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Introduction

These Detailed Technical Notes, published by the Centers for Disease Control and Prevention's National Center for Health Statistics (NCHS), supplement the "Technical Notes" section of "Births: Final Data for 2005" [1], and are for use with the 2005 Natality public use data [2]. The 2005 natality micro-data file is available on CD-ROM [3] and may be downloaded at: http://www.cdc.gov/nchs/about/major/dvs/Vitalstatsonline.htm#Downloadable. These Technical Notes also provide additional documentation for VitalStats http://www.cdc.gov/nchs/VitalStats.htm, a new data access and analysis tool. VitalStats includes interactive pre-built tables and the ability to create tables and graphics using more than 100 demographic and health variables from the 1990-2005 natality public-use files.

Beginning with the 2005 data year, the micro-data natality file no longer includes geographic detail (e.g., state or county of birth). Information on the new data use policy is available at: http://www.cdc.gov/nchs/about/major/dvs/NCHS_DataRelease.htm [4]. Tabulations of birth data by state and for counties with populations of 100,000 or more may be made using VitalStats described above. Procedures for requesting micro-data files with geographic detail are provided in the new data release policy.

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 as described in a United Nation's Handbook [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]. The vast majority of registration areas use definitions of live births similar to this definition [9]. All states require the reporting of live births regardless of length of gestation or birth weight.

The 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 [11,12].

Since 1985, natality statistics for all states and the District of Columbia have been based on information from the total file of records, that is, all births registered in the reporting areas. 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 are 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 most published 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.

Classification of births by occurrence and residence

In tabulations by place of residence, births occurring within the United States to U.S. citizens and to resident aliens are allocated to the usual place of residence of the mother in the United States, as reported on the birth certificate. Births to U.S. residents occurring outside this country are not included in tabulations by place of residence or place of occurrence.

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 A** for the number of births by residence and occurrence for the 50 states and the District of Columbia for 2005.

Note: Data for Vermont shown in "Births: Final Data for 2005" and included in the 2005 natality micro-data file are based on an incomplete file of records; the total number of Vermont resident births is under-reported by about 3 percent. Information based on the complete file of Vermont resident births is available at: **http://www.cdc.gov/nchs/about/major/dvs/2005VTupdate.htm .**

Residence error— According to a 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 [13]. Recent experience based on anecdotal evidence from the states, suggests that this is still a concern. 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 particular consideration in interpreting tabulated data for small areas. Both birth and infant mortality patterns can be affected.

Information on the completeness of reporting of birth certificate data is shown in **Table B**, which presents a listing of items and the percentage of records that were not stated for each state, plus Puerto Rico, the Virgin Islands, Guam, American Samoa, and the Northern Marianas.

Population based rates -- 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 (e.g., 2005 births to women aged 20-24 years and the 2005 population of women aged 20-24). 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 [14].

Geographic classification

The geographic code structure for the 2005 natality file is given in two NCHS manuals, "Vital Records Geographic Classification, 2003," and "Vital Records Geographic Classification, 2005. Federal Information Processing Standards (FIPS)." [15,16]. The geographic code structure on the 2005 file is based on results of the 2000 Census of Population.

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. The U.S. Standard Certificate of Live Birth is revised every 10-15

years. 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.

The 2003 revision — In 2003, a revised U.S. Standard Certificate of Live Birth was adopted **(Figure 1**). The 2003 birth certificate replaces the previous 1989 U.S. Standard Certificate of Live Birth **(Figures 1** and **2)** [17,18]. Implementation of the 2003 U.S. Standard Certificate of Live Birth (revised) by the states and independent reporting areas is being phased in over several years. Initial implementation of the revised certificate began in 2003 with 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, with Florida and New Hampshire doing so later in 2004. Three states, Kansas, Nebraska and Texas, plus Puerto Rico implemented the revised birth certificate January 1, 2005; Vermont implemented the revised certificate after January 1, 2005. The twelve states which revised as of January 1, 2005, represent 31 percent of all 2005 resident births.

The 2003 Revision of the U.S. Standard Certificate of live birth introduced sweeping changes to data content and quality. Many key data items are common between revisions, however, a number of items were substantively modified. The 2003 revision also includes many new items never before collected on the Standard Certificate [17, 18].

A key aspect of the 2003 revision of the U.S. Standard Certificate of Live Birth 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 [17,19]. 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 items such as race, Hispanic origin and educational attainment. For the facility worksheet, data are obtained directly from the medical records of the mother and infant for items such as date of last normal menses, pregnancy risk factors, and method of delivery. 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) [20]. Details of the nature and content of the 1989 revision are available elsewhere [11,12].

Comparability of data between the 1989 and 2003 Revisions of the United States Standard Certificates of Live Birth

Many data items (e.g., maternal age, birth order, marital status, attendant at birth, birthweight, gestational age) are common to both the 1989 and 2003 standard birth certificates and are considered directly comparable between revisions. Several key items, however (i.e., educational attainment, tobacco use during pregnancy, month prenatal care began and type of vaginal or cesarean delivery), although collected on both certificate revisions, were substantively modified. Data for these items are not considered comparable between revisions and are not combined in tabulations or in the data files. See "Births: Final Data for 2005" [1] for selected key non-comparable items data from both revised and unrevised reporting areas. Additionally, although the checkbox items: Risk factors in this pregnancy, Obstetric procedures, Characteristics of labor and delivery, Method of delivery, Abnormal conditions of the newborn, and Congenital anomalies of the newborn are included on both the 1989 and the 2003 U.S. Standard Certificate of Live Birth, many of the specific checkboxes under these items were modified, or are entirely new to the 2003 certificate. **Table C** lists 2003 revision-based items and indicates whether the item is considered comparable with a 1989 revision-based item. Births: Final Data for 2005 presents information for specific checkboxes for which data *are* comparable across revisions [1]. The report "Expanded Health Data from the New Birth, 2005" presents 2003 revision-based information for selected specific checkbox items included under the checkbox categories listed above [21]; an earlier report presented these data for 2004 [22].Tabulations based on the 1989 standard certificate checkbox items are available at:

http://www.cdc.gov/nchs/ab/major/dvs/Vitalstatsonline.htm#Downloadable.

Table B presents a listing of items and the percentage of records that were not stated for each state and the District of Columbia, plus Puerto Rico, the Virgin Islands, Guam, American Samoa, and the Northern Marianas. Births to residents of revised states

which occur in unrevised states are classified as unknowns for non-comparable items (such as educational attainment, tobacco use, and prenatal care). Birth to residents of non-revised states are similarly classified.

The 2003 revision also includes a number of items which are new *and* exclusive to the 2003 revised certificate (e.g., Maternal Morbidity, breastfeeding and the receipt of WIC food for the pregnancy) (**Figure 1)**; these data are not currently available in tabulations or the public use files.

Natality data files

Micro-data files --Natality micro-data files for data years 1968-2005 are available on CD-ROM [2] and may be downloaded at: http://www.cdc.gov/nchs/about/major/dvs/Vitalstatsonline.htm#Downloadable. The general rules used to classify characteristics of live births are presented in several NCHS manuals [15,16,19,23]. These instructions are for states to use to collect and code the data items; they do not include NCHS recodes.

The 2003-2005 natality micro-data files include data items common to both the 1989 and 2003 revisions of the U.S. Standard Certificate of Live Birth. The file also includes items exclusive to the 1989 revision and selected items exclusive to the 2003 revision. Data items considered comparable between revisions are combined in the same data field(s); items which are not comparable, or are exclusive to either revision, are captured in separate fields. See file layout [2]. Certain data items new to the 2003 revised certificate (e.g., Maternal Morbidity) are not available on the file. See **Figure 1** for information on items included in the file. For a listing of specific data items included in the 2005 natality public use file and the comparability of each item see **Table C.**

Beginning with the 2005 data year, the public release micro-data natality file no longer includes geographic detail (e.g., state or county of birth). Information on the new data use policy is available at: http://www.cdc.gov/nchs/about/major/dvs/NCHS_DataRelease.htm [4]. However, tabulations of birth data by state and for counties with populations of 100,000 or more may be made using the new interactive data tool VitalStats, described below.

Reporting flags – The 2005 public use micro-data file includes extensive reporting flags to assist in the accurate exclusion of records from non-reporting areas when tabulating data by mother's place of residence. Reporting flags should be used to generate accurate numbers by residence for items which are not reported by all states. More information on the use of reporting flags can be found in the introduction to the 2005 file documentation [2]. Identification of individual state level data, however, is not possible with the public-use file for 2005 [4].

VitalStats - VitalStats is an online data access tool which gives users access to a collection of interactive pre-built tables, and the ability to build their own tables choosing from over 100 public use birth variables for natality data files for 1990-2005. Interactive charting and mapping tools are a key part of the system, and provide powerful options for visualizing and manipulating tabulated data. Additionally, users can export tabulated data to Excel for further analysis. VitalStats is available at: http://www.cdc.gov/nchs/VitalStats.htm.

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 are reported as white. 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, and on the birth certificate of Puerto Rico starting in 2005 [1]. American Samoa and the Northern Marianas do not collect this information. The Hispanic origin question on the 2003 revised certificate asks respondents to select only one response, but does not preclude selecting more than one response (**Figure 1**). (In comparison, the *race* question explicitly asks respondents to select one or more race categories -- see section on *Single, Multiple and "Bridged" race of mother and father*.) If more than one Hispanic origin box is checked, or if there is a literal entry and one or more boxes are checked, the code for "Multiple Hispanic" is applied. These records are classified as "Other Hispanic" in NCHS data. The 12 states using the 2003 revision plus Minnesota, which used the 1989 revision but also allowed reporting of multiple Hispanic groups, accounted for 34 percent of Hispanic births in the United States in 2005; for 0.4 percent of these births, the mother reported more than one Hispanic origin group in 2005.

Changes in the reporting of Hispanic origin in the 2003 certificate, including the reporting of more than one Hispanic origin, may have some influence on the distribution of births among specified Hispanic groups, since records for which multiple Hispanic origin as coded as "Other and unknown Hispanic" in lieu of a specified Hispanic origin category. Between 2004 and 2005, births to "Other and unknown Hispanic" women in the U.S. increased from 49,044 to 61,703.

The percentage of records for which Hispanic origin of the parents was not reported in 2005 is shown by state in **Table B** of these Detailed Notes.

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'' [24-26]. These documents specify guidelines for the 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 five 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 2005 data year, multiple-race was reported by the 12 states which had implemented the revised certificate by January 1, 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. (Vermont implemented the revised certificate after January 1, and, accordingly, multiple-race data are not available for this state for the full year.) The 17 states which reported multiple-race for all births for all of 2005, accounted for 52.4 percent of U.S. births in 2005, and reported 1.5 percent of mothers as multiracial, with levels varying from 0.4 percent (Texas) to 36.6 percent (Hawaii). Data from the vital records of the remaining 31 states and the District of Columbia followed the 1977 OMB standards in which a single race is reported [24]. In addition, these areas also report the minimum set of four races as stipulated in

the 1977 standards [24], compared with the minimum of five races for the 1997 [25] 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") [26, 27]. 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 [28, 29].

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 reporting 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 an API subgroup, only to the API group. API mothers are disproportionately represented in the 17 states reporting multiple-race (59.5 percent in 2005.) For reports: "Births: Final Data for 2003" through "Births: Final Data for 2005," data are not shown for the specified API subgroups because the bridging technique cannot be applied in this detail [1, 26, 27,30,31]. However, data for the API subgroups, reported alone or in combination with other races and/or API subgroups, are available in the 2003-2005 natality public-use micro-data files. A recent report [32] describes characteristics of births in 2003 to single and multiple-race women.

Race of mother is reported as single race only in 31 states and the District of Columbia under 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 31 states, five states (Illinois, Missouri, New Jersey, 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 nineteen states which report multiple-race data – for all or part of 2005

(California, Florida, Hawaii, Idaho, Kansas, Kentucky, Michigan, Minnesota, Nebraska, New Hampshire, New York State (excluding New York City), Ohio, Pennsylvania, South Carolina, Tennessee, Texas, Utah, Vermont, 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) are available on the 2005 natality micro-data file.

