,992,000	1908		88,708,976	...	...	17	38,634,759
1960	179,933,000	179,323,175	1907		87,000,271	...	...	15	34,552,837
1959	177,264,000	176,513,000	1906		85,436,556	...	...	15	33,782,288
1958	174,141,000	173,320,000	1905		83,819,666	...	...	10	21,767,980
1957	171,274,000	170,371,000	1904		82,164,974	...	...	10	21,332,076
1956	168,221,000	167,306,000	1903		80,632,152	...	...	10	20,943,222
1955	165,275,000	164,308,000	1902		79,160,196	...	...	10	20,582,907
1954	162,391,000	161,164,000	1901		77,585,128	...	...	10	20,237,453
1953	159,565,000	158,242,000	1900		76,094,134	...	...	10	19,965,446
1952	156,954,000	155,687,000							
1951	154,287,000	153,310,000							

- - - Data not available.
... Category not applicable.

1/ Alaska included beginning 1959 and Hawaii, 1960.

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

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

Table 4-2. Estimated total population by race, and estimated female population by age and race: United States, 2004

[Populations estimated as of July 1]

Age	All races	White	Black	American Indian	Asian or Pacific Islander
Total population	293,655,404	238,268,102	38,600,765	3,148,484	13,638,053
Female population					
15-44 years	62,033,402	48,758,090	9,115,649	745,279	3,414,384
10-14 years	10,314,017	7,970,814	1,749,557	149,173	444,473
15-19 years	10,094,408	7,882,326	1,623,541	146,719	441,822
15-17 years	6,074,126	4,730,761	991,660	88,794	262,911
18-19 years	4,020,282	3,151,565	631,881	57,925	178,911
20-24 years	10,168,314	7,948,811	1,569,086	137,971	512,446
25-29 years	9,566,092	7,424,518	1,427,396	115,539	598,639
30-34 years	10,129,814	7,877,175	1,458,754	111,792	682,093
35-39 years	10,481,803	8,290,818	1,472,528	111,698	606,759
40-44 years	11,592,971	9,334,442	1,564,344	121,560	572,625
45-49 years	11,204,882	9,126,191	1,442,853	111,542	524,296

NOTES: These population counts are estimated based on the 2000 census; see "Technical Notes." Race categories are consistent with the 1977 Office of Management and Budget (OMB) standards. The multiple-race population estimates were bridged to the single race categories of the 1977 OMB standards for comparability with the birth data; see "Technical Notes."

SOURCE: U.S. Census Bureau. See reference 41.

Table 4-3. 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, 2004

[Populations estimated as of July 1]

	Hispanic					Non-Hispanic		
Age	Total	Mexican	Puerto Rican	Cuban	Other Hispanic[1]	Total[2]	White	Black
Total population	41,322,073	27,239,634	3,796,668	1,615,256	8,670,410	252,333,331	199,775,516	36,921,613
Female population								
15-44 years	9,675,716	6,342,530	895,458	280,672	2,157,027	52,357,686	39,792,952	8,690,960
10-14 years	1,849,239	1,287,209	192,908	47,645	321,475	8,464,778	6,270,957	1,661,367
15-19 years	1,610,907	1,063,976	169,131	36,712	341,085	8,483,501	6,398,834	1,550,705
15-17 years	978,802	643,799	101,899	25,850	207,252	5,095,324	3,830,286	946,674
18-19 years	632,105	420,177	67,232	10,862	133,833	3,388,177	2,568,548	604,031
20-24 years	1,692,204	1,152,713	140,572	32,568	366,353	8,476,110	6,383,764	1,495,431
25-29 years	1,746,376	1,187,946	149,086	42,753	366,575	7,819,716	5,804,787	1,350,322
30-34 years	1,707,611	1,143,451	149,322	46,282	368,555	8,422,203	6,289,881	1,384,303
35-39 years	1,531,559	958,065	144,142	61,685	367,660	8,950,244	6,868,928	1,405,377
40-44 years	1,387,059	836,379	143,205	60,672	346,799	10,205,912	8,046,758	1,504,822
45-49 years	1,124,013	632,549	121,460	53,200	316,809	10,080,869	8,082,874	1,394,156

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

2 Includes races other than white and black.

NOTES: These population counts are estimated based on the 2000 census; see "Technical Notes." Race categories are consistent with the 1977 Office of Management and Budget (OMB) standards. The multiple-race population estimates were bridged to the single race categories of the 1977 OMB standards for comparability with the birth data; see "Technical Notes."

SOURCE: U.S. Census Bureau. See reference 44.

4-4. Estimated total population and female population aged 15-44 years: United States, each state, and territory: July 1, 2004

Geographic area	Total population	Females15-44 years
United States	293,655,404	62,033,402
Alabama	4,530,182	953,205
Alaska	655,435	138,894
Arizona	5,743,834	1,178,796
Arkansas	2,752,629	564,382
California	35,893,799	7,737,852
Colorado	4,601,403	995,583
Connecticut	3,503,604	715,420
Delaware	830,364	178,248
District of Columbia	553,523	136,276
Florida	17,397,161	3,401,004
Georgia	8,829,383	1,980,901
Hawaii	1,262,840	247,068
Idaho	1,393,262	291,644
Illinois	12,713,634	2,711,823
Indiana	6,237,569	1,300,718
Iowa	2,954,451	602,688
Kansas	2,735,502	568,540
Kentucky	4,145,922	875,838
Louisiana	4,515,770	980,207
Maine	1,317,253	266,261
Maryland	5,558,058	1,197,939
Massachusetts	6,416,505	1,389,346
Michigan	10,112,620	2,112,016
Minnesota	5,100,958	1,095,018
Mississippi	2,902,966	627,018
Missouri	5,754,618	1,209,678
Montana	926,865	183,589
Nebraska	1,747,214	362,935
Nevada	2,334,771	484,917
New Hampshire	1,299,500	272,632
New Jersey	8,698,879	1,796,444
New Mexico	1,903,289	394,725
New York	19,227,088	4,119,291
North Carolina	8,541,221	1,814,855
North Dakota	634,366	129,654
Ohio	11,459,011	2,375,500
Oklahoma	3,523,553	730,010
Oregon	3,594,586	738,861
Pennsylvania	12,406,292	2,493,556
Rhode Island	1,080,632	232,239
South Carolina	4,198,068	889,545
South Dakota	770,883	156,547
Tennessee	5,900,962	1,255,897
Texas	22,490,022	4,929,807
Utah	2,389,039	549,253

Vermont	621,394	126,655
Virginia	7,459,827	1,599,066
Washington	6,203,788	1,324,693
West Virginia	1,815,354	357,916
Wisconsin	5,509,026	1,156,113
Wyoming	506,529	102,339
Puerto Rico	3,894,855	853,843
Virgin Islands	108,775	22,581
Guam	166,090	37,124
American Samoa	57,902	12,946
Northern Marianas	78,252	31,112

Source: National Center for Health Statistics. Unpublished estimates of the July 1, 2004, United States population by age, sex, race, and Hispanic origin, prepared under a collaborative arrangement with the U.S. Census Bureau, 2004.

