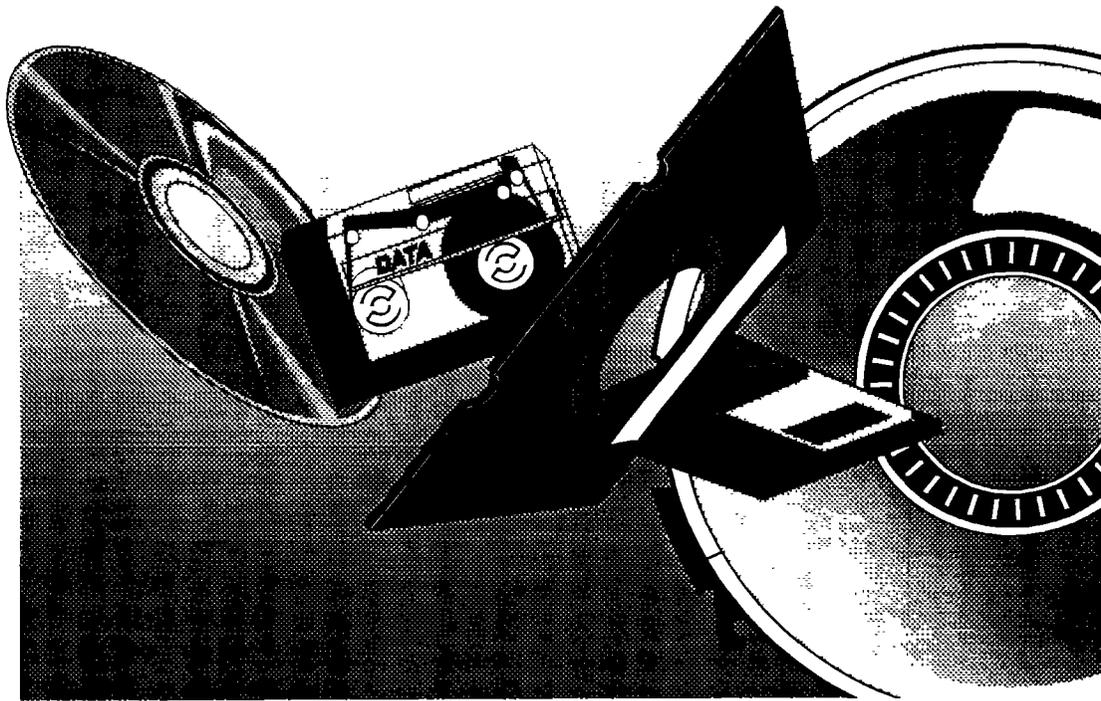

Public Use Data File Documentation

Linked Birth/Infant Death Data Set:
1991 Birth Cohort



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

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This tape documentation was prepared in the Division of Vital Statistics. David Johnson of the Systems and Programming Branch and Kate Prager, previously of the Mortality Statistics Branch were responsible for developing the linked birth/infant death data set documentation. Linda Biggar of the Systems and Programming Branch and Marian MacDorman of the Mortality Statistics Branch were responsible for providing all needed modifications to keep it up-to-date. Bettie L. Hudson of the Mortality Statistics Branch coordinated preparation of the Mortality Technical Appendix and Addenda. T. J. Mathews of the Natality, Marriage and Divorce Statistics Branch coordinated preparation of the Natality Technical Appendix. The Registration Methods Branch and the Technical Services Branch provided consultation to State vital statistics offices regarding collection of birth and death certificate data.

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Questions concerning the Mortality Technical Appendix or substantive questions concerning the data should be directed to the Mortality Statistics Branch, Division of Vital Statistics, NCHS, 6525 Belcrest Road, Room 840, Hyattsville, MD 20782 Ph: (301) 436-8884.

Table of Contents

1. Introduction, Methodology, and Classification of Data.
2. Machine used, file and data characteristics.
3. List of data elements and locations.
4. Record layout and definition of items and codes.
5. County geographic codes available on the public-use file.
6. City geographic codes available on the public-use file.
7. Titles and codes for the 61 cause-of-death list.
8. Documentation tables 1-6.
9. Technical Appendix for the 1991 Natality file.
10. Technical Appendix for the 1990 Mortality file.
11. 1991 Addendum to the 1990 Mortality Technical Appendix.
12. 1992 Addendum to the 1990 Mortality Technical Appendix.

SYMBOLS USED IN TABLES

Symbol	Explanation
---	Data not available
...	Category not applicable
-	Quantity zero
0.0	Quantity more than 0 but less than 0.05
*	Figure does not meet standards of reliability or precision

Linked Birth/Infant Death Data Set: 1991 Birth Cohort

Introduction

The Linked Birth/Infant Death Data Set, 1991 Birth Cohort consists of three separate data files. The first file includes linked records of live births and infant deaths for the 1991 birth cohort -- also referred to as the numerator file. The second file is the live birth file for 1991, with a few minor modifications -- referred to as the denominator-plus file. The files are offered as a numerator/denominator data set to give users the means to compute infant mortality rates. The third file contains information from the death certificate for all infant death records which could not be linked to their corresponding birth certificates -- referred to as the unlinked death file.

The 1991 linked file is comprised of deaths to infants born in 1991 who died in 1991 or 1992 before their first birthday. Infant death records were extracted from the 1991 and 1992 National Center for Health Statistics (NCHS) mortality statistical files. Linked birth records were extracted from a denominator file that contained the 1991 NCHS natality statistical file and a small number of late-filed birth certificates. Refer to the Methodology section for a more detailed explanation of records added to the statistical file. The denominator file is not identical with the NCHS natality statistical file.

The linked file of live births and infant deaths includes linked records for births and deaths that occurred in the United States to U.S. residents and to U.S. nonresidents. Excluded are deaths that occurred outside the United States to infants born in the U.S.; deaths that occurred in the United States to foreign-born infants; and births and deaths that occurred outside the United States to U.S. residents.

Sources for denominator data and for birth records included in the numerator file are described in detail in the 1991 Technical Appendix from the Natality Annual Volume; sources for death records included in the numerator file are described in detail in the 1990 Technical Appendix from the Mortality Annual Volume, and in the 1991 and 1992 Addenda. Copies of these documents are included in this tape documentation.

Because of confidentiality concerns, only those counties of 250,000 or more population and only those cities of 250,000 or more population are identified in this data set. The population counts are based on the results of the 1980 census. Users should refer to the geographic code outline in this document for the list of available areas and codes.

Linked Birth/Infant Death Data Set: 1991 Birth Cohort

In tabulations of linked data and denominator data, events occurring in the United States to U.S. nonresidents are included in tabulations that are by place of occurrence, and excluded from tabulations by place of residence. For linked data, these exclusions are based on the usual place of residence item of the mother. This item is contained in both the denominator file and the birth section of the numerator (linked) file. U.S. nonresidents are identified by a code 4 in location 11 of these files.

Methodology

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

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

Virtually all States routinely link infant death certificates to their corresponding birth certificates for legal and statistical purposes. When the birth and death of an infant occur in different States, linking the two records that are filed in different jurisdictions requires State cooperation for the exchange of records. In accordance with the terms of the "Association for Vital Records and Health Statistics Agreement for Administering the Vital Records Exchange System," copies of the records are exchanged by the State of death and State of birth in order to effect a link. In addition, if a third State is identified as the State of residence at the time of birth or death, that State is also sent a copy of the appropriate certificate by the State where the birth or death occurred.

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

To initiate processing, NCHS obtained computerized linked files from States that had them and extracted only the birth and death certificate numbers for linked records and State and year of occurrence. The States of Arizona and Nevada provided linkage information by posting birth certificate numbers on a

Linked Birth/Infant Death Data Set: 1991 Birth Cohort

computer-generated list of infant death certificate numbers that was provided by NCHS. A file that contained only State-provided identifiers for linked certificates was then matched to the NCHS mortality and natality statistical files. Individual birth and death records were selected from their respective files and linked into a single statistical record, thereby establishing a national linked record file.

After the initial linkage, NCHS returned to the States of death copies or computer lists of unlinked infant death certificates for followup linking. If the birth occurred in a State different from the State of death, the State of birth identified on the death certificate was contacted to obtain the linking birth certificate.

If the linking birth certificate from another State had been renumbered, the State of death requested the original certificate number from the State of birth. If the linked birth certificate had been filed after NCHS closed its statistical files, States provided NCHS with a copy of the late-filed birth certificate. These certificates were coded, keyed, processed, added to the denominator file and then linked to the infant death record. Approximately 300 late-filed records were added to the denominator.

The birth record in the denominator file includes an item in tape location 1 that identifies whether or not the record is linked to an infant death. This item is included in the denominator record for users who would want to identify individual records for which the infant died in the first year of life, or survived.

Changes Beginning with the 1989 Birth Cohort

Beginning with data for 1989, the U.S. Standard Certificate of Birth was redesigned to add a number of new items and to expand some previously reported items. Items that were added or changed from an open-ended to a checkbox format include: medical risk factors for the pregnancy, smoking, alcohol use, weight gain of the mother during pregnancy, obstetric procedures, complications of labor and/or delivery, method of delivery, abnormal conditions of the newborn, and congenital anomalies of child. An item on clinical estimate of gestation was also added, and the Hispanic-origin reporting area was expanded substantially.

The addition of these new items nearly doubled the record length of the 1989 Natality data tape. Because of this, the linked file record layout was redesigned beginning with 1989 data to create a more compact record layout while including all of the new information from the expanded birth certificate. In addition, a

Linked Birth/Infant Death Data Set: 1991 Birth Cohort

number of innovations were added to the linked file, primarily to respond to requests from data users.

Selected variables from the numerator file have been added to the denominator file to facilitate processing. These variables are age at death (and recodes), underlying cause of death (and the 61-cause recode), autopsy, and place of accident. These variables are the most widely used variables from the numerator file. With the previous file format it was sometimes necessary to combine the numerator and denominator files when performing certain multivariate statistical techniques. In fact, NCHS received several calls each year asking how best to combine the numerator and denominator files while eliminating duplicate records. Now, when the number of variables required from the numerator file is limited, the denominator file may be used by itself for ease of programming. It is hoped that this small alteration in file structure will make the linked birth/infant death data set more convenient to use.

Infant death identification numbers have been added to both the numerator and denominator files, so that the same infant can be uniquely identified and matched between the two files. These numbers bear no relationship to birth or death certificate numbers, but are sequential numbers created solely for the purpose of identifying records for the same infant between the numerator and denominator files. This innovation will enhance processing of the file, as additional data from the numerator file can now be directly matched and imported into the denominator file.

Other new variables added to the file in 1989 include: exact age at death of the infant in days, day of the week of birth and death, and month of the year of birth and death.

Finally, a separate file of infant death records which could not be linked to their corresponding birth records has been added to provide additional information on unlinked records. The unlinked record file uses the same record layout as the numerator file of linked birth and infant death records. However, except as noted below, tape locations 1-88, reserved for information from the matching birth certificate, are blank since no matching birth certificate could be found for these records. Both race and sex of child (tape locations 209-210 and 77-78, respectively) contain information as reported on the death certificate, rather than the information as reported on the birth certificate as is the case with the linked record file. Also, date of birth as reported on the death certificate is used to generate age at death. This information is used in place of date of birth from the birth certificate, which is not available. This unlinked file has been added to provide additional information on unmatched records so

Linked Birth/Infant Death Data Set: 1991 Birth Cohort

that data users who wish to make adjustments to the data (such as weighting) can do so.

Percent of Records Linked

The 1991 birth cohort linked file includes 35,520 linked records representing 97.7 percent of the infant deaths to the 1991 birth cohort. After followup, records for some 841 infant deaths, or 2.3 percent of the deaths to the birth cohort, remained unlinked. These records are contained in the unlinked file. Documentation table 6 presents summary information about the unlinked death records. The table shows counts of unlinked records by race and age at death for each State of residence. The user is cautioned in using table 6 that the race and residence items are based on information reported at the time of death; whereas, tables 2-5 present data from the linked file in which the race and residence items are based on information reported at the time of birth. For more information, see discussions about race and residence on pages 4-5 of the Natality Technical Appendix and about infant deaths on pages 11-14 of the Mortality Technical Appendix in this documentation.

While the overall percent linked for infant deaths in the 1991 birth cohort is 97.7%, there are differences in percent linked by certain variables. These differences have important implications for how the data is analyzed.

Table 1 shows the percent of infant deaths linked by State of residence. While most States link a high percentage of infant deaths, linkage rates for some States are well below the national average. Note in particular the percent linked for Louisiana (93.7), Ohio (92.8) and Oklahoma (92.7). When a high percentage of deaths remain unlinked, infant mortality rates computed for these States are underestimated. Thus, caution must be used in comparing infant mortality rates by State from the linked file.

The percent of infant deaths linked by race and age at death is shown in Table 2. The percent linked for black infants is 97.1, lower than the percent linked for white infants (98.0). In general, a higher percentage of postneonatal (98.3), than neonatal deaths (97.3) are linked, and the percentage for early neonatal deaths (97.0) is lower still. Again, the lower the percent linked the more likely that infant mortality rates computed for these groups will be slightly underestimated. Also, since most early neonatal deaths are to very low birthweight infants, and since black infants are more likely to be born at very low birthweight, the patterns in percentage linked provide

Linked Birth/Infant Death Data Set: 1991 Birth Cohort

Table 1. Percent of infant deaths linked by State of residence: United States, 1991 birth cohort

(For linked infant deaths, State of residence is at the time of birth. For unlinked infant deaths, State of residence is at the time of death.)

United States	97.7%	Montana	98.8%
Alabama	99.9%	Nebraska	100.0%
Alaska	99.0%	Nevada	97.3%
Arizona	99.8%	New Hampshire	100.0%
Arkansas	99.4%	New Jersey	97.0%
California	96.2%	New Mexico	99.6%
Colorado	99.8%	New York	97.8%
Connecticut	98.1%	Upstate	96.6%
Delaware	97.7%	City	98.7%
District of Columbia	98.4%	North Carolina	98.4%
Florida	99.8%	North Dakota	100.0%
Georgia	99.9%	Ohio	92.8%
Hawaii	98.6%	Oklahoma	92.7%
Idaho	98.6%	Oregon	100.0%
Illinois	96.0%	Pennsylvania	96.5%
Indiana	97.7%	Rhode Island	100.0%
Iowa	99.7%	South Carolina	100.0%
Kansas	100.0%	South Dakota	100.0%
Kentucky	98.9%	Tennessee	99.2%
Louisiana	93.7%	Texas	96.2%
Maine	98.2%	Utah	100.0%
Maryland	97.1%	Vermont	100.0%
Massachusetts	99.6%	Virginia	98.0%
Michigan	99.9%	Washington	98.3%
Minnesota	99.8%	West Virginia	98.9%
Mississippi	99.2%	Wisconsin	99.7%
Missouri	99.5%	Wyoming	98.1%

Table 2. Percent of infant deaths linked by race and age at death: United States, 1991 birth cohort

(Infant deaths are under 1 year. Neonatal deaths are under 28 days; early neonatal, 0-6 days; late neonatal, 7-27 days, and postneonatal, 28 days through 11 months)

	All races	White	Black
Infant	97.7%	98.0%	97.1%
Total Neonatal	97.3%	97.7%	96.6%
Early Neonatal	97.0%	97.4%	96.3%
Late Neonatal	98.6%	98.8%	98.2%
Postneonatal	98.3%	98.5%	98.0%

Linked Birth/Infant Death Data Set: 1991 Birth Cohort

indirect evidence of lower linkage rates for very low birthweight infants. This hypothesis is supported by relatively low infant mortality rates for infants with birthweights under 500 grams for a few States (data not shown). Variations in percent matched by underlying cause of death have also been noted, particularly a slightly lower percent matched for ICD-9 No. 765 - Disorders relating to short gestation and unspecified low birthweight (data not shown). So, although the data is generally of good quality, variations in the percent of records linked should be taken into account when comparing infant mortality rates for particular States, race groups, age, or birthweight categories.

Demographic and Medical Classification

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

- A. Manual of the International Statistical Classification of Diseases, Injuries, and the Cause-of-Death, Ninth Revision (ICD-9) Volumes 1 and 2.
- B. NCHS Instruction Manual Data Preparation Part 2a, Vital Statistics Instructions for Classifying the Underlying Cause-of-Death. Published annually.
- C. NCHS Instruction Manual Data Preparation, Part 2b, Vital Statistics Instructions for Classifying Multiple Cause-of-Death. Published annually.
- D. NCHS Instruction Manual Data Preparation, Part 2c, Vital Statistics ICD-9 ACME Decision Tables for Classifying Underlying Causes-of-Death. Published annually.
- E. NCHS Instruction Manual Data Preparation, Part 2d, Vital Statistics NCHS Procedures for Mortality Medical Data System File Preparation and Maintenance, Effective 1985.
- F. NCHS Instruction Manual Data Tabulation, Part 2f, Vital Statistics ICD-9 TRANSAX Disease Reference Tables for Classifying Multiple Causes-of-Death, 1982-85.

Linked Birth/Infant Death Data Set: 1991 Birth Cohort

- G. NCHS Instruction Manual Part 2g, Vital Statistics, Data Entry Instructions for the Mortality Medical Indexing, Classification, and Retrieval system (MICAR). Published annually.
- H. NCHS Instruction Manual Part 2h, Vital Statistics, Dictionary of Valid Terms for the Mortality Medical Indexing, Classification, and Retrieval System (MICAR). Published annually.
- I. NCHS Instruction Manual Data Preparation, Part 3a, Vital Statistics Classification and Coding Instructions for Live Birth Records. Published annually.
- J. NCHS Instruction Manual Data Preparation, Part 4, Vital Statistics Demographic Classification and Coding Instructions for Death Records. Published annually.
- K. NCHS Instruction Manual Tabulation, Part 11, Vital Statistics Computer Edits for Mortality Data, Effective 1989.

Volumes 1 and 2 of the ICD-9 may be purchased from WHO Publication Center USA, 49 Sheridan Avenue, Albany, New York, 12210. The remaining documents may be requested from the Chief, Data Preparation Branch, Division of Data Processing, National Center for Health Statistics, P.O.Box 12214, Research Triangle Park, North Carolina 27709.

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

Cause-of-Death Data

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

The multiple cause of death codes were developed with two objectives in mind. First, to facilitate etiological studies of the relationships among conditions, it was necessary to reflect accurately in coded form each condition and its location on the death certificate in the exact manner given by the certifier.

Linked Birth/Infant Death Data Set: 1991 Birth Cohort

Secondly, coding needed to be carried out in a manner by which the underlying cause of death could be assigned through computer applications. The approach was to suspend the linkage provisions of the ICD for the purpose of condition coding and code each entity with minimum regard to other conditions present on the certification. This general approach is hereafter called entity coding.

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

Since the two objectives are incompatible, NCHS has chosen to create from the original set of entity codes a new code set called record axis multiple cause data. Essentially, the axis of classification has been converted from an entity basis to a record (or person) basis. The record axis codes are assigned in terms of the set of codes that best describe the overall medical certification portion of the death certificate.

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

Case 1: When reported on the same record as separate entities, cirrhosis of liver and alcoholism are coded to 5715 (cirrhosis of liver without mention of alcohol) and 303 (alcohol dependence syndrome). Tabulation of records with 5715 would on the surface falsely imply that such records had no mention of alcohol. A preferable codification would be 5712 (alcoholic cirrhosis of liver) in lieu of both 5715 and 303.

Linked Birth/Infant Death Data Set: 1991 Birth Cohort

Case 2: If "gastric ulcer" and "bleeding gastric ulcer" are reported on a record they are coded to 5319 (gastric ulcer, unspecified as acute or chronic, without mention of hemorrhage or perforation) and 5314 (gastric ulcer, chronic or unspecified, with hemorrhage). A more concise codification would be to code 5314 only since the 5314 shows both the gastric ulcer and the bleeding.

A. Entity Axis Codes

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

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

1. Line indicator: The first byte represents the line of the certificate on which the code appears. Six lines (1-6) are allowable with the fourth and fifth denoting one or two written in "due to"s beyond the three lines provided in Part I of the U.S. standard death certificate. Line "6" represents Part II of the certificate.
2. Position indicator: The next byte indicates the position of the code on the line, i.e., it is the first (1), second (2), third (3),... eighth (8) code on the line.
3. Cause category: The next four bytes represent the ICD-9 cause code.
4. Nature of injury flag: ICD-9 uses the same series of numbers (800-999) to indicate nature of injury (N codes) and external cause codes (E codes). This flag distinguishes between the two with a one (1) representing nature of injury codes and a zero (0) representing all other cause codes.

Linked Birth/Infant Death Data Set: 1991 Birth Cohort

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

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

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

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

Additionally, the entity data provide in certain categories a more detailed code assignment which is linked out in the creation of record axis data. Where such detail is needed for a study, the user should selectively employ entity data. Finally, the researcher may not wish to be bound by the assumptions used in the axis translation process preferring rather to investigate hypotheses of his own predilection.