In 2005, race of mother was not reported for 0.7 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. Imputation to race of mother was necessary for just 0.5 percent of births in 2005

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 [11]. Trend data by race of mother are shown in "Births: Final Data for 2005" [1] 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.

Texas births -- For 2005, differences in editing procedures for race of mother between Texas and NCHS resulted in an over reporting of births to white mothers and underreport of births to black mothers for Texas. The magnitude of the reporting differences will be discussed in: "Births: Final Data for 2006."

Age of mother

Beginning with the 1989 U.S. Standard Certificate of Live Birth, a "Date of birth" item 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 2005 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 [11].

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 question of the pre-1989 birth certificates, 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 [14]. 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 [33].

Median and mean 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, 2002, Volume 1, Natality" [34], which is available at**:** http://www.cdc.gov/nchs/datawh/statab/unpubd/natality/natab2002.htm

Trend data on the mean age of mother, derived directly from frequencies of births by age, are shown in **Table 1-6** of "Vital Statistics of the United States, 2002, Volume 1, Natality" available at: http://www.cdc.gov/nchs/datawh/statab/unpubd/natality/natab2002.htm, and for recent years, in "Births: Final Data for 2005." [1]

Not stated age or date of birth of mother— In 2005, age of mother was not reported on 0.01 percent of the records. Beginning in 1964, birth records with date of birth of mother and/or age of mother not stated have had age imputed according to the age of mother from the previous birth record of the same race and total-birth order (total of fetal deaths and live births). (See *NCHS Instruction Manuals*, Part 12) [35,36]. Editing procedures for 1963 and earlier years are described elsewhere [11].

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 13.8 percent of the birth certificates in 2005, 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.

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 2005 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 [35, 36].

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 to the same procedues in effect in New York State, a separate registration area. 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 continued to use inferential

procedures to compile birth statistics by marital status in 2005, 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 [37, 38].

The mother's marital status was not reported in 2005 on 0.03 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 all records with marital status not reported was imputed as "married." Because of the small number of records affected (1,271 births in 2005), 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 and 1989 U.S. Standard Certificates of Live Birth. However, the format of the education item on the 2003 revised standard certificate differs substantively from that of the 1989 unrevised standard certificate. The 1989 certificate asks for the number of years of school completed by the mother. (Additional information on the unrevised 1989 education question is found in the earlier year Technical Appendix [11].) In contrast, the revised

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.).

Education data for the states that have implemented the revised 2003 certificate are not directly comparable with data for the states that are not yet using the revised certificate. Accordingly, revised and unrevised educational attainment data are not combined for tabulations [1] and in the natality data files. For all of 2005, revised data are available for 12 states (Vermont revised their birth certificate in 2005, but after January 1). Unrevised data are available for 37 states, New York City and the District of Columbia.

Data on educational attainment are currently available only for the mother [11]. 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 weight gain during pregnancy is available from both the 2003 and the 1989 U.S. Standard Certificate of Live Birth. The item was modified, however, between revisions. The 1989 certificate which asks for "weight gained during pregnancy ____ lbs," whereas the revised 2003 item which asks for the mother's pre-pregnancy weight and weight at delivery from which total weight gain during pregnancy is derived. Information on weight gain is considered comparable between revisions and, accordingly, are combined for tabulations and in the natality data files. California did not report weight gain during pregnancy in either format for 2005.

Weight gain during pregnancy is reported in pounds. A reported loss of weight is recorded as zero gain. See NCHS manuals for detailed descriptions of editing and computation of the weight gain item [35,36].

Tobacco use during pregnancy

Information on smoking during pregnancy is reported on both the 1989 and the 2003 U.S. Standard Certificates of Live Birth. The item was substantively modified for

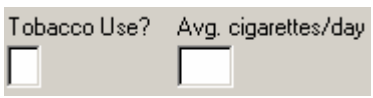
the 2003 certificate, however, and data based on the revised item are not comparable with those based on the unrevised 1989 item. The revised 2003 question asks for the number of cigarettes smoked at different intervals before and during the pregnancy. If the mother reports smoking in any of the three trimesters of pregnancy she is classified as a smoker. In comparison, the unrevised 1989 item asks a "yes/no" question on tobacco use during pregnancy and the average number of cigarettes per day with no specificity on timing during the pregnancy.

Data based on the 2003 revised item are available for all of 2005 for eleven states; Idaho, Kansas, Kentucky, Nebraska, New Hampshire, New York (excluding New York City), Pennsylvania, South Carolina, Tennessee, Texas, and Washington, and Puerto Rico. (Vermont implemented the revised birth certificate in 2005, but after January 1.) The tobacco use item for Florida, which implemented the revised birth certificate as of January 1, 2004, does not follow the standard format. As a result, tobacco use data for Florida are not comparable with either the 2003 revised or 1989 unrevised data (see below) and are not included in the 2005 data files. [39].

Data based on the unrevised 1989 certificate are available for all of 2005 for 36 States, New York City, and the District of Columbia. California did not report tobacco use in either the revised or unrevised format for 2005 [1, 3]).

The Florida tobacco use item: Response categories on the revised Florida birth certificate include Yes, No, Quit, and Unknown. The question however, does not collect information by trimester, an important enhancement of the smoking question in the 2003 revision. This, plus the additional response of "quit, makes Florida tobacco use data not comparable with data for either the unrevised or revised reporting areas, and Florida data on tobacco use are not included in the 2005 data file.

(Florida Question) Mother Used Tobacco During Pregnancy?



Tobacco Use?

Enter "Y", "N", "Q", or "U".

Average number cigarettes/day :

This may not be **00**. Valid entries are **01** though **98** .

Alcohol use during pregnancy

Data on alcohol use during pregnancy are available for 36 states which used the 1989 Standard Certificate of Live Birth for all of 2005. (An item on alcohol use was not included on the 2003 revised birth certificate). Information on alcohol use also is not available from California which does not report this item. Although alcohol use during pregnancy is a major, independent risk factor for poor pregnancy outcome and is implicated in delayed infant and child development [40,41] it has been shown to be substantially underreported on the birth certificate. The underreporting of alcohol use on the birth certificate is likely due to question wording as well as the stigma attached to maternal alcohol use [42,43].

Pregnancy risk factors

Both the 2003 and 1989 standard birth certificates collect pregnancy risk information in a checkbox format. Ten risk factors are separately identified on the revised 2003 certificate (**Figure 1)**; sixteen are identified on the 1989 Certificate (**Figure 2)**. Four risk factors; diabetes, pre-pregnancy hypertension, gestational hypertension, and eclampsia are comparable across revisions [3]. (See **Table C**.) Selected risk factors new to the revised certificate were presented in a recent report based on 2004 data [22]; a forthcoming report will update these data for 2005 [21].

Both the revised and unrevised formats allow for the reporting of more than one risk factor and include a choice of "None" (or "None of the above" in the case of the revised certificate). Accordingly, if the item is not completed, it is classified as not stated. Levels of reporting completeness by state for pregnancy risk factors are shown in **Table B.**

For detailed instructions and definitions for the pregnancy risk factors included on the revised 2003 certificate see: *Guide to Completing the Facility Worksheets for the Certificate of Live Birth and Report of Fetal Death (2003 Revision)* [20].
Definitions for the 1989 certificate items are also available [30]

Prenatal care

Information on the timing of prenatal care is available for both the 2003 revised and 1989 unrevised Certificates of Live Birth. However, the 2003 revision 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 include a recommended source for these data. Accordingly, prenatal care data for the two revisions are not directly comparable and are shown separately in tabulations [1] and in the data file. For the full 2005 data year, revised prenatal care data are available for 12 states (Vermont implemented the 2003 revised certificate in 2005, but after January 1); data based on the 1989 unrevised certificate are available for 37 states, New York City, and the District of Columbia.

Levels of utilization of prenatal care based on revised data are substantially lower than those based on unrevised data. For example, unrevised 2004 data for Kansas indicated that 86.5 of residents began care in the first trimester of pregnancy. This compares with a level of 76.6 percent based on 2005 Kansas revised data. Much, if not all of the difference between 2004 and 2005 for Kansas and other revised states, is related to changes in reporting and *not* to changes in prenatal care utilization.

The 2005 natality data file also includes an alternative measure of prenatal care utilization, the Adequacy of Prenatal Care Index (APNCU). The APNCU is based on recommendations from the American College of Obstetricians and Gynecologists and takes into account the month care began, the number of prenatal care visits and the gestational age of the newborn as reported on the birth certificate [44, 45].

Obstetric procedures

Both the 2003 and the 1989 Standard Certificates of Live Birth collect information on obstetric procedures in a checkbox format (**Figures 1** and **2**). Three risk factors are separately identified on the revised 2003 certificate; six procedures are separately identified on the 1989 certificate. Two procedures, induction of labor

(captured under the "Characteristics of Labor and Delivery section of the revised 2003 certificate) and tocolysis are comparable across revisions [1]. Obstetric procedures new to the revised certificate were presented in a recent report based on 2004 data [22]; a forthcoming report will update these data for 2005 [21].

Both the revised and unrevised certificate formats allow for the reporting of more than one procedure and include a choice of "None" (or "None of the above" in the case of the revised certificate). Accordingly, if the item is not completed, it is classified as not stated. Reporting completeness for obstetric procedures by state is shown in **Table B.**

Detailed instructions and definitions for the pregnancy risk factors based on the revised 2003 certificate are presented the: *Guide to Completing the Facility Worksheets for the Certificate of Live Birth and Report of Fetal Death (2003 Revision)* [20].
Definitions for the 1989 certificate items are also available [30]

Characteristics of labor and delivery

Both the 2003 and the 1989 standard birth certificates collect characteristics of labor and delivery in a checkbox format (**Figures 1** and **2**). The 2003 Standard Certificate of Live Birth includes nine specific characteristics of labor and delivery; fifteen characteristics are included on the 1989 certificate. Three characteristics, Meconium, Breech/malpresentation (collected under the "Method of Delivery" item on the 2003 Certificate), and Precipitous labor (collected under "Onset of labor" on the 2003 certificate) are comparable across revisions [1]. Characteristics of labor and delivery new to the revised certificate were presented in a recent report based on 2004 data [22]; a forthcoming report will update these data for 2005 [21].

Both certificate revisions have a format which allows for the reporting of more than one characteristic and include a choice of "none" (or "none of the above"). If the item is not completed, it is classified as "not stated." The percent of records for which characteristics of labor and delivery items were not stated are shown in **Table B**.

Detailed instructions and definitions for the characteristics of labor and delivery collected on the revised 2003 certificate are presented the: *Guide to Completing the Facility Worksheets for the Certificate of Live Birth and Report of Fetal Death (2003 Revision)* [20]. Definitions for the 1989 certificate items are also available [30].

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. There is evidence that the number of live births attended by certified nurse midwives [CNM] is understated [46], largely due to difficulty in correctly identifying the birth attendant when more than one provider is present at the birth. (Anecdotal evidence suggests that some hospitals require that a physician be reported as the attendant even where no physician is physically present at midwife-attended births.)

Additional information on births occurring outside of hospitals, and on birth attendants, can be found in "Technical appendix. Vital statistics of the United States: 1999, vol I, natality [11].

Method of delivery

Several rates are computed for "Method of Delivery." The overall cesarean delivery rate or total cesarean rate is computed as the percent of all births delivered by cesarean. The primary cesarean rate relates the number of women having a first cesarean delivery to all women giving birth who have never had a cesarean delivery. The denominator for this rate includes the sum of primary cesareans and vaginal births without previous cesarean. The rate of vaginal birth after previous cesarean (VBAC) delivery is computed by relating all VBAC deliveries to the sum of VBAC and repeat cesarean deliveries, that is, to women with a previous cesarean delivery. Prior to 2005, revised and unrevised data on type of cesarean section and vaginal delivery were combined.

Information on method of delivery is reported on both the 2003 and 1989 Standard Certificates of Live Birth. However, the format and wording of the method of delivery item on the revised certificate differs from that of the unrevised certificate. The

unrevised item asks a direct question on whether the birth was vaginal, VBAC or a primary or repeat cesarean delivery. In contrast, the revised method of delivery item asks if the final route of delivery was a vaginal (with or without forceps or vacuum assistance) or a cesarean delivery. Information on the type of vaginal (vaginal or VBAC) or type of cesarean delivery (primary or repeat) is calculated from the response to a question under a different item, "Risk Factors in this Pregnancy", which asks if the mother had a previous cesarean delivery.