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 2004 are based on records of deaths that occurred during 2004 and were received as of March 31, 2006. The U.S. Standard Certificate of Death—which is used as a model by the states—was revised in 2003 (38). Prior to 2003, the Standard Certificate of Death had not been revised since 1989. This report includes data for 10 states (California, Idaho, Michigan, Montana, New Jersey, New York, Oklahoma, South Dakota, Washington, and Wyoming) that used the 2003 revision of the U.S. Standard Certificate of Death in 2004 for the entire year, two states (New Hampshire and Connecticut) that implemented the 2003 revision for part of 2004, and 38 states and the District of Columbia that collected and reported death data in 2004 based on the 1989 revision of the U.S. Standard Certificate of Death. Data for New Hampshire was collected and reported using the 1989 revision until mid-April, which is when the state began using the 2003 revision. Connecticut began using the 2003 revision in early 2004 but was unable to transmit the data to NCHS in the revised format; therefore, Connecticut converted data received on revised certificates into the old format and layout. The 1989 and 2003 revisions are described in detail elsewhere (38–41).

Because most of the items presented in this report appear largely comparable despite changes to item wording and format in the 2003 revision, data from both groups of states are combined unless otherwise stated. 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 NCHS through the Vital Statistics Cooperative Program (VSCP) and from copies of the original certificates received by NCHS from the state registration offices. In 2004, all the states and the District of Columbia participated in this program and submitted part or all of the mortality data for 2004 in electronic data files to NCHS. Except for Illinois and West Virginia, all areas provided precoded medical (cause-of-death) data to NCHS. For 2004, 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. 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) (8). For earlier years, causes of death were classified according to the revisions then in use: 1979–1998, Ninth Revision; 1968–1978, Eighth Revision, adapted for use in the United States; 1958–1967, Seventh Revision; and 1949–1957, Sixth Revision.

Changes in classification of causes of death that are 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 and independent tabulations (22–24,42–44).

Rules for coding cause(s) of death may sometimes require modification when evidence suggests that such modifications will improve the quality of cause-of-death data. Prior to 1999, such modifications were made only when a new revision of the ICD was implemented. A process for updating the ICD was introduced with ICD–10 that allows for mid-revision changes. These changes, however, may affect comparability of data between years for select causes of death. Minor changes may be implemented every year, whereas major changes may be implemented every 3 years (e.g., 2003 data year).

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* (45,46), which includes rules for selecting the underlying cause of death for tabulation purposes, definitions, tabulation lists, and regulations on the use of the ICD.

Before 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) (47), 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) (48,49) was introduced in order 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 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 2004, all of the Nation's death records were multiple-cause coded using SuperMICAR.

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" (8). 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 shown in NCHS multiple cause-of-death statistics (50–52).

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 (updated October 2002) (53). 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 2004" (30).

Leading cause-of-death trends, discussed in this report, are based on cause-of-death data according to ICD–10 for 1999–2004, 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" (24) and "Deaths: Final Data for 1999" (25). 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 1979–1998 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/hist001r.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 (23,24). 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 caused by 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

The 2003 revision of the U.S. Standard Certificate of Death allows the reporting of more than one race (multiple races) (38). This change was implemented to reflect the increasing diversity of the population of the United States and to be consistent with the decennial census. The race and ethnicity items on the revised certificate are compliant with the 1997 revision of the Race and Ethnic Standards for Federal Statistics and Administrative Reporting. These were issued by the Office of Management and Budget (OMB), and have replaced the previous standards that were issued in 1977. The new standards mandate the collection of more than one race where applicable for Federal data (9). In addition, the new certificate is compliant with the OMB-mandated minimum set of five races to be reported for Federal data. Multiple race includes any combination of white, black or African American, American Indian or Alaska Native (AIAN), Asian, and Native Hawaiian or Other Pacific Islander (NHOPI). If two or more specific subgroups such as Korean and Chinese are reported, these count as a single race of Asian rather than as multiple races.

In 2004, multiple race was reported on the revised death certificates of California, Idaho, Michigan, Montana, New Hampshire, New Jersey, New York, Oklahoma, South Dakota, Washington, and Wyoming as well as on the unrevised certificates of Hawaii, Maine, Minnesota, and Wisconsin (Table I). Because New Hampshire did not report multiple race for the entire data year, the following computations exclude data for New Hampshire. More than one race was reported for 0.5 percent of the records in the 14 reporting states. Although still uncommon, multiple races were reported more often for younger decedents than for older decedents (2.4 percent of decedents under 25 years of age versus 0.7 percent of decedents between 25 and 64 years of age and 0.3 percent of decedents 65 years of age and older). No decedent was reported as having more than four races. Of those records where more than one race was reported, the NHOPI category was mentioned in combination with another race (49.2 percent) more often than the other categories (white, 0.4; black or African American, 0.9; Asian, 5.1; AIAN, 16.2 percent).

Although Connecticut began using the 2003 revision of the death certificate in early 2004, they were unable to transmit the data to NCHS

Table I. Deaths by race: California, Hawaii, Idaho, Maine, Michigan, Minnesota, Montana, New Jersey, New York, Oklahoma, South Dakota, Washington, Wisconsin, and Wyoming, 2004

[By state of occurrence]

Race	Deaths	Percent of deaths
Total	748,855	100.0
One race	745,433	99.5
White	638,228	85.2
Black	66,691	8.9
Asian	27,159	3.6
American Indian	6,031	0.8
Other[1]	5,958	0.8
NHOPI[2]	1,366	0.2
Two or more races	3,422	0.5
Two races	3,029	0.4
American Indian and white	944	0.1
Asian and white	533	0.1
Asian and NHOPI	507	0.1
NHOPI and white	479	0.1
Black and white	363	0.0
Black and American Indian	123	0.0
Black and Asian	47	0.0
American Indian and Asian	20	0.0
Black and NHOPI	8	*
American Indian and NHOPI	5	*
Three races	382	0.1
Asian, NHOPI, and white	302	0.0
Black, American Indian, and white	44	0.0
Black, Asian, and white	14	*
American Indian, Asian, and white	9	*
American Indian, NHOPI, and white	6	*
Black, American Indian, and Asian	2	*
Black, Asian, and NHOPI	2	*
Black, American Indian, and NHOPI	2	*
American Indian, Asian, and NHOPI	1	*
Four races	11	*
American Indian, Asian, NHOPI, and white	8	*
Black, Asian, NHOPI, and white	3	*

* Figure does not meet standards of reliability or precision; see "Random variation" section.
[1]Includes records for which race was reported as "other." Further processing assigns "other" race to one of the recognized categories. Other race comprises a wide variety of responses; however, the most common is to check "other" and not provide future specification or to report a Hispanic group as a race.
[2]NHOPI is Native Hawaiian or Other Pacific Islander.

in the revised format. Connecticut converted data received on revised certificates into the old format and layout for transmission to NCHS.

Data from the vital records of the remaining 34 states and the District of Columbia are based on the 1989 revision of the U.S. Standard Certificate of Death, which follows the 1977 OMB standard, allowing only a single race to be reported (10,41). In addition, these states report a minimum set of four races as stipulated in the 1977 standard. These are White, Black or African American, American Indian or Alaska Native (AIAN), and Asian or Pacific Islander (API).

In order to provide uniformity and comparability of the data during the transition period, before all or most of the data are available in the new multiple-race format, it was necessary to "bridge" the responses of those for whom more than one race was reported (multiple race) to one, single race. The bridging procedure is similar to the procedure used to bridge multiracial population estimates (12,13). Multiracial decedents are imputed to a single race (either white, black, AIAN, or API) according to their combination of races, Hispanic origin, sex, and age indicated on the death certificate. The imputation procedure is described in detail at http://www.cdc.gov/nchs/data/dvs/Multiple_race_documentation_5-10-04.pdf.

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, AIAN, and 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, AIAN, 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 underreporting on death certificates of AIAN, API, and Hispanic decedents as well as undercounts of these groups in the censuses (16–18,54).