By definition, the main limitation of entity axis data is that an entity code does not necessarily reflect the best code for a condition when considered within the context of the medical certification as a whole. As a result certain entity codes can be misleading or even contradict other codes in the record. For example, category 5750 is titled "Acute cholecystitis without mention of calculus". Within the framework of entity codes this is interpreted to mean

Linked Birth/Infant Death Data Set: 1991 Birth Cohort

that the codable entity itself contained no mention of calculus rather than that calculus was not mentioned anywhere on the record. Tabulation of records with a "5750" as a count of persons having acute cholecystitis without mention of calculus would therefore be erroneous. This illustrates the fact that under entity coding the ICD-9 titles cannot be taken literally. The user must study the rules for entity coding as they relate to his/her research prior to utilization of entity data. The user is further cautioned that the inclusion notes in ICD-9 which relate to modifying and combining categories are seldom applicable to entity coding (except where provided in Part 2b of the Vital Statistics Instruction Manual Series).

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

B. Record Axis Codes

The following paragraphs describe the format and application of record-axis data. Part 2f of the Vital Statistics Instruction Manual Series describes the TRANSAX process for creating record axis data from entity axis data. FORMAT: Each record (or person) axis code is displayed in five bytes. Location information is not relevant. The Code consists of the following components:

1. Cause category: The first four bytes represent the ICD-9 cause code.
2. Nature of injury flag: The last byte contains a 0 or 1 with the 1 indicating that the cause is a nature of injury category.

Linked Birth/Infant Death Data Set: 1991 Birth Cohort

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

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

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

The user can take the record axis codes as literally representing the information conveyed in ICD-9 category titles. While knowledge of the rules for combining and linking and coding conditions is useful, it is not a prerequisite to meaningful analysis of the data as long as one is willing to accept the assumptions of the axis translation process. The user is cautioned, however, that due to special rules in mortality coding, not all linkage notes in ICD-9 are utilized. (See Part 2f of the Vital Statistics Instruction Manual Series.) The user should proceed with caution in using record axis data to count conditions as opposed to people with conditions since linkages have been invoked and duplicate codes have been eliminated. As with entity data, person based tabulations which combine individual cause categories must take into account the possible interaction of up to 20 codes on a single certificate.

Linked Birth/Infant Death Data Set: 1991 Birth Cohort

In using the NCHS multiple cause data, the user is urged to review the information in this document and its references. The instructional material does change from year to year and revision to revision. The user is cautioned that coding of specific ICD-9 categories should be checked in the appropriate instruction manual. What may appear on the surface to be the correct code by ICD-9 may in fact not be correct as given in the instruction manuals.

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

Linked Birth/Infant Death Data Set: 1991 Birth Cohort

Machine/File/Data Characteristics:

I. Denominator File:

A. Machine used:	IBM/3081
B. Language used:	PL/I
C. File Organization:	One file, multiple tapes
D. Record Format:	Blocked, fixed format
E. Record count:	4,115,494
F. Record length:	225
G. Blocksize:	32625
H. Recording mode:	IBM/EBCDIC 8-bit code
J. Last block	May be a short block
I. Code Scheme	Numeric/Alphabetic/Blank
K. Data counts:	
a. By occurrence:	4,115,494
b. By residence:	4,111,059
c. To foreign residents:	4,435

II. Numerator File:

A. Machine used:	IBM/3081
B. Language used:	PL/I
C. File Organization:	One file, one tape
D. Record Format:	Blocked, fixed format
E. Record count:	35,520
F. Record length:	535
G. Blocksize:	32635
H. Recording mode:	IBM/EBCDIC 8-bit code
J. Last block	May be a short block
I. Code Scheme	Numeric/Alphabetic/Blank
K. Data counts:	
a. By occurrence:	35,520
b. By residence:	35,496
c. To foreign residents:	24

III. Unlinked File:

A. Machine used:	IBM/3081
B. Language used:	PL/I
C. File Organization:	One file, one tape
D. Record Format:	Blocked, fixed format
E. Record count:	841
F. Record length:	535
G. Blocksize:	32635
H. Recording mode:	IBM/EBCDIC 8-bit code
J. Last block	May be a short block
I. Code Scheme	Numeric/Alphabetic/Blank
K. Data counts:	
a. By occurrence:	841
b. By residence:	838
c. To foreign residents:	3

Linked Birth/Infant Death Data Set

List of Data Elements and Locations

<u>Data Items</u>	<u>Denominator- Plus File</u>	<u>Numerator Birth</u>	<u>File Death</u>	<u>Unlinked File</u>
1. General				
a. Match status	1	1	--	1
b. Infant death number	2-6	2-6	--	--
c. Year of birth	7-10	7-10	--	7-10*
d. Year of death	--	--	522-525	522-525
e. Resident status	11	11	505	505
2. Occurrence				
a. FIPS state	14-15	14-15	506-507	506-507
b. FIPS county	16-18	16-18	508-510	508-510
3. Residence				
a. FIPS state	19-20	19-20	511-512	511-512
b. FIPS county	21-23	21-23	513-515	513-515
c. NCHS state	24-25	24-25	516-517	516-517
d. NCHS city	26-28	26-28	518-520	518-520
4. Infant				
a. Age	213-216	--	213-216	213-216
b. Race	209-210	209-210	--	209-210
c. Sex	77-78	77-78	--	77-78*
d. Gestation	72-76	72-76	--	--
e. Birthweight	79-85	79-85	--	--
f. Plurality	86-87	86-87	--	--
g. Apgar score	88-91	88-91	--	--
h. Day of week of birth/death	207	207	528	528
i. Month of birth/death	69-71	69-71	526-527	526-527
5. Mother				
a. Age	29-32	29-32	--	--
b. Race	35-38	35-38	--	--
c. Education	39-41	39-41	--	--
d. Marital status	42-43	42-43	--	--
e. Place of birth	44-46	44-46	--	--
f. Hispanic origin	33-34	33-34	--	--
6. Father				
a. Age	60-62	60-62	--	--
b. Race	65-66	65-66	--	--
c. Education	67-68	67-68	--	--
d. Hispanic origin	63-64	63-64	--	--

Linked Birth/Infant Death Data Set

List of Data Elements and Locations

<u>Data Items</u>	<u>Denominator- Plus File</u>	<u>Numerator Birth</u>	<u>File Death</u>	<u>Unlinked File</u>
7. Pregnancy items				
a. Interval since last live birth	57-59	57-59	--	--
b. Month prenatal care began	51-53	51-53	--	--
c. Number of prenatal visits	54-55	54-55	--	--
d. Adequacy of care recode	56	56	--	--
e. Total birth order	47-48	47-48	--	--
f. Live birth order	49-50	49-50	--	--
8. Medical and Health Data				
a. Method of delivery	92-99	92-99	--	--
b. Medical risk factors	101-117	101-117	--	--
c. Other risk factors				
Tobacco	118-121	118-121	--	--
Alcohol	122-125	122-125	--	--
Weight gain during pregnancy	126-128	126-128	--	--
d. Obstetric procedures	130-136	130-136	--	--
e. Complications of labor and/or delivery	138-153	138-153	--	--
f. Abnormal conditions of the newborn	155-163	155-163	--	--
g. Congenital anomalies	165-186	165-186	--	--
h. Underlying cause of death	219-222	--	219-222	219-222
i. 61 Infant cause recode	223-225	--	223-225	223-225
j. Multiple conditions	--	--	261-504	261-504
9. Other items				
a. Place of delivery	12	12	--	--
b. Attendant at birth	13	13	--	--
c. Hospital and patient status	--	--	521	521
d. Autopsy performed	217	--	--	217
e. Place of accident	218	--	--	218
f. Residence reporting flags	187-204	187-204	--	--

* For the unlinked file, these items are from the death certificate. See section on Changes Beginning with 1989 Data for explanation.

+ For the unlinked file, date of birth as reported on the death certificate is used to generate age at death. See section on Changes Beginning with 1989 Data for explanation.

Denominator-Plus Record and Natality Section of Numerator (Linked) Record

<u>Item Location</u>	<u>Item Length</u>	<u>Variable Name, Item and Code Outline</u>
13	1	<u>BIRATTND</u> <u>Attendant at Delivery</u> 1 ... Doctor of Medicine (M.D.) 2 ... Doctor of Osteopathy (D.O.) 3 ... Certified Nurse Midwife (C.N.M.) 4 ... Other Midwife 5 ... Other 9 ... Unknown or not stated
14-18	5	<u>FIPSOCCE</u> <u>Federal Information Processing Standards</u> <u>(FIPS) Geographic Codes (Occurrence) - Birth</u> Refer to the Geographic Code Outline further back in this document for a detailed list of areas and codes. For an explanation of FIPS codes, reference should be made to various National Institute of Standards and Technology (NIST) publications.
14-15	2	<u>STOCCFIPB</u> <u>State of Occurrence (FIPS) - Birth</u> 01 ... Alabama 02 ... Alaska 04 ... Arizona 05 ... Arkansas 06 ... California 08 ... Colorado 09 ... Connecticut 10 ... Delaware 11 ... District of Columbia 12 ... Florida 13 ... Georgia 15 ... Hawaii 16 ... Idaho 17 ... Illinois 18 ... Indiana 19 ... Iowa 20 ... Kansas 21 ... Kentucky 22 ... Louisiana 23 ... Maine 24 ... Maryland 25 ... Massachusetts 26 ... Michigan 27 ... Minnesota 28 ... Mississippi 29 ... Missouri 30 ... Montana 31 ... Nebraska 32 ... Nevada 33 ... New Hampshire

1991
Denominator-Plus Record and Natality Section of Numerator (Linked) Record

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

1991
Denominator-Plus Record and Natality Section of Numerator (Linked) Record

<u>Item Location</u>	<u>Item Length</u>	<u>Variable Name, Item and Code Outline</u>
21-23	3	<u>CNTYRFPB</u> <u>County of Residence (FIPS) - Birth</u> 000 ... Foreign residents 001-999 ... Counties and county equivalents (independent and coextensive cities) are numbered alphabetically within each State (Note: To uniquely identify a county, both the State and county codes must be used.) 999 ... County with less than 250,000 population
24-25	2	<u>BRSTATE</u> <u>State Residence - NCHS Codes - Birth</u> 01 ... Alabama 02 ... Alaska 03 ... Arizona 04 ... Arkansas 05 ... California 06 ... Colorado 07 ... Connecticut 08 ... Delaware 09 ... District of Columbia 10 ... Florida 11 ... Georgia 12 ... Hawaii 13 ... Idaho 14 ... Illinois 15 ... Indiana 16 ... Iowa 17 ... Kansas 18 ... Kentucky 19 ... Louisiana 20 ... Maine 21 ... Maryland 22 ... Massachusetts 23 ... Michigan 24 ... Minnesota 25 ... Mississippi 26 ... Missouri 27 ... Montana 28 ... Nebraska 29 ... Nevada 30 ... New Hampshire 31 ... New Jersey 32 ... New Mexico 33 ... New York 34 ... North Carolina 35 ... North Dakota 36 ... Ohio 37 ... Oklahoma 38 ... Oregon 39 ... Pennsylvania

1991
Denominator-Plus Record and Natality Section of Numerator (Linked) Record

<u>Item Location</u>	<u>Item Length</u>	<u>Variable Name, Item and Code Outline</u>
24-25	2	<p><u>BRSTATE</u> <u>State of Residence - NCHS Codes - Birth (Cont'd)</u></p> <p>40 ... Rhode Island 41 ... South Carolina 42 ... South Dakota 43 ... Tennessee 44 ... Texas 45 ... Utah 46 ... Vermont 47 ... Virginia 48 ... Washington 49 ... West Virginia 50 ... Wisconsin 51 ... Wyoming 52-57,59 ... Foreign Residents 52 ... Puerto Rico 53 ... Virgin Islands 54 ... Guam 55 ... Canada 56 ... Cuba 57 ... Mexico 59 ... Remainder of the World</p>
26-28	3	<p><u>CITYRESB</u> <u>City of Residence - NCHS Codes - Birth</u></p> <p>A complete list of cities is shown in the Geographic Code Outline further back in this document.</p> <p>001-nnn ... Cities are numbered alphabetically within each State and identify each city with a population of 250,000 or more in 1980. (Note: To uniquely identify a city, both the State and city codes must be used. State, county and city codes may also be used.)</p> <p>999 ... Entire county, balance of county, or city less than 250,000 population</p> <p>zzz ... Foreign residents</p>
29	1	<p><u>MAGEFLG</u> <u>Age of Mother Flag</u></p> <p>This position is flagged whenever age is imputed or the mother's reported age is used. The reported age is used, if valid, when computed age derived from the date of birth is not available or when it is outside the 10-49 code range.</p> <p>Blank ... Not imputed and reported age is not used 1 ... Reported age is used 2 ... Age is imputed</p>

1991
Denominator-Plus Record and Natality Section of Numerator (Linked) Record

<u>Item Location</u>	<u>Item Length</u>	<u>Variable Name, Item and Code Outline</u>
30-31	2	<p><u>DMAGE</u> <u>Age of Mother</u></p> <p>This item is: a) computed using dates of birth of mother and of delivery; b) reported; or c) imputed. This is the age item used in NCHS publications.</p> <p>10-49 ... Age in single years</p>
32	1	<p><u>MAGER8</u> <u>Age of Mother Recode 8</u></p> <p>1 ... Under 15 years 2 ... 15 - 19 years 3 ... 20 - 24 years 4 ... 25 - 29 years 5 ... 30 - 34 years 6 ... 35 - 39 years 7 ... 40 - 44 years 8 ... 45 - 49 years</p>
33	1	<p><u>ORMOTH</u> <u>Hispanic Origin of Mother</u></p> <p>Origin is not reported by all areas. See reporting flags.</p> <p>0 ... Non-Hispanic 1 ... Mexican 2 ... Puerto Rican 3 ... Cuban 4 ... Central or South American 5 ... Other and unknown Hispanic 9 ... Origin unknown or not stated</p>
34	1	<p><u>ORRACEM</u> <u>Hispanic Origin and Race of Mother Recode</u></p> <p>Origin is not reported by all areas. See reporting flags.</p> <p>1 ... Mexican 2 ... Puerto Rican 3 ... Cuban 4 ... Central or South American 5 ... Other and unknown Hispanic 6 ... Non-Hispanic White 7 ... Non-Hispanic Black 8 ... Non-Hispanic other races 9 ... Origin unknown or not stated</p>
35	1	<p><u>MRACEIMP</u> <u>Race of Mother Imputation Flag</u></p> <p>Blank ... Race is not imputed 1 ... Race is imputed</p>

1991
Denominator-Plus Record and Natality Section of Numerator (Linked) Record

<u>Item Location</u>	<u>Item Length</u>	<u>Variable Name, Item and Code Outline</u>																																				
36-37	2	<p><u>MRACE</u> <u>Race of Mother</u></p> <p>Race codes effective with 1989 data differ from previous years.</p> <table> <tr><td>01</td><td>...</td><td>White</td></tr> <tr><td>02</td><td>...</td><td>Black</td></tr> <tr><td>03</td><td>...</td><td>American Indian (includes Aleuts and Eskimos)</td></tr> <tr><td>04</td><td>...</td><td>Chinese</td></tr> <tr><td>05</td><td>...</td><td>Japanese</td></tr> <tr><td>06</td><td>...</td><td>Hawaiian (includes Part-Hawaiian)</td></tr> <tr><td>07</td><td>...</td><td>Filipino</td></tr> <tr><td>08</td><td>...</td><td>Other Asian or Pacific Islander</td></tr> <tr><td>09</td><td>...</td><td>All other Races</td></tr> </table>	01	...	White	02	...	Black	03	...	American Indian (includes Aleuts and Eskimos)	04	...	Chinese	05	...	Japanese	06	...	Hawaiian (includes Part-Hawaiian)	07	...	Filipino	08	...	Other Asian or Pacific Islander	09	...	All other Races									
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09	...	All other Races																																				
38	1	<p><u>MRACE3</u> <u>Race of Mother Recode</u></p> <table> <tr><td>1</td><td>...</td><td>White</td></tr> <tr><td>2</td><td>...</td><td>Races other than White or Black</td></tr> <tr><td>3</td><td>...</td><td>Black</td></tr> </table>	1	...	White	2	...	Races other than White or Black	3	...	Black																											
1	...	White																																				
2	...	Races other than White or Black																																				
3	...	Black																																				
39-40	2	<p><u>DMEDUC</u> <u>Education of Mother Detail</u></p> <p>Education is not reported by all areas. See reporting flags.</p> <table> <tr><td>00</td><td>...</td><td>No formal education</td></tr> <tr><td>01-08</td><td>...</td><td>Years of elementary school</td></tr> <tr><td>09</td><td>...</td><td>1 year of high school</td></tr> <tr><td>10</td><td>...</td><td>2 years of high school</td></tr> <tr><td>11</td><td>...</td><td>3 years of high school</td></tr> <tr><td>12</td><td>...</td><td>4 years of high school</td></tr> <tr><td>13</td><td>...</td><td>1 year of college</td></tr> <tr><td>14</td><td>...</td><td>2 years of college</td></tr> <tr><td>15</td><td>...</td><td>3 years of college</td></tr> <tr><td>16</td><td>...</td><td>4 years of college</td></tr> <tr><td>17</td><td>...</td><td>5 or more years of college</td></tr> <tr><td>99</td><td>...</td><td>Not stated</td></tr> </table>	00	...	No formal education	01-08	...	Years of elementary school	09	...	1 year of high school	10	...	2 years of high school	11	...	3 years of high school	12	...	4 years of high school	13	...	1 year of college	14	...	2 years of college	15	...	3 years of college	16	...	4 years of college	17	...	5 or more years of college	99	...	Not stated
00	...	No formal education																																				
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15	...	3 years of college																																				
16	...	4 years of college																																				
17	...	5 or more years of college																																				
99	...	Not stated																																				
41	1	<p><u>MEDUC6</u> <u>Education of Mother Recode</u></p> <p>Education is not reported by all areas. See reporting flags.</p> <table> <tr><td>1</td><td>...</td><td>0 - 8 years</td></tr> <tr><td>2</td><td>...</td><td>9 - 11 years</td></tr> <tr><td>3</td><td>...</td><td>12 years</td></tr> <tr><td>4</td><td>...</td><td>13 - 15 years</td></tr> <tr><td>5</td><td>...</td><td>16 years and over</td></tr> <tr><td>6</td><td>...</td><td>Not stated</td></tr> </table>	1	...	0 - 8 years	2	...	9 - 11 years	3	...	12 years	4	...	13 - 15 years	5	...	16 years and over	6	...	Not stated																		
1	...	0 - 8 years																																				
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6	...	Not stated																																				

1991
Denominator-Plus Record and Natality Section of Numerator (Linked) Record

<u>Item Location</u>	<u>Item Length</u>	<u>Variable Name, Item and Code Outline</u>
42	1	<u>DMARIMP</u> <u>Marital Status of Mother Imputation Flag</u> Blank ... Marital status is not imputed 1 ... Marital status is imputed
43	1	<u>DMAR</u> <u>Marital Status of Mother</u> 1 ... Married 2 ... Unmarried
44-45	2	<u>MPLBIR</u> <u>Place of Birth of Mother</u> 01 ... Alabama 02 ... Alaska 03 ... Arizona 04 ... Arkansas 05 ... California 06 ... Colorado 07 ... Connecticut 08 ... Delaware 09 ... District of Columbia 10 ... Florida 11 ... Georgia 12 ... Hawaii 13 ... Idaho 14 ... Illinois 15 ... Indiana 16 ... Iowa 17 ... Kansas 18 ... Kentucky 19 ... Louisiana 20 ... Maine 21 ... Maryland 22 ... Massachusetts 23 ... Michigan 24 ... Minnesota 25 ... Mississippi 26 ... Missouri 27 ... Montana 28 ... Nebraska 29 ... Nevada 30 ... New Hampshire 31 ... New Jersey 32 ... New Mexico 33 ... New York 34 ... North Carolina

1991
Denominator-Plus Record and Natality Section of Numerator (Linked) Record

<u>Item Location</u>	<u>Item Length</u>	<u>Variable Name, Item and Code Outline</u>
44-45	2	<u>MPLBIR</u> <u>Place of Birth of Mother Cont'd</u> 35 ... North Dakota 36 ... Ohio 37 ... Oklahoma 38 ... Oregon 39 ... Pennsylvania 40 ... Rhode Island 41 ... South Carolina 42 ... South Dakota 43 ... Tennessee 44 ... Texas 45 ... Utah 46 ... Vermont 47 ... Virginia 48 ... Washington 49 ... West Virginia 50 ... Wisconsin 51 ... Wyoming 52 ... Puerto Rico ... Virgin Islands 53 54 ... Guam 55 ... Canada 56 ... Cuba 57 ... Mexico 59 ... Remainder of the world 99 ... Not Classifiable
46	1	<u>MPLBIRR</u> <u>Place of Birth of Mother Recode</u> 1 ... Born in the 50 States and D.C. 2 ... Born outside the 50 States and D.C. 3 ... Unknown or not stated
47-48	2	<u>DTOTORD</u> <u>Detail Total Birth Order</u> Sum of live birth order and other terminations of pregnancy. If either item is unknown, this item is made unknown. 01-40 ... Total number of live births and other terminations of pregnancy 99 ... Unknown
49-50	2	<u>DLIVORD</u> <u>Detail Live Birth Order</u> 00-31 ... Number of children born alive to mother 99 ... Unknown