As a result of these changes, although data on total cesarean deliveries appear to be very comparable between revisions, information on type of vaginal or cesarean delivery is not. Rates based on data from the revised certificates are substantially higher for VBACs and primary cesareans, and lower for repeat cesareans, than rates based on data from unrevised certificates [47]. Accordingly, data on VBAC, primary, and repeat cesarean deliveries are not directly comparable between revisions, and, beginning with the 2005 data year, are presented separately in tabulations [1] and in the data file. Prior to 2005, revised and unrevised data on type of cesarean and vaginal delivery were combined.

Information on forceps and vacuum delivery is also available from both the 2003 revised and 1989 unrevised birth certificates; 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. Method of delivery items new to the revised certificate were presented in a recent report based on 2004 data [22]; a forthcoming report will update these data for 2005 [21].

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 consistent with the ICD–9 and ICD–10 [8] definitions.

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 [11, 48]. Reporting problems for this item persist and may occur more frequently among some subpopulations, such as selected maternal race groups, and among births with shorter gestations [49].

The 1989 revision of the U.S. Standard Certificate of Live Birth includes an additional measure of gestational age, the item of "Clinical estimate of gestation". The comparable item on the 2003 revision of the birth certificate is the "Obstetric estimate of gestation" – see definitions [20]. The clinical or obstetric estimate is compared with the 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 NCHS instruction manuals [35, 36]. The clinical/obstetric estimate is reported by all areas except California for 2005.

The period of gestation for 5.8 percent of the births in 2005 was based on the clinical or obstetric estimate of gestation. For 97 percent of these records, the clinical or obstetric estimate was used because the LMP date was not reported. For the remaining 3 percent, the clinical or 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 /obstetric estimate of gestation, the LMP-computed gestation was used and birthweight was reclassified as "not stated." This was necessary for 2,149 births or 0.06 percent of all birth records in 2005. The levels of the adjustments were similar to those for earlier years. Despite these edits, substantial incongruities in these data persist.

Birthweight

In some areas birthweight is reported in pounds and ounces rather than in grams. However, the metric system is used to tabulate and present 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* [50]. 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.

Apgar score

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.

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. In 1995, NCHS discontinued collecting data on the 1-minute score. The 2003 revised certificate includes the five minute score and also asks for a 10 minute score if the 5 minute score is less than 6. The 2005 natality file includes information on the 5 minute score, only. In 2005, California did not collect information on Apgar scores on its birth certificate.

Plurality

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 [51] includes information on sets of twin, triplet and quadruplets, thus allowing for the analysis of maternal and infant characteristics of sets of births and fetal deaths in multiple deliveries.

Records for which plurality is unknown are imputed as singletons. This occurred for 0.007 percent of all records for 2005.

Abnormal conditions of the newborn

Both the 2003 and 1989 standard birth certificates collect abnormal conditions of the newborn in a checkbox format **(Figures 1** and **2).** There are seven specific abnormal conditions included on the 2003 revised birth certificate; the 1989 certificate separately identifies eight abnormal conditions. None of the specific abnormal conditions of the newborn are comparable across the 1989 and 2003 revisions. Abnormal conditions based on the revised certificate were presented in a recent report based on 2004 data [22]; a

forthcoming report will update these data for 2005 [21].

More than one abnormal condition may be reported for a given birth. "None" or ("None of the above" in the case of the revised certificate) may also be selected. Accordingly, if the item is not completed, it is tabulated as not stated.

Detailed instructions and definitions for the abnormal conditions of the newborn collected on the revised 2003 certificate are presented in the: *Guide to Completing the Facility Worksheets for the Certificate of Live Birth and Report of Fetal Death (2003 Revision)* [20]. Definitions for the 1989 certificate items are also available [30]

Congenital anomalies of the newborn

Both the 2003 and 1989 standard birth certificates collect congenital anomalies of the newborn in a checkbox format **(Figures 1** and **2).** Twelve specific anomalies or anomaly groups are collected on the 2003 revised birth certificate; 21 anomalies are collected on the 1989 certificate. Six anomalies or anomaly groups; anencephaly, Meningolcele/Spinda Bifida, Congenital diaphragmatic hernia, Omphalocele/Gastroschisis, Cleft lip with or without Cleft palate, and Down Syndrome are comparable across revisions [3], see **Table C**. Congenital anomalies new to the 2003 revised certificate were presented in a recent report based on 2004 data [22]; a forthcoming report will update these data for 2005 [21].

Both the revised and unrevised formats allow for the identification of more than one anomaly and include a choice of "None" (or "None of the above"). Accordingly, if the item is not completed, it is classified as not stated.

It is well documented that congenital anomalies, except for the most visible and most severe, have historically been under-reported on birth certificates [52]. This has been attributable, at least in part, to the inclusion of anomalies on the 1989 U.S. Standard Certificate of Live Birth which may be difficult to detect within the short period between birth and completion of the child's birth certificate. The 2003 revision of the US Standard Certificate attempted to improve reporting of congenital anomalies by including only those diagnosable within 24 hours of birth using conventional, widely available diagnostic techniques [17, 22]. As more data based on the revised certificate become available, it will be possible to determine whether this change has had the intended effect.

Detailed instructions and definitions for the abnormal conditions of the newborn

collected on the revised 2003 certificate are presented in the: *Guide to Completing the Facility Worksheets for the Certificate of Live Birth and Report of Fetal Death (2003 Revision)* [20]. Definitions for the 1989 certificate items are also available [30]

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 2005 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 [53]. Information on procedures for adjusting births for under registration (for cohort fertility tables) is presented elsewhere [11].

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 B** for the percentage of birth records on which specified items were not stated. In this table, there are items comparable to the two revisions, items not comparable between the 2003 and 1989 revision, and items exclusive to each.

Data users should note that levels of incomplete or inaccurate reporting for some of the items are quite high in some states. See **Table B**.

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.

Computation of Rates and Other Measures

Population denominators

Estimation by age, sex, race and Hispanic origin—Populations for birth and fertility rates for 2005 shown in the report: "Births: Final Data for 2005" [1] are estimated from the 2000 census, as of July 1, 2005. These populations are shown in **Tables 1** and **2** of these Detailed Notes. The population estimates have been provided by the U.S. Census Bureau [54] 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 [24, 26, 27, 55, 56].

Birth and fertility rates by state shown in the 2005 final report [1] use 2000 census-based state-level post-censal population estimates provided by the U.S. Census Bureau [54]. 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 the 2005 natality final report [1] are based on monthly population estimate consistent with the July 1, 2005 population estimates. Rates for unmarried women shown in that report are based on distributions of the population by marital status as of March 2005 as reported by the U.S. Census Bureau in the March Current Population Survey (CPS) [57-59], which have been adjusted to July 2005 population levels [54] by the Division of Vital Statistics, NCHS [1]**.** Birth and fertility rates for the Hispanic population [1]**,** are based on estimates of the total Hispanic population as of July 1, 2005 [54]. Rates for Hispanic subgroups are based on special population estimates that are presented in **Table 2.** Information about allocation to Hispanic subgroups is presented elsewhere [60, 61, 62].

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 [25]. 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 [24]. Except for nineteen 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 1991 through 2005, it was necessary to ''bridge'' the population data for multiple-race persons back to single race categories. In addition, the 2000 census counts 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 [26, 27]. The procedures used to produce the ‘‘bridged’’ populations are described in separate publications [26, 27]. Seventeen states reported multiple-race data for all of 2005; two states reported multiple-race data for part of 2005. 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 [26,54,63,64]. These intercensal population estimates for 1991-99 are based on the April 1990 and April 2000 Censuses. The bridged rates for 1990 and 2000 are based on populations from the censuses in those years as of April 1.

The population data used to compile birth and fertility rates by race and ethnicity shown in these Detailed Notes and used for this File 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 or Alaskan Natives, are likely to be affected much more than larger populations by potential measurement error [26]. While the nature and magnitude of error is unknown, the potential for error should be kept in mind when evaluating trends and differentials.

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 3**). 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 1900–2005 is shown in **Table 4**. In addition, the population including Armed Forces abroad is shown for the United States. **Table D** in these Notes shows the sources for these populations. A

detailed discussion of historical population bases is presented elsewhere [11].

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 population. A more detailed discussion of census undercounts and overcounts can be found in the "1999 Technical Appendix" [11]. 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** of these Notes.

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 (white and black). Heuser [65] 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 is 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 2,054 in 2005, 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 2005, they would have a total of 2,054 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 [66]. 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.

Computation 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 B**. 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 confidence intervals 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 2005" [1]. 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 [67]. 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 F** that corresponds to the number B

U = the value in **Table F** that corresponds to the number B

Example

Suppose that the number of first births to American Indian or Alaskan Native (AIAN) 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 AIAN 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:

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

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

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 (weighted) for all other years for an Hispanic subgroup), 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 F**.

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

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

where:

R	=	birth rate
L	=	the value in **Table F** that corresponds to the number of events B
U	=	the value in **Table F** that corresponds to the number of events B

Example

Suppose that the first birth rate for American Indian and Alaskan Native (AIAN) women 40-44 years of age was 0.50 per thousand, based on 47 births in the numerator. Using **Table F**:

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

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

This means that the chances are 95 out of 100 that the actual first birth rate for AIAN 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 and proportions-- In many instances we need to compute the confidence intervals for percents or proportions. 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. The computation of a 95-percent confidence interval for a percent is made 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:

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

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

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 14,752 births in the numerator and 29,682 births in the denominator. First is the test to make sure the normal approximation of the binomial can be used:

$$29{,}682 \times 0.497 = 14{,}752$$

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

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

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

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

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 for population groups

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 and Alaskan Native (AIAN) 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 AIAN 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 [68]. 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:

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

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 percentages -- 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

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

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:

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

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.

Significance testing differences between two means – A previous report details the formula and procedure in testing differences between two means in which both means are based on 100 or more cases [69]. When one or both means is based on fewer than 100 cases, confidence intervals are computed for both means based on the standard error of the mean: $s / \sqrt{N}$; s is the standard deviation and N is the number of births. If the confidence intervals overlap, the difference is not statistically significant given the width of the confidence interval (i.e. 0.95 percent level). If they do not overlap, the difference is statistically significant.

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 2005 are shown in the 2005 final report [1] and in the "Vital Statistics of the United States, 2005, 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 2** [54, 61]. 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: 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 F.**

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)
L = the value in **Table F** that corresponds to the number B, using the 96 percent CI column
U = the value in **Table F** that corresponds to the number B, using the 96 percent CI column
α = standard error term for selecting CI column in **Table F**
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 [70,71]
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 F**, 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.

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 [70,71]
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:

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

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

This means that the chances are 95 out of 100 that the actual fertility rate of Cuban women 15–44 years of age is between 41.16 and 61.24.