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 (16–18,54). 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 (16–18,54) show that a person self-reported as AIAN 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, undercoverage of minority groups in the census and resultant population estimates introduces biases into death rates by race (16–18,54–56). Unlike the 1990 census, coverage error in the 2000 census was found to be statistically significant only for the non-Hispanic white and non-Hispanic black populations, with the former having been over-counted by approximately 1.13 percent and the latter under-counted by approximately 1.84 percent (55).

The National Longitudinal Mortality Study (NLMS) (17), examined the reliability of race and Hispanic origin reported on approximately 250,000 death certificates with what was reported on a total of 26 CPS conducted by the U.S. Bureau of the Census for the years 1979–1985 (18). Agreement between the two sources was found to be excellent for the white and black populations, both exhibiting CPS to death certificate ratios of 1.00. On the other hand, substantial differences were found for other race groups. The ratio of CPS to death certificates was found to be 1.30 for the AIAN population and 1.07 for the API

population, indicating net underreporting on death certificates of 30 percent for the AIAN population and 7 percent for the API population. The ratio of deaths for CPS to death certificates for Hispanics was found to be 1.05 percent, indicating a net underreport on death certificates for the population of 5 percent.

In 2004, data on Central and South American and Other Hispanic origin reflects some processing problems for two areas. New York City and California have fewer records identifying decedents as being of Central and South American origin and more as Other Hispanic origin because literal text reported on the death certificates was not submitted to NCHS. For New York State, records that do not indicate a check in one or more of the Hispanic Origin checkboxes are reported as Non-Hispanic.

Other races and race not stated—Beginning in 1992, all records coded as "Other races" (0.16 percent of the total deaths in 2004) were assigned to the specified race of the previous record. Records for which race was unknown, not stated, or not classifiable (0.16 percent) were assigned the racial designation of the previous record.

Infant and maternal mortality rates—For 1989–2004, 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 (40,57). 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 (58,59).

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 2004, the percentage of infant deaths of unknown origin was 0.9 and the percentage of live births to mothers of unknown origin was 0.8 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 (36,60).

Infant mortality rates calculated from the general mortality file for specified race and Hispanic origin contain errors 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 (36,60). The linked file computes infant mortality rates using the race and Hispanic origin of the mother from the birth certificate in both the numerator and denominator of the rate. In addition, mother's race and Hispanic origin from the birth certificate are considered to be more accurately reported than infant's race and 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 Hispanic origin are 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 (18,60).

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 (61). 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.

For data years 1997–1999, a revised life table methodology was used to construct complete life tables by single years of age that extend to age 100 (62) using a methodology similar to that of the decennial life tables (63). The advantages of the revised 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 (62). Although the revised 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 85 years and over. 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 (64).

Life tables for 2000–2003 used a slight modification of the life table method introduced in 1997. (As a result of an error recently discovered in the originally published 2003 life tables, and because population estimates in single-years for ages 85 and over have become available from the U.S. Census Bureau, the 2003 tables have been re-estimated based on the original 1997 methodology. Likewise, the 2004 life tables are based on the original 1997 methodology. See text below.)

Beginning with the 2004 data year, the methodology developed in 1997 was used without the modification used from 2000–2003, as population estimates in single-years for ages 85 and over became available from the U.S Census Bureau. For data year 2004, pooled 1999–2001 Medicare data were used to model the probability of dying at ages 85 and over.

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 and identifies the

causes of death having the greatest influence, positive or negative, on changes in life expectancy (19,65,66).

Injury mortality by mechanism and intent

In Table 18, injury mortality data are presented using the External cause of injury mortality matrix for ICD–10. 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.).

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 matrix (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, 2002" (6).

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

The list of codes included in drug-induced causes was expanded in the 2003 data year to be more comprehensive. Causes of death attributable to drug-induced mortality include ICD–10 codes D52.1, Drug-induced folate deficiency anemia; D59.0, Drug-induced hemolytic anemia; D59.2, Drug-induced nonautoimmune hemolytic anemia; D61.1, Drug-induced aplastic anemia; D64.2, Secondary sideroblastic anemia due to drugs and toxins; E06.4, Drug-induced thyroiditis; E16.0, Drug-induced hypoglycemia without coma; E23.1, Drug-induced hypopituitarism; E24.2, Drug-induced Cushing's syndrome; E27.3, Drug-induced adrenocortical insufficiency; E66.1, Drug-induced obesity; selected codes from the ICD–10 title Mental and behavioral disorders due to psychoactive substance use, specifically, 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, F19.7–F19.9; G21.1, Other drug-induced secondary parkinsonism; G24.0, Drug-induced dystonia; G25.1, Drug-induced tremor; G25.4, Drug-induced chorea; G25.6, Drug-induced tics and other tics of organic origin; G44.4, Drug-induced headache, not elsewhere classified; G62.0, Drug-induced polyneuropathy; G72.0, Drug-induced myopathy; I95.2, Hypotension due to drugs; J70.2, Acute drug-induced interstitial lung disorders; J70.3, Chronic drug-induced interstitial lung disorders; J70.4, Drug-induced interstitial lung disorder, unspecified; L10.5, Drug-induced pemphigus; L27.0, Generalized skin eruption due to drugs and medicaments; L27.1, Localized skin eruption due to drugs and medicaments; M10.2, Drug-induced gout; M32.0, Drug-induced systemic lupus erythematosus; M80.4, Drug-induced osteoporosis with pathological fracture; M81.4, Drug-induced osteoporosis; M83.5, Other drug-induced osteomalacia in adults; M87.1, Osteonecrosis due to drugs; R78.1, Finding of opiate drug in blood; R78.2, Finding of cocaine in blood; R78.3, Finding of hallucinogen in blood; R78.4, Finding of other drugs of addictive potential in blood; R78.5, Finding of psychotropic drug in blood; X40–X44, Accidental poisoning by and exposure to drugs, medicaments and biological substances; X60–X64, Intentional self-poisoning (suicide) by and exposure to drugs, medicaments and biological substances; X85, Assault (homicide) by drugs, medicaments and biological substances; and Y10–Y14, Poisoning by and exposure to drugs, medicaments and biological substances, undetermined intent. 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

The list of codes included in alcohol-induced causes was expanded in the 2003 data year to be more comprehensive. Causes of death attributable to alcohol-induced mortality include ICD–10 codes E24.4, Alcohol-induced pseudo-Cushing's syndrome; F10, Mental and behavioral disorders due to alcohol use; G31.2, Degeneration of nervous system due to alcohol; G62.1, Alcoholic polyneuropathy; G72.1, Alcoholic myopathy; I42.6, Alcoholic cardiomyopathy; K29.2, Alcoholic gastritis; K70, Alcoholic liver disease; K86.0, Alcohol-induced chronic pancreatitis; 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 sex. 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 (56). 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. Although 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 in 2003, some registration areas adopted the new standard death certificate, which includes a revised educational attainment item. This replaces the previous item which focused on

highest grade of school completed. The subject of the new item continues to focus on collegiate track education and does not capture vocational training. The item was changed to be consistent with the U.S Census Bureau data, to improve the ability to identify specific degrees, to improve the ability to identify persons who had completed 12 years of education but did not hold either a GED or high school diploma, and to replace the old item which was inappropriately and inaccurately used to infer degree status. According to testing by the U.S Census Bureau, the new item identifies about 2 percent more individuals with less than a high school diploma or equivalent, 13 percent fewer individuals with a high school diploma, and 8 percent more individuals with at least some college (67). In 2004, 12 states used the preferred question for all or part of the year. These states included California, Connecticut, Idaho, Michigan, Montana, New Hampshire, New Jersey, New York, Oklahoma, South Dakota, Washington, and Wyoming. Because most states have not yet adopted the preferred question, Table 26 is still shown using the old education item. However, Table II shows a comparison of the percent distribution of deaths by measures of educational attainment in use in 2002 and 2004 for nine states. Three of the 12 states using the revised certificate are not included in Table II. Those states are New Hampshire because they did not begin using the new item until mid-April, Connecticut because they were unable to transmit data to NCHS in the revised format, and South Dakota because they first began reporting education in 2004 and, therefore, have no comparison data for 2002.