1991
Denominator-Plus Record and Natality Section of Numerator (Linked) Record

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

Denominator-Plus Record and Natality Section of Numerator (Linked) Record

<u>Item Location</u>	<u>Item Length</u>	<u>Variable Name, Item and Code Outline</u>
57-59	3	<p><u>DISLLB</u> <u>Interval Since Last Live Birth</u></p> <p>This item was computed using date of birth of the child and date of last live birth.</p> <p>777 ... No previous live birth 000 ... Zero months (plural birth) 001-468 ... One - four hundred sixty-eight months 999 ... Unknown</p>
60	1	<p><u>FAGERFLG</u> <u>Reported Age of Father Used Flag</u></p> <p>This position is flagged whenever the Father's reported age in years is used. The reported age is used, if valid, when age derived from date of birth is not available or when it is less than 10.</p> <p>Blank ... Reported age is not used 1 ... Reported age is used</p>
61-62	2	<p><u>DFAGE</u> <u>Age of Father</u></p> <p>This item is either computed from date of birth of father and of child or is the reported age. This is the age item used in NCHS publications.</p> <p>10-98 ... Age in single years 99 ... Unknown or not stated</p>
63	1	<p><u>ORFATH</u> <u>Hispanic Origin of Father</u></p> <p>Origin is not reported by all areas. See reporting flags.</p> <p>0 ... Non-Hispanic 1 ... Mexican 2 ... Puerto Rican 3 ... Cuban 4 ... Central or South American 5 ... Other and unknown Hispanic 9 ... Origin unknown or not stated</p>

1991
Denominator-Plus Record and Natality Section of Numerator (Linked) Record

<u>Item Location</u>	<u>Item Length</u>	<u>Variable Name, Item and Code Outline</u>
64	1	<p><u>ORRACEF</u> <u>Hispanic Origin and Race of Father Recode</u></p> <p>Origin is not reported by all areas. See reporting flags.</p> <p>1 ... Mexican 2 ... Puerto Rican 3 ... Cuban 4 ... Central or South American 5 ... Other and unknown Hispanic 6 ... Non-Hispanic White 7 ... Non-Hispanic Black 8 ... Non-Hispanic other or unknown race 9 ... Origin unknown or not stated</p>
65-66	2	<p><u>FRACE</u> <u>Race of Father</u></p> <p>Race codes effective with 1989 data differ from previous years.</p> <p>01 ... White 02 ... Black 03 ... American Indian (includes Aleuts and Eskimos) 04 ... Chinese 05 ... Japanese 06 ... Hawaiian (includes Part-Hawaiian) 07 ... Filipino 08 ... Other Asian or Pacific Islander 09 ... All other races 99 ... Unknown or not stated</p>
67-68	2	<p><u>DFEDUC</u> <u>Education of Father Detail</u></p> <p>Education is not reported by all areas. See reporting flags</p> <p>00 ... No formal education 01-08 ... Years of elementary school 09 ... 1 year of high school 10 ... 2 years of high school 11 ... 3 years of high school 12 ... 4 years of high school 13 ... 1 year of college 14 ... 2 years of college 15 ... 3 years of college 16 ... 4 years of college 17 ... 5 or more years of college 99 ... Not stated</p>

1991
Denominator-Plus Record and Natality Section of Numerator (Linked) Record

<u>Item Location</u>	<u>Item Length</u>	<u>Variable Name, Item and Code Outline</u>
69	1	<u>CDOBMIMP</u> <u>Month of Birth of Child Imputation Flag</u> Blank ... Month is not imputed 1 ... Month is imputed
70-71	2	<u>BIRMON</u> <u>Month of Birth</u> 01 ... January 02 ... February 03 ... March 04 ... April 05 ... May 06 ... June 07 ... July 08 ... August 09 ... September 10 ... October 11 ... November 12 ... December
72	1	<u>GESTFLG</u> <u>Clinical Estimate of Gestation Used or Gestation Imputed Flag</u> This position is flagged whenever gestation is imputed or the clinical estimate of gestation is used. It is used whenever gestation could not be computed or when the computed gestation is outside the 17-47 code range. Blank ... Not imputed and the clinical estimate of gestation is not used 1 ... Clinical estimate is used 2 ... Gestation is imputed
73-74	2	<u>GESTAT</u> <u>Gestation - Detail in Weeks</u> This item is: a) computed using dates of birth of child and last normal menses; b) imputed from LMP date; c) the clinical estimate; or d) unknown when there is insufficient data to impute or no valid clinical estimate. This is the gestation item used in NCHS publications. 17-47 ... 17th through 47th week of gestation 99 ... Unknown
75-76	2	<u>GESTAT 10</u> <u>GESTATION RECODE 10</u> 01 ... Under 20 weeks 02 ... 20 - 27 weeks 03 ... 28 - 31 weeks 04 ... 32 - 35 weeks

Denominator-Plus Record and Natality Section of Numerator (Linked) Record

<u>Item Location</u>	<u>Item Length</u>	<u>Variable Name, Item and Code Outline</u>
75-76	2	<u>GESTAT 10</u> <u>GESTATION RECODE 10 (Cont'd)</u> 05 ... 36 weeks 06 ... 37 - 39 weeks 07 ... 40 weeks 08 ... 41 weeks 09 ... 42 weeks and over 10 ... Not stated
77	1	<u>CSEXIMP</u> <u>Sex Imputation Flag</u> Blank ... Sex is not imputed 1 ... Sex is imputed
78	1	<u>CSEX</u> <u>Sex</u> 1 ... Male 2 ... Female
79-82	4	<u>DBIRWT</u> <u>Birth Weight Detail in Grams</u> 0227-8165 ... Number of grams 9999 ... Not stated birth weight
83-84	2	<u>BIRWT12</u> <u>Birth Weight Recode 12</u> 01 ... 499 grams or less 02 ... 500-999 grams 03 ... 1000-1499 grams 04 ... 1500-1999 grams 05 ... 2000-2499 grams 06 ... 2500-2999 grams 07 ... 3000-3499 grams 08 ... 3500-3999 grams 09 ... 4000-4499 grams 10 ... 4500-4999 grams 11 ... 5000-8165 grams 12 ... Unknown or not stated
85	1	<u>BIRWT4</u> <u>Birth Weight Recode 4</u> 1 ... 1499 grams or less 2 ... 1500-2499 grams 3 ... 2500 grams or more 4 ... Unknown or not stated
86	1	<u>PLURIMP</u> <u>Plurality Imputation Flag</u> Blank ... Plurality is not imputed 1 ... Plurality is imputed

1991
Denominator-Plus Record and Natality Section of Numerator (Linked) Record

<u>Item Location</u>	<u>Item Length</u>	<u>Variable Name, Item and Code Outline</u>
87	1	<p><u>DPLURAL</u> <u>Plurality</u></p> <p>1 ... Single 2 ... Twin 3 ... Triplet 4 ... Quadruplet 5 ... Quintuplet or higher</p>
88-89	2	<p><u>OMAPS</u> <u>One Minute Apgar Score</u></p> <p>Apgar score is not reported by all areas. See reporting flags.</p> <p>00-10 ... A score of 1-10 99 ... Unknown or not stated</p>
90-91	2	<p><u>FMAPS</u> <u>Five Minute Apgar Score</u></p> <p>Apgar score is not reported by all areas. See reporting flags.</p> <p>00-10 ... A score of 0-10 99 ... Unknown or not stated</p>
92-186	95	<p><u>MEDINFO</u> <u>Medical and Health Data</u></p> <p>Some States do not report an entire item while other States do not report all of the categories within an item.</p> <p>If an item is not reported, it is indicated by code zero in the appropriate reporting flag.</p> <p>If a category within an item is not reported it is indicated by code 8 in the position for that category.</p>
92-99	8	<p><u>DELMETH</u> <u>Method of Delivery</u></p> <p>Each method is assigned a separate position, and the code structure for each method (position) is:</p> <p>1 ... The method was used 2 ... The method was not used 8 ... Method not on certificate 9 ... Method unknown or not stated</p>
92	1	<p><u>VAGINAL</u> <u>Vaginal</u></p>

1991
Denominator-Plus Record and Natality Section of Numerator (Linked) Record

<u>Item Location</u>	<u>Item Length</u>	<u>Variable Name, Item and Code Outline</u>
93	1	<u>VBAC</u> <u>Vaginal Birth After Previous C-Section</u>
94	1	<u>PRIMAC</u> <u>Primary C-Section</u>
95	1	<u>REPEAC</u> <u>Repeat C-Section</u>
96	1	<u>FORCEP</u> <u>Forceps</u>
97	1	<u>VACUUM</u> <u>Vacuum</u>
98	1	<u>R1</u> <u>Reserved Position</u>
99	1	<u>DELMETH5</u> <u>Method of Delivery Recode</u>
		1 ... Vaginal (excludes Vaginal after previous C-section)
		2 ... Vaginal birth after previous C section
		3 ... Primary C-section
		4 ... Repeat C-Section
		5 ... Not stated
100	1	<u>R2</u> <u>Reserved Position</u>
101-117	17	<u>MEDRISK</u> <u>Medical Risk Factors</u>
		Each risk factor is assigned a separate position, and the code structure for each risk factor (position) is:
		1 ... Factor reported
		2 ... Factor not reported
		8 ... Factor not on certificate
		9 ... Factor not classifiable
101	1	<u>ANEMIA</u> <u>Anemia (Hct.<30/Hgb.<10)</u>
102	1	<u>CARDIAC</u> <u>Cardiac disease</u>
103	1	<u>LUNG</u> <u>Acute or chronic lung disease</u>
104	1	<u>DIABETES</u> <u>Diabetes</u>
105	1	<u>HERPES</u> <u>Genital herpes</u>

Denominator-Plus Record and Natality Section of Numerator (Linked) Record

<u>Item Location</u>	<u>Item Length</u>	<u>Variable Name, Item and Code Outline</u>
106	1	<u>HYDRA</u> <u>Hydramnios/Oligohydramnios</u>
107	1	<u>HEMO</u> <u>Hemoglobinopathy</u>
108	1	<u>CHYPER</u> <u>Hypertension, chronic</u>
109	1	<u>PHYPER</u> <u>Hypertension, pregnancy-associated</u>
110	1	<u>ECLAMP</u> <u>Eclampsia</u>
111	1	<u>INCERVIX</u> <u>Incompetent cervix</u>
112	1	<u>PRE4000</u> <u>Previous infant 4000+ grams</u>
113	1	<u>PRETERM</u> <u>Previous preterm or small-for-gestational-age infant</u>
114	1	<u>RENAL</u> <u>Renal disease</u>
115	1	<u>RH</u> <u>Rh sensitization</u>
116	1	<u>UTERINE</u> <u>Uterine bleeding</u>
117	1	<u>OTHERMR</u> <u>Other Medical Risk Factors</u>
118-128	11	<u>OTHERRSK</u> <u>Other Risk Factors for this Pregnancy</u>
118-121	4	<u>TOBACRSK</u> <u>Tobacco Risks</u>
118	1	<u>TOBACCO</u> <u>Tobacco Use During Pregnancy</u>
		1 ... Yes
		2 ... No
		9 ... Unknown or not stated
119-120	2	<u>CIGAR</u> <u>Average Number of Cigarettes Per Day</u>
		00-97 ... As stated
		98 ... 98 or more cigarettes per day
		99 ... Unknown or not stated

Denominator-Plus Record and Natality Section of Numerator (Linked) Record

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

1991
Denominator-Plus Record and Natality Section of Numerator (Linked) Record

<u>Item Location</u>	<u>Item Length</u>	<u>Variable Name, Item and Code Outline</u>
128	1	<u>WTGAIN9</u> <u>Weight Gain Recode</u> 1 ... Less than 16 pounds 2 ... 16-20 pounds 3 ... 21-25 pounds 4 ... 26-30 pounds 5 ... 31-35 pounds 6 ... 36-40 pounds 7 ... 41-45 pounds 8 ... 46 or more pounds 9 ... Unknown or not stated
129	1	<u>R3</u> <u>Reserved Position</u>
130-136	7	<u>OBSTETRC</u> <u>Obstetric Procedures</u> Each procedure is assigned a separate position, and the code structure for each procedure (position) is: 1 ... Procedure reported 2 ... Procedure not reported 8 ... Procedure not on certificate 9 ... Procedure not classifiable
130	1	<u>AMNIO</u> <u>Amniocentesis</u>
131	1	<u>MONITOR</u> <u>Electronic fetal monitoring</u>
132	1	<u>INDUCT</u> <u>Induction of labor</u>
133	1	<u>STIMULA</u> <u>Stimulation of labor</u>
134	1	<u>TOCOL</u> <u>Tocolysis</u>
135	1	<u>ULTRAS</u> <u>Ultrasound</u>
136	1	<u>OTHEROB</u> <u>Other Obstetric Procedures</u>
137	1	<u>R4</u> <u>Reserved Position</u>

Denominator-Plus Record and Natality Section of Numerator (Linked) Record

<u>Item Location</u>	<u>Item Length</u>	<u>Variable Name, Item and Code Outline</u>
138-153	16	<u>LABOR</u> <u>Complications of Labor and/or Delivery</u> Each complication is assigned a separate position, and the code structure for each complication (position) is: 1 ... Complication reported 2 ... Complication not reported 8 ... Complication not on certificate 9 ... Complication not classifiable
138	1	<u>FEBRILE</u> <u>Febrile (>100 degrees F. or 38 degrees C.)</u>
139	1	<u>MECONIUM</u> <u>Meconium, moderate/heavy</u>
140	1	<u>RUPTURE</u> <u>Premature rupture of membrane (>12 hours)</u>
141	1	<u>ABRUPTIO</u> <u>Abruptio placenta</u>
142	1	<u>PREPLACE</u> <u>Placenta previa</u>
143	1	<u>EXCEBLD</u> <u>Other excessive bleeding</u>
144	1	<u>SEIZURE</u> <u>Seizures during labor</u>
145	1	<u>PRECIP</u> <u>Precipitous labor (<3 hours)</u>
146	1	<u>PROLONG</u> <u>Prolonged labor (>20 hours)</u>
147	1	<u>DYSFUNC</u> <u>Dysfunctional labor</u>
148	1	<u>BREECH</u> <u>Breech/Malpresentation</u>
149	1	<u>CEPHALO</u> <u>Cephalopelvic disproportion</u>
150	1	<u>CORD</u> <u>Cord prolapse</u>
151	1	<u>ANESTHE</u> <u>Anesthetic complications</u>

Denominator-Plus Record and Natality Section of Numerator (Linked) Record

<u>Item Location</u>	<u>Item Length</u>	<u>Variable Name, Item and Code Outline</u>
152	1	<u>DISTRESS</u> <u>Fetal distress</u>
153	1	<u>OTHERLB</u> <u>Other Complication of Labor and/or Delivery</u>
154	1	<u>R5</u> <u>Reserved Position</u>
155-163	9	<u>NEWBORN</u> <u>Abnormal conditions of the Newborn</u>
Each condition is assigned a separate position, and the code structure for each condition (position) is:		
1 ... Condition reported		
2 ... Condition not reported		
8 ... Condition not on certificate		
9 ... Condition not classifiable		
155	1	<u>NANEMIA</u> <u>Anemia Hct.>39/Hgb.<13)</u>
156	1	<u>INJURY</u> <u>Birth injury</u>
157	1	<u>ALCOSYN</u> <u>Fetal alcohol syndrome</u>
158	1	<u>HYALINE</u> <u>Hyaline membrane disease</u>
159	1	<u>MECONSYN</u> <u>Meconium aspiration syndrome</u>
160	1	<u>VENL30</u> <u>Assisted ventilation, less than 30 minutes</u>
161	1	<u>VEN30M</u> <u>Assisted ventilation, 30 minutes or more</u>

Denominator-Plus Record and Natality Section of Numerator (Linked) Record

<u>Item Location</u>	<u>Item Length</u>	<u>Variable Name, Item and Code Outline</u>
162	1	<u>NSEIZ</u> <u>Seizures</u>
163	1	<u>OTHERAB</u> <u>Other Abnormal Conditions of the Newborn</u>
164	1	<u>R6</u> <u>Reserved Position</u>
165-186	22	<u>CONGENIT</u> <u>Congenital Anomalies</u> Each anomaly is assigned a separate position, and the code structure for each anomaly (position) is: 1 ... Anomaly reported 2 ... Anomaly not reported 8 ... Anomaly not on certificate 9 ... Anomaly not classifiable
165	1	<u>ANEN</u> <u>Anencephalus</u>
166	1	<u>SPINA</u> <u>Spina bifida/Meningocele</u>
167	1	<u>HYDRO</u> <u>Hydrocephalus</u>
168	1	<u>MICROCE</u> <u>Microcephalus</u>
169	1	<u>NERVOUS</u> <u>Other central nervous system anomalies</u>
170	1	<u>HEART</u> <u>Heart malformations</u>
171	1	<u>CIRCUL</u> <u>Other circulatory/respiratory anomalies</u>
172	1	<u>RECTAL</u> <u>Rectal atresia/stenosis</u>
173	1	<u>TRACHEO</u> <u>Tracheo-esophageal fistula/Esophageal atresia</u>
174	1	<u>OMPHALO</u> <u>Omphalocele/Gastroschisis</u>
175	1	<u>GASTRO</u> <u>Other gastrointestinal anomalies</u>
176	1	<u>GENITAL</u> <u>Malformed genitalia</u>

1991
Denominator-Plus Record and Natality Section of Numerator (Linked) Record

<u>Item Location</u>	<u>Item Length</u>	<u>Variable Name, Item and Code Outline</u>
177	1	<u>RENALAGE</u> <u>Renal agenesis</u>
178	1	<u>UROGEN</u> <u>Other urogenital anomalies</u>
179	1	<u>CLEFTLP</u> <u>Cleft lip/palate</u>
180	1	<u>ADACTYLY</u> <u>Polydactyly/Syndactyly/Adactyly</u>
181	1	<u>CLUBFOOT</u> <u>Club foot</u>
182	1	<u>HERNIA</u> <u>Diaphragmatic hernia</u>
183	1	<u>MUSCULO</u> <u>Other musculoskeletal/integumental anomalies</u>
184	1	<u>DOWNNS</u> <u>Down's syndrome</u>
185	1	<u>CHROMO</u> <u>Other chromosomal anomalies</u>
186	1	<u>OTHERCON</u> <u>Other congenital anomalies</u>
187-206	20	<u>FLRES</u> <u>Reporting Flags for Place of Residence</u> These positions contain flags to indicate whether or not the specified item is included on the birth certificate of the State of residence or of the SMSA of residence. The code structure of each flag (position) is: 0 ... The item is not reported 1 ... The item is reported or partially reported.
187	1	<u>ORIGM</u> <u>Origin of mother</u>
188	1	<u>ORIGF</u> <u>Origin of father</u>
189	1	<u>EDUCM</u> <u>Education of mother</u>
190	1	<u>EDUCF</u> <u>Education of father</u>

1990
Denominator-Plus Record and Natality Section of Numerator (Linked) Record

<u>Item Location</u>	<u>Item Length</u>	<u>Variable Name, Item and Code Outline</u>
191	1	<u>GESTE</u> <u>Clinical estimate of gestation</u>
192	1	<u>OMAPSRF</u> <u>1-minute Apgar score</u>
193	1	<u>FMAPSRF</u> <u>5-minute Apgar score</u>
194	1	<u>DELMETRF</u> <u>Method of delivery</u>
195	1	<u>MEDRSK</u> <u>Medical risk factors</u>
196	1	<u>TOBUSE</u> <u>Tobacco use</u>
197	1	<u>ALCUSE</u> <u>Alcohol use</u>
198	1	<u>WTGN</u> <u>Weight gain</u>
199	1	<u>OBSTRC</u> <u>Obstetric procedures</u>
200	1	<u>CLABOR</u> <u>Complications of labor and/or delivery</u>
201	1	<u>ABNML</u> <u>Abnormal conditions of newborn</u>
202	1	<u>CONGAN</u> <u>Congenital anomalies</u>
203	1	<u>R7</u> <u>Reserved position</u>
204	1	<u>EDUCMSA</u> <u>Education of Mother (Based on SMSA)</u>
205-206	2	<u>R8</u> <u>Reserved positions</u>
207	1	<u>WEEKDAYB</u> <u>Day of Week Child Born</u>
		1 ... Sunday
		2 ... Monday
		3 ... Tuesday
		4 ... Wednesday
		5 ... Thursday
		6 ... Friday
		7 ... Saturday