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. It may be concluded 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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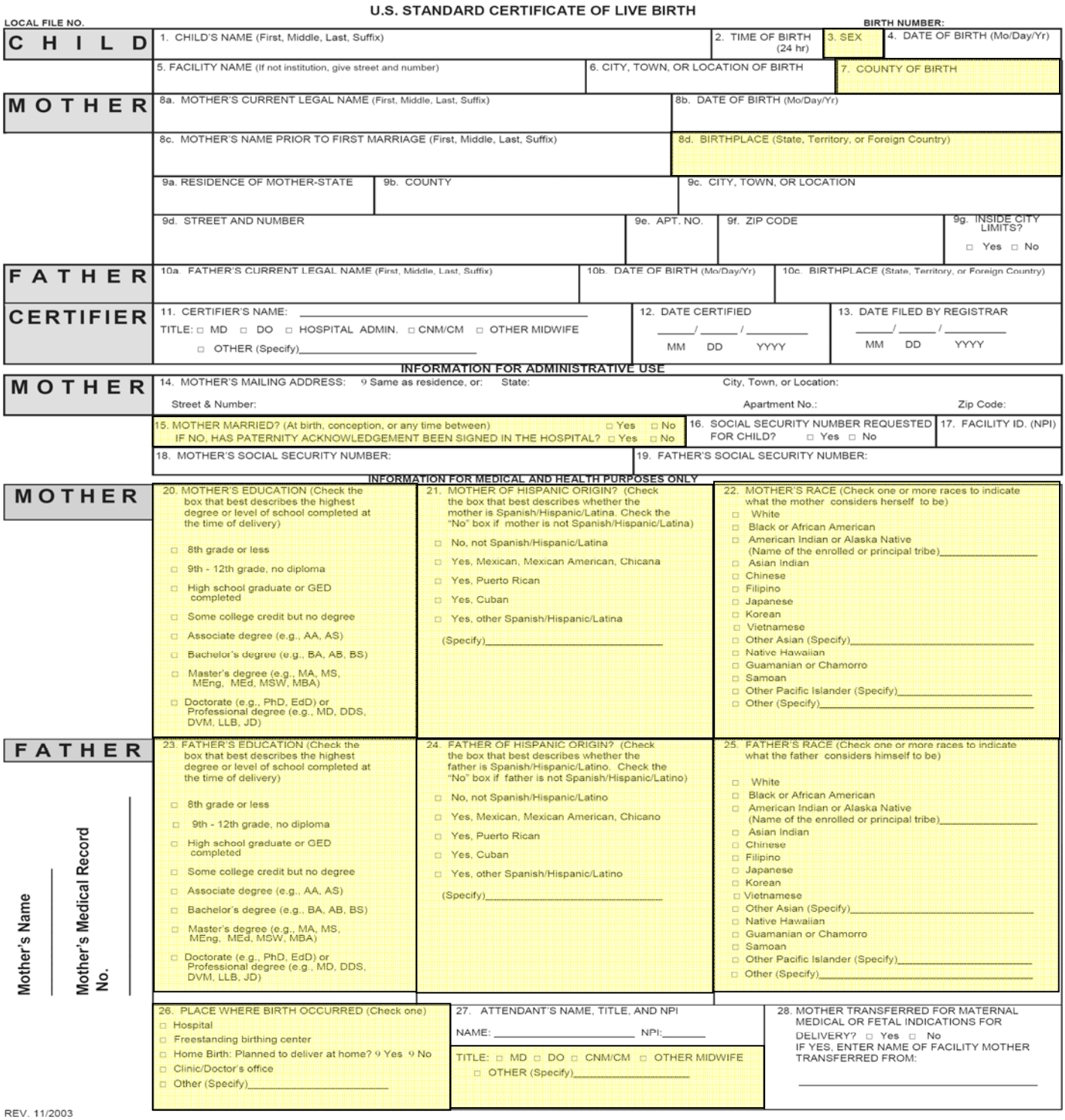
Figure 1. U.S. Standard Certificate of Live Birth, 2003 Revision



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 (24 hr)
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? □ Yes □ 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: □ MD □ DO □ HOSPITAL ADMIN. □ CNM/CM □ OTHER MIDWIFE
□ 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) □ Yes □ No
IF NO, HAS PATERNITY ACKNOWLEDGEMENT BEEN SIGNED IN THE HOSPITAL? □ Yes □ No
16. SOCIAL SECURITY NUMBER REQUESTED FOR CHILD? □ Yes □ 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)
□ 8th grade or less
□ 9th - 12th grade, no diploma
□ High school graduate or GED completed
□ Some college credit but no degree
□ Associate degree (e.g., AA, AS)
□ Bachelor's degree (e.g., BA, AB, BS)
□ Master's degree (e.g., MA, MS, MEng, MEd, MSW, MBA)
□ 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)
□ No, not Spanish/Hispanic/Latina
□ Yes, Mexican, Mexican American, Chicana
□ Yes, Puerto Rican
□ Yes, Cuban
□ Yes, other Spanish/Hispanic/Latina
(Specify)_____

22. MOTHER'S RACE (Check one or more races to indicate what the mother considers herself to be)
□ White
□ Black or African American
□ American Indian or Alaska Native (Name of the enrolled or principal tribe)_____
□ Asian Indian
□ Chinese
□ Filipino
□ Japanese
□ Korean
□ Vietnamese
□ Other Asian (Specify)_____
□ Native Hawaiian
□ Guamanian or Chamorro
□ Samoan
□ Other Pacific Islander (Specify)_____
□ 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)
□ 8th grade or less
□ 9th - 12th grade, no diploma
□ High school graduate or GED completed
□ Some college credit but no degree
□ Associate degree (e.g., AA, AS)
□ Bachelor's degree (e.g., BA, AB, BS)
□ Master's degree (e.g., MA, MS, MEng, MEd, MSW, MBA)
□ 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)
□ No, not Spanish/Hispanic/Latino
□ Yes, Mexican, Mexican American, Chicano
□ Yes, Puerto Rican
□ Yes, Cuban
□ Yes, other Spanish/Hispanic/Latino
(Specify)_____

25. FATHER'S RACE (Check one or more races to indicate what the father considers himself to be)
□ White
□ Black or African American
□ American Indian or Alaska Native (Name of the enrolled or principal tribe)_____
□ Asian Indian
□ Chinese
□ Filipino
□ Japanese
□ Korean
□ Vietnamese
□ Other Asian (Specify)_____
□ Native Hawaiian
□ Guamanian or Chamorro
□ Samoan
□ Other Pacific Islander (Specify)_____
□ Other (Specify)_____

Mother's Name

Mother's Medical Record No.

26. PLACE WHERE BIRTH OCCURRED (Check one)
□ Hospital
□ Freestanding birthing center
□ Home Birth: Planned to deliver at home? 9 Yes 9 No
□ Clinic/Doctor's office
□ Other (Specify)_____

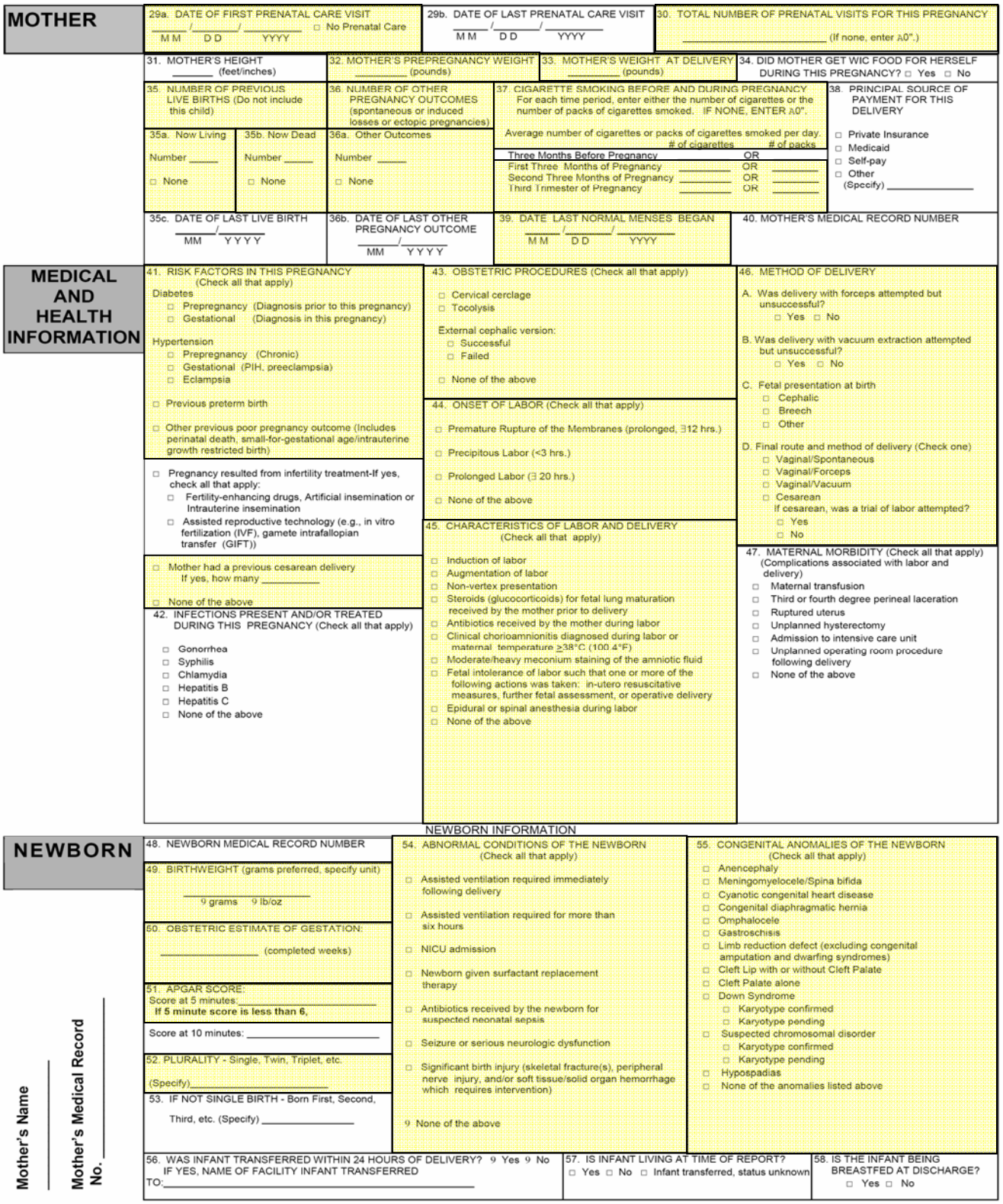
27. ATTENDANT'S NAME, TITLE, AND NPI
NAME: _____ NPI:_____
TITLE: □ MD □ DO □ CNM/CM □ OTHER MIDWIFE
□ OTHER (Specify)_____

28. MOTHER TRANSFERRED FOR MATERNAL MEDICAL OR FETAL INDICATIONS FOR DELIVERY? □ Yes □ No
IF YES, ENTER NAME OF FACILITY MOTHER TRANSFERRED FROM:
_____

REV. 11/2003

NOTE:
Shaded portions indicate items included in the 2005 natality public use micro-data file.

Figure 1. - Continued



MOTHER

29a. DATE OF FIRST PRENATAL CARE VISIT
_____/_____/_____ ☐ 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? ☐ Yes ☐ No

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

35a. Now Living
Number _____
☐ None

35b. Now Dead
Number _____
☐ None

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

36a. Other Outcomes
Number _____
☐ 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
☐ Private Insurance
☐ Medicaid
☐ Self-pay
☐ 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 YYYY

40. MOTHER'S MEDICAL RECORD NUMBER

MEDICAL AND HEALTH INFORMATION

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

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

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

☐ Previous preterm birth

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

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

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

☐ None of the above

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

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

External cephalic version:
☐ Successful
☐ Failed

☐ None of the above

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

45. CHARACTERISTICS OF LABOR AND DELIVERY (Check all that apply)
☐ Induction of labor
☐ Augmentation of labor
☐ Non-vertex presentation
☐ Steroids (glucocorticoids) for fetal lung maturation received by the mother prior to delivery
☐ Antibiotics received by the mother during labor
☐ Clinical chorioamnionitis diagnosed during labor or maternal temperature ≥38°C (100.4°F)
☐ Moderate/heavy meconium staining of the amniotic fluid
☐ 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
☐ Epidural or spinal anesthesia during labor
☐ None of the above

46. METHOD OF DELIVERY

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

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

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

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

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

NEWBORN

NEWBORN INFORMATION

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)
☐ Assisted ventilation required immediately following delivery
☐ Assisted ventilation required for more than six hours
☐ NICU admission
☐ Newborn given surfactant replacement therapy
☐ Antibiotics received by the newborn for suspected neonatal sepsis
☐ Seizure or serious neurologic dysfunction
☐ 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)
☐ Anencephaly
☐ Meningomyelocele/Spina bifida
☐ Cyanotic congenital heart disease
☐ Congenital diaphragmatic hernia
☐ Omphalocele
☐ Gastroschisis
☐ Limb reduction defect (excluding congenital amputation and dwarfing syndromes)
☐ Cleft Lip with or without Cleft Palate
☐ Cleft Palate alone
☐ Down Syndrome
☐ Karyotype confirmed
☐ Karyotype pending
☐ Suspected chromosomal disorder
☐ Karyotype confirmed
☐ Karyotype pending
☐ Hypospadias
☐ None of the anomalies listed above