Table 26 is based on data from 36 states and the District of Columbia that continue to use the unrevised educational attainment item and whose data were approximately 80 percent or more complete on a place-of-occurrence basis. Data for Georgia and Rhode Island were excluded because the educational attainment item was not on their certificates. Data for California, Idaho, Michigan, Montana, New Jersey, New York, Oklahoma, South Dakota, Washington, Wyoming, and New York City were excluded because these states used the revised educational attainment item, and their data would therefore not be comparable to data based on the unrevised item.

Age-specific and age-adjusted death rates by educational attainment are shown in Table 26. 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 (68).

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 (67).

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 27 and 28. 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."

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 2004" (69). 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, 2004, 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.

Another data source is available for infant mortality. The linked file of live births and infant deaths differs from the infant mortality data presented in this report in the following ways: the linked file includes only events in which both the birth and the death occur in the United States and includes late filed births. During the processing of the linked file, there is an additional opportunity to exclude infant records that are duplicate records or records that have additional information that raise questions about their age. Therefore, although the differences are

Table II. Percent distribution of deaths by education items: California, Idaho, Michigan, Montana, New Jersey, New York, Oklahoma, Washington, and Wyoming, 2002 and 2004

[By state of occurrence. Excludes nonresidents of the United States. Due to rounding, the sum of the subgroups may not add to the total]

2002		2004	
Years of school completed	Percent distribution	Educational attainment	Percent distribution
Total	100	Total	100
Under 12 years	26.3	Less than high school diploma or GED	28.9
12 years	42.8	High school diploma or GED	39.4
13 years or more	27.4	Some college or collegiate degree	29.8
Not stated	3.5	Not stated	1.9

NOTE: GED is General Education Development high school equivalency diploma.

normally miniscule, infant mortality rates based on the linked file tend to be somewhat smaller than those based on data from the general mortality file as presented in this report. The linked file uses the mother's self-reported race from the child's birth certificate (36,60). Because the mother's self-report is of better quality than infant's race from the death certificate and because the numerator and denominator are referring to the same individual's race, the linked file is the preferred source for infant mortality by race.

Maternal mortality

Maternal mortality rates are computed on the basis of the number of live births. The maternal mortality rate indicates the likelihood of a pregnant woman dying of maternal causes. Rates 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 WHO 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" (8). 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 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, the pregnancy is assumed to have been terminated 42 days or less prior to death. Moreover, if only indirect maternal causes of death (i.e., a previously existing disease or a disease that developed during pregnancy that 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.

An evaluation study for the 1995–1997 period found that 35 percent more maternal deaths were identified through surveillance efforts than solely by using the death certificate. A number of explanations accounted for the underascertainment, including lack of information reported in the cause-of-death section, use of fewer sources, and some differences in identification (70). This differential conceivably is decreasing because of changes in the coding of indirect maternal causes under ICD–10 that accounted for a nearly a 13 percent increase in maternal deaths in ICD–10 compared with ICD–9 and the increasing use of a pregnancy status checkbox on death certificates.

The 2003 revision of the U.S. Standard Certificate of Death introduced a standard question format with categories to take advantage of additional codes available in ICD–10 for deaths with a connection to pregnancy, childbirth, and the puerperium. As states revise their certificates, most are expected to introduce the standard item or replace pre-existing questions with the standard item, so that there will be wider adoption of a pregnancy status item across the country and greater standardization of the particular item used. As of 2004, 28 states (one state added the question midyear) have a separate question related to pregnancy status of female decedents around the time of their death, and two states have a prompt that encourages certifiers to report recent pregnancies on the death certificate; however, at least six different questions are used.

The number of maternal deaths has been tending to increase as a result of direct and indirect effects of inclusion of a pregnancy status item on the U.S. Standard Certificate of Death (71). For states that already had a separate question, additional guidance being provided on use in identifying maternal deaths is resulting in more deaths being identified. For states that are adopting the standard item, additional information is available to use in identifying maternal deaths.

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 percentage of all reported deaths in the United States assigned to Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified, was 1.26 in 2004, differing little from 2002 and 2003 (1.23 and 1.28, respectively) but lower than in 2000 and 2001 (1.33 and 1.34 percent, respectively). From 1990 to 1999, the percentage of deaths from this cause for all ages combined was fairly stable, fluctuating between 1.08 and 1.18 percent.

Rules for coding cause(s) of death may sometimes require modification when evidence suggests that such modifications will improve the quality of cause-of-death data. These changes, however, may affect comparability of data between years for select causes of death.

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 (46,72,73).

For data year 2004, complete confirmation of deaths from infrequent and rare causes was not provided by the following states: California, Illinois, Indiana, Kentucky, Maryland, Massachusetts, Michigan, Minnesota, Nebraska, Nevada, New Hampshire, New Jersey, New York, North Carolina, Ohio, and Oklahoma.

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. Population estimates used to compute death rates for the United States for 2004 are shown by race for 10-year age groups in Table III and are available by single years of age on the mortality website at: http://www.cdc.gov/nchs/about/major/dvs/popbridge/popbridge.htm (74).

Population estimates in Table IV for Mexicans, Puerto Ricans, Cubans, and other Hispanics, and population estimates by marital status in Tables V, are based on the CPS adjusted to resident population control totals for the United States (75) 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, 2004 (74).

Population estimates by educational attainment, shown in Table VI, are also based on the CPS adjusted to resident population control totals (74), and are also subject to sampling variation (see "Random variation"). The control totals used are 2000-based population estimates for 38 states and the District of Columbia for July 1, 2004 (75).

Population estimates for each state, shown in Table VII, were estimated from state-level postcensal population estimates based on the 2000 census, estimated as of July 1, 2004 (74). Population estimates for Puerto Rico, Virgin Islands, Guam, American Samoa, and Northern Marianas, also shown in Table VII, are based on the 2000 census, estimated as of July 1, 2004 (76). Population estimates for each state and territory are based on demographic analysis and are therefore not subject to sampling variation.

Death rates for 1991–2004 shown in this report are based on populations that are consistent with the 2000 census levels (74,75,77–81). 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, which were modified to be consistent with U.S. Office of Management and Budget racial categories as of 1977 and historical categories for death data (10). The modification procedures are described in detail elsewhere (12,13).

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 age distribution (Table VIII)

$$R' = \sum_i \frac{P_{si}}{P_s} R_i$$

where P_{si} is the standard population for age group i, and P_s is the total U.S. standard population (all ages combined).

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* (82). Beginning with 2003 data, the traditional standard million population along with corresponding standard weights to six decimal places were replaced by the projected year 2000 population age distribution (see Table VIII). The effect of the change is negligible and does not significantly affect comparability with age-adjusted rates calculated using the previous method.

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

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 used for computing age-adjusted rates and standard errors by marital status is shown in Table IX.

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 ages than for younger ages (67). The year 2000 standard population used for computing age-adjusted rates and standard errors by education is shown in Table X.