1991
Denominator-Plus Record and Natality Section of Numerator (Linked) Record

<u>Item Location</u>	<u>Item Length</u>	<u>Variable Name, Item and Code Outline</u>
208	1	<u>R9</u> <u>Reserved position</u>
209-210	2	<u>CRACE</u> <u>Race of Child</u> Race codes effective with 1989 data differ from previous years. 01 ... White 02 ... Black 03 ... American Indian (includes Aleuts and Eskimos) 04 ... Chinese 05 ... Japanese 06 ... Hawaiian (includes part-Hawaiian) 07 ... Filipino 08 ... Other Asian or Pacific Islander 09 ... All other races
211-212	2	<u>R10</u> <u>Reserved positions</u>

1991
Denominator-Plus Record and Mortality Section of Numerator (Linked) Record

<u>Item Location</u>	<u>Item Length</u>	<u>Variable Name, Item and Code Outline</u>
		Locations 213-535 contain data from the Death Certificate. Data in locations 213-225 are included on both the numerator and denominator-plus files. Data in locations 226-535 are included in the numerator file only. Residence items in the Denominator Record and in the natality section of the Numerator (Linked) Record refer to the usual place of residence of the <u>Mother</u> ; whereas in the mortality section of the Numerator (linked) Record, these items refer to the residence of the <u>Decedent</u> .
213-215	3	<u>AGED</u> <u>Age at Death in Days</u> The generated age at death in days is calculated from the date of death on the death certificate minus the date of birth on the birth certificate unless the reported age of death is less than 2 days, then the reported age is used. If the exact date of birth and/or death is unknown, the age is imputed. 000-364 ... Number of days
216	1	<u>AGER5</u> <u>Infant Age Recode 5</u> 1 ... Under 1 hour 2 ... 1-23 hours 3 ... 1-6 hours 4 ... 7-27 days (late neonatal) 5 ... 28 days and over (postneonatal)
217	1	<u>AUTOPSY</u> <u>Autopsy Performed</u> 1 ... Yes 2 ... No 8 ... Autopsy performed not on certificate 9 ... Autopsy performed not stated
218	1	<u>ACCIDPL</u> <u>Place of Accident for Causes E850-E869 and E880-E928</u> Blank ... Causes other than E850-E869 and E880-E928 0 ... Home 1 ... Farm 2 ... Mine and quarry 3 ... Industrial place and premises 4 ... Place for recreation and sport 5 ... Street and highway 6 ... Public building 7 ... Resident institution 8 ... Other specified places 9 ... Place of accident not specified

1991
Denominator-Plus Record and Mortality Section of Numerator (Linked) Record

<u>Item Location</u>	<u>Item Length</u>	<u>Variable Name, Item and Code Outline</u>
219-222	4	<u>UCOD</u> <u>ICD Code (9th Revision)</u> See the "International Classification of Diseases". 1975 Revision, Volume 1. For injuries and poisoning, the external cause is coded (E800-E999). rather than the Nature of Injury (800-899) These positions do not include the letter E for the external cause of injury. For those causes that do not have a 4th digit, location 222 is blank.
223-225	3	<u>UCODR61</u> <u>61 Infant Cause Recode</u> A recode of the ICD cause code into 61 groups for NCHS publications. Further back in this document is a complete list of recodes and the causes included. 010-680 ... Code range (not inclusive)

Here ends the Denominator-plus file. The layout for the Numerator (Linked) file continues on the next page.

1991
Mortality Section of Linked Record

<u>Item Location</u>	<u>Item Length</u>	<u>Variable Name, Item and Code Outline</u>
226-260	35	<u>R11</u> <u>Reserved Positions</u>
261-504	244	<u>MULTCOND</u> <u>Multiple Conditions</u> See the "International Classification of Diseases", 1975 Revision, Volume 1. Both the entity-axis and record-axis conditions are coded according to this revision (9th).
261-262	2	<u>EANUM</u> <u>Number of Entity-Axis Conditions</u> 00-20 ... Code range
263-402	140	<u>ENTITY</u> <u>ENTITY - AXIS CONDITIONS</u> Space has been provided for maximum of 20 conditions. Each condition takes 7 positions in the record. Records that do not have 20 conditions are blank in the unused area. Position 1: Part/line number on certificate 1 ... Part I, line 1 (a) 2 ... Part I, line 2 (b) 3 ... Part I, line 3 (c) 4 ... Part I, line 4 (d) 5 ... Part I, line 5 (e) 6 ... Part II, Position 2: Sequence of condition within part/line 1-7 ... Code range Position 3 - 6: Condition code (ICD 9th Revision) Position 7: Nature of Injury Flag 1 ... Indicates that the code in positions 3-6 is a Nature of Injury code 0 ... All other codes
263-269	7	1st Condition
270-276	7	2nd Condition
277-283	7	3rd Condition
284-290	7	4th Condition
291-297	7	5th Condition
298-304	7	6th Condition

1991
Mortality Section of Linked Record

<u>Item Location</u>	<u>Item Length</u>	<u>Variable Name, Item and Code Outline</u>
		<u>ENTITY</u>
263-402	140	<u>ENTITY - AXIS CONDITIONS (Cont'd)</u>
305-311	7	7th Condition
312-318	7	8th Condition
319-325	7	9th Condition
326-332	7	10th Condition
333-339	7	11th Condition
340-346	7	12th Condition
347-353	7	13th Condition
354-360	7	14th Condition
361-367	7	15th Condition
368-374	7	16th Condition
375-381	7	17th Condition
382-388	7	18th Condition
389-395	7	19th Condition
396-402	7	20th Condition
		<u>RANUM</u>
403-404	2	<u>Number of Record-Axis Conditions</u>
		00-20 ... Code range
405-504	100	<u>RECORD</u>
		<u>RECORD - AXIS CONDITIONS</u>
		Space has been provided for a maximum of 20 conditions. Each condition takes 5 positions in the record. Records that do not have 20 conditions are blank in the unused area.
		Positions 1-4: Condition code (ICD 9th Revision)
		Position 5: Nature of Injury Flag
		1 ... Indicates that the code in positions 1-4 is a Nature of Injury code
		0 ... All other codes
405-409	5	1st Condition
410-414	5	2nd Condition

1991
Mortality Section of Linked Record

<u>Item Location</u>	<u>Item Length</u>	<u>Variable Name, Item and Code Outline</u>
405-504	100	<u>RECORD</u> <u>RECORD - AXIS CONDITIONS Cont'd)</u>
405-419	5	3rd Condition
420-424	5	4th Condition
425-429	5	5th Condition
430-434	5	6th Condition
435-439	5	7th Condition
440-444	5	8th Condition
445-449	5	9th Condition
450-454	5	10th Condition
455-459	5	11th Condition
460-464	5	12th Condition
465-469	5	13th Condition
470-474	5	14th Condition
475-479	5	15th Condition
480-484	5	16th Condition
485-489	5	17th Condition
490-494	5	18th Condition
495-499	5	19th Condition
500-504	5	20th Condition
505	1	<u>RESSTATD</u> <u>Resident Status - Death</u>
		1 ... RESIDENTS: State and county of occurrence and residence are the same.
		2 ... INTRASTATE NONRESIDENTS: State of occurrence and residence are the same, but county is different.
		3 ... INTERSTATE NONRESIDENTS: State of occurrence and residence are different, but both are in the 50 States and D.C.
		4 ... FOREIGN RESIDENTS: State of occurrence is one of the 50 States or the District of Columbia, but place of residence of mother is outside of the 50 States and D.C.

1991
Mortality Section of Linked Record

<u>Item Location</u>	<u>Item Length</u>	<u>Variable Name, Item and Code Outline</u>
506-510	5	<p><u>FIPSOCCD</u> <u>Federal Information Processing Standards</u> <u>(FIPS) Geographic Codes (Occurrence) - Death</u></p> <p>Refer to the Geographic Code Outline further back in this document for a detailed list of areas and codes. For an explanation of FIPS codes, reference should be made to various National Institute of Standards and Technology (NIST) publications.</p>
506-507	2	<p><u>STOCCFIPD</u> <u>State of Occurrence (FIPS) - Death</u></p> <p>01 ... Alabama 02 ... Alaska 04 ... Arizona 05 ... Arkansas 06 ... California 08 ... Colorado 09 ... Connecticut 10 ... Delaware 11 ... District of Columbia 12 ... Florida 13 ... Georgia 15 ... Hawaii 16 ... Idaho 17 ... Illinois 18 ... Indiana 19 ... Iowa 20 ... Kansas 21 ... Kentucky 22 ... Louisiana 23 ... Maine 24 ... Maryland 25 ... Massachusetts 26 ... Michigan 27 ... Minnesota 28 ... Mississippi 29 ... Missouri 30 ... Montana 31 ... Nebraska 32 ... Nevada 33 ... New Hampshire 34 ... New Jersey 35 ... New Mexico 36 ... New York 37 ... North Carolina 38 ... North Dakota 39 ... Ohio 40 ... Oklahoma 41 ... Oregon 42 ... Pennsylvania</p>

1991
Mortality Section of Linked Record

<u>Item Location</u>	<u>Item Length</u>	<u>Variable Name, Item and Code Outline</u>
506-507	5	<u>STOCCFIPD</u> <u>State of Occurrence (FIPS) - Death (Cont'd)</u> 44 ... Rhode Island 45 ... South Carolina 46 ... South Dakota 47 ... Tennessee 48 ... Texas 49 ... Utah 50 ... Vermont 51 ... Virginia 53 ... Washington 54 ... West Virginia 55 ... Wisconsin 56 ... Wyoming
508-510	3	<u>CNTOCFIPD</u> <u>County of Occurrence (FIPS) - Death</u> 001-nnn ... Counties and county equivalents (independent and coextensive cities) are numbered alphabetically within each State. (Note: To uniquely identify a county, both the State and county codes must be used.) 999 ... County with less than 250,000 population
511-515	5	<u>FIPSRESD</u> <u>Federal Information Processing Standards (FIPS) Geographic Codes (Residence) - Death</u> <p>Refer to the Geographic Code Outline further back in this document for a detailed list of areas and codes. For an explanation of FIPS codes, reference should be made to various National Institute of Standards and Technology (NIST) publications.</p>
511-512	2	<u>STRESFIPD</u> <u>State of Residence (FIPS) - Death</u> 00 ... Foreign residents 01 ... Alabama 02 ... Alaska 04 ... Arizona 05 ... Arkansas 06 ... California 08 ... Colorado 09 ... Connecticut 10 ... Delaware 11 ... District of Columbia 12 ... Florida 13 ... Georgia 15 ... Hawaii 16 ... Idaho 17 ... Illinois 18 ... Indiana

1991
Mortality Section of Linked Record

<u>Item Location</u>	<u>Item Length</u>	<u>Variable Name, Item and Code Outline</u>
511-512	2	<u>STRESFIPD</u> <u>State of Residence (FIPS) - Death (Cont'd)</u>
		19 ... Iowa 20 ... Kansas 21 ... Kentucky 22 ... Louisiana 23 ... Maine 24 ... Maryland 25 ... Massachusetts 26 ... Michigan 27 ... Minnesota 28 ... Mississippi 29 ... Missouri 30 ... Montana 31 ... Nebraska 32 ... Nevada 33 ... New Hampshire 34 ... New Jersey 35 ... New Mexico 36 ... New York 37 ... North Carolina 38 ... North Dakota 39 ... Ohio 40 ... Oklahoma 41 ... Oregon 42 ... Pennsylvania 44 ... Rhode Island 45 ... South Carolina 46 ... South Dakota 47 ... Tennessee 48 ... Texas 49 ... Utah 50 ... Vermont 51 ... Virginia 53 ... Washington 54 ... West Virginia 55 ... Wisconsin 56 ... Wyoming
513-515	3	<u>CNTYRFPD</u> <u>County of Residence (FIPS) - Death</u>
		000 ... Foreign residents 001-999 ... Counties and county equivalents (independent and coextensive cities) are numbered alphabetically within each State (Note: To uniquely identify a county, both the State and county codes must be used.) A complete list of counties is shown in the Geographic Code Outline further back in this document. 999 ... County with less than 250,000 population

1991
Mortality Section of Linked Record

<u>Item Location</u>	<u>Item Length</u>	<u>Variable Name, Item and Code Outline</u>
516-517	2	<u>DRSTATE</u> <u>State of Residence - NCHS Codes - Death</u>
		01 ... Alabama
		02 ... Alaska
		03 ... Arizona
		04 ... Arkansas
		05 ... California
		06 ... Colorado
		07 ... Connecticut
		08 ... Delaware
		09 ... District of Columbia
		10 ... Florida
		11 ... Georgia
		12 ... Hawaii
		13 ... Idaho
		14 ... Illinois
		15 ... Indiana
		16 ... Iowa
		17 ... Kansas
		18 ... Kentucky
		19 ... Louisiana
		20 ... Maine
		21 ... Maryland
		22 ... Massachusetts
		23 ... Michigan
		24 ... Minnesota
		25 ... Mississippi
		26 ... Missouri
		27 ... Montana
		28 ... Nebraska
		29 ... Nevada
		30 ... New Hampshire
		31 ... New Jersey
		32 ... New Mexico
		33 ... New York
		34 ... North Carolina
		35 ... North Dakota
		36 ... Ohio
		37 ... Oklahoma
		38 ... Oregon
		39 ... Pennsylvania
		40 ... Rhode Island
		41 ... South Carolina
		42 ... South Dakota
		43 ... Tennessee
		44 ... Texas
		45 ... Utah
		46 ... Vermont
		47 ... Virginia
		48 ... Washington
		49 ... West Virginia
		50 ... Wisconsin
		51 ... Wyoming

1991
Mortality Section of Linked Record

<u>Item Location</u>	<u>Item Length</u>	<u>Variable Name, Item and Code Outline</u>
516-517	2	<u>DRSTATE</u> <u>State of Residence - NCHS Codes - Death (Cond't)</u> 52-57,59 ... Foreign Residents 52 ... Puerto Rico 53 ... Virgin Islands 54 ... Guam 55 ... Canada 56 ... Cuba 57 ... Mexico 59 ... Remainder of the World
518-520	3	<u>CITYRES</u> <u>City of Residence - NCHS Codes - Death</u> A complete list of cities is shown in the Geographic Code Outline further back in this document. 001-nnn ... Cities are numbered alphabetically within each State and identify each city with a population of 250,000 or more in 1980. (Note: To uniquely identify a city, both the State and city codes must be used. State, county and city codes may also be used.) 999 ... Balance of county ZZZ ... Foreign residents
521	1	<u>HOSPD</u> <u>Hospital and Patient Status</u> 1 ... Hospital, Clinic or Medical Center - Inpatient 2 ... Hospital, Clinic or Medical Center - Outpatient or admitted to Emergency Room 3 ... Hospital, clinic or medical center - Dead on arrival 4 ... Hospital, Clinic or Medical Center - patient status unknown 5 ... Nursing home 6 ... Residence 7 ... Other 9 ... Place of death unknown
522-525	4	<u>DTHYR</u> <u>Year of Death</u> 1991 ... Death occurred in 1991 1992 ... Death occurred in 1992

1991
Mortality Section of Linked Record

<u>Item Location</u>	<u>Item Length</u>	<u>Variable Name, Item and Code Outline</u>
526-527	2	<u>DTHMON</u> <u>Month of Death</u> 01 ... January 02 ... February 03 ... March 04 ... April 05 ... May 06 ... June 07 ... July 08 ... August 09 ... September 10 ... October 11 ... November 12 ... December
528	1	<u>WEEKDAYD</u> <u>Day of Week of Death</u> 1 ... Sunday 2 ... Monday 3 ... Tuesday 4 ... Wednesday 5 ... Thursday 6 ... Friday 7 ... Saturday 9 ... Unknown
529-535	7	<u>R12</u> <u>Reserved positions</u>

Linked Birth/Infant Death Data Set

Geographic Code Outline

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

Federal Information Processing Standards (FIPS) State and County Codes: For the 1991 linked file, the county codes and the State code immediately preceding them are FIPS codes. These codes were effective with the 1989 data year and are based on the results of the 1980 Census. County and county equivalents (independent and coextensive cities) are numbered alphabetically within each State. When an event occurs to a nonresident of the United States, residence data are coded only to the "State" level, or to the remainder of the world. For an explanation of FIPS codes, reference should be made to various National Bureau of Standards (NBS) publications.

NCHS State and City Codes: The city codes and the State codes immediately preceding them are NCHS codes. These codes were effective with the 1982 data year and are based on the results of the 1980 Census. Cities are numbered alphabetically within each State. When an event occurs to a nonresident of the United States, residence data are coded only to the "State" level; several western hemisphere countries or the remainder of the world are uniquely identified.

Listing of Counties Identified in the Linked Data Set

Vital Statistics Geographic Code Outline Effective With 1989 Data

State	County	State and County Name
01		Alabama
	073	Jefferson
	097	Mobile
02		Alaska
04		Arizona
	013	Maricopa
	019	Pima
05		Arkansas
	119	Pulaski
06		California
	001	Alameda
	013	Contra Costa
	019	Fresno
	029	Kern
	037	Los Angeles
	053	Monterey
	059	Orange
	065	Riverside
	067	Sacramento
	071	San Bernardino
	073	San Diego
	075	San Francisco, coext. with San Francisco city
	077	San Joaquin
	081	San Mateo
	083	Santa Barbara
085	Santa Clara	
097	Sonoma	
099	Stanislaus	
111	Ventura	
08		Colorado
	005	Arapahoe
	031	Denver, coext. with Denver city
	041	El Paso
	059	Jefferson
09		Connecticut
	001	Fairfield
	003	Hartford
009	New Haven	
10		Delaware
	003	New Castle
11		District of Columbia
	001	District of Columbia
12		Florida
	009	Brevard
	011	Broward
	025	Dade
	031	Duval
	057	Hillsborough
	095	Orange
	099	Palm Beach
	103	Pinellas
	105	Polk
127	Volusia	

Listing of Counties Identified in the Linked Data Set

Vital Statistics Geographic Code Outline Effective With 1989 Data

Page

State	County	State and County Name
13	067	Georgia Cobb
	089	De Kalb
	121	Fulton
15	003	Hawaii Honolulu
16		Idaho
17	031	Illinois Cook
	043	Du Page
	089	Kane
	097	Lake
	163	St. Clair
	197	Will
201		Winnebago
18	003	Indiana Allen
	089	Lake
	097	Marion
19	153	Iowa Polk
20	091	Kansas Johnson
	173	Sedgwick
21	111	Kentucky Jefferson
22	017	Louisiana Caddo
	033	East Baton Rouge
	051	Jefferson
	071	Orleans, coext. with New Orleans city
23		Maine
24	003	Maryland Anne Arundel
	005	Baltimore
	510	Baltimore city
	031	Montgomery
	033	Prince George's
25	005	Massachusetts Bristol
	009	Essex
	013	Hampden
	017	Middlesex
	021	Norfolk
	023	Plymouth
	025	Suffolk
027	Worcester	
26	049	Michigan Genesee
	065	Ingham
	081	Kent
	099	Macomb
	125	Oakland
	161	Washtenaw
163	Wayne	

Listing of Counties Identified in the Linked Data Set

Vital Statistics Geographic Code Outline Effective With 1989 Data

State	County	State and County Name
27	053	Minnesota
	123	Hennepin Ramsey
28	049	Mississippi Hinds
29	095	Missouri
	189	Jackson
	510	St. Louis St. Louis city
30		Montana
31	055	Nebraska Douglas
	003	Nevada Clark
33	011	New Hampshire Hillsborough
34	003	New Jersey Bergen
	005	Burlington
	007	Camden
	013	Essex
	017	Hudson
	021	Mercer
	023	Middlesex
	025	Monmouth
	027	Morris
	029	Ocean
	031	Passaic
039	Union	
35	001	New Mexico Bernalillo
	36	001	New York Albany
029		Erie
055		Monroe
059		Nassau
005		New York city
065		Oneida
067		Onondaga
071		Orange
087		Rockland
103		Suffolk
119		Westchester
37	081	North Carolina Guilford
	119	Mecklenburg
	183	Wake
38		North Dakota
39	017	Ohio Butler
	035	Cuyahoga
	049	Franklin
	061	Hamilton
	093	Lorain
	095	Lucas
	099	Mahoning
	113	Montgomery
	151	Stark
	153	Summit