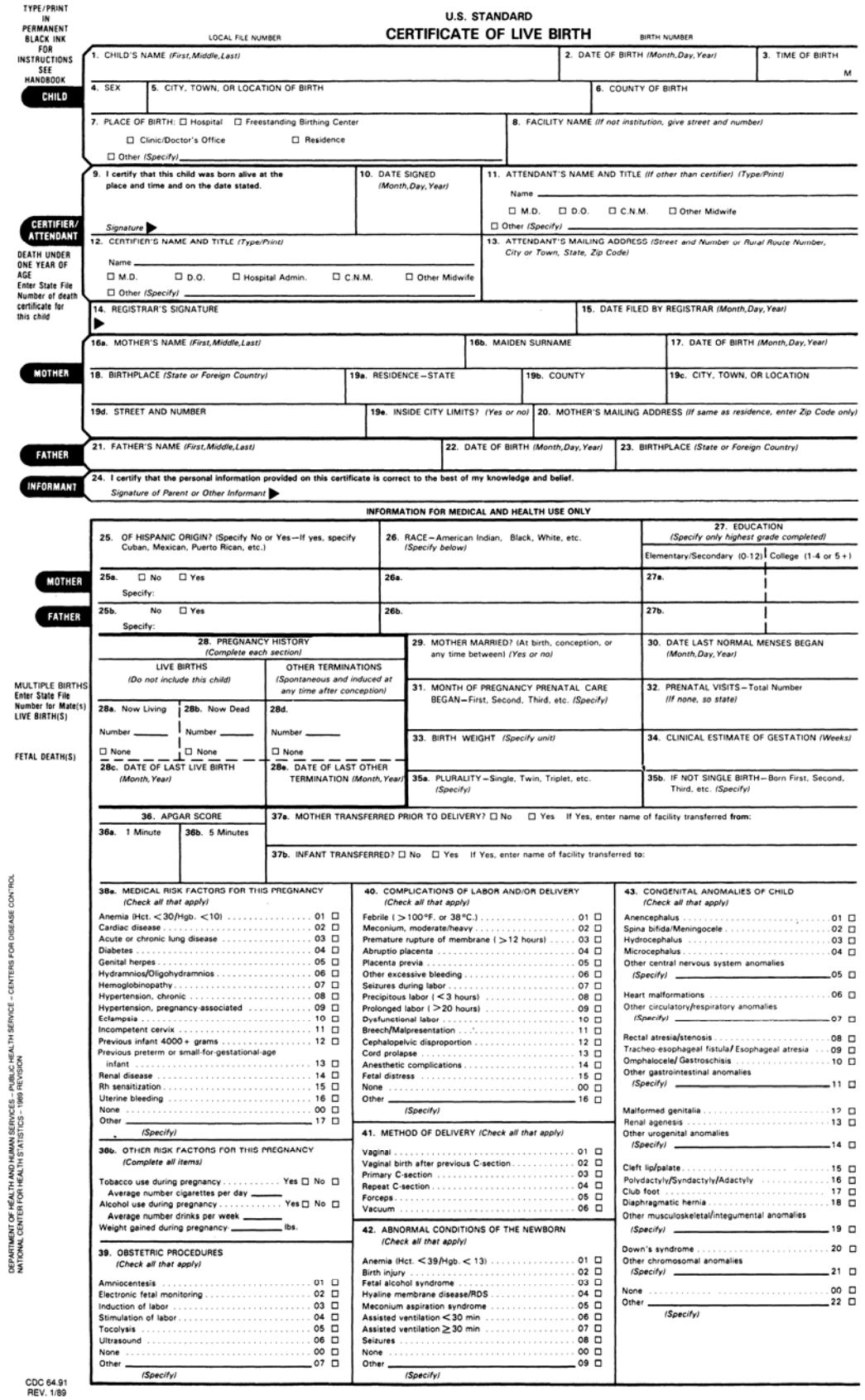
56. WAS INFANT TRANSFERRED WITHIN 24 HOURS OF DELIVERY? 9 Yes 9 No
IF YES, NAME OF FACILITY INFANT TRANSFERRED TO:_____

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

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

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

Figure 2. U.S. Standard Certificate of Live Birth, 1989 Revision



TYPE/PRINT IN PERMANENT BLACK INK FOR INSTRUCTIONS SEE HANDBOOK

LOCAL FILE NUMBER

U.S. STANDARD
CERTIFICATE OF LIVE BIRTH

BIRTH NUMBER

CHILD

1. CHILD'S NAME (First, Middle, Last)
2. DATE OF BIRTH (Month, Day, Year)
3. TIME OF BIRTH
4. SEX
5. CITY, TOWN, OR LOCATION OF BIRTH
6. COUNTY OF BIRTH
7. PLACE OF BIRTH: ☐ 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 ▶

INFORMATION FOR MEDICAL AND HEALTH USE ONLY

		MOTHER	FATHER
25. OF HISPANIC ORIGIN? (Specify No or Yes—If yes, specify Cuban, Mexican, Puerto Rican, etc.)	25a. ☐ No ☐ Yes Specify:	25b. ☐ No ☐ Yes Specify:
26. RACE—American Indian, Black, White, etc. (Specify below)	26a.	26b.
27. EDUCATION (Specify only highest grade completed) Elementary/Secondary (0-12) | College (1-4 or 5+)	27a.	27b.

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

FETAL DEATH(S)

28. PREGNANCY HISTORY (Complete each section)

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

29. MOTHER MARRIED? (At birth, conception, or any time between) (Yes or no)
30. DATE LAST NORMAL MENSES BEGAN (Month, Day, Year)
31. MONTH OF PREGNANCY PRENATAL CARE BEGAN—First, Second, Third, etc. (Specify)
32. PRENATAL VISITS—Total Number (If none, so state)
33. BIRTH WEIGHT (Specify unit)
34. CLINICAL ESTIMATE OF GESTATION (Weeks)
35a. PLURALITY—Single, Twin, Triplet, etc. (Specify)
35b. IF NOT SINGLE BIRTH—Born First, Second, Third, etc. (Specify)

36. APGAR SCORE
36a. 1 Minute
36b. 5 Minutes

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

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

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

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

Tobacco use during pregnancy Yes ☐ No ☐
Average number cigarettes per day
Alcohol use during pregnancy Yes ☐ No ☐
Average number drinks per week
Weight gained during pregnancy lbs.

39. OBSTETRIC PROCEDURES (Check all that apply)

Amniocentesis 01 ☐
Electronic fetal monitoring 02 ☐
Induction of labor 03 ☐
Stimulation of labor 04 ☐
Tocolysis 05 ☐
Ultrasound 06 ☐
None 00 ☐
Other (Specify) 07 ☐

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

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

41. METHOD OF DELIVERY (Check all that apply)

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

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

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

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

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

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

CDC 64.91
REV. 1/89

Table A. Births by place of occurrence and residence for births occurring in the 50 states, the District of Columbia, and U.S. territories, 2005

Area	Number live births	
	Occurrence	Residence
United States 1/	4,138,349	4,138,349
Alabama	59,300	60,453
Alaska	10,365	10,459
Arizona	95,687	96,199
Arkansas	38,381	39,208
California	549,100	548,882
Colorado	69,205	68,944
Connecticut	42,133	41,718
Delaware	12,265	11,643
District of Columbia	14,311	7,971
Florida	226,415	226,240
Georgia	143,476	142,200
Hawaii	17,911	17,924
Idaho	22,522	23,062
Illinois	175,714	179,020
Indiana	87,843	87,193
Iowa	39,337	39,311
Kansas	40,737	39,888
Kentucky	54,590	56,444
Louisiana	60,461	60,937
Maine	13,975	14,112
Maryland	71,292	74,980
Massachusetts	77,820	76,865
Michigan	126,498	127,706
Minnesota	70,933	70,919
Mississippi	41,175	42,395
Missouri	79,523	78,618
Montana	11,551	11,583
Nebraska	26,350	26,145
Nevada	36,950	37,268
New Hampshire	13,968	14,420
New Jersey	110,800	113,776
New Mexico	28,291	28,835
New York	247,901	246,351
North Carolina	123,943	123,096
North Dakota	9,621	8,390
Ohio	148,876	148,388
Oklahoma	50,656	51,801
Oregon	46,712	45,922
Pennsylvania	144,908	145,383
Rhode Island	13,481	12,697
South Carolina	55,321	57,711
South Dakota	11,957	11,462
Tennessee	87,072	81,747
Texas	387,856	385,915
Utah	52,555	51,556
Vermont	5,932	6,295
Virginia	102,646	104,555
Washington	82,336	82,703
West Virginia	21,150	20,836
Wisconsin	69,769	70,984
Wyoming	6,778	7,239
Births occurring to US territorial residents		
Puerto Rico	-	50,564
Virgin Islands	-	1,605
Guam	-	3,187
American Samoa	-	1,720
Northern Marianas	-	1,335

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

Table B. 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, 2005

[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	4,138,349	0.0	0.1	0.4	13.8	17.2	0.7	14.7
Alabama	60,453	0.0	0.0	0.1	20.2	20.7	0.1	20.2
Alaska	10,459	0.0	1.1	0.5	11.7	15.1	0.9	14.5
Arizona	96,199	0.0	0.0	0.1	14.7	17.7	1.9	16.9
Arkansas	39,208	-	0.0	0.6	18.8	20.5	0.4	19.1
California	548,882	0.0	0.0	0.4	7.4	8.1	1.3	7.7
Colorado	68,944	-	-	0.5	8.1	8.8	0.0	8.8
Connecticut	41,718	-	0.1	0.4	10.9	12.3	0.2	11.0
Delaware	11,643	-	0.0	0.2	34.0	34.9	0.9	34.4
District of Columbia	7,971	-	-	0.1	34.3	43.8	0.3	34.3
Florida	226,240	0.0	0.3	0.3	15.3	25.9	0.3	17.2
Georgia	142,200	0.0	0.0	0.3	17.3	18.0	1.4	18.5
Hawaii	17,924	-	0.1	0.1	8.5	12.1	0.2	8.5
Idaho	23,062	0.0	0.0	0.3	9.4	15.5	0.5	11.6
Illinois	179,020	0.0	0.0	0.1	13.8	15.4	0.1	15.2
Indiana	87,193	0.0	0.1	0.1	14.0	13.9	0.4	14.0
Iowa	39,311	0.0	0.0	0.0	13.8	16.4	0.3	16.7
Kansas	39,888	-	-	0.1	11.2	17.2	0.4	0.9
Kentucky	56,444	0.2	0.0	0.7	20.0	26.6	0.1	24.2
Louisiana	60,937	0.0	0.0	0.0	19.0	19.4	0.1	19.1
Maine	14,112	0.0	-	0.0	10.1	13.2	0.2	13.2
Maryland	74,980	0.0	0.0	0.1	14.0	21.4	0.2	16.1
Massachusetts	76,865	0.0	0.0	1.0	8.5	10.0	0.6	8.9
Michigan	127,706	0.0	0.1	0.2	15.2	17.1	3.1	19.5
Minnesota	70,919	-	0.1	0.3	13.0	18.8	1.4	14.5
Mississippi	42,395	-	0.0	0.1	21.4	21.5	0.1	21.5
Missouri	78,618	0.0	0.0	0.3	18.7	20.0	0.1	18.4
Montana	11,583	0.0	0.1	0.1	9.2	10.9	2.4	13.0
Nebraska	26,145	-	0.0	2.8	12.4	22.1	0.0	12.6
Nevada	37,268	-	0.0	0.7	22.0	24.4	1.4	22.7
New Hampshire	14,420	-	0.0	0.2	6.7	11.9	1.6	7.8
New Jersey	113,776	0.0	0.0	0.1	7.5	9.3	0.1	7.8
New Mexico	28,835	-	0.0	0.6	19.3	19.5	0.0	19.5
New York (excluding NYC)	128,844	0.0	0.0	0.0	11.1	17.4	0.2	11.2
New York City	117,507	0.0	0.0	0.4	15.7	16.9	0.3	15.9
North Carolina	123,096	0.0	0.0	0.0	16.4	16.6	0.1	17.1
North Dakota	8,390	0.0	-	0.0	8.3	9.7	3.6	13.2
Ohio	148,388	0.0	0.0	0.8	17.3	21.7	0.8	21.6
Oklahoma	51,801	-	0.0	0.0	14.5	17.5	0.3	16.7
Oregon	45,922	0.0	0.0	0.1	10.1	5.1	0.5	5.2
Pennsylvania	145,383	0.0	0.3	3.8	6.9	11.6	0.9	5.9
Rhode Island	12,697	-	-	0.2	13.3	14.4	13.4	26.5
South Carolina	57,711	-	0.0	0.3	30.1	35.4	0.2	30.1
South Dakota	11,462	0.0	0.0	0.1	10.1	11.1	0.1	13.5
Tennessee	81,747	0.0	0.1	0.3	16.5	23.5	0.2	16.3
Texas	385,915	0.0	0.2	0.1	15.0	21.1	0.2	15.0
Utah	51,556	0.0	-	0.2	7.3	9.6	0.6	9.0
Vermont /2	6,295	0.0	0.1	0.1	7.3	10.1	1.0	10.4
Virginia	104,555	-	0.0	0.1	15.2	17.8	0.2	15.3
Washington	82,703	0.0	0.0	0.3	10.1	23.6	2.5	15.5
West Virginia	20,836	0.1	0.0	0.2	13.2	14.1	0.3	14.1
Wisconsin	70,984	-	0.0	0.1	32.0	32.1	0.0	32.1
Wyoming	7,239	-	-	0.1	15.5	16.3	0.3	15.9
Puerto Rico	50,564	0.0	0.0	0.1	3.7	4.3	0.0	4.1
Virgin Islands	1,605	-	0.8	-	21.6	23.2	4.6	54.1
Guam	3,187	0.0	0.1	0.3	21.7	22.0	0.7	23.5
American Samoa	1,720	0.1	0.8	4.9	34.2	34.4	---	---
Northern Marianas	1,335	-	-	-	9.9	9.2	---	---

See footnotes at end of table.