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 used for computing age-adjusted rates and standard errors for injury at work is shown in Table XI.

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 used for computing age-adjusted rates and standard errors for the territories is shown in Table XII.

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. Age-adjusted death rates should not be compared 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

Table III. Estimated population by 10-year age groups, specified race and sex: United States, 2004

[Populations are postcensal estimates based on the 2000 census, estimated as of July 1, 2004, see "Technical Notes"]

Age	All races			White			Black			American Indian or Alaska Native			Asian and Pacific Islander		
	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female
Total	293,655,404	144,537,402	149,118,002	238,268,102	117,915,508	120,352,594	38,600,765	18,416,886	20,183,879	3,148,484	1,572,049	1,576,435	13,638,053	6,632,959	7,005,094
Under 1 year	4,077,187	2,085,436	1,991,751	3,176,265	1,625,299	1,550,966	661,160	337,225	323,935	43,272	22,026	21,246	196,490	100,886	95,604
1–4 years	15,994,081	8,177,557	7,816,524	12,461,493	6,380,698	6,080,795	2,599,363	1,319,973	1,279,390	178,321	90,367	87,954	754,904	386,519	368,385
5–14 years	40,750,728	20,860,278	19,890,450	31,633,848	16,229,235	15,404,613	6,719,897	3,413,646	3,306,251	572,170	290,104	282,066	1,824,813	927,293	897,520
15–24 years	41,701,105	21,438,383	20,262,722	32,727,487	16,896,350	15,831,137	6,440,904	3,248,277	3,192,627	584,333	299,643	284,690	1,948,381	994,113	954,268
25–34 years	40,031,937	20,336,031	19,695,906	31,506,447	16,204,754	15,301,693	5,535,770	2,649,620	2,886,150	471,466	244,135	227,331	2,518,254	1,237,522	1,280,732
35–44 years	44,108,652	22,033,878	22,074,774	35,619,055	17,993,795	17,625,260	5,732,303	2,695,431	3,036,872	465,813	232,555	233,258	2,291,481	1,112,097	1,179,384
45–54 years	41,618,805	20,452,674	21,166,131	34,444,360	17,115,739	17,328,621	4,929,108	2,278,248	2,650,860	396,380	192,286	204,094	1,848,957	866,401	982,556
55–64 years	29,078,923	13,999,435	15,079,488	24,803,473	12,062,385	12,741,088	2,900,104	1,292,946	1,607,158	235,866	113,559	122,307	1,139,480	530,545	608,935
65–74 years	18,463,473	8,427,628	10,035,845	15,952,643	7,357,705	8,594,938	1,732,803	721,663	1,011,140	120,668	55,762	64,906	657,359	292,498	364,861
75–84 years	12,970,882	5,218,229	7,752,653	11,562,349	4,688,373	6,873,976	994,740	359,196	635,544	59,781	24,999	34,782	354,012	145,661	208,351
85 years and over	4,859,631	1,507,873	3,351,758	4,380,682	1,361,175	3,019,507	354,613	100,661	253,952	20,414	6,613	13,801	103,922	39,424	64,498

SOURCE: National Center for Health Statistics. Estimates of the July 1, 2004, United States resident population by age, sex, race, and Hispanic origin, prepared under a collaborative arrangement with the U.S. Census Bureau. 2005.

Table IV. Estimated population by 10-year age groups, according to specified Hispanic origin, race for non-Hispanic population, and sex: United States, 2004

[Populations for all origins, Hispanic, non-Hispanic, non-Hispanic white, and non-Hispanic black are postcensal estimates based on the 2000 census, estimated as of July1, 2004; populations for Mexican, Puerto Rican, Cuban, Central and South American and other and unknown Hispanic are based on the Current Population Survey adjusted to resident population control totals. Due to rounding, population estimates for Hispanic subgroups may not add to Hispanic control totals. The control totals are 2000-based population estimates for the United States for July 1, 2004; see "Technical Notes"]

Hispanic origin, race for non-Hispanic population, and sex	Total	Under 1 year	1–4 years	5–14 years	15–24 years	25–34 years	35–44 years	45–54 years	55–64 years	65–74 years	75–84 years	85 years and over
All origins	293,655,404	4,077,187	15,994,081	40,750,728	41,701,105	40,031,937	44,108,652	41,618,805	29,078,923	18,463,473	12,970,882	4,859,631
Male	144,537,402	2,085,436	8,177,557	20,860,278	21,438,383	20,336,031	22,033,878	20,452,674	13,999,435	8,427,628	5,218,229	1,507,873
Female	149,118,002	1,991,751	7,816,524	19,890,450	20,262,722	19,695,906	22,074,774	21,166,131	15,079,488	10,035,845	7,752,653	3,351,758
Hispanic	41,322,073	906,645	3,463,280	7,662,196	7,097,580	7,616,544	6,160,458	4,028,291	2,222,088	1,270,259	684,511	210,221
Male	21,347,067	463,176	1,769,126	3,918,696	3,794,469	4,162,557	3,241,840	2,022,757	1,057,912	565,561	279,593	71,380
Female	19,975,006	443,469	1,694,154	3,743,500	3,303,111	3,453,987	2,918,618	2,005,534	1,164,176	704,698	404,918	138,841
Mexican American	27,239,634	675,088	2,508,864	5,330,669	4,834,388	5,241,024	3,871,513	2,390,845	1,263,640	642,429	375,223	105,951
Male	14,308,129	344,906	1,276,274	2,725,485	2,617,699	2,909,627	2,077,069	1,238,207	632,221	294,517	154,712	37,412
Female	12,931,505	330,182	1,232,590	2,605,184	2,216,689	2,331,397	1,794,444	1,152,638	631,419	347,912	220,511	68,539
Puerto Rican	3,796,668	65,903	263,826	758,766	645,468	574,229	550,226	427,471	259,879	171,389	59,519	19,992
Male	1,873,185	36,378	131,676	390,781	335,765	275,821	262,879	207,446	120,818	81,723	20,581	9,317
Female	1,923,483	29,525	132,150	367,985	309,703	298,408	287,347	220,025	139,061	89,666	38,938	10,675
Cuban	1,615,256	20,861	93,093	199,041	151,258	197,466	271,567	182,397	166,501	161,055	123,290	48,727
Male	836,311	9,444	49,475	106,824	81,978	108,431	149,210	100,538	81,161	82,869	55,317	11,064
Female	778,945	11,417	43,618	92,217	69,280	89,035	122,357	81,859	85,340	78,186	67,973	37,663
Central and South American	6,698,717	106,177	452,134	1,020,963	1,153,232	1,311,731	1,200,929	800,080	368,394	189,590	81,306	14,181
Male	3,359,080	54,443	232,615	506,090	600,550	722,486	615,372	377,550	154,577	61,058	29,280	5,059
Female	3,339,637	51,734	219,519	514,873	552,682	589,245	585,557	422,530	213,817	128,532	52,026	9,122
Other Hispanic	1,971,693	38,618	145,354	352,735	313,229	292,074	266,212	227,486	163,652	105,798	45,174	21,361
Male	970,321	18,003	79,083	189,501	158,473	146,189	137,310	99,006	69,130	45,393	19,708	8,525
Female	1,001,372	20,615	66,271	163,234	154,756	145,885	128,902	128,480	94,522	60,405	25,466	12,836
Non-Hispanic[1]	252,333,331	3,170,542	12,530,801	33,088,532	34,603,525	32,415,393	37,948,194	37,590,514	26,856,835	17,193,214	12,286,371	4,649,410
Male	123,190,335	1,622,260	6,408,431	16,941,582	17,643,914	16,173,474	18,792,038	18,429,917	12,941,523	7,862,067	4,938,636	1,436,493
Female	129,142,996	1,548,282	6,122,370	16,146,950	16,959,611	16,241,919	19,156,156	19,160,597	13,915,312	9,331,147	7,347,735	3,212,917
White	199,775,516	2,311,447	9,182,432	24,587,374	26,158,589	24,395,789	29,873,175	30,694,282	22,722,334	14,755,436	10,913,284	4,181,374
Male	97,986,186	1,183,535	4,705,654	12,623,328	13,375,991	12,301,121	14,957,489	15,228,450	11,070,814	6,823,868	4,422,410	1,293,526
Female	101,789,330	1,127,912	4,476,778	11,964,046	12,782,598	12,094,668	14,915,686	15,465,832	11,651,520	7,931,568	6,490,874	2,887,848
Black	36,921,613	633,727	2,481,257	6,356,421	6,139,230	5,238,855	5,488,073	4,764,636	2,814,236	1,686,037	971,702	347,439
Male	17,591,122	323,126	1,259,543	3,228,916	3,093,094	2,504,230	2,577,874	2,200,194	1,253,399	701,718	350,614	98,414
Female	19,330,491	310,601	1,221,714	3,127,505	3,046,136	2,734,625	2,910,199	2,564,442	1,560,837	984,319	621,088	249,025