Listing of Counties Identified in the Linked Data Set

Vital Statistics Geographic Code Outline Effective With 1989 Data

Page 4

State	County	State and County Name
40		Oklahoma
	109	Oklahoma
	143	Tulsa
41		Oregon
	039	Lane
	051	Multnomah
42		Pennsylvania
	003	Allegheny
	011	Berks
	017	Bucks
	029	Chester
	045	Delaware
	049	Erie
	071	Lancaster
	077	Lehigh
	079	Luzerne
	091	Montgomery
	101	Philadelphia, coext. with Philadelphia city
129	Westmoreland	
133	York	
44		Rhode Island
	007	Providence
45		South Carolina
	019	Charleston
	045	Greenville
	079	Richland
46		South Dakota
47		Tennessee
	037	Davidson
	065	Hamilton
	093	Knox
	157	Shelby
48		Texas
	029	Bexar
	113	Dallas
	141	El Paso
	201	Harris
	215	Hidalgo
	245	Jefferson
	355	Nueces
	439	Tarrant
453	Travis	
49		Utah
	035	Salt Lake
50		Vermont
51		Virginia
	059	Fairfax
	710	Norfolk city
	810	Virginia Beach city
53		Washington
	033	King
	053	Pierce
	061	Snohomish
	063	Spokane

Listing of Counties Identified in the Linked Data Set

Vital Statistics Geographic Code Outline Effective With 1989 Data

State	County	State and County Name
54		West Virginia
55		Wisconsin
	025	Dane
	079	Milwaukee
	133	Waukesha
56		Wyoming

Listing of Counties Identified in the Linked Data Set

Vital Statistics Geographic Code Outline Effective With 1989 Data

Page 6

State	County	State and County Name
00	000	Puerto Rico
00	000	Virgin Islands
00	000	Guam
00	000	Canada
00	000	Cuba
00	000	Mexico
00	000	Remainder of World

Listing of Cities Identified in the Linked Data Set

Vital Statistics Geographic Code Outline Effective With 1982 Data

Page 1

State	City	State and City Name
01	008	Alabama Birmingham
02		Alaska
03	011 016	Arizona Phoenix Tucson
04		Arkansas
05	112 115 146 186 194 197 200	California Long Beach Los Angeles Oakland Sacramento San Diego San Francisco San Jose
06	009	Colorado Denver
07		Connecticut
08		Delaware
09	001	District of Columbia Washington
10	033 047 086	Florida Jacksonville Miami Tampa
11	004	Georgia Atlanta
12	004	Hawaii Honolulu
13		Idaho
14	032	Illinois Chicago
15	027	Indiana Indianapolis
16		Iowa
17	033	Kansas Wichita
18	016	Kentucky Louisville
19	024	Louisiana New Orleans
20		Maine
21	003	Maryland Baltimore
22	012	Massachusetts Boston
23	023	Michigan Detroit

Listing of Cities Identified in the Linked Data Set

Vital Statistics Geographic Code Outline Effective With 1982 Data

Page 2

State	City	State and City Name
24		Minnesota
	035	Minneapolis
	055	St. Paul
25		Mississippi
26		Missouri
	026	Kansas City
	044	St. Louis
27		Montana
28		Nebraska
	011	Omaha
29		Nevada
30		New Hampshire
31		New Jersey
	094	Newark
32		New Mexico
	002	Albuquerque
33		New York
	009	Bronx borough, Bronx county
	010	Buffalo
	043	Brooklyn borough, Kings county
	060	Manhattan borough, New York county
	077	Queens borough, Queens county
	078	Staten Island borough, Richmond county
34		North Carolina
	008	Charlotte
35		North Dakota
36		Ohio
	028	Cincinnati
	030	Cleveland
	032	Columbus
	126	Toledo
37		Oklahoma
	023	Oklahoma City
	031	Tulsa
38		Oregon
	023	Portland
39		Pennsylvania
	096	Philadelphia
	098	Pittsburgh
40		Rhode Island
41		South Carolina
42		South Dakota
43		Tennessee
	026	Memphis
	030	Nashville-Davidson
44		Texas
	009	Austin
	036	Dallas
	047	El Paso
	052	Fort Worth
	066	Houston
	121	San Antonio

Listing of Cities Identified in the Linked Data Set

Vital Statistics Geographic Code Outline Effective With 1982 Data

State	City	State and City Name
45		Utah
46		Vermont
47		Virginia
	021	Norfolk
	032	Virginia Beach
48		Washington
	030	Seattle
49		West Virginia
50		Wisconsin
	032	Milwaukee
51		Wyoming

Listing of Cities Identified in the Linked Data Set

Vital Statistics Geographic Code Outline Effective With 1982 Data

Page 4

State	City	State and City Name
52	ZZZ	Puerto Rico
53	ZZZ	Virgin Islands
54	ZZZ	Guam
55	ZZZ	Canada
56	ZZZ	Cuba
57	ZZZ	Mexico
59	ZZZ	Remainder of World

ST: 1 = Subtotal Limited: Sex: 1 = Males; 2 = Females
 Length = of Cause Title Age: 1 = 5 & Over; 2 = 10-54; 3 = 28 Days & Over

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

61 S Limited Len-

Recode T Sex Age gth Cause Title And ICD-9 Codes Included

010		039 Certain intestinal infections (008-009)
020		020 Whooping cough (033)
030		029 Meningococcal infection (036)
040	3	016 Septicemia (038)
050		024 Viral diseases (045-079)
060		025 Congenital syphilis (090)
070		110 Remainder of infectious and parasitic diseases (001-007,010-032,034-035,037,039-041,*042-*044,080-088,
080		089 Malignant neoplasms, including neoplasms of lymphatic and hematopoietic tissues (140-208)
090		108 Benign neoplasms, carcinoma in situ, and neoplasms of uncertain behavior and of unspecified nature (210-239)
100		030 Diseases of thymus gland (254)
110		023 Cystic fibrosis (277.0)
120		052 Diseases of blood and blood-forming organs (280-289)
130		020 Meningitis (320-322)
140		059 Other diseases of nervous system and sense organs (323-389)
150		044 Acute upper respiratory infections (460-465)
160		042 Bronchitis and bronchiolitis (466,490-491)
170	1	033 Pneumonia and influenza (480-487)
180		021 Pneumonia (480-486)
190		017 Influenza (487)
200		061 Remainder of diseases of respiratory system (470-478,492-519)
210		093 Hernia of abdominal cavity and intestinal obstruction without mention of hernia (550-553,560)
220		075 Gastritis, duodenitis, and noninfective enteritis and colitis (535,555-558)
230		067 Remainder of diseases of digestive system (520-534,536-543,562-579)
240	1	030 Congenital anomalies (740-759)
250		042 Anencephalus and similar anomalies (740)
260		020 Spina bifida (741)
270		034 Congenital hydrocephalus (742.3)
280		092 Other congenital anomalies of central nervous system and eye (742.0-742.2,742.4-742.9,743)
290		041 Congenital anomalies of heart (745-746)
300		056 Other congenital anomalies of circulatory system (747)
310		050 Congenital anomalies of respiratory system (748)
320		052 Congenital anomalies of digestive system (749-751)
330		056 Congenital anomalies of genitourinary system (752-753)
340		058 Congenital anomalies of musculoskeletal system (754-756)
350		025 Down's syndrome (758.0)
360		043 Other chromosomal anomalies (758.1-758.9)
370		062 All other and unspecified congenital anomalies (744,757,759)

ST: 1 = Subtotal Limited: Sex: 1 = Males; 2 = Females
 Length = of Cause Title Age: 1 = 5 & Over; 2 = 10-54; 3 = 28 Days & Over

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

61 S Limited Len-
 Recode T Sex Age gth Cause Title And ICD-9 Codes Included

380	1	064	Certain conditions originating in the perinatal period (760-779)
390		091	Newborn affected by maternal conditions which may be unrelated to present pregnancy (760)
400		063	Newborn affected by maternal complications of pregnancy (761)
410		074	Newborn affected by complications of placenta, cord, and membranes (762)
420		069	Newborn affected by other complications of labor and delivery (763)
430		048	Slow fetal growth and fetal malnutrition (764)
440		077	Disorders relating to short gestation and unspecified low birthweight (765)
450		065	Disorders relating to long gestation and high birthweight (766)
460		020	Birth trauma (767)
470	1	047	Intrauterine hypoxia and birth asphyxia (768)
480		051	Fetal distress in liveborn infant (768.2-768.4)
490		032	Birth asphyxia (768.5-768.9)
500		037	Respiratory distress syndrome (769)
510		047	Other respiratory conditions of newborn (770)
520		051	Infections specific to the perinatal period (771)
530		027	Neonatal hemorrhage (772)
540		094	Hemolytic disease of newborn, due to isoimmunization, and other perinatal jaundice (773-774)
550		088	Syndrome of "infant of a diabetic mother" and neonatal diabetes mellitus (775.0-775.1)
560		040	Hemorrhagic disease of newborn (776.0)
570		098	All other and ill-defined conditions originating in the perinatal period (775.2-775.9,776.1-779)
580	1	053	Symptoms, signs, and ill-defined conditions (780-799)
590		038	Sudden infant death syndrome (798.0)
600		075	Symptoms, signs, and all other ill-defined conditions (780-797,798.1-799)
610	1	041	Accidents and adverse effects (E800-E949)
620		118	Inhalation and ingestion of food or other object causing obstruction of respiratory tract or suffocation (E911-E912)
630		042	Accidental mechanical suffocation (E913)
640		067	Other accidental causes and adverse effects (E800-E910,E914-E949)
650	1	020	Homicide (E960-E969)
660		047	Child battering and other maltreatment (E967)
670		038	Other homicide (E960-E966,E968-E969)
680		027	All other causes (Residual)

DOCUMENTATION TABLE 1

LIVE BIRTHS BY STATE OF OCCURRENCE AND BY STATE RESIDENCE AND INFANT DEATHS BY STATE OF OCCURRENCE AND BY STATE OF RESIDENCE:
1991 BIRTH COHORT

(RESIDENCE AT BIRTH IS OF THE MOTHER. RESIDENCE AT DEATH IS OF THE DECEDENT)

AREA	LIVE BIRTHS		INFANT DEATHS			
	OCCURRENCE	RESIDENCE	AT BIRTH		AT DEATH	
			OCCURRENCE	RESIDENCE	OCCURRENCE	RESIDENCE
UNITED STATES.....	4,115,494	4,111,059	35,520	35,496	35,520	35,500
ALABAMA.....	61,703	62,810	696	705	709	704
ALASKA.....	11,555	11,686	100	104	97	103
ARIZONA.....	68,029	68,110	568	570	579	580
ARKANSAS.....	34,426	35,479	320	359	337	365
CALIFORNIA.....	610,419	610,111	4,362	4,361	4,372	4,355
COLORADO.....	53,955	53,813	467	450	488	453
CONNECTICUT.....	48,779	48,569	364	359	356	359
DELAWARE.....	11,880	11,195	143	127	135	128
DISTRICT OF COLUMBIA.....	21,096	11,776	404	243	469	251
FLORIDA.....	194,224	194,001	1,722	1,719	1,735	1,728
GEORGIA.....	111,717	110,288	1,251	1,235	1,225	1,234
HAWAII.....	19,985	19,922	144	138	138	137
IDAHO.....	16,721	16,821	134	141	121	143
ILLINOIS.....	190,809	194,231	1,922	1,990	1,903	1,983
INDIANA.....	85,646	85,707	764	775	748	768
IOWA.....	39,227	38,989	300	314	290	314
KANSAS.....	36,452	37,839	317	332	298	334
KENTUCKY.....	53,536	54,326	430	452	418	458
LOUISIANA.....	72,473	72,193	722	719	718	712
MAINE.....	16,428	16,753	108	107	106	107
MARYLAND.....	72,990	79,187	544	696	495	680
MASSACHUSETTS.....	89,623	88,218	575	566	592	562
MICHIGAN.....	148,488	150,219	1,505	1,518	1,513	1,521
MINNESOTA.....	66,991	67,070	509	501	527	505
MISSISSIPPI.....	42,757	43,204	461	476	441	479
MISSOURI.....	81,079	78,680	850	783	887	784

DOCUMENTATION TABLE 1

LIVE BIRTHS BY STATE OF OCCURRENCE AND BY STATE RESIDENCE AND INFANT DEATHS BY STATE OF OCCURRENCE AND BY STATE OF RESIDENCE:
1991 BIRTH COHORT

(RESIDENCE AT BIRTH IS OF THE MOTHER. RESIDENCE AT DEATH IS OF THE DECEDENT)

AREA	LIVE BIRTHS		INFANT DEATHS			
	OCCURRENCE	RESIDENCE	AT BIRTH		AT DEATH	
			OCCURRENCE	RESIDENCE	OCCURRENCE	RESIDENCE
MONTANA.....	11,294	11,513	65	84	64	85
NEBRASKA.....	24,199	24,017	210	197	219	197
NEVADA.....	21,782	22,030	183	181	178	183
NEW HAMPSHIRE.....	15,811	16,341	93	100	87	102
NEW JERSEY.....	118,269	121,448	951	992	871	987
NEW MEXICO.....	27,332	27,805	239	240	231	243
NEW YORK.....	293,518	292,633	2,616	2,635	2,632	2,634
UPSTATE.....	155,435	158,844	1,137	1,172	1,124	1,170
CITY.....	138,083	133,789	1,479	1,463	1,508	1,464
NORTH CAROLINA.....	102,859	102,362	1,063	1,047	1,049	1,046
NORTH DAKOTA.....	10,151	8,887	89	67	88	67
OHIO.....	166,978	165,795	1,491	1,475	1,480	1,469
OKLAHOMA.....	46,824	47,795	393	396	385	397
OREGON.....	44,013	42,499	321	300	322	298
PENNSYLVANIA.....	169,786	168,852	1,505	1,476	1,610	1,485
RHODE ISLAND.....	15,518	14,734	125	114	125	114
SOUTH CAROLINA.....	55,512	57,572	619	644	611	645
SOUTH DAKOTA.....	11,060	10,946	106	107	103	108
TENNESSEE.....	78,829	74,510	837	749	854	751
TEXAS.....	322,078	317,759	2,354	2,338	2,356	2,331
UTAH.....	36,988	36,036	229	213	242	216
VERMONT.....	7,590	7,965	45	51	41	50
VIRGINIA.....	94,572	97,370	909	935	884	935
WASHINGTON.....	78,346	79,711	578	583	570	574
WEST VIRGINIA.....	23,448	22,508	201	183	211	186
WISCONSIN.....	71,391	72,071	576	598	576	599
WYOMING.....	6,358	6,703	40	51	34	51
FOREIGN RESIDENTS.....	...	4,435	...	24	...	20

DOCUMENTATION TABLE 2

LIVE BIRTHS, INFANT DEATHS, AND INFANT MORTALITY RATES BY RACE OF MOTHER, SEX AND BIRTH WEIGHT OF CHILD: UNITED STATES, 1991
BIRTH COHORT

(RATES ARE PER 1000 LIVE BIRTHS)

RACE OF MOTHER AND SEX	TOTAL	<500 GRAMS	500-749 GRAMS	750-999 GRAMS	1000-1249 GRAMS	1250-1499 GRAMS	1500-1999 GRAMS	2000-2499 GRAMS	2500 GRAMS OR MORE	NOT STATED
ALL RACES ^{1/}										
BOTH SEXES										
LIVE BIRTHS.....	4,111,059	5,524	9,709	10,940	12,407	14,495	55,942	183,306	3,813,959	4,777
INFANT DEATHS...	35,496	4,898	5,981	2,579	1,347	1,037	2,191	3,021	13,261	1,181
INF.MORT.RATE...	8.6	886.7	616.0	235.7	108.6	71.5	39.2	16.5	3.5	247.2
MALE										
LIVE BIRTHS.....	2,101,607	2,807	4,979	5,691	6,457	7,293	27,362	83,878	1,960,597	2,543
INFANT DEATHS...	20,229	2,517	3,404	1,628	827	595	1,183	1,607	7,765	703
INF.MORT.RATE...	9.6	896.7	683.7	286.1	128.1	81.6	43.2	19.2	4.0	276.4
FEMALE										
LIVE BIRTHS.....	2,009,452	2,717	4,730	5,249	5,950	7,202	28,580	99,428	1,853,362	2,234
INFANT DEATHS...	15,267	2,381	2,577	951	520	442	1,008	1,414	5,496	478
INF.MORT.RATE...	7.6	876.3	544.8	181.2	87.4	61.4	35.3	14.2	3.0	214.0
WHITE										
BOTH SEXES										
LIVE BIRTHS.....	3,241,355	2,917	5,404	6,397	7,532	8,950	35,766	120,892	3,050,056	3,441
INFANT DEATHS...	22,875	2,632	3,389	1,592	867	681	1,478	2,005	9,510	721
INF.MORT.RATE...	7.1	902.3	627.1	248.9	115.1	76.1	41.3	16.6	3.1	209.5
MALE										
LIVE BIRTHS.....	1,659,124	1,444	2,800	3,327	3,964	4,557	17,791	55,611	1,567,816	1,814
INFANT DEATHS...	13,186	1,322	1,958	1,003	525	391	828	1,090	5,642	427
INF.MORT.RATE...	7.9	915.5	699.3	301.5	132.4	85.8	46.5	19.6	3.6	235.4
FEMALE										
LIVE BIRTHS.....	1,582,231	1,473	2,604	3,070	3,568	4,393	17,975	65,281	1,482,240	1,627
INFANT DEATHS...	9,689	1,310	1,431	589	342	290	650	915	3,868	294
INF.MORT.RATE...	6.1	889.3	549.5	191.9	95.9	66.0	36.2	14.0	2.6	180.7
BLACK										
BOTH SEXES										
LIVE BIRTHS.....	682,669	2,471	4,020	4,194	4,497	5,015	18,091	54,105	589,150	1,126
INFANT DEATHS...	11,321	2,154	2,423	917	442	320	619	900	3,134	412
INF.MORT.RATE...	16.6	871.7	602.7	218.6	98.3	63.8	34.2	16.6	5.3	365.9
MALE										
LIVE BIRTHS.....	346,494	1,303	2,033	2,175	2,298	2,439	8,494	24,348	302,780	624
INFANT DEATHS...	6,358	1,149	1,352	586	279	183	314	464	1,779	252
INF.MORT.RATE...	18.3	881.8	665.0	269.4	121.4	75.0	37.0	19.1	5.9	403.8
FEMALE										
LIVE BIRTHS.....	336,175	1,168	1,987	2,019	2,199	2,576	9,597	29,757	286,370	502
INFANT DEATHS...	4,963	1,005	1,071	331	163	137	305	436	1,355	160
INF.MORT.RATE...	14.8	860.4	539.0	163.9	74.1	53.2	31.8	14.7	4.7	318.7

^{1/} INCLUDES RACES OTHER THAN WHITE AND BLACK

DOCUMENTATION TABLE 3

LIVE BIRTHS, INFANT DEATHS, AND INFANT MORTALITY RATES BY BIRTH WEIGHT, RACE OF MOTHER, AND GESTATIONAL AGE:
UNITED STATES, 1991 BIRTH COHORT

(RATES ARE PER 1000 LIVE BIRTHS.)