Table B. Percent of birth records on which specified items were not stated: United States and each state and territory, 2005 -- 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	
	Unrevised /3	Revised /4			Unrevised /3	Revised /4		
Total of reporting areas /1	2.3	2.7	0.4	0.7	2.7	6.5	3.2	
Alabama	0.9	---	0.1	0.1	1.0	---	0.4	
Alaska	2.9	---	0.3	0.2	3.2	---	6.2	
Arizona	0.9	---	0.0	0.0	0.1	---	0.1	
Arkansas	5.0	---	0.2	0.2	5.5	---	2.6	
California /5	2.8	---	0.1	4.4	0.9	---	1.2	
Colorado	1.9	---	0.3	0.0	1.9	---	2.2	
Connecticut	1.2	---	0.0	0.0	1.3	---	0.8	
Delaware	3.4	---	0.1	0.2	3.0	---	0.8	
District of Columbia	9.4	---	0.1	0.2	11.6	---	18.3	
Florida	---	1.4	0.9	0.1	---	6.4	4.8	
Georgia	3.9	---	0.3	0.1	3.5	---	2.8	
Hawaii	1.6	---	0.0	0.4	2.9	---	2.4	
Idaho	---	4.2	0.1	0.1	---	3.5	0.8	
Illinois	1.3	---	0.2	0.3	5.1	---	5.6	
Indiana	1.9	---	0.1	0.0	2.2	---	1.9	
Iowa	2.7	---	0.0	0.0	2.8	---	0.3	
Kansas	---	4.2	0.0	0.3	---	8.1	3.2	
Kentucky	---	4.5	0.3	0.1	---	6.5	2.0	
Louisiana	1.0	---	0.1	0.1	1.3	---	0.4	
Maine	2.3	---	0.2	0.0	2.2	---	0.1	
Maryland	1.8	---	0.2	0.1	1.8	---	2.3	
Massachusetts	0.5	---	0.2	0.1	2.1	---	0.8	
Michigan	1.6	---	0.4	0.2	3.6	---	3.2	
Minnesota	2.2	---	0.4	0.2	5.0	---	6.1	
Mississippi	4.5	---	0.1	0.2	5.4	---	5.0	
Missouri	3.9	---	0.9	0.2	4.7	---	3.6	
Montana	0.7	---	0.1	0.1	1.2	---	0.9	
Nebraska	---	3.9	0.6	0.0	---	5.4	0.3	
Nevada	3.1	---	1.0	0.5	7.0	---	9.2	
New Hampshire	---	13.9	1.7	0.3	---	14.6	4.6	
New Jersey	2.0	---	0.1	0.1	1.9	---	1.3	
New Mexico	5.3	---	0.3	0.3	7.8	---	4.9	
New York (excluding NYC)	---	7.8	1.2	0.1	---	9.6	5.1	
New York City	4.3	---	0.0	0.1	6.1	---	0.8	
North Carolina	0.5	---	0.1	0.0	1.2	---	1.0	
North Dakota	0.4	---	0.2	0.1	1.0	---	0.7	
Ohio	2.4	---	0.6	0.2	5.1	---	10.5	
Oklahoma	1.4	---	0.2	0.3	2.3	---	1.3	
Oregon	2.8	---	0.1	0.0	1.6	---	0.3	
Pennsylvania	---	3.0	1.4	0.7	---	9.3	10.1	
Rhode Island	2.7	---	2.9	0.1	6.5	---	3.1	
South Carolina	---	5.3	0.1	0.1	---	6.0	0.7	
South Dakota	0.8	---	0.0	0.0	0.9	---	0.5	
Tennessee	---	1.0	1.2	0.6	---	12.1	11.2	
Texas	---	0.5	0.1	0.1	---	1.1	0.4	
Utah	2.2	---	0.3	0.0	1.9	---	2.3	
Vermont /2	---	---	0.4	0.0	---	---	0.7	
Virginia	2.3	---	0.0	0.0	1.1	---	2.0	
Washington	---	3.4	5.1	0.6	---	16.9	16.0	
West Virginia	2.6	---	0.0	0.1	3.4	---	0.7	
Wisconsin	0.5	---	0.0	0.0	0.6	---	0.9	
Wyoming	2.3	---	0.3	0.1	2.1	---	0.8	
Puerto Rico	---	0.2	0.0	0.1	---	0.6	0.2	
Virgin Islands	2.4	---	1.0	0.6	3.4	---	4.4	
Guam	0.7	---	1.3	0.1	0.6	---	0.9	
American Samoa	---	---	-	---	---	---	---	
Northern Marianas	5.6	---	0.2	0.1	1.7	---	2.7	

See footnotes at end of table.

Table B. Percent of birth records on which specified items were not stated: United States and each state and territory, 2005 -- 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	Weight gain	Tobacco use		Method of Delivery /6		
				Unrevised /3	Revised /4			
Total of reporting areas /1	0.1	0.6	5.1	1.4	2.8	0.4		
Alabama	0.2	0.3	2.4	0.8	---	0.7		
Alaska	0.3	0.4	5.1	1.0	---	0.6		
Arizona	0.0	0.3	2.5	0.6	---	0.5		
Arkansas	0.1	0.3	4.9	4.4	---	0.4		
California	0.0	---	---	---	---	0.0		
Colorado	0.1	0.3	3.0	0.4	---	0.0		
Connecticut	0.0	0.1	1.0	0.7	---	0.2		
Delaware	0.1	0.2	1.2	2.7	---	0.0		
District of Columbia	0.1	0.7	14.1	0.2	---	0.1		
Florida /7	0.0	0.2	9.1	---	---	0.2		
Georgia	0.0	0.5	8.4	1.4	---	0.7		
Hawaii	0.1	0.5	13.5	0.2	---	0.3		
Idaho	0.1	0.5	2.5	---	12.9	0.1		
Illinois	0.1	0.3	7.4	0.3	---	0.6		
Indiana /8	0.4	0.3	2.2	1.2	---	0.7		
Iowa	0.1	0.3	0.7	2.6	---	0.9		
Kansas	0.0	0.5	3.9	---	16.1	0.0		
Kentucky	0.1	0.4	2.0	---	25.0	0.1		
Louisiana	0.0	0.2	2.9	1.5	---	0.2		
Maine	0.1	0.2	0.6	2.3	---	0.2		
Maryland	0.1	0.3	2.8	0.4	---	0.7		
Massachusetts	0.1	0.2	1.0	0.5	---	0.3		
Michigan	0.1	0.3	6.2	0.8	---	0.6		
Minnesota	0.1	0.4	12.3	2.7	---	0.8		
Mississippi	0.1	0.3	7.7	4.3	---	0.6		
Missouri	0.1	0.5	4.2	3.2	---	0.8		
Montana	0.1	0.3	1.5	1.7	---	0.5		
Nebraska	0.0	0.2	2.5	---	14.9	0.0		
Nevada	0.0	1.4	9.3	2.3	---	1.5		
New Hampshire	0.2	0.4	16.4	---	13.5	0.1		
New Jersey	0.0	0.2	0.8	1.6	---	1.0		
New Mexico	0.2	0.4	11.2	5.5	---	0.7		
New York (excluding NYC)	0.1	0.4	5.8	---	12.1	0.5		
New York City	0.0	0.1	2.1	4.0	---	0.2		
North Carolina	0.1	0.3	3.3	0.5	---	0.6		
North Dakota	0.0	0.2	1.5	0.2	---	2.4		
Ohio	0.1	0.2	4.0	0.9	---	1.0		
Oklahoma	0.1	0.3	2.8	1.1	---	1.6		
Oregon	0.0	0.3	1.8	2.3	---	0.8		
Pennsylvania	0.4	1.1	14.6	---	17.2	0.1		
Rhode Island	0.1	0.4	14.0	3.4	---	0.3		
South Carolina	0.1	0.2	1.8	---	13.6	0.0		
South Dakota /9	0.0	0.2	0.6	0.7	---	1.0		
Tennessee	0.3	2.7	12.2	---	19.3	0.0		
Texas	0.1	---	1.1	---	6.1	0.0		
Utah	0.0	0.2	4.3	1.2	---	0.4		
Vermont /2	0.0	0.2	1.9	---	---	0.2		
Virginia	0.1	0.1	4.1	1.1	---	0.6		
Washington	0.4	0.5	14.3	---	9.9	0.0		
West Virginia	0.1	0.2	1.7	2.0	---	0.4		
Wisconsin	0.0	0.4	2.8	0.3	---	0.0		
Wyoming	0.1	0.3	2.5	1.5	---	0.2		
Puerto Rico	0.2	0.6	0.7	---	0.0	0.0		
Virgin Islands	0.6	1.0	23.2	3.1	---	3.1		
Guam	0.5	0.5	1.5	0.7	---	0.4		
American Samoa	-	---	---	---	---	---		
Northern Marianas /9	0.2	0.5	---	-	---	0.7		

See footnotes at end of table.

Table B. Percent of birth records on which specified items were not stated: United States and each state and territory, 2005 -- Con.