[1]Includes races other than white and black. SOURCE: Population estimates for specified Hispanic subgroups based on unpublished tabulations prepared by the Housing and Household Economic Statistics Division, U.S. Bureau of the Census. Population estimates for all origins, Hispanic, non-Hispanic, non-Hispanic white, and non-Hispanic black were prepared under a collaborative arrangement with the U.S. Census Bureau. See references 74 and 75.

Table V. Estimated population for ages 15 years and over by marital status, 10-year age groups and sex: United States, 2004

[Population estimates are based on the Current Population Survey adjusted to resident population controls for the United States. The control totals used are 2000-based population estimates for the United States for July 1, 2004]

Marital status and sex	15 years and over	15–24 years	25–34 years	35–44 years	45–54 years	55–64 years	65–74 years	75 years and over
All races	232,833,387	41,701,101	40,031,946	44,108,670	41,618,799	29,078,902	18,463,480	17,830,489
Never married	67,707,285	37,281,921	15,266,925	7,457,641	4,557,089	1,705,224	770,301	668,184
Ever married	165,126,102	4,419,180	24,765,021	36,651,029	37,061,710	27,373,678	17,693,179	17,162,305
Married	128,079,499	4,073,771	22,157,023	30,647,477	29,674,076	21,153,119	12,352,563	8,021,470
Widowed	14,796,434	29,292	132,816	382,338	841,322	1,783,737	3,466,315	8,160,614
Divorced	22,250,169	316,117	2,475,182	5,621,214	6,546,312	4,436,822	1,874,301	980,221
All races, male	113,414,137	21,438,385	20,336,032	22,033,892	20,452,681	13,999,422	8,427,633	6,726,092
Never married	37,279,391	19,825,499	8,938,254	4,473,280	2,554,312	854,581	385,178	248,287
Ever married	76,134,746	1,612,886	11,397,778	17,560,612	17,898,369	13,144,841	8,042,455	6,477,805
Married	64,094,964	1,481,729	10,319,345	15,007,751	14,912,194	11,039,621	6,663,921	4,670,403
Widowed	2,781,335	8,882	31,403	92,316	197,987	317,144	652,152	1,481,451
Divorced	9,258,447	122,275	1,047,030	2,460,545	2,788,188	1,788,076	726,382	325,951
All races, female	119,419,250	20,262,716	19,695,914	22,074,778	21,166,118	15,079,480	10,035,847	11,104,397
Never married	30,427,894	17,456,422	6,328,671	2,984,361	2,002,777	850,643	385,123	419,897
Ever married	88,991,356	2,806,294	13,367,243	19,090,417	19,163,341	14,228,837	9,650,724	10,684,500
Married	63,984,535	2,592,042	11,837,678	15,639,726	14,761,882	10,113,498	5,688,642	3,351,067
Widowed	12,015,099	20,410	101,413	290,022	643,335	1,466,593	2,814,163	6,679,163
Divorced	12,991,722	193,842	1,428,152	3,160,669	3,758,124	2,648,746	1,147,919	654,270

SOURCE: Population estimates based on unpublished tabulations prepared by the Housing and Household Economic Statistics Division of the U.S. Census Bureau. 2006.

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 (83,84). When the number of deaths is small (perhaps fewer 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 it provides reasonable, conservative variance estimates for mortality statistics when the probability of dying is relatively low (83). Using the properties of the Poisson distribution, the standard error (SE) associated with the number of deaths (D) is

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

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

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

Table VI. Estimated population for ages 25–64, by educational attainment and sex: Total of 36 reporting states and the District of Columbia, 2004

[Population estimates based onthe Current Population Survey adjusted to resident population controls. The control totals used are 2000-based population estimates for 36 states and the District of Columbia for July 1, 2004; see "Technical Notes"]

Years of school completed and sex	25–64 years	25–34 years	35–44 years	45–54 years	55–64 years
All races					
Both sexes	100,884,157	26,103,560	28,434,907	27,034,884	19,310,806
Under 12 years	11,834,841	3,308,587	3,160,916	2,736,017	2,629,321
12 years	32,946,304	7,812,097	9,459,818	8,940,892	6,733,497
13 or more years	56,103,012	14,982,876	15,814,173	15,357,975	9,947,988
Male	50,076,765	13,252,843	14,196,270	13,310,247	9,317,405
Under 12 years	6,328,547	1,875,007	1,773,291	1,420,222	1,260,027
12 years	16,578,349	4,299,945	4,931,903	4,369,789	2,976,712
13 or more years	27,169,869	7,077,891	7,491,076	7,520,236	5,080,666
Female	50,807,392	12,850,717	14,238,637	13,724,637	9,993,401
Under 12 years	5,506,294	1,433,580	1,387,625	1,315,795	1,369,294
12 years	16,367,955	3,512,152	4,527,915	4,571,103	3,756,785
13 or more years	28,933,143	7,904,985	8,323,097	7,837,739	4,867,322

SOURCE: Population estimates based on unpublished tabulations prepared by the Housing and Household Economic Statistics Division, U.S. Census Bureau. 2006.

Table VII. Estimated population for the United States, each state, Puerto Rico, Virgin Islands, Guam, American Samoa, and Northern Marianas, 2004

[Populations for the United States are postcensal estimates produced in 2004 based on the 2000 census estimated as of July 1, 2004. Populations for each state, Puerto Rico, Virgin Islands, Guam, American Samoa, and Northern Marianas are postcensal estimates produced in 2005 based on the 2000 census estimated as of July 1, 2004]

Area	Total	Area	Total
United States	293,655,404		
Alabama	4,530,182	Nevada	2,334,771
Alaska	655,435	New Hampshire	1,299,500
Arizona	5,743,834	New Jersey	8,698,879
Arkansas	2,752,629	New Mexico	1,903,289
California	35,893,799	New York	19,227,088
Colorado	4,601,403	North Carolina	8,541,221
Connecticut	3,503,604	North Dakota	634,366
Delaware	830,364	Ohio	11,459,011
District of Columbia	553,523	Oklahoma	3,523,553
Florida	17,397,161	Oregon	3,594,586
Georgia	8,829,383	Pennsylvania	12,406,292
Hawaii	1,262,840	Rhode Island	1,080,632
Idaho	1,393,262	South Carolina	4,198,068
Illinois	12,713,634	South Dakota	770,883
Indiana	6,237,569	Tennessee	5,900,962
Iowa	2,954,451	Texas	22,490,022
Kansas	2,735,502	Utah	2,389,039
Kentucky	4,145,922	Vermont	621,394
Louisiana	4,515,770	Virginia	7,459,827
Maine	1,317,253	Washington	6,203,788
Maryland	5,558,058	West Virginia	1,815,354
Massachusetts	6,416,505	Wisconsin	5,509,026
Michigan	10,112,620	Wyoming	506,529
Minnesota	5,100,958	Puerto Rico	3,894,855
Mississippi	2,902,966	Virgin Islands	108,775
Missouri	5,754,618	Guam	166,090
Montana	926,865	American Samoa	57,902
Nebraska	1,747,214	Northern Marianas	78,252

SOURCE: U.S. Census Bureau. See references 74 and 76.