BIRTH WEIGHT	GESTATION									
	TOTAL	<28 WEEKS	28-31 WEEKS	32-35 WEEKS	36 WEEKS	37-39 WEEKS	40 WEEKS	41 WEEKS	42 WEEKS OR MORE	NOT STATED
ALL RACES <u>1/</u>										
TOTAL										
LIVE BIRTHS.....	4,111,059	29,371	49,700	208,904	152,195	1,715,836	919,692	557,972	434,202	43,187
INFANT DEATHS.....	35,496	13,032	3,003	3,420	1,350	7,001	2,847	1,808	1,794	1,241
INF. MORT. RATE....	8.6	443.7	60.4	16.4	8.9	4.1	3.1	3.2	4.1	28.7
LESS THAN 2,500 GRAMS										
LIVE BIRTHS.....	292,323	27,039	34,787	87,982	30,484	76,835	14,449	7,057	9,415	4,275
INFANT DEATHS.....	21,054	12,444	2,815	2,448	584	1,464	312	198	251	538
INF. MORT. RATE....	72.0	460.2	80.9	27.8	19.2	19.1	21.6	28.1	26.7	125.8
LESS THAN 500 GRAMS										
LIVE BIRTHS.....	5,524	5,066	219	15	1	10	6	-	4	203
INFANT DEATHS.....	4,898	4,552	166	11	0	5	6	-	3	155
INF. MORT. RATE....	886.7	898.6	758.0	733.3	-	500.0	1000.0	-	750.0	763.5
500-749 GRAMS										
LIVE BIRTHS.....	9,709	8,149	1,085	140	13	18	11	5	8	280
INFANT DEATHS.....	5,981	5,264	482	53	5	8	7	2	3	157
INF. MORT. RATE....	616.0	646.0	444.2	378.6	384.6	444.4	636.4	400.0	375.0	560.7
750-999 GRAMS										
LIVE BIRTHS.....	10,940	6,902	3,077	455	45	148	64	28	23	198
INFANT DEATHS.....	2,579	1,869	529	80	6	19	6	1	3	66
INF. MORT. RATE....	235.7	270.8	171.9	175.8	133.3	128.4	93.8	35.7	130.4	333.3
1,000-1,249 GRAMS										
LIVE BIRTHS.....	12,407	3,198	6,236	1,846	169	407	139	55	115	242
INFANT DEATHS.....	1,347	470	545	210	26	44	12	2	6	32
INF. MORT. RATE....	108.6	147.0	87.4	113.8	153.8	108.1	86.3	36.4	52.2	132.2
1,250-1,499 GRAMS										
LIVE BIRTHS.....	14,495	1,180	7,359	4,043	434	801	173	95	158	252
INFANT DEATHS.....	1,037	138	437	280	51	70	10	12	14	25
INF. MORT. RATE....	71.5	116.9	59.4	69.3	117.5	87.4	57.8	126.3	88.6	99.2
1,500-1,999 GRAMS										
LIVE BIRTHS.....	55,942	1,475	11,427	26,677	4,566	7,850	1,291	694	1,152	810
INFANT DEATHS.....	2,191	110	488	841	177	375	65	41	52	42
INF. MORT. RATE....	39.2	74.6	42.7	31.6	38.8	47.8	50.3	59.1	45.1	51.9
2,000-2,499 GRAMS										
LIVE BIRTHS.....	183,306	1,069	5,384	54,806	25,256	67,601	12,765	6,180	7,955	2,290
INFANT DEATHS.....	3,021	41	168	973	319	943	206	140	170	61
INF. MORT. RATE....	16.5	38.4	31.2	17.8	12.6	13.9	16.1	22.7	21.4	26.6
2,500-2,999 GRAMS										
LIVE BIRTHS.....	669,377	1,571	5,599	54,317	54,571	345,687	101,545	49,823	49,083	7,181
INFANT DEATHS.....	4,312	25	85	544	400	1,919	617	314	327	81
INF. MORT. RATE....	6.4	15.9	15.2	10.0	7.3	5.6	6.1	6.3	6.7	11.3
3,000-3,499 GRAMS										
LIVE BIRTHS.....	1,511,485	-	6,080	42,116	45,118	714,164	347,080	188,788	153,191	14,948
INFANT DEATHS.....	5,058	-	52	253	263	2,232	970	595	605	88
INF. MORT. RATE....	3.3	-	8.6	6.0	5.8	3.1	2.8	3.2	3.9	5.9
3,500-3,999 GRAMS										
LIVE BIRTHS.....	1,197,188	-	3,078	19,323	17,463	450,563	330,570	212,471	152,895	10,825
INFANT DEATHS.....	2,883	-	15	98	70	1,062	696	475	422	45
INF. MORT. RATE....	2.4	-	4.9	5.1	4.0	2.4	2.1	2.2	2.8	4.2

SEE FOOTNOTES AT END OF TABLE

DOCUMENTATION TABLE 3

LIVE BIRTHS, INFANT DEATHS, AND INFANT MORTALITY RATES BY BIRTH WEIGHT, RACE OF MOTHER, AND GESTATIONAL AGE:
UNITED STATES, 1991 BIRTH COHORT

(RATES ARE PER 1000 LIVE BIRTHS.)

BIRTH WEIGHT	GESTATION									
	TOTAL	<28 WEEKS	28-31 WEEKS	32-35 WEEKS	36 WEEKS	37-39 WEEKS	40 WEEKS	41 WEEKS	42 WEEKS OR MORE	NOT STATED
ALL RACES <u>1/</u>										
4,000-4,499 GRAMS										
LIVE BIRTHS.....	365,392	-	-	4,216	3,796	109,087	105,961	82,279	56,593	3,460
INFANT DEATHS.....	765	-	-	25	15	224	182	165	135	19
INF. MORT. RATE....	2.1	-	-	5.9	4.0	2.1	1.7	2.0	2.4	5.5
4,500-4,999 GRAMS										
LIVE BIRTHS.....	62,926	-	-	638	605	16,433	17,794	15,467	11,323	666
INFANT DEATHS.....	183	-	-	5	4	51	40	43	26	14
INF. MORT. RATE....	2.9	-	-	7.8	6.6	3.1	2.2	2.8	2.3	21.0
5,000 GRAMS OR MORE										
LIVE BIRTHS.....	7,591	-	-	120	79	2,176	1,877	1,786	1,434	119
INFANT DEATHS.....	60	-	-	4	1	15	13	3	9	15
INF. MORT. RATE....	7.9	-	-	33.3	12.7	6.9	6.9	1.7	6.3	126.1
NOT STATED										
LIVE BIRTHS.....	4,777	761	156	192	79	891	416	301	268	1,713
INFANT DEATHS.....	1,181	563	36	43	13	34	17	15	19	441
INF. MORT. RATE....	247.2	739.8	230.8	224.0	164.6	38.2	40.9	49.8	70.9	257.4

SEE FOOTNOTES AT END OF TABLE.

DOCUMENTATION TABLE 3
 LIVE BIRTHS, INFANT DEATHS, AND INFANT MORTALITY RATES BY BIRTH WEIGHT, RACE OF MOTHER, AND GESTATIONAL AGE:
 UNITED STATES, 1991 BIRTH COHORT
 (RATES ARE PER 1000 LIVE BIRTHS.)

BIRTH WEIGHT	GESTATION									
	TOTAL	<28 WEEKS	28-31 WEEKS	32-35 WEEKS	36 WEEKS	37-39 WEEKS	40 WEEKS	41 WEEKS	42 WEEKS OR MORE	NOT STATED
WHITE										
TOTAL										
LIVE BIRTHS.....	3,241,355	15,804	29,365	138,533	109,514	1,342,876	755,258	467,152	351,012	31,841
INFANT DEATHS.....	22,875	7,351	1,895	2,286	939	4,940	2,087	1,355	1,292	730
INF. MORT. RATE....	7.1	465.1	64.5	16.5	8.6	3.7	2.8	2.9	3.7	22.9
LESS THAN 2,500 GRAMS										
LIVE BIRTHS.....	187,858	14,611	20,902	58,636	20,532	50,691	9,388	4,620	5,963	2,515
INFANT DEATHS.....	12,644	6,979	1,776	1,638	416	1,005	200	148	162	320
INF. MORT. RATE....	67.3	477.7	85.0	27.9	20.3	19.8	21.3	32.0	27.2	127.2
LESS THAN 500 GRAMS										
LIVE BIRTHS.....	2,917	2,660	120	11	-	6	5	-	3	112
INFANT DEATHS.....	2,632	2,437	89	10	-	2	5	-	2	87
INF. MORT. RATE....	902.3	916.2	741.7	909.1	-	333.3	1000.0	-	666.7	776.8
500-749 GRAMS										
LIVE BIRTHS.....	5,404	4,502	628	87	7	10	3	4	2	161
INFANT DEATHS.....	3,389	2,968	285	35	2	3	3	1	1	91
INF. MORT. RATE....	627.1	659.3	453.8	402.3	285.7	300.0	1000.0	250.0	500.0	565.2
750-999 GRAMS										
LIVE BIRTHS.....	6,397	3,908	1,878	286	32	101	45	20	14	113
INFANT DEATHS.....	1,592	1,124	347	55	5	13	6	1	1	40
INF. MORT. RATE....	248.9	287.6	184.8	192.3	156.3	128.7	133.3	60.0	71.4	354.0
1,000-1,249 GRAMS										
LIVE BIRTHS.....	7,532	1,830	3,861	1,156	105	245	83	34	72	146
INFANT DEATHS.....	867	288	349	134	21	37	9	2	3	24
INF. MORT. RATE....	115.1	157.4	90.4	115.9	200.0	151.0	108.4	58.8	41.7	164.4
1,250-1,499 GRAMS										
LIVE BIRTHS.....	8,950	569	4,593	2,587	284	516	105	62	100	134
INFANT DEATHS.....	681	80	281	196	36	50	3	10	10	15
INF. MORT. RATE....	76.1	140.6	61.2	75.8	126.8	96.9	28.6	161.3	100.0	111.9
1,500-1,999 GRAMS										
LIVE BIRTHS.....	35,766	648	7,108	17,489	3,046	5,036	812	460	710	457
INFANT DEATHS.....	1,478	63	318	577	132	256	39	31	36	26
INF. MORT. RATE....	41.3	97.2	44.7	33.0	43.3	50.8	48.0	67.4	50.7	56.9
2,000-2,499 GRAMS										
LIVE BIRTHS.....	120,892	494	2,714	37,020	17,058	44,777	8,335	4,040	5,062	1,392
INFANT DEATHS.....	2,005	19	107	631	220	644	135	103	109	37
INF. MORT. RATE....	16.6	38.5	39.4	17.0	12.9	14.4	16.2	25.5	21.5	26.6
2,500-2,999 GRAMS										
LIVE BIRTHS.....	469,309	731	2,771	35,520	38,906	244,113	72,546	35,986	34,066	4,670
INFANT DEATHS.....	2,883	12	50	350	274	1,286	432	206	222	51
INF. MORT. RATE....	6.1	16.4	18.0	9.9	7.0	5.3	6.0	5.7	6.5	10.9
3,000-3,499 GRAMS										
LIVE BIRTHS.....	1,178,436	-	3,545	26,979	33,057	556,882	276,102	151,681	119,165	11,025
INFANT DEATHS.....	3,597	-	36	176	180	1,588	694	432	431	60
INF. MORT. RATE....	3.1	-	10.2	6.5	5.4	2.9	2.5	2.8	3.6	5.4
3,500-3,999 GRAMS										
LIVE BIRTHS.....	1,015,518	-	2,044	13,503	13,369	378,967	284,417	184,478	129,925	8,815
INFANT DEATHS.....	2,228	-	11	67	46	811	554	379	328	32
INF. MORT. RATE....	2.2	-	5.4	5.0	3.4	2.1	1.9	2.1	2.5	3.6

SEE FOOTNOTES AT END OF TABLE.

DOCUMENTATION TABLE 3

LIVE BIRTHS, INFANT DEATHS, AND INFANT MORTALITY RATES BY BIRTH WEIGHT, RACE OF MOTHER, AND GESTATIONAL AGE:
UNITED STATES, 1991 BIRTH COHORT

(RATES ARE PER 1000 LIVE BIRTHS.)

BIRTH WEIGHT	GESTATION									
	TOTAL	<28 WEEKS	28-31 WEEKS	32-35 WEEKS	36 WEEKS	37-39 WEEKS	40 WEEKS	41 WEEKS	42 WEEKS OR MORE	NOT STATED
WHITE										
4,000-4,499 GRAMS										
LIVE BIRTHS.....	323,771	-	-	3,174	3,027	95,331	94,747	74,368	50,163	2,961
INFANT DEATHS.....	631	-	-	18	11	178	154	143	111	16
INF. MORT. RATE....	1.9	-	-	5.7	3.6	1.9	1.6	1.9	2.2	5.4
4,500-4,999 GRAMS										
LIVE BIRTHS.....	56,427	-	-	497	502	14,375	16,063	14,150	10,248	592
INFANT DEATHS.....	136	-	-	3	4	34	32	34	19	10
INF. MORT. RATE....	2.4	-	-	6.0	8.0	2.4	2.0	2.4	1.9	16.9
5,000 GRAMS OR MORE										
LIVE BIRTHS.....	6,595	-	-	88	62	1,808	1,652	1,623	1,266	96
INFANT DEATHS.....	35	-	-	2	0	10	6	2	6	9
INF. MORT. RATE....	5.3	-	-	22.7	-	5.5	3.6	1.2	4.7	93.8
NOT STATED										
LIVE BIRTHS.....	3,441	462	103	136	59	709	343	246	216	1,167
INFANT DEATHS.....	721	360	22	32	8	28	15	11	13	232
INF. MORT. RATE....	209.5	779.2	213.6	235.3	135.6	39.5	43.7	44.7	60.2	198.8

SEE FOOTNOTES AT END OF TABLE.

DOCUMENTATION TABLE 3

LIVE BIRTHS, INFANT DEATHS, AND INFANT MORTALITY RATES BY BIRTH WEIGHT, RACE OF MOTHER, AND GESTATIONAL AGE:
UNITED STATES, 1991 BIRTH COHORT

(RATES ARE PER 1000 LIVE BIRTHS.)

BIRTH WEIGHT	GESTATION									
	TOTAL	<28 WEEKS	28-31 WEEKS	32-35 WEEKS	36 WEEKS	37-39 WEEKS	40 WEEKS	41 WEEKS	42 WEEKS OR MORE	NOT STATED
BLACK										
TOTAL										
LIVE BIRTHS.....	682,669	12,747	18,469	60,721	35,696	286,860	124,633	69,470	66,099	7,974
INFANT DEATHS.....	11,321	5,365	1,006	1,002	368	1,700	624	385	425	446
INF. MORT. RATE....	16.6	420.9	54.5	16.5	10.3	5.9	5.0	5.5	6.4	55.9
LESS THAN 2,500 GRAMS										
LIVE BIRTHS.....	92,393	11,698	12,730	26,025	8,671	22,256	4,380	2,124	3,053	1,456
INFANT DEATHS.....	7,775	5,164	946	719	151	387	99	45	75	189
INF. MORT. RATE....	84.2	441.4	74.3	27.6	17.4	17.4	22.6	21.2	24.6	129.8
LESS THAN 500 GRAMS										
LIVE BIRTHS.....	2,471	2,290	94	4	-	3	1	-	1	78
INFANT DEATHS.....	2,154	2,018	72	1	-	3	1	-	1	58
INF. MORT. RATE....	871.7	881.2	766.0	250.0	-	1000.0	1000.0	-	1000.0	743.6
500-749 GRAMS										
LIVE BIRTHS.....	4,020	3,431	426	45	3	8	7	1	6	93
INFANT DEATHS.....	2,423	2,158	181	16	2	5	4	1	2	54
INF. MORT. RATE....	602.7	629.0	424.9	355.6	666.7	625.0	571.4	1000.0	333.3	580.6
750-999 GRAMS										
LIVE BIRTHS.....	4,194	2,792	1,097	153	12	40	16	6	8	70
INFANT DEATHS.....	917	696	166	22	1	6	0	0	2	24
INF. MORT. RATE....	218.6	249.3	151.3	143.8	83.3	150.0	-	-	250.0	342.9
1,000-1,249 GRAMS										
LIVE BIRTHS.....	4,497	1,279	2,197	629	58	145	47	17	36	89
INFANT DEATHS.....	442	170	180	69	4	6	2	0	3	8
INF. MORT. RATE....	98.3	132.9	81.9	109.7	69.0	41.4	42.6	-	83.3	89.9
1,250-1,499 GRAMS										
LIVE BIRTHS.....	5,015	573	2,507	1,298	139	258	62	25	52	101
INFANT DEATHS.....	320	56	139	75	13	18	5	2	3	9
INF. MORT. RATE....	63.8	97.7	55.4	57.8	93.5	69.8	80.6	80.0	57.7	89.1
1,500-1,999 GRAMS										
LIVE BIRTHS.....	18,091	787	3,944	8,229	1,364	2,456	424	209	388	290
INFANT DEATHS.....	619	45	151	230	43	94	25	8	9	14
INF. MORT. RATE....	34.2	57.2	38.3	27.9	31.5	38.3	59.0	38.3	23.2	48.3
2,000-2,499 GRAMS										
LIVE BIRTHS.....	54,105	546	2,465	15,667	7,095	19,346	3,823	1,866	2,562	735
INFANT DEATHS.....	900	21	57	306	88	255	62	34	55	22
INF. MORT. RATE....	16.6	38.5	23.1	19.5	12.4	13.2	16.2	18.2	21.5	29.9
2,500-2,999 GRAMS										
LIVE BIRTHS.....	162,768	772	2,580	16,207	13,137	80,893	23,255	11,324	12,710	1,890
INFANT DEATHS.....	1,237	13	34	176	111	533	157	100	89	24
INF. MORT. RATE....	7.6	16.8	13.2	10.9	8.4	6.6	6.8	8.8	7.0	12.7
3,000-3,499 GRAMS										
LIVE BIRTHS.....	256,480	-	2,223	12,694	9,911	119,418	53,878	28,582	27,186	2,588
INFANT DEATHS.....	1,213	-	12	69	76	522	225	135	149	25
INF. MORT. RATE....	4.7	-	5.4	5.4	7.7	4.4	4.2	4.7	5.5	9.7
3,500-3,999 GRAMS										
LIVE BIRTHS.....	134,667	-	890	4,775	3,263	52,506	33,738	20,748	17,512	1,235
INFANT DEATHS.....	521	-	4	23	21	196	111	76	82	8
INF. MORT. RATE....	3.9	-	4.5	4.8	6.4	3.7	3.3	3.7	4.7	6.5

SEE FOOTNOTES AT END OF TABLE.

DOCUMENTATION TABLE 3

LIVE BIRTHS, INFANT DEATHS, AND INFANT MORTALITY RATES BY BIRTH WEIGHT, RACE OF MOTHER, AND GESTATIONAL AGE:
UNITED STATES, 1991 BIRTH COHORT

(RATES ARE PER 1000 LIVE BIRTHS.)

BIRTH WEIGHT	GESTATION									
	TOTAL	<28 WEEKS	28-31 WEEKS	32-35 WEEKS	36 WEEKS	37-39 WEEKS	40 WEEKS	41 WEEKS	42 WEEKS OR MORE	NOT STATED
BLACK										
4,000-4,499 GRAMS										
LIVE BIRTHS.....	29,926	-	-	837	607	9,896	7,966	5,622	4,718	280
INFANT DEATHS.....	104	-	-	5	4	39	19	18	17	2
INF. MORT. RATE....	3.5	-	-	6.0	6.6	3.9	2.4	3.2	3.6	7.1
4,500-4,999 GRAMS										
LIVE BIRTHS.....	4,602	-	-	112	78	1,481	1,205	911	767	48
INFANT DEATHS.....	38	-	-	1	0	14	6	8	6	3
INF. MORT. RATE....	8.3	-	-	8.9	-	9.5	5.0	8.8	7.8	62.5
5,000 GRAMS OR MORE										
LIVE BIRTHS.....	707	-	-	24	14	265	154	118	117	15
INFANT DEATHS.....	21	-	-	2	1	4	5	1	3	5
INF. MORT. RATE....	29.7	-	-	83.3	71.4	15.1	32.5	8.5	25.6	333.3
NOT STATED										
LIVE BIRTHS.....	1,126	277	46	47	15	145	57	41	36	462
INFANT DEATHS.....	412	188	10	7	4	5	2	2	4	190
INF. MORT. RATE....	365.9	678.7	217.4	148.9	266.7	34.5	35.1	48.8	111.1	411.3

1/ INCLUDES RACES OTHER THAN WHITE AND BLACK

DOCUMENTATION TABLE 4

LIVE BIRTHS, INFANT DEATHS, AND INFANT MORTALITY RATES BY BIRTH WEIGHT, RACE OF MOTHER, AND AGE AT DEATH:
UNITED STATES, 1991 BIRTH COHORT

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

(RATES ARE PER 1000 LIVE BIRTHS)

BIRTH WEIGHT AND RACE OF MOTHER	LIVE BIRTHS	INFANT	TOTAL NEONATAL	EARLY NEONATAL	LATE NEONATAL	POST-NEONATAL
ALL RACES ^{1/}						
TOTAL (ALL BIRTH WEIGHTS)...	NUMBER.. 4,111,059	35,496	22,384	18,362	4,022	13,112
	RATE..	8.6	5.4	4.5	1.0	3.2
LESS THAN 2,500 GRAMS.....	NUMBER.. 292,323	21,054	16,839	14,597	2,242	4,215
	RATE..	72.0	57.6	49.9	7.7	14.4
LESS THAN 500 GRAMS.....	NUMBER.. 5,524	4,898	4,856	4,774	82	42
	RATE..	886.7	879.1	864.2	14.8	7.6
500-749 GRAMS.....	NUMBER.. 9,709	5,981	5,422	4,816	606	559
	RATE..	616.0	558.5	496.0	62.4	57.6
750-999 GRAMS.....	NUMBER.. 10,940	2,579	2,019	1,587	432	560
	RATE..	235.7	184.6	145.1	39.5	51.2
1,000-1,249 GRAMS.....	NUMBER.. 12,407	1,347	990	741	249	357
	RATE..	108.6	79.8	59.7	20.1	28.8
1,250-1,499 GRAMS.....	NUMBER.. 14,495	1,037	714	557	157	323
	RATE..	71.5	49.3	38.4	10.8	22.3
1,500-1,999 GRAMS.....	NUMBER.. 55,942	2,191	1,367	1,056	311	824
	RATE..	39.2	24.4	18.9	5.6	14.7
2,000-2,499 GRAMS.....	NUMBER.. 183,306	3,021	1,471	1,066	405	1,550
	RATE..	16.5	8.0	5.8	2.2	8.5
2,500-2,999 GRAMS.....	NUMBER.. 669,377	4,312	1,546	991	555	2,766
	RATE..	6.4	2.3	1.5	.8	4.1
3,000-3,499 GRAMS.....	NUMBER.. 1,511,485	5,058	1,607	950	657	3,451
	RATE..	3.3	1.1	.6	.4	2.3
3,500-3,999 GRAMS.....	NUMBER.. 1,197,188	2,883	886	502	384	1,997
	RATE..	2.4	.7	.4	.3	1.7
4,000-4,499 GRAMS.....	NUMBER.. 365,392	765	256	150	106	509
	RATE..	2.1	.7	.4	.3	1.4
4,500-4,999 GRAMS.....	NUMBER.. 62,926	183	80	60	20	103
	RATE..	2.9	1.3	1.0	.3	1.6
5,000 GRAMS OR MORE.....	NUMBER.. 7,591	60	42	38	4	18
	RATE..	7.9	5.5	5.0	.5	2.4
NOT STATED.....	NUMBER.. 4,777	1,181	1,128	1,074	54	53
	RATE..	247.2	236.1	224.8	11.3	11.1