[By place of residence]

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		Meconium	Breech	Precipitous Labor
Total of reporting areas /1	0.3	0.3	0.3	0.2		0.2	0.8	0.3
Alabama	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Alaska	1.4	1.4	1.4	1.4		1.3	1.3	1.3
Arizona	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Arkansas	0.0	0.0	0.0	0.0		0.0	0.2	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	0.2	0.2	0.2	0.2		0.0	0.0	0.0
Delaware	0.0	0.0	0.0	0.0		0.0	0.0	0.0
District of Columbia	-	-	-	-		-	-	-
Florida	0.4	0.4	0.4	0.4		0.5	1.9	0.5
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	0.4	0.4	0.4	---		0.2	0.2	0.3
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	0.0	0.0		0.1	0.4	0.1
Kansas	0.0	0.0	0.0	0.0		-	0.0	-
Kentucky	0.2	0.2	0.2	---		0.1	0.1	0.3
Louisiana	0.1	0.1	0.1	0.1		0.1	0.1	0.1
Maine	0.2	0.2	0.2	0.2		0.1	0.1	0.2
Maryland	0.0	0.0	0.0	0.0		-	0.0	-
Massachusetts	0.2	0.2	0.2	0.2		0.2	0.2	0.2
Michigan	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Minnesota	3.2	3.2	3.2	3.2		3.1	3.1	3.1
Mississippi	0.2	0.2	0.2	0.2		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	0.0		-	-	-
Nebraska	0.2	0.2	0.2	---		0.1	9.7	0.2
Nevada	2.0	2.0	2.0	2.0		2.1	2.1	2.1
New Hampshire	0.0	0.0	0.0	0.0		0.8	0.0	2.6
New Jersey	0.2	0.2	0.2	0.2		0.1	0.1	0.1
New Mexico	0.0	0.0	0.0	0.0		0.0	0.2	0.0
New York (excluding NYC)	1.1	1.1	1.1	1.1		0.0	0.5	2.0
New York City	0.1	0.1	0.1	0.1		0.1	0.1	0.2
North Carolina	0.0	0.0	0.0	0.0		0.0	0.0	0.0
North Dakota	0.1	0.1	0.1	0.1		0.1	0.1	0.1
Ohio	0.1	0.1	0.1	0.1		0.1	0.1	0.1
Oklahoma	2.4	2.4	2.4	2.4		2.8	2.8	2.8
Oregon	0.6	0.6	0.6	0.6		0.0	0.0	0.0
Pennsylvania	0.0	0.0	0.0	---		0.0	0.1	0.0
Rhode Island	0.9	0.9	0.9	0.9		1.0	1.0	1.0
South Carolina	0.0	0.0	0.0	---		0.0	0.0	0.0
South Dakota	-	-	-	-		-	0.1	-
Tennessee	0.0	0.0	0.0	---		0.0	0.0	0.0
Texas	0.0	0.0	0.0	0.0		0.0	4.4	0.0
Utah	0.2	0.2	0.2	0.2		0.0	0.0	0.0
Vermont /2	0.1	0.1	0.1	0.1		0.1	0.4	0.5
Virginia	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Washington	2.3	2.3	2.3	---		2.1	4.0	3.5
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	0.0	0.0	0.0	0.0		0.0	0.3	0.0
Puerto Rico	0.0	0.0	0.0	0.0		0.0	3.6	0.0
Virgin Islands	8.1	8.1	8.1	8.1		8.5	8.5	8.5
Guam	2.1	2.1	2.1	2.1		1.4	1.4	1.4
American Samoa	---	---	---	---		---	---	---
Northern Marianas	-	-	-	-		-	-	-

See footnotes at end of table.

Table B. Percent of birth records on which specified items were not stated: United States and each state and territory, 2005 -- Con.

[By place of residence]

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		Anencephaly	Spina bifida	Omphalocele/ Gastroschisis	Cleft Lip/ Palate	Down Syndrome
Total of reporting areas /1	0.2	0.2		0.5	0.5	0.5	0.5	0.5
Alabama	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Alaska	1.2	1.3		1.6	1.6	1.6	1.6	1.6
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	-	0.0		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	0.0	0.0		0.1	0.1	0.1	0.1	0.1
District of Columbia	-	-		-	-	-	-	-
Florida	0.5	0.0		0.6	0.6	0.6	0.6	0.6
Georgia	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Hawaii	-	-		0.0	0.0	0.0	0.0	0.0
Idaho	0.2	0.3		0.4	0.4	0.4	0.4	0.4
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	-	-		0.0	0.0	0.0	0.0	0.0
Kentucky	0.1	0.2		-	-	-	-	-
Louisiana	0.1	0.1		0.1	0.1	0.1	0.1	0.1
Maine	0.1	0.1		0.2	0.2	0.2	0.2	0.2
Maryland	-	-		-	-	-	-	-
Massachusetts	0.1	0.1		0.9	0.9	0.9	0.9	0.9
Michigan	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Minnesota	1.1	1.1		5.1	5.1	5.1	5.1	5.1
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	-	-		-	-	-	-	-
Nebraska	0.1	0.2		0.1	0.1	0.1	0.1	0.1
Nevada	6.9	6.9		6.7	6.7	6.7	6.7	6.7
New Hampshire	0.8	1.3		4.1	4.1	4.1	4.1	4.1
New Jersey	0.0	0.0		0.2	0.2	0.2	0.2	0.2
New Mexico	---	---		---	---	---	---	---
New York (excluding NYC)	0.0	1.4		2.6	2.6	2.6	2.6	2.6
New York City	0.0	0.0		0.3	0.3	0.3	0.3	0.3
North Carolina	0.0	0.0		0.0	0.0	0.0	0.0	0.0
North Dakota	0.1	0.1		0.2	0.2	0.2	0.2	0.2
Ohio	0.0	0.0		0.1	0.1	0.1	0.1	0.1
Oklahoma	1.2	1.2		6.8	6.8	6.8	6.8	6.8
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	0.9	0.9		6.4	6.4	6.4	6.4	6.4
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
Texas	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Utah	0.0	0.0		0.1	0.1	0.1	0.1	0.1
Vermont /2	0.1	0.3		0.6	0.6	0.6	0.6	0.6
Virginia	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Washington	2.1	3.6		3.7	3.7	3.7	3.7	3.7
West Virginia	0.1	0.1		0.2	0.2	0.2	0.2	0.2
Wisconsin	0.0	0.0		0.2	0.2	0.2	0.2	0.2
Wyoming	0.0	0.0		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	3.9	3.9		8.2	8.2	8.2	8.2	8.2
Guam	1.9	1.9		0.9	0.9	0.9	0.9	0.9
American Samoa	---	---		---	---	---	---	---
Northern Marianas	-	-		0.1	0.1	0.1	0.1	0.1
See footnotes at end of table.								

Table B. Percent of birth records on which specified items were not stated: United States and each state and territory, 2005 -- Con.
[By place of residence]

Area	Items exclusive to the 2003 US. Standard Certificate of Live Birth /4						
	Pregnancy Risk Factors	Obstetric Procedures	Onset of Labor	Characteristics of Labor and Delivery	Method of Delivery	Congenital Anomalies	
Total of reporting areas /1	2.4	2.4	2.6	2.2	2.1	2.7	
Alabama	---	---	---	---	---	---	
Alaska	---	---	---	---	---	---	
Arizona	---	---	---	---	---	---	
Arkansas	---	---	---	---	---	---	
California	---	---	---	---	---	---	
Colorado	---	---	---	---	---	---	
Connecticut	---	---	---	---	---	---	
Delaware	---	---	---	---	---	---	
District of Columbia	---	---	---	---	---	---	
Florida	0.8	0.3	0.8	0.8	0.5	1.0	
Georgia	---	---	---	---	---	---	
Hawaii	---	---	---	---	---	---	
Idaho	3.2	3.1	3.1	3.0	2.9	3.2	
Illinois	---	---	---	---	---	---	
Indiana	---	---	---	---	---	---	
Iowa	---	---	---	---	---	---	
Kansas	3.7	3.7	3.7	3.7	3.7	3.7	
Kentucky	4.4	4.4	4.4	4.3	4.3	4.2	
Louisiana	---	---	---	---	---	---	
Maine	---	---	---	---	---	---	
Maryland	---	---	---	---	---	---	
Massachusetts	---	---	---	---	---	---	
Michigan	---	---	---	---	---	---	
Minnesota	---	---	---	---	---	---	
Mississippi	---	---	---	---	---	---	
Missouri	---	---	---	---	---	---	
Montana	---	---	---	---	---	---	
Nebraska	4.0	4.0	4.0	3.9	3.9	4.0	
Nevada	---	---	---	---	---	---	
New Hampshire	10.9	12.2	13.5	11.7	10.9	15.0	
New Jersey	---	---	---	---	---	---	
New Mexico	---	---	---	---	---	---	
New York (excluding NYC)	7.8	8.1	8.7	6.7	7.2	9.3	
New York City	---	---	---	---	---	---	
North Carolina	---	---	---	---	---	---	
North Dakota	---	---	---	---	---	---	
Ohio	---	---	---	---	---	---	
Oklahoma	---	---	---	---	---	---	
Oregon	---	---	---	---	---	---	
Pennsylvania	2.2	2.2	2.2	2.2	2.2	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	0.3	0.3	0.3	0.3	0.3	0.3	
Utah	---	---	---	---	---	---	
Vermont /2	---	---	---	---	---	---	
Virginia	---	---	---	---	---	---	
Washington	3.7	5.1	5.0	3.6	1.5	5.1	
West Virginia	---	---	---	---	---	---	
Wisconsin	---	---	---	---	---	---	
Wyoming	---	---	---	---	---	---	
Puerto Rico	0.0	0.0	0.0	0.0	0.0	0.0	
Virgin Islands	---	---	---	---	---	---	
Guam	---	---	---	---	---	---	
American Samoa	---	---	---	---	---	---	
Northern Marianas	---	---	---	---	---	---	
See footnotes at end of table.							

Table B. Percent of birth records on which specified items were not stated: United States and each state and territory, 2005 -- Con.

[By place of residence]

Area	Items exclusive to the 1989 U.S. Standard Certificate of Live Birth /3						
	Alcohol use	Medical Risk Factors	Obstetric Procedures	Complications of Labor/ Delivery	Abnormal Conditions of the Newborn	Congenital Anomalies	
Total of reporting areas /1	1.5	1.1	1.0	1.0	1.2	1.3	
Alabama	0.8	0.7	0.7	0.7	0.7	0.7	
Alaska	1.1	1.9	1.8	1.9	2.0	2.1	
Arizona	0.7	0.1	0.1	0.1	0.1	0.3	
Arkansas	4.5	4.2	4.2	4.2	4.2	4.2	
California	---	0.0	0.0	0.0	0.0	0.0	
Colorado	0.4	0.1	0.1	0.1	0.1	0.2	
Connecticut	0.7	0.8	0.7	0.7	0.9	1.0	
Delaware	2.7	2.7	2.7	2.7	2.7	2.7	
District of Columbia	0.2	0.1	0.1	0.1	0.1	0.1	
Florida	---	---	---	---	---	---	
Georgia	1.4	1.6	1.2	1.2	1.2	1.2	
Hawaii	0.2	0.1	0.1	0.1	0.1	0.1	
Idaho	---	---	---	---	---	---	
Illinois	0.2	0.2	0.2	0.2	0.2	0.2	
Indiana	1.1	1.0	1.0	1.0	1.0	1.0	
Iowa	2.6	2.6	2.6	2.6	2.6	2.6	
Kansas /10	---	---	---	---	---	---	
Kentucky	---	---	---	---	---	---	
Louisiana	1.5	1.0	1.0	1.0	1.0	1.0	
Maine	2.4	2.2	2.1	2.2	2.1	2.2	
Maryland	0.4	0.3	0.3	0.3	0.3	0.3	
Massachusetts	0.5	0.5	0.4	0.5	0.7	1.1	
Michigan	0.9	0.0	0.0	0.0	0.0	0.0	
Minnesota	2.8	3.2	1.1	3.2	4.6	5.1	
Mississippi	4.4	4.3	4.2	4.2	4.2	4.2	
Missouri	3.2	2.9	2.9	2.9	2.9	2.9	
Montana	1.9	0.5	0.4	0.4	0.4	0.4	
Nebraska	---	---	---	---	---	---	
Nevada	2.5	2.2	7.1	2.3	3.3	6.9	
New Hampshire	---	---	---	---	---	---	
New Jersey	1.7	1.7	1.5	1.6	1.6	1.7	
New Mexico	5.7	2.9	2.9	2.9	2.9	---	
New York (excluding NYC)	---	---	---	---	---	---	
New York City /11	4.0	4.1	4.0	4.1	4.2	4.3	
North Carolina	0.5	0.4	0.4	0.4	0.4	0.4	
North Dakota	0.2	0.1	0.1	0.2	0.2	0.2	
Ohio	0.9	0.7	0.6	0.7	0.7	0.7	
Oklahoma	1.1	3.3	2.1	3.7	7.1	7.7	
Oregon	2.4	2.1	1.5	1.5	1.5	1.5	
Pennsylvania	---	---	---	---	---	---	
Rhode Island	3.6	1.0	0.9	1.1	14.4	6.5	
South Carolina	---	---	---	---	---	---	
South Dakota	0.7	0.7	0.7	0.7	0.7	0.7	
Tennessee	---	---	---	---	---	---	
Texas	---	---	---	---	---	---	
Utah	1.2	0.3	0.1	0.1	0.1	0.2	
Vermont /2	---	---	---	---	---	---	
Virginia	1.1	1.1	1.1	1.1	1.2	1.1	
Washington	---	---	---	---	---	---	
West Virginia	2.1	1.9	1.9	1.9	2.0	2.0	
Wisconsin /12	0.4	0.1	0.0	0.1	0.1	0.2	
Wyoming	1.6	1.2	1.2	1.2	1.2	1.2	
Puerto Rico	---	---	---	---	---	---	
Virgin Islands	3.2	9.0	4.8	9.3	10.8	9.1	
Guam	1.1	2.1	1.9	1.4	1.1	0.9	
American Samoa	---	---	---	---	---	---	
Northern Marianas	-	-	-	-	-	0.1	

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] Vermont implemented the 2003 U.S. Standard Certificate of Live Birth in 2005, but after January 1, 2005.