Table VIII. United States standard population

Age	Population
All ages	274,633,642
Under 1 year	3,794,901
1–4 years	15,191,619
5–14 years	39,976,619
15–24 years	38,076,743
25–34 years	37,233,437
35–44 years	44,659,185
45–54 years	37,030,152
55–64 years	23,961,506
65–74 years	18,135,514
75–84 years	12,314,793
85 years and over	4,259,173

Table IX. United States standard population for ages 25 years and over

Age	Population
25 years and over	177,593,760
25–34 years	37,233,437
35–44 years	44,659,185
45–54 years	37,030,152
55–64 years	23,961,506
65–74 years	18,135,514
75 years and over	16,573,966

Table X. United States standard population for ages 25–64 years

Age	Population
25–64 years	142,884,280
25–34 years	37,233,437
35–44 years	44,659,185
45–54 years	37,030,152
55–64 years	23,961,506

Table XI. United States standard population for ages 15 years and over

Age	Population
15 years and over	215,670,503
15–24 years	38,076,743
25–34 years	37,233,437
35–44 years	44,659,185
45–54 years	37,030,152
55–64 years	23,961,506
65 years and over	34,709,480

Table XII. United States standard population for the territories

Age	Population
All ages	274,633,642
Under 1 year	3,794,901
1–4 years	15,191,619
5–14 years	39,976,619
15–24 years	38,076,743
25–34 years	37,233,437
35–44 years	44,659,185
45–54 years	37,030,152
55–64 years	23,961,506
65–74 years	18,135,514
75 years and over	16,573,966

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

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

For crude and age-specific death rates

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

Thus,

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

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

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

where

R_i = age-specific rate for the ith age group
P_{si} = age-specific standard population for the ith age group from the U.S. standard population age distribution (see Table VIII and age-adjusted death rate under "Definition of terms")
P_s = total U.S. standard population (all ages combined)
D_i = number of deaths for the ith 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.

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

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

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

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, and 26 which are calculated using population figures that are subject to sampling error (see the following subsection).

Tables 5, 25, and 26—Death rates for Mexicans, Puerto Ricans, Cubans, Central and South Americans, and other and unknown Hispanics in Table 5, rates by marital status in Table 25 and rates by educational attainment in Table 26 are based on population estimates derived from the U.S. Census Bureau CPS for 2004 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. $$\mathrm{SE}(R) = R\sqrt{\frac{1}{D} + 0.67\left(a + \frac{b}{P}\right)}$$

For age-adjusted death rates (R')

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

where a and b in formulas 7 and 8 represent parameters presented in Table XIII, which are derived from the CPS data for 2004 and 2005 and vary depending on the subgroup of interest (85,86).

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 (fewer 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 fewer 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, and 26.

For death rates shown in Tables 5, 25, and 26, 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, and 26 are derived from formulas 7 and 8 by dividing the results of formulas 7 and 8 by the crude or 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 (*).

Table XIII. Current Population Survey standard error parameters for death rates in Tables 5, 25, and 26

Characteristic	Total		White, black, non-Hispanic white, or non-Hispanic black		Hispanic	
	a	b	a	b	a	b
Table 5						
All origins	0.000000	0	0.000000	0	0.000000	0
Hispanic subgroups (Mexican, Puerto Rican, Cuban, and Other Hispanic)	. . .	. . .	. . .	. . .	–0.000096	3,809
Table 25						
All marital status groups combined	0.000000	0	. . .	. . .	. . .	. . .
Marital status subgroups (Never married, Ever married, Married, Widowed, Divorced)	–0.000009	2,652	. . .	. . .	. . .	. . .
Table 26						
All education groups	0.000000	0	. . .	. . .	. . .	. . .
Education subgroups (Under 12 years, 12 years, 13 years or over)	–0.000005	1,206	. . .	. . .	. . .	. . .

. . . Category not applicable.

SOURCE: The a and b parameters are the average of the 2003 and 2004 Current Population Survey standard error parameters. See references 85 and 86.

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. The number of deaths that constitutes "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 (58,82,87). Formula 9 is used to calculate 95 percent confidence limits for the death rate when the normal approximation is appropriate.

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

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 out of 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 188.6 per 100,000 population based on 553,888 deaths. Lower and upper 95 percent confidence limits using formula 9 are calculated as

$L(188.6) = 188.6 - 1.96(.25) = 188.1$ and
$U(188.6) = 188.6 + 1.96(.25) = 189.1$

Thus, the chances are 95 out of 100 that the true death rate for malignant neoplasms is between 188.1 and 189.1. 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

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

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' and R' , etc. Suppose that the age-adjusted death rate for Malignant neoplasms of trachea, bronchus, and lung (lung cancer) for females is 41.3 per 100,000 U.S. standard population in 2003 (R_1) and 40.9 per 100,000 U.S. standard population in 2004 (R_2). The standard error for each of these figures, $\mathrm{SE}(R_1)$ and $\mathrm{SE}(R_2)$, is calculated using formula 4. Using formula 10, one can test if the decrease in the age-adjusted rate is statistically significant.

$$z = \frac{41.3 - 40.9}{\sqrt{(0.159)^2 + (0.157)^2}} = 1.79$$

Because $z = 1.79 < 1.96$, the decrease from 2003 to 2004 in the female age-adjusted death rate for lung cancer is not statistically significant.

Confidence intervals and statistical tests based on fewer than 100 deaths—When the number of deaths is not large (fewer than 100), the Poisson distribution cannot be approximated by the normal distribution. The normal distribution is a symmetric distribution with a range from $-\infty$ to $+\infty$. 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 (82,87). For more information regarding how the gamma method is derived, see *Derivation of the gamma 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 XIV. 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 XIV. For example, suppose that the death rate for AIAN females aged 10–14 is 21.5 per 100,000 and based on 32 deaths. Applying formula 12, values for L and U from Table XIV for 32 deaths are multiplied by the death rate, 21.5, such that

$L(R) = L(21.5) = 0.683999 \times 21.5 = 14.7$ and
$U(R) = U(21.5) = 1.411702 \times 21.5 = 30.4$

These confidence limits indicate that the chances are 95 out of 100 that the actual death rate for AIAN females aged 10–14 is between 14.7 and 30.4 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 (58,82). Refer to the most recent version of the Mortality Technical Appendix for more details, available from:
(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 $R_2 > R_1$, and then test if $L(R_2) > U(R_1)$. Positive tests denote statistical significance at the 0.05-level. For example, suppose that AIAN females aged 10–14 years have a death rate (R_1) of 21.5 based on 32 deaths and that API males aged 10–14 years have a death rate (R_2) of 10.6 per 100,000 based on 47 deaths. The 95 percent confidence limits for R_1 and R_2 *calculated using formula 12 would be*