DOCUMENTATION TABLE 4

LIVE BIRTHS, INFANT DEATHS, AND INFANT MORTALITY RATES BY BIRTH WEIGHT, RACE OF MOTHER, AND AGE AT DEATH:
UNITED STATES, 1991 BIRTH COHORT

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

(RATES ARE PER 1000 LIVE BIRTHS)-C

BIRTH WEIGHT AND RACE OF MOTHER	LIVE BIRTHS	INFANT	TOTAL NEONATAL	EARLY NEONATAL	LATE NEONATAL	POST-NEONATAL
WHITE						
TOTAL (ALL BIRTH WEIGHTS)...	NUMBER.. 3,241,355	22,875	14,319	11,647	2,672	8,556
	RATE..	7.1	4.4	3.6	.8	2.6
LESS THAN 2,500 GRAMS	NUMBER 187,858	12,644	10,304	8,943	1,361	2,340
	RATE..	67.3	54.8	47.6	7.2	12.5
LESS THAN 500 GRAMS	NUMBER 2,917	2,632	2,617	2,573	44	15
	RATE..	902.3	897.2	882.1	15.1	5.1
500-749 GRAMS.....	NUMBER.. 5,404	3,389	3,131	2,814	317	258
	RATE..	627.1	579.4	520.7	58.7	47.7
750-999 GRAMS.....	NUMBER.. 6,397	1,592	1,320	1,042	278	272
	RATE..	248.9	206.3	162.9	43.5	42.5
1,000-1,249 GRAMS.....	NUMBER.. 7,532	867	670	516	154	197
	RATE..	115.1	89.0	68.5	20.4	26.2
1,250-1,499 GRAMS.....	NUMBER.. 8,950	681	497	403	94	184
	RATE..	76.1	55.5	45.0	10.5	20.6
1,500-1,999 GRAMS.....	NUMBER.. 35,766	1,478	998	798	200	480
	RATE..	41.3	27.9	22.3	5.6	13.4
2,000-2,499 GRAMS.....	NUMBER.. 120,892	2,005	1,071	797	274	934
	RATE..	16.6	8.9	6.6	2.3	7.7
2,500-2,999 GRAMS.....	NUMBER.. 469,309	2,883	1,140	757	383	1,743
	RATE..	6.1	2.4	1.6	.8	3.7
3,000-3,499 GRAMS.....	NUMBER.. 1,178,436	3,597	1,197	720	477	2,400
	RATE..	3.1	1.0	.6	.4	2.0
3,500-3,999 GRAMS.....	NUMBER.. 1,015,518	2,228	698	394	304	1,530
	RATE..	2.2	.7	.4	.3	1.5
4,000-4,499 GRAMS.....	NUMBER.. 323,771	631	215	123	92	416
	RATE..	1.9	.7	.4	.3	1.3
4,500-4,999 GRAMS.....	NUMBER.. 56,427	136	55	39	16	81
	RATE..	2.4	1.0	.7	.3	1.4
5,000 GRAMS OR MORE.....	NUMBER.. 6,595	35	27	25	2	8
	RATE..	5.3	4.1	3.8	.3	1.2
NOT STATED.....	NUMBER.. 3,441	721	683	646	37	38
	RATE..	209.5	198.5	187.7	10.8	11.0

DOCUMENTATION TABLE 4

LIVE BIRTHS, INFANT DEATHS, AND INFANT MORTALITY RATES BY BIRTH WEIGHT, RACE OF MOTHER, AND AGE AT DEATH:
UNITED STATES, 1991 BIRTH COHORT

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

(RATES ARE PER 1000 LIVE BIRTHS)-C

BIRTH WEIGHT AND RACE OF MOTHER	LIVE BIRTHS	INFANT	TOTAL NEONATAL	EARLY NEONATAL	LATE NEONATAL	POST-NEONATAL
BLACK						
TOTAL (ALL BIRTH WEIGHTS)...	682,669	11,321	7,322	6,120	1,202	3,999
		16.6	10.7	9.0	1.8	5.9
LESS THAN 2,500 GRAMS.....	92,393	7,775	6,031	5,225	806	1,744
		84.2	65.3	56.6	8.7	18.9
LESS THAN 500 GRAMS.....	2,471	2,154	2,130	2,092	38	24
		871.7	862.0	846.6	15.4	9.7
500-749 GRAMS.....	4,020	2,423	2,141	1,870	271	282
		602.7	532.6	465.2	67.4	70.1
750-999 GRAMS.....	4,194	917	638	497	141	279
		218.6	152.1	118.5	33.6	66.5
1,000-1,249 GRAMS.....	4,497	442	290	204	86	152
		98.3	64.5	45.4	19.1	33.8
1,250-1,499 GRAMS.....	5,015	320	186	127	59	134
		63.8	37.1	25.3	11.8	26.7
1,500-1,999 GRAMS.....	18,091	619	309	211	98	310
		34.2	17.1	11.7	5.4	17.1
2,000-2,499 GRAMS.....	54,105	900	337	224	113	563
		16.6	6.2	4.1	2.1	10.4
2,500-2,999 GRAMS.....	162,768	1,237	339	191	148	898
		7.6	2.1	1.2	.9	5.5
3,000-3,499 GRAMS.....	256,480	1,213	337	185	152	876
		4.7	1.3	.7	.6	3.4
3,500-3,999 GRAMS.....	134,667	521	148	79	69	373
		3.9	1.1	.6	.5	2.8
4,000-4,499 GRAMS.....	29,926	104	33	23	10	71
		3.5	1.1	.8	.3	2.4
4,500-4,999 GRAMS.....	4,602	38	21	18	3	17
		8.3	4.6	3.9	.7	3.7
5,000 GRAMS OR MORE.....	707	21	14	12	2	7
		29.7	19.8	17.0	2.8	9.9
NOT STATED.....	1,126	412	399	387	12	13
		365.9	354.4	343.7	10.7	11.5

1/ INCLUDES RACES OTHER THAN WHITE AND BLACK

DOCUMENTATION TABLE 5

LIVE BIRTHS BY BIRTH WEIGHT AND RACE OF MOTHER AND INFANT DEATHS AND INFANT MORTALITY RATES BY AGE AT DEATH, BIRTH WEIGHT, AND RACE OF MOTHER FOR 10 MAJOR CAUSES OF INFANT DEATH: UNITED STATES, 1991 BIRTH COHORT

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

(RATES ARE PER 100,000 LIVE BIRTHS)

CAUSE OF DEATH, BIRTH WEIGHT, AND RACE OF MOTHER	LIVE BIRTHS	INFANT DEATHS	TOTAL NEONATAL	EARLY NEONATAL	LATE NEONATAL	POST-NEONATAL
ALL RACES <u>1</u> / ALL BIRTH WEIGHTS						
ALL CAUSES.....	NUMBER... 4,111,059	35,496	22,384	18,362	4,022	13,112
	RATE..	863.4	544.5	446.6	97.8	318.9
CONGENITAL ANOMALIES (740-759).....	NUMBER... ..	7,468	5,382	4,117	1,265	2,086
	RATE..	181.7	130.9	100.1	30.8	50.7
SUDDEN INFANT DEATH SYNDROME (798.0).....	NUMBER... ..	5,154	283	31	252	4,871
	RATE..	125.4	6.9	.8	6.1	118.5
PREMATURITY (765).....	NUMBER... ..	3,981	3,933	3,882	51	48
	RATE..	96.8	95.7	94.4	1.2	1.2
RESPIRATORY DISTRESS SYNDROME (769).....	NUMBER... ..	2,487	2,347	1,989	358	140
	RATE..	60.5	57.1	48.4	8.7	3.4
MATERNAL COMPLICATIONS (761).....	NUMBER... ..	1,500	1,494	1,479	15	6
	RATE..	36.5	36.3	36.0	.4	.1
COMPLICATIONS OF PLACENTA, ETC. (762).....	NUMBER... ..	914	910	888	22	4
	RATE..	22.2	22.1	21.6	.5	.1
ACCIDENTS (E800-E949).....	NUMBER... ..	833	76	35	41	757
	RATE..	20.3	1.8	.9	1.0	18.4
INFECTIONS (771).....	NUMBER... ..	867	821	486	335	46
	RATE..	21.1	20.0	11.8	8.1	1.1
PNEUMONIA AND INFLUENZA (480-487).....	NUMBER... ..	609	105	42	63	504
	RATE..	14.8	2.6	1.0	1.5	12.3
HYPOXIA AND ASPHYXIA (768).....	NUMBER... ..	596	529	433	96	67
	RATE..	14.5	12.9	10.5	2.3	1.6
ALL OTHER CAUSES (RESIDUAL).....	NUMBER... ..	1,561	676	429	247	885
	RATE..	38.0	16.4	10.4	6.0	21.5

DOCUMENTATION TABLE 5

LIVE BIRTHS BY BIRTH WEIGHT AND RACE OF MOTHER AND INFANT DEATHS AND INFANT MORTALITY RATES BY AGE AT DEATH, BIRTH WEIGHT, AND RACE OF MOTHER FOR 10 MAJOR CAUSES OF INFANT DEATH: UNITED STATES, 1991 BIRTH COHORT

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

(RATES ARE PER 100,000 LIVE BIRTHS)

CAUSE OF DEATH, BIRTH WEIGHT, AND RACE OF MOTHER	LIVE BIRTHS	INFANT DEATHS	TOTAL NEONATAL	EARLY NEONATAL	LATE NEONATAL	POST-NEONATAL
ALL RACES 1/ LESS THAN 2,500 GRAMS						
ALL CAUSES.....	NUMBER... 292,323	21,054	16,839	14,597	2,242	4,215
	RATE..	7,202.3	5,760.4	4,993.4	767.0	1,441.9
CONGENITAL ANOMALIES (740-759).....	NUMBER... 3,756	3,756	2,966	2,501	465	790
	RATE..	1,284.9	1,014.6	855.6	159.1	270.2
SUDDEN INFANT DEATH SYNDROME (798.0).....	NUMBER... 1,007	1,007	35	8	27	972
	RATE..	344.5	12.0	2.7	9.2	332.5
PREMATURITY (765).....	NUMBER... 3,554	3,554	3,509	3,458	51	45
	RATE..	1,215.8	1,200.4	1,182.9	17.4	15.4
RESPIRATORY DISTRESS SYNDROME (769).....	NUMBER... 2,369	2,369	2,239	1,905	334	130
	RATE..	810.4	765.9	651.7	114.3	44.5
MATERNAL COMPLICATIONS (761).....	NUMBER... 1,329	1,329	1,326	1,313	13	3
	RATE..	454.6	453.6	449.2	4.4	1.0
COMPLICATIONS OF PLACENTA, ETC. (762).....	NUMBER... 744	744	742	727	15	2
	RATE..	254.5	253.8	248.7	5.1	.7
ACCIDENTS (E800-E949).....	NUMBER... 130	130	25	17	8	105
	RATE..	44.5	8.6	5.8	2.7	35.9
INFECTIONS (771).....	NUMBER... 646	646	609	344	265	37
	RATE..	221.0	208.3	117.7	90.7	12.7
PNEUMONIA AND INFLUENZA (480-487).....	NUMBER... 223	223	51	22	29	172
	RATE..	76.3	17.4	7.5	9.9	58.8
HYPOXIA AND ASPHYXIA (768).....	NUMBER... 282	282	263	232	31	19
	RATE..	96.5	90.0	79.4	10.6	6.5
ALL OTHER CAUSES (RESIDUAL).....	NUMBER... 713	713	369	251	118	344
	RATE..	243.9	126.2	85.9	40.4	117.7

DOCUMENTATION TABLE 5

LIVE BIRTHS BY BIRTH WEIGHT AND RACE OF MOTHER AND INFANT DEATHS AND INFANT MORTALITY RATES BY AGE AT DEATH, BIRTH WEIGHT, AND RACE OF MOTHER FOR 10 MAJOR CAUSES OF INFANT DEATH: UNITED STATES, 1991 BIRTH COHORT

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

(RATES ARE PER 100,000 LIVE BIRTHS)

CAUSE OF DEATH, BIRTH WEIGHT, AND RACE OF MOTHER	LIVE BIRTHS	INFANT DEATHS	TOTAL NEONATAL	EARLY NEONATAL	LATE NEONATAL	POST-NEONATAL
ALL RACES ^{1/} , 2,500 GRAMS OR MORE						
ALL CAUSES.....	NUMBER... 3,813,959	13,261	4,417	2,691	1,726	8,844
	RATE..	347.7	115.8	70.6	45.3	231.9
CONGENITAL ANOMALIES (740-759).....	NUMBER... 3,543	3,543	2,257	1,470	787	1,286
	RATE..	92.9	59.2	38.5	20.6	33.7
SUDDEN INFANT DEATH SYNDROME (798.0).....	NUMBER... 4,138	4,138	247	23	224	3,891
	RATE..	108.5	6.5	.6	5.9	102.0
PREMATURITY (765).....	NUMBER... 38	38	35	35	-	3
	RATE..	1.0	.9	.9	-	.1
RESPIRATORY DISTRESS SYNDROME (769).....	NUMBER... 76	76	67	51	16	9
	RATE..	2.0	1.8	1.3	.4	.2
MATERNAL COMPLICATIONS (761).....	NUMBER... 31	31	29	27	2	2
	RATE..	.8	.8	.7	.1	.1
COMPLICATIONS OF PLACENTA, ETC. (762).....	NUMBER... 83	83	81	75	6	2
	RATE..	2.2	2.1	2.0	.2	.1
ACCIDENTS (E800-E949).....	NUMBER... 697	697	47	14	33	650
	RATE..	18.3	1.2	.4	.9	17.0
INFECTIONS (771).....	NUMBER... 209	209	201	134	67	8
	RATE..	5.5	5.3	3.5	1.8	.2
PNEUMONIA AND INFLUENZA (480-487).....	NUMBER... 384	384	53	20	33	331
	RATE..	10.1	1.4	.5	.9	8.7
HYPOXIA AND ASPHYXIA (768).....	NUMBER... 282	282	236	176	60	46
	RATE..	7.4	6.2	4.6	1.6	1.2
ALL OTHER CAUSES (RESIDUAL).....	NUMBER... 825	825	288	163	125	537
	RATE..	21.6	7.6	4.3	3.3	14.1

DOCUMENTATION TABLE 5

LIVE BIRTHS BY BIRTH WEIGHT AND RACE OF MOTHER AND INFANT DEATHS AND INFANT MORTALITY RATES BY AGE AT DEATH, BIRTH WEIGHT, AND RACE OF MOTHER FOR 10 MAJOR CAUSES OF INFANT DEATH: UNITED STATES, 1991 BIRTH COHORT

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

(RATES ARE PER 100,000 LIVE BIRTHS)

CAUSE OF DEATH, BIRTH WEIGHT, AND RACE OF MOTHER	LIVE BIRTHS	INFANT DEATHS	TOTAL NEONATAL	EARLY NEONATAL	LATE NEONATAL	POST-NEONATAL
ALL RACES 1/ NOT STATED BIRTH WEIGHT						
ALL CAUSES.....	4,777	1,181	1,128	1,074	54	53
		24,722.6	23,613.1	22,482.7	1,130.4	1,109.5
CONGENITAL ANOMALIES (740-759).....		169	159	146	13	10
		3,537.8	3,328.4	3,056.3	272.1	209.3
SUDDEN INFANT DEATH SYNDROME (798.0).....		9	1	-	1	8
		188.4	20.9	-	20.9	167.5
PREMATURITY (765).....		389	389	389	-	-
		8,143.2	8,143.2	8,143.2	-	-
RESPIRATORY DISTRESS SYNDROME (769).....		42	41	33	8	1
		879.2	858.3	690.8	167.5	20.9
MATERNAL COMPLICATIONS (761).....		140	139	139	-	1
		2,930.7	2,909.8	2,909.8	-	20.9
COMPLICATIONS OF PLACENTA, ETC. (762).....		87	87	86	1	-
		1,821.2	1,821.2	1,800.3	20.9	-
ACCIDENTS (E800-E949).....		6	4	4	-	2
		125.6	83.7	83.7	-	41.9
INFECTIONS (771).....		12	11	8	3	1
		251.2	230.3	167.5	62.8	20.9
PNEUMONIA AND INFLUENZA (480-487).....		2	1	-	1	1
		41.9	20.9	-	20.9	20.9
HYPOXIA AND ASPHYXIA (768).....		32	30	25	5	2
		669.9	628.0	523.3	104.7	41.9
ALL OTHER CAUSES (RESIDUAL).....		23	19	15	4	4
		481.5	397.7	314.0	83.7	83.7

DOCUMENTATION TABLE 5

LIVE BIRTHS BY BIRTH WEIGHT AND RACE OF MOTHER AND INFANT DEATHS AND INFANT MORTALITY RATES BY AGE AT DEATH, BIRTH WEIGHT, AND RACE OF MOTHER FOR 10 MAJOR CAUSES OF INFANT DEATH: UNITED STATES, 1991 BIRTH COHORT

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

(RATES ARE PER 100,000 LIVE BIRTHS)

CAUSE OF DEATH, BIRTH WEIGHT, AND RACE OF MOTHER	LIVE BIRTHS	INFANT DEATHS	TOTAL NEONATAL	EARLY NEONATAL	LATE NEONATAL	POST-NEONATAL
WHITE, ALL BIRTH WEIGHTS						
ALL CAUSES.....	3,241,355	22,875	14,319	11,647	2,672	8,556
		705.7	441.8	359.3	82.4	264.0
CONGENITAL ANOMALIES (740-759).....		5,720	4,218	3,259	959	1,502
		176.5	130.1	100.5	29.6	46.3
SUDDEN INFANT DEATH SYNDROME (798.0).....		3,482	182	15	167	3,300
		107.4	5.6	.5	5.2	101.8
PREMATURITY (765).....		2,035	2,011	1,994	17	24
		62.8	62.0	61.5	.5	.7
RESPIRATORY DISTRESS SYNDROME (769).....		1,557	1,475	1,245	230	82
		48.0	45.5	38.4	7.1	2.5
MATERNAL COMPLICATIONS (761).....		947	944	935	9	3
		29.2	29.1	28.8	.3	.1
COMPLICATIONS OF PLACENTA, ETC. (762).....		620	618	603	15	2
		19.1	19.1	18.6	.5	.1
ACCIDENTS (E800-E949).....		565	56	25	31	509
		17.4	1.7	.8	1.0	15.7
INFECTIONS (771).....		530	506	314	192	24
		16.4	15.6	9.7	5.9	.7
PNEUMONIA AND INFLUENZA (480-487).....		366	60	24	36	306
		11.3	1.9	.7	1.1	9.4
HYPOXIA AND ASPHYXIA (768).....		398	355	289	66	43
		12.3	11.0	8.9	2.0	1.3
ALL OTHER CAUSES (RESIDUAL).....		1,007	463	293	170	544
		31.1	14.3	9.0	5.2	16.8

DOCUMENTATION TABLE 5

LIVE BIRTHS BY BIRTH WEIGHT AND RACE OF MOTHER AND INFANT DEATHS AND INFANT MORTALITY RATES BY AGE AT DEATH, BIRTH WEIGHT, AND RACE OF MOTHER FOR 10 MAJOR CAUSES OF INFANT DEATH: UNITED STATES, 1991 BIRTH COHORT

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

(RATES ARE PER 100,000 LIVE BIRTHS)