[3] Data are for states using the 1989 Standard Certificate of Live Birth. Births to residents of states using the 1989 Standard Certificate of Live Birth occurring in states using the 2003 Standard Certificate of Live Birth are coded as not stated for this item. See "Technical Notes."

[4] Data are for states using the 2003 Standard Certificate of Live Birth. Births to residents of states using the 2003 Standard Certificate of Live Birth occurring in states using the 1989 Standard Certificate of Live Birth are coded as not stated for this item. See "Technical Notes."

[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] 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."

[12] Wisconsin does not report the Abnormal Condition of the Newborn "fetal alcohol syndrome."

Table C. Comparability of selected data items from the 2003 U.S. Standard Certificate of Live Birth with items from the 1989 U.S. Standard Certificate of Live Birth

Item on 2003 U.S. Standard Certificate of Live Birth	*Comparable*	*Not comparable*	*New*
Race - Mother/Father	X[1]		
Hispanic origin - Mother/Father	X		
Education - Mother/Father		X	
Cigarette smoking during pregnancy		X	
Month prenatal care began		X	
Risk factors in this pregnancy			
Diabetes, Prepregnancy (Diagnosis prior to this pregnancy)	X[2]		
Diabetes, Gestational (Diagnosis in this pregnancy)	X[2]		
Hypertension, Prepregnancy (chronic)	X		
Hypertension, Gestational (PIH, preeclampsia)	X		
Hypertension, Eclampsia	X		
Previous preterm birth		X	
Other previous poor pregnancy outcome		X	
Mother had previous cesarean delivery		X	
Obstetric Procedures			
Cervical cerclage		X	
Tocolysis	X		
External cephalic version - Successful			X
External cephalic version - Failed			X
Onset of Labor			
Premature rupture>=12 hrs		X	
Precipitous labor<3 hrs	X		
Prolonged labor>=20 hours		X	
Characteristics of Labor/Delivery			
Induction of labor	X		
Augmentation of labor		X	
Non-vertex presentation			X
Steroids (glucocorticoids) for fetal lung maturation			X
Antibiotics received by the mother during labor			X
Clinical chorioamnionitis diagnosed during labor		X	
Moderate/heavy meconium staining of the amniotic fluid	X		
Fetal intolerance of labor		X	
Epidural or spinal anesthesia during labor			X
Method of Delivery			
Forceps delivery attempted but unsuccessful?		X	
Vacuum extraction delivery attempted but unsuccessful?		X	
Cephalic Presentation		X	
Breech Presentation	X[3]		
Other presentation	X[3]		
Final route and method of delivery Vaginal/Spontaneous	X[4]		
Final route and method of delivery Vaginal/Forceps	X[4]		
Final route and method of delivery Vaginal/Vacuum	X[4]		
Final route and method of delivery Cesarean	X[5]		
If cesarean, was trial of labor attempted?			X
NEWBORN INFORMATION			
Birthweight	X		
Apgar Score - 5 minute	X		
Plurality	X		
Abnormal Conditions of the Newborn			
Assisted ventilation required immediately following delivery		X	
Assisted ventilation > 6 hours		X	
NICU admission			X
Newborn given surfactant replacement therapy			X
Antibiotics received by the newborn for suspected neonatal sepsis			X
Seizure or serious neurologic dysfunction			X
Significant birth injury			X
Congenital Anomalies			
Anencephaly	X		
Meningolcele/Spina Bifida	X		
Cyanotic congenital heart disease			X
Congenital diaphragmatic hernia	X		
Omphalocele	X[6]		
Gastroschisis	X[6]		
Limb reduction defect			X
Cleft lip with or without Cleft palate	X[7]		
Cleft Palate alone	X[7]		
Down Syndrome	X		

Down Syndrome - karyotype confirmed			X
Down Syndrome - karyotype pending			X
Suspected chromosomal disorder		X	
Suspected chromosomal disorder - karyotype confirmed			X
Suspected chromosomal disorder - karyotype pending			X
Hypospadias			X

1 Nineteen states reported multiple race data in 2005. However, of these, two states reported multiple race for only part of 2005. The multiple-race data for these states are bridged to the single race categories of the 1977 OMB standards for comparability with other states; See Detailed Technical Notes.

2 Prepregnancy diabetes and Gestational diabetes may be combined to be consistent with the Diabetes item reported on the 1989 U.S. Standard Certificate of Live Birth.

3 "Breech" and "Other" fetal presentations at birth may be combined to be consistent with the Breech/malpresentation item on the 1989 U.S. Standard Certificate of Live Birth.

4 Information on whether the vaginal delivery following a previous cesarean delivery (VBAC) is not comparable.

5 Information on whether the delivery was a primary or repeat cesarean is not comparable.

6 "Omphalocele" and "Gastroschisis may be combined to be consistent with the Omphalocele/Gastroschisis item *on the 1989 U.S. Standard Certificate of Live Birth.*

7 Cleft lip with or without palate may be combined with Cleft lip alone to be consistent with the Cleft lip/palate item on the 1989 U.S. Standard Certificate of Live Birth.

Table D. Sources for resident population and population including Armed Forces abroad: Birth and death-registration states, 1900-1932, and United States, 1900-2005

[2005] National Center for Health Statistics. Estimates of the July 1, 2000-July 1, 2005, United States resident population from the Vintage 2005 postcensal series by year, county, age, sex, race, and Hispanic origin, prepared under a collaborative arrangement with the U.S. Census Bureau. Released August 16, 2006. Available at: http://www.cdc.gov/nchs/about/major/dvs/popbridge/popbridge.htm .

[2005] 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 .

[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 icen1998.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 under/over count, 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 F. 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- α=.95,*B*)	U(1- α =.95,*B*)	L(1- α =.96,*B*)	U(1- α =.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 F. 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- α=.95,*B*)	U(1- α =.95,*B*)	L(1- α =.96,*B*)	U(1- α =.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 1. Estimated total population by race, and estimated female population by age and race: United States, 2005

[Populations estimated as of July 1]

Age	All races	White	Black	American Indian	Asian or Pacific Islander
Total population	296,410,404	240,135,528	39,073,991	3,161,185	14,039,700
Female population					
15-44 years	62,073,767	48,678,108	9,177,145	747,762	3,470,752
10-14 years	10,175,908	7,863,953	1,716,177	144,060	451,718
15-19 years	10,248,766	7,976,530	1,675,131	148,112	448,993
15-17 years	6,224,876	4,829,450	1,034,751	90,414	270,261
18-19 years	4,023,890	3,147,080	640,380	57,698	178,732
20-24 years	10,180,924	7,965,749	1,568,850	140,438	505,887
25-29 years	9,797,533	7,603,016	1,474,326	119,314	600,877
30-34 years	9,924,119	7,685,438	1,434,841	110,151	693,689
35-39 years	10,438,579	8,230,555	1,462,794	109,986	635,244
40-44 years	11,483,846	9,216,820	1,561,203	119,761	586,062
45-49 years	11,377,948	9,241,505	1,481,578	114,006	540,859

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 54.

Table 2. Estimated total population by specified Hispanic origin and estimated female population by age and specified Hispanic origin and by race for women of non-Hispanic origin: United States, 2005

[Populations estimated as of July 1]

	Hispanic					Non-Hispanic		
Age	Total	Mexican	Puerto Rican	Cuban	Other Hispanic[1]	Total[2]	White	Black
Total population	42,687,248	28096347	3687295	1580333	9323273	253,723,180	200,358,278	37,340,566
Female population								
15-44 years	9,917,362	6,436,355	878,573	318,496	2,283,938	52,156,373	39,488,082	8,742,412
10-14 years	1,885,391	1,284,131	182,935	44,672	373,653	8,290,525	6,129,855	1,626,569
15-19 years	1,676,462	1,088,546	171,337	44,430	372,149	8,572,301	6,433,446	1,598,169
15-17 years	1,030,920	678,587	106,704	27,696	217,933	5,193,954	3,881,046	986,817
18-19 years	645,542	409,959	64,633	16,734	154,216	3,378,347	2,552,400	611,352
20-24 years	1,693,393	1,141,933	150,709	43,859	356,892	8,487,534	6,399,196	1,496,090
25-29 years	1,786,677	1,214,292	146,939	44,764	380,682	8,010,852	5,946,514	1,395,734
30-34 years	1,745,404	1,165,130	132,094	58,213	389,967	8,178,713	6,061,782	1,359,474
35-39 years	1,580,459	976,181	137,817	65,761	400,700	8,858,099	6,763,086	1,393,242
40-44 years	1,434,967	850,273	139,677	61,469	383,548	10,048,874	7,884,058	1,499,703
45-49 years	1,186,664	682,843	123,334	42,245	338,242	10,191,282	8,139,882	1,430,411

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

2 Includes races other than white and black.

NOTES: These post-censal 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 61.

Table 3. Estimated total population and female population aged 15-44 years: United States, each state, and territory: July 1, 2005

Geographic area	Total population	Females15-44 years
United States	296,410,404	62,073,767
Alabama	4,557,808	951,870
Alaska	663,661	138,731
Arizona	5,939,292	1,214,996
Arkansas	2,779,154	567,064
California	36,132,147	7,697,776
Colorado	4,665,177	1,001,833
Connecticut	3,510,297	710,116
Delaware	843,524	178,822
District of Columbia	550,521	133,368
Florida	17,789,864	3,448,596
Georgia	9,072,576	2,031,262
Hawaii	1,275,194	245,755
Idaho	1,429,096	298,054
Illinois	12,763,371	2,697,814
Indiana	6,271,973	1,296,496
Iowa	2,966,334	600,820
Kansas	2,744,687	566,831
Kentucky	4,173,405	872,148
Louisiana	4,523,628	973,799
Maine	1,321,505	263,510
Maryland	5,600,388	1,193,482
Massachusetts	6,398,743	1,370,797
Michigan	10,120,860	2,094,231
Minnesota	5,132,799	1,092,604
Mississippi	2,921,088	624,907
Missouri	5,800,310	1,210,334
Montana	935,670	183,157
Nebraska	1,758,787	362,429
Nevada	2,414,807	500,417
New Hampshire	1,309,940	270,365
New Jersey	8,717,925	1,781,143
New Mexico	1,928,384	396,151
New York	19,254,630	4,084,946
North Carolina	8,683,242	1,833,067
North Dakota	636,677	128,473
Ohio	11,464,042	2,354,459
Oklahoma	3,547,884	731,110
Oregon	3,641,056	745,626
Pennsylvania	12,429,616	2,476,622
Rhode Island	1,076,189	228,096
South Carolina	4,255,083	894,523
South Dakota	775,933	156,116
Tennessee	5,962,959	1,260,253
Texas	22,859,968	4,970,419
Utah	2,469,585	570,030

Vermont	623,050	127,007
Virginia	7,567,465	1,604,836
Washington	6,287,759	1,331,948
West Virginia	1,816,856	354,514
Wisconsin	5,536,201	1,150,450
Wyoming	509,294	101,594
Puerto Rico	3912054	851,813
Virgin Islands	108708	22,364
Guam	168564	37,497
American Samoa	57881	13001
Northern Marianas	80362	32,285

Source: National Center for Health Statistics. Unpublished estimates of the July 1, 2005, United States population by age, sex, race, and Hispanic origin, prepared under a collaborative arrangement with the U.S. Census Bureau, 2005.
See reference 54.
Territories data from Census Bureau International Data Base.

Table 4. Population of birth- and death-registration states, 1900–1932, and United States, 1900–2005

[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
2005	296,748,486	296,410,404	1952	156,954,000	155,687,000				
2004	293,906,517	293,655,404	1951	154,287,000	153,310,000				
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

- - - 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.