$L(R_{1)} = L(21.5) = 0.683999 \times 21.5 = 14.7$ and
$U(R_1) = U(21.5) = 1.411702 \times 21.5 = 30.4$

$L(R_2) = L(10.6) = 0.734762 \times 10.6 = 7.8$ and
$U(R_2) = U(10.6) = 1.329788 \times 10.6 = 14.1$

Because $R_1 > R_2$ and $L(R_1) > U(R_2)$, it can be concluded that the difference between the death rates for AIAN females aged 10–14 years and API females of the same age is statistically significant at the .05-level. That is, taking into account random variability, API females aged 10–14 years have a death rate that is significantly lower than that for AIAN 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 (88). Thus, caution should be observed when interpreting a nonsignificant 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 (89): $E(X) = yz$ and $Var(X) = yz^2$. For the number of deaths, *D*, $E(D) = D$ and $Var(D) = D$. It follows that $y = D$ and $z = 1$. Thus,

13. $D \sim \Gamma(D,1)$

From equation 13, the shape of the distribution of deaths clearly depends only on the number of deaths.

For the death rate, *R*, $E(R) = R$ and $Var(R) = D/P^2$. It follows, in this case, that $y = D$ and $z = P^{-1}$. 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 $X/z \sim \Gamma(y,1)$. 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, the shape of the distribution of the death rate is clearly 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 $100(1-\alpha)$ 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, $\alpha = .05$. For the death rate, it can be shown that

17. $$L(R) = \frac{L(D)}{P} \text{ and } U(R) = \frac{U(D)}{P}$$

Table XIV. Lower and upper 95 percent confidence limit factors for the number of deaths and death rate when the number of deaths is less than 100

Number of deaths (D)	Lower confidence limit (L)	Upper confidence limit (U)	Number of deaths (D)	Lower confidence limit (L)	Upper confidence limit (U)
1	0.025318	5.571643	51	0.744566	1.314815
2	0.121105	3.612344	52	0.746848	1.311367
3	0.206224	2.922424	53	0.749069	1.308025
4	0.272466	2.560397	54	0.751231	1.304783
5	0.324697	2.333666	55	0.753337	1.301637
6	0.366982	2.176579	56	0.755389	1.298583
7	0.402052	2.060382	57	0.757390	1.295616
8	0.431729	1.970399	58	0.759342	1.292732
9	0.457264	1.898311	59	0.761246	1.289927
10	0.479539	1.839036	60	0.763105	1.287198
11	0.499196	1.789276	61	0.764921	1.284542
12	0.516715	1.746799	62	0.766694	1.281955
13	0.532458	1.710030	63	0.768427	1.279434
14	0.546709	1.677830	64	0.770122	1.276978
15	0.559692	1.649348	65	0.771779	1.274582
16	0.571586	1.623937	66	0.773400	1.272245
17	0.582537	1.601097	67	0.774986	1.269965
18	0.592663	1.580431	68	0.776539	1.267738
19	0.602065	1.561624	69	0.778060	1.265564
20	0.610826	1.544419	70	0.779549	1.263440
21	0.619016	1.528606	71	0.781008	1.261364
22	0.626695	1.514012	72	0.782438	1.259335
23	0.633914	1.500491	73	0.783840	1.257350
24	0.640719	1.487921	74	0.785215	1.255408
25	0.647147	1.476197	75	0.786563	1.253509
26	0.653233	1.465232	76	0.787886	1.251649
27	0.659006	1.454947	77	0.789184	1.249828
28	0.664493	1.445278	78	0.790459	1.248045
29	0.669716	1.436167	79	0.791709	1.246298
30	0.674696	1.427562	80	0.792938	1.244587
31	0.679451	1.419420	81	0.794144	1.242909
32	0.683999	1.411702	82	0.795330	1.241264
33	0.688354	1.404372	83	0.796494	1.239650
34	0.692529	1.397400	84	0.797639	1.238068
35	0.696537	1.390758	85	0.798764	1.236515
36	0.700388	1.384422	86	0.799871	1.234992
37	0.704092	1.378368	87	0.800959	1.233496
38	0.707660	1.372578	88	0.802029	1.232028
39	0.711098	1.367033	89	0.803082	1.230586
40	0.714415	1.361716	90	0.804118	1.229170
41	0.717617	1.356613	91	0.805138	1.227778
42	0.720712	1.351709	92	0.806141	1.226411
43	0.723705	1.346993	93	0.807129	1.225068
44	0.726602	1.342453	94	0.808102	1.223747
45	0.729407	1.338079	95	0.809060	1.222448
46	0.732126	1.333860	96	0.810003	1.221171
47	0.734762	1.329788	97	0.810933	1.219915
48	0.737321	1.325855	98	0.811848	1.218680
49	0.739806	1.322053	99	0.812751	1.217464
50	0.742219	1.318375			

For more detail regarding the derivation of the gamma method and its application to age-adjusted death rates and other mortality statistics, see references (7,82,87).

Availability of mortality data

Mortality data are available in publications, unpublished tables, and electronic products as described on the mortality website at the following address: http://www.cdc.gov/nchs/deaths.htm. More detailed analysis than that 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, the *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 (89).

Table E. Number of infant deaths, percentage of total infant deaths, and infant mortality rates for 2004, and percentage change in infant mortality rates from 2003 to 2004 for the 10 leading causes of infant death in 2004: United States

[Rates are infant deaths per 100,000 live births]

Rank[1]	Cause of death (Based on the *International Classification of Diseases, Tenth Revision, 1992*)	Number	Percent of total deaths	Rate	Percent change[2] from 2003 to 2004
. . .	All causes	27,936	100.0	679.4	–0.8
1	Congenital malformations, deformations and chromosomal abnormalities (Q00–Q99)	5,622	20.1	136.7	–0.5
2	Disorders related to short gestation and low birth weight, not elsewhere classified (P07)	4,642	16.6	112.9	–4.8
3	Sudden infant death syndrome (R95)	2,246	8.0	54.6	3.2
4	Newborn affected by maternal complications of pregnancy (P01)	1,715	6.1	41.7	–0.2
5	Accidents (unintentional injuries) (V01–X59)	1,052	3.8	25.6	10.8
6	Newborn affected by complications of placenta, cord and membranes (P02)	1,042	3.7	25.3	–5.9
7	Respiratory distress of newborn (P22)	875	3.1	21.3	4.9
8	Bacterial sepsis of newborn (P36)	827	3.0	20.1	6.3
9	Neonatal hemorrhage (P50–P52,P54)	616	2.2	15.0	–5.7
10	Diseases of the circulatory system (I00–I99)	593	2.1	14.4	–0.7
. . .	All other causes (residual)	8,706	31.2	211.7	. . .

. . . Category not applicable.

[1]Rank based on number of deaths; see "Technical Notes."

[2]Percentage change based on a comparison of the 2004 infant mortality rate with the 2003 infant mortality rate.

Hispanic maternal mortality—The maternal mortality rate for Hispanic women was 8.5 deaths per 100,000 live births. The ratio of the Hispanic-to-non-Hispanic-white maternal mortality rates was 0.9 in 2004 compared with 1.2 in 2003. As with other statistics involving Hispanic origin, these should be interpreted with caution because of inconsistencies between reporting Hispanic origin on death certificates and on censuses and surveys; see "Technical Notes."

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List of Detailed Tables