CAUSE OF DEATH, BIRTH WEIGHT, AND RACE OF MOTHER	LIVE BIRTHS	INFANT DEATHS	TOTAL NEONATAL	EARLY NEONATAL	LATE NEONATAL	POST-NEONATAL
WHITE, LESS THAN 2,500 GRAMS						
ALL CAUSES.....	187,858	12,644	10,304	8,943	1,361	2,340
		6,730.6	5,485.0	4,760.5	724.5	1,245.6
CONGENITAL ANOMALIES (740-759).....		2,827	2,307	1,975	332	520
		1,504.9	1,228.1	1,051.3	176.7	276.8
SUDDEN INFANT DEATH SYNDROME (798.0).....		567	16	2	14	551
		301.8	8.5	1.1	7.5	293.3
PREMATURITY (765).....		1,802	1,780	1,763	17	22
		959.2	947.5	938.5	9.0	11.7
RESPIRATORY DISTRESS SYNDROME (769).....		1,467	1,395	1,180	215	72
		780.9	742.6	628.1	114.4	38.3
MATERNAL COMPLICATIONS (761).....		844	843	836	7	1
		449.3	448.7	445.0	3.7	.5
COMPLICATIONS OF PLACENTA, ETC. (762).....		488	487	479	8	1
		259.8	259.2	255.0	4.3	.5
ACCIDENTS (E800-E949).....		80	16	10	6	64
		42.6	8.5	5.3	3.2	34.1
INFECTIONS (771).....		382	364	216	148	18
		203.3	193.8	115.0	78.8	9.6
PNEUMONIA AND INFLUENZA (480-487).....		116	29	13	16	87
		61.7	15.4	6.9	8.5	46.3
HYPOXIA AND ASPHYXIA (768).....		167	157	141	16	10
		88.9	83.6	75.1	8.5	5.3
ALL OTHER CAUSES (RESIDUAL).....		410	231	161	70	179
		218.2	123.0	85.7	37.3	95.3

DOCUMENTATION TABLE 5

LIVE BIRTHS BY BIRTH WEIGHT AND RACE OF MOTHER AND INFANT DEATHS AND INFANT MORTALITY RATES BY AGE AT DEATH, BIRTH WEIGHT, AND RACE OF MOTHER FOR 10 MAJOR CAUSES OF INFANT DEATH: UNITED STATES, 1991 BIRTH COHORT

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

(RATES ARE PER 100,000 LIVE BIRTHS)

CAUSE OF DEATH, BIRTH WEIGHT, AND RACE OF MOTHER	LIVE BIRTHS	INFANT DEATHS	TOTAL NEONATAL	EARLY NEONATAL	LATE NEONATAL	POST-NEONATAL
WHITE, 2,500 GRAMS OR MORE						
ALL CAUSES.....	NUMBER... 3,050,056	9,510	3,332	2,058	1,274	6,178
	RATE..	311.8	109.2	67.5	41.8	202.6
CONGENITAL ANOMALIES (740-759).....	NUMBER... 2,762	1,789	1,172	617	973	
	RATE..	90.6	58.7	38.4	20.2	31.9
SUDDEN INFANT DEATH SYNDROME (798.0).....	NUMBER... 2,909	165	13	152	2,744	
	RATE..	95.4	5.4	.4	5.0	90.0
PREMATURITY (765).....	NUMBER... 27	25	25	-	2	
	RATE..	.9	.8	.8	-	.1
RESPIRATORY DISTRESS SYNDROME (769).....	NUMBER... 60	51	39	12	9	
	RATE..	2.0	1.7	1.3	.4	.3
MATERNAL COMPLICATIONS (761).....	NUMBER... 24	22	20	2	2	
	RATE..	.8	.7	.7	.1	.1
COMPLICATIONS OF PLACENTA, ETC. (762).....	NUMBER... 68	67	61	6	1	
	RATE..	2.2	2.2	2.0	.2	.0
ACCIDENTS (E800-E949).....	NUMBER... 480	37	12	25	443	
	RATE..	15.7	1.2	.4	.8	14.5
INFECTIONS (771).....	NUMBER... 140	135	93	42	5	
	RATE..	4.6	4.4	3.0	1.4	.2
PNEUMONIA AND INFLUENZA (480-487).....	NUMBER... 249	31	11	20	218	
	RATE..	8.2	1.0	.4	.7	7.1
HYPOXIA AND ASPHYXIA (768).....	NUMBER... 215	183	136	47	32	
	RATE..	7.0	6.0	4.5	1.5	1.0
ALL OTHER CAUSES (RESIDUAL).....	NUMBER... 582	220	124	96	362	
	RATE..	19.1	7.2	4.1	3.1	11.9

DOCUMENTATION TABLE 5

LIVE BIRTHS BY BIRTH WEIGHT AND RACE OF MOTHER AND INFANT DEATHS AND INFANT MORTALITY RATES BY AGE AT DEATH, BIRTH WEIGHT, AND RACE OF MOTHER FOR 10 MAJOR CAUSES OF INFANT DEATH: UNITED STATES, 1991 BIRTH COHORT

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

(RATES ARE PER 100,000 LIVE BIRTHS)

CAUSE OF DEATH, BIRTH WEIGHT, AND RACE OF MOTHER	LIVE BIRTHS	INFANT DEATHS	TOTAL NEONATAL	EARLY NEONATAL	LATE NEONATAL	POST-NEONATAL
BLACK, ALL BIRTH WEIGHTS						
ALL CAUSES.....	682,669	11,321	7,322	6,120	1,202	3,999
		1,658.3	1,072.6	896.5	176.1	585.8
CONGENITAL ANOMALIES (740-759).....		1,410	941	686	255	469
		206.5	137.8	100.5	37.4	68.7
SUDDEN INFANT DEATH SYNDROME (798.0).....		1,467	91	13	78	1,376
		214.9	13.3	1.9	11.4	201.6
PREMATURITY (765).....		1,851	1,828	1,796	32	23
		271.1	267.8	263.1	4.7	3.4
RESPIRATORY DISTRESS SYNDROME (769).....		863	810	693	117	53
		126.4	118.7	101.5	17.1	7.8
MATERNAL COMPLICATIONS (761).....		510	510	504	6	-
		74.7	74.7	73.8	.9	-
COMPLICATIONS OF PLACENTA,ETC. (762).....		267	265	258	7	2
		39.1	38.8	37.8	1.0	.3
ACCIDENTS (E800-E949).....		229	19	10	9	210
		33.5	2.8	1.5	1.3	30.8
INFECTIONS (771).....		299	279	149	130	20
		43.8	40.9	21.8	19.0	2.9
PNEUMONIA AND INFLUENZA (480-487).....		209	36	12	24	173
		30.6	5.3	1.8	3.5	25.3
HYPOXIA AND ASPHYXIA (768).....		181	158	134	24	23
		26.5	23.1	19.6	3.5	3.4
ALL OTHER CAUSES (RESIDUAL).....		494	191	122	69	303
		72.4	28.0	17.9	10.1	44.4

DOCUMENTATION TABLE 5

LIVE BIRTHS BY BIRTH WEIGHT AND RACE OF MOTHER AND INFANT DEATHS AND INFANT MORTALITY RATES BY AGE AT DEATH, BIRTH WEIGHT, AND RACE OF MOTHER FOR 10 MAJOR CAUSES OF INFANT DEATH: UNITED STATES, 1991 BIRTH COHORT

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

(RATES ARE PER 100,000 LIVE BIRTHS)

CAUSE OF DEATH, BIRTH WEIGHT, AND RACE OF MOTHER	LIVE BIRTHS	INFANT DEATHS	TOTAL NEONATAL	EARLY NEONATAL	LATE NEONATAL	POST-NEONATAL
BLACK, LESS THAN 2,500 GRAMS						
ALL CAUSES.....	NUMBER... 92,393	7,775	6,031	5,225	806	1,744
	RATE..	8,415.1	6,527.6	5,655.2	872.4	1,887.6
CONGENITAL ANOMALIES (740-759).....	NUMBER... 773	773	539	428	111	234
	RATE..	836.6	583.4	463.2	120.1	253.3
SUDDEN INFANT DEATH SYNDROME (798.0).....	NUMBER... 412	412	18	6	12	394
	RATE..	445.9	19.5	6.5	13.0	426.4
PREMATURITY (765).....	NUMBER... 1,667	1,667	1,645	1,613	32	22
	RATE..	1,804.2	1,780.4	1,745.8	34.6	23.8
RESPIRATORY DISTRESS SYNDROME (769).....	NUMBER... 840	840	787	678	109	53
	RATE..	909.2	851.8	733.8	118.0	57.4
MATERNAL COMPLICATIONS (761).....	NUMBER... 449	449	449	443	6	-
	RATE..	486.0	486.0	479.5	6.5	-
COMPLICATIONS OF PLACENTA, ETC. (762).....	NUMBER... 236	236	235	228	7	1
	RATE..	255.4	254.3	246.8	7.6	1.1
ACCIDENTS (E800-E949).....	NUMBER... 44	44	9	7	2	35
	RATE..	47.6	9.7	7.6	2.2	37.9
INFECTIONS (771).....	NUMBER... 243	243	225	116	109	18
	RATE..	263.0	243.5	125.6	118.0	19.5
PNEUMONIA AND INFLUENZA (480-487).....	NUMBER... 99	99	18	6	12	81
	RATE..	107.2	19.5	6.5	13.0	87.7
HYPOXIA AND ASPHYXIA (768).....	NUMBER... 108	108	100	86	14	8
	RATE..	116.9	108.2	93.1	15.2	8.7
ALL OTHER CAUSES (RESIDUAL).....	NUMBER... 281	281	128	84	44	153
	RATE..	304.1	138.5	90.9	47.6	165.6

DOCUMENTATION TABLE 5

LIVE BIRTHS BY BIRTH WEIGHT AND RACE OF MOTHER AND INFANT DEATHS AND INFANT MORTALITY RATES BY AGE AT DEATH, BIRTH WEIGHT, AND RACE OF MOTHER FOR 10 MAJOR CAUSES OF INFANT DEATH: UNITED STATES, 1991 BIRTH COHORT

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

(RATES ARE PER 100,000 LIVE BIRTHS)

CAUSE OF DEATH, BIRTH WEIGHT, AND RACE OF MOTHER	LIVE BIRTHS	INFANT DEATHS	TOTAL NEONATAL	EARLY NEONATAL	LATE NEONATAL	POST-NEONATAL
BLACK, 2,500 GRAMS OR MORE						
ALL CAUSES.....	589,150	3,134	892	508	384	2,242
.....NUMBER...						
.....RATE..		532.0	151.4	86.2	65.2	380.5
CONGENITAL ANOMALIES (740-759).....		610	376	234	142	234
.....NUMBER...						
.....RATE..		103.5	63.8	39.7	24.1	39.7
SUDDEN INFANT DEATH SYNDROME (798.0).....		1,053	73	7	66	980
.....NUMBER...						
.....RATE..		178.7	12.4	1.2	11.2	166.3
PREMATURITY (765).....		9	8	8	-	1
.....NUMBER...						
.....RATE..		1.5	1.4	1.4	-	.2
RESPIRATORY DISTRESS SYNDROME (769).....		15	15	11	4	-
.....NUMBER...						
.....RATE..		2.5	2.5	1.9	.7	-
MATERNAL COMPLICATIONS (761).....		6	6	6	-	-
.....NUMBER...						
.....RATE..		1.0	1.0	1.0	-	-
COMPLICATIONS OF PLACENTA, ETC. (762).....		11	10	10	-	1
.....NUMBER...						
.....RATE..		1.9	1.7	1.7	-	.2
ACCIDENTS (E800-E949).....		184	9	2	7	175
.....NUMBER...						
.....RATE..		31.2	1.5	.3	1.2	29.7
INFECTIONS (771).....		54	52	31	21	2
.....NUMBER...						
.....RATE..		9.2	8.8	5.3	3.6	.3
PNEUMONIA AND INFLUENZA (480-487).....		109	17	6	11	92
.....NUMBER...						
.....RATE..		18.5	2.9	1.0	1.9	15.6
HYPOXIA AND ASPHYXIA (768).....		59	45	36	9	14
.....NUMBER...						
.....RATE..		10.0	7.6	6.1	1.5	2.4
ALL OTHER CAUSES (RESIDUAL).....		206	57	32	25	149
.....NUMBER...						
.....RATE..		35.0	9.7	5.4	4.2	25.3

DOCUMENTATION TABLE 5

LIVE BIRTHS BY BIRTH WEIGHT AND RACE OF MOTHER AND INFANT DEATHS AND INFANT MORTALITY RATES BY AGE AT DEATH, BIRTH WEIGHT, AND RACE OF MOTHER FOR 10 MAJOR CAUSES OF INFANT DEATH: UNITED STATES, 1991 BIRTH COHORT

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

(RATES ARE PER 100,000 LIVE BIRTHS)

CAUSE OF DEATH, BIRTH WEIGHT, AND RACE OF MOTHER	LIVE BIRTHS	INFANT DEATHS	TOTAL NEONATAL	EARLY NEONATAL	LATE NEONATAL	POST-NEONATAL
BLACK, NOT STATED BIRTH WEIGHT						
ALL CAUSES.....	1,126	412	399	387	12	13
.....NUMBER...						
.....RATE..		36,589.7	35,435.2	34,369.4	1,065.7	1,154.5
CONGENITAL ANOMALIES (740-759).....		27	26	24	2	1
.....NUMBER...						
.....RATE..		2,397.9	2,309.1	2,131.4	177.6	88.8
SUDDEN INFANT DEATH SYNDROME (798.0).....		2	-	-	-	2
.....NUMBER...						
.....RATE..		177.6	-	-	-	177.6
PREMATURITY (765).....		175	175	175	-	-
.....NUMBER...						
.....RATE..		15,541.7	15,541.7	15,541.7	-	-
RESPIRATORY DISTRESS SYNDROME (769).....		8	8	4	4	-
.....NUMBER...						
.....RATE..		710.5	710.5	355.2	355.2	-
MATERNAL COMPLICATIONS (761).....		55	55	55	-	-
.....NUMBER...						
.....RATE..		4,884.5	4,884.5	4,884.5	-	-
COMPLICATIONS OF PLACENTA, ETC. (762).....		20	20	20	-	-
.....NUMBER...						
.....RATE..		1,776.2	1,776.2	1,776.2	-	-
ACCIDENTS (E800-E949).....		1	1	1	-	-
.....NUMBER...						
.....RATE..		88.8	88.8	88.8	-	-
INFECTIONS (771).....		2	2	2	-	-
.....NUMBER...						
.....RATE..		177.6	177.6	177.6	-	-
PNEUMONIA AND INFLUENZA (480-487).....		1	1	-	1	-
.....NUMBER...						
.....RATE..		88.8	88.8	-	88.8	-
HYPOXIA AND ASPHYXIA (768).....		14	13	12	1	1
.....NUMBER...						
.....RATE..		1,243.3	1,154.5	1,065.7	88.8	88.8
ALL OTHER CAUSES (RESIDUAL).....		7	6	6	-	1
.....NUMBER...						
.....RATE..		621.7	532.9	532.9	-	88.8

1/ INCLUDES RACES OTHER THAN WHITE AND BLACK

DOCUMENTATION TABLE 6

UNLINKED INFANT DEATHS BY RACE, AGE AT DEATH, AND STATE OF RESIDENCE:
UNITED STATES, 1991 BIRTH COHORT

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

(DATA IN THIS TABLE IS FOR INFANT DEATHS TO THE 1991 BIRTH COHORT NOT INCLUDED IN THE LINKED FILE BECAUSE THEY WERE NOT LINKED WITH THEIR CORRESPONDING BIRTH CERTIFICATES. SEE METHODOLOGY SECTION. RESIDENCE IS OF INFANT DECEDENT; RACE IS FROM DEATH CERTIFICATE.)

AREA AND RACE OF CHILD <u>1/</u>	INFANT	TOTAL NEONATAL	EARLY NEONATAL	LATE NEONATAL	POST-NEONATAL
UNITED STATES.....	838	618	562	56	220
WHITE.....	475	344	311	33	131
BLACK.....	340	258	236	22	82
ALABAMA.....	1	-	-	-	1
WHITE.....	1	-	-	-	1
BLACK.....	-	-	-	-	-
ALASKA.....	1	1	-	1	-
WHITE.....	1	1	-	1	-
BLACK.....	-	-	-	-	-
ARIZONA.....	1	-	-	-	1
WHITE.....	1	-	-	-	1
BLACK.....	-	-	-	-	-
ARKANSAS.....	2	2	2	-	-
WHITE.....	1	1	1	-	-
BLACK.....	1	1	1	-	-
CALIFORNIA.....	174	139	120	19	35
WHITE.....	120	99	85	14	21
BLACK.....	45	33	29	4	12
COLORADO.....	1	-	-	-	1
WHITE.....	1	-	-	-	1
BLACK.....	-	-	-	-	-
CONNECTICUT.....	7	5	5	-	2
WHITE.....	6	4	4	-	2
BLACK.....	1	1	1	-	-
DELAWARE.....	3	2	2	-	1
WHITE.....	2	1	1	-	1
BLACK.....	1	1	1	-	-
DISTRICT OF COLUMBIA.....	4	-	-	-	4
WHITE.....	3	-	-	-	3
BLACK.....	1	-	-	-	1

DOCUMENTATION TABLE 6

UNLINKED INFANT DEATHS BY RACE, AGE AT DEATH, AND STATE OF RESIDENCE:
UNITED STATES, 1991 BIRTH COHORT

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

(DATA IN THIS TABLE IS FOR INFANT DEATHS TO THE 1991 BIRTH COHORT NOT INCLUDED IN THE LINKED FILE BECAUSE THEY WERE NOT LINKED WITH THEIR CORRESPONDING BIRTH CERTIFICATES. SEE METHODOLOGY SECTION. RESIDENCE IS OF INFANT DECEDENT; RACE IS FROM DEATH CERTIFICATE.)

AREA AND RACE OF CHILD ^{1/}	INFANT	TOTAL NEONATAL	EARLY NEONATAL	LATE NEONATAL	POST-NEONATAL
FLORIDA.....	3	1	-	1	2
WHITE.....	1	-	-	-	1
BLACK.....	2	1	-	1	1
GEORGIA.....	1	-	-	-	1
WHITE.....	-	-	-	-	-
BLACK.....	1	-	-	-	1
HAWAII.....	2	-	-	-	2
WHITE.....	1	-	-	-	1
BLACK.....	1	-	-	-	1
IDAHO.....	2	2	2	-	-
WHITE.....	1	1	1	-	-
BLACK.....	-	-	-	-	-
ILLINOIS.....	82	65	59	6	17
WHITE.....	26	18	17	1	8
BLACK.....	55	46	41	5	9
INDIANA.....	18	8	7	1	10
WHITE.....	11	4	3	1	7
BLACK.....	7	4	4	-	3
IOWA.....	1	-	-	-	1
WHITE.....	1	-	-	-	1
BLACK.....	-	-	-	-	-
KANSAS.....	-	-	-	-	-
WHITE.....	-	-	-	-	-
BLACK.....	-	-	-	-	-
KENTUCKY.....	5	4	2	2	1
WHITE.....	4	4	2	2	-
BLACK.....	1	-	-	-	1
LOUISIANA.....	48	39	38	1	9
WHITE.....	14	11	11	-	3
BLACK.....	33	27	26	1	6

DOCUMENTATION TABLE 6

UNLINKED INFANT DEATHS BY RACE, AGE AT DEATH, AND STATE OF RESIDENCE:
UNITED STATES, 1991 BIRTH COHORT

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

(DATA IN THIS TABLE IS FOR INFANT DEATHS TO THE 1991 BIRTH COHORT NOT INCLUDED IN THE LINKED FILE BECAUSE
THEY WERE NOT LINKED WITH THEIR CORRESPONDING BIRTH CERTIFICATES. SEE METHODOLOGY SECTION. RESIDENCE IS
OF INFANT DECEDENT; RACE IS FROM DEATH CERTIFICATE.)

AREA AND RACE OF CHILD ^{1/}	INFANT	TOTAL NEONATAL	EARLY NEONATAL	LATE NEONATAL	POST- NEONATAL
MAINE.....	2	-	-	-	2
WHITE.....	2	-	-	-	2
BLACK.....	-	-	-	-	-
MARYLAND.....	21	16	15	1	5
WHITE.....	8	6	6	-	2
BLACK.....	13	10	9	1	3
MASSACHUSETTS.....	2	2	2	-	-
WHITE.....	2	2	2	-	-
BLACK.....	-	-	-	-	-
MICHIGAN.....	2	-	-	-	2
WHITE.....	-	-	-	-	-
BLACK.....	2	-	-	-	2
MINNESOTA.....	1	-	-	-	1
WHITE.....	1	-	-	-	1
BLACK.....	-	-	-	-	-
MISSISSIPPI.....	4	1	1	-	3
WHITE.....	3	1	1	-	2
BLACK.....	1	-	-	-	1
MISSOURI.....	4	2	1	1	2
WHITE.....	2	-	-	-	2
BLACK.....	2	2	1	1	-
MONTANA.....	1	-	-	-	1
WHITE.....	1	-	-	-	1
BLACK.....	-	-	-	-	-
NEBRASKA.....	-	-	-	-	-
WHITE.....	-	-	-	-	-
BLACK.....	-	-	-	-	-
NEVADA.....	5	1	1	-	4
WHITE.....	5	1	1	-	4
BLACK.....	-	-	-	-	-

DOCUMENTATION TABLE 6

UNLINKED INFANT DEATHS BY RACE, AGE AT DEATH, AND STATE OF RESIDENCE:
UNITED STATES, 1991 BIRTH COHORT

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

(DATA IN THIS TABLE IS FOR INFANT DEATHS TO THE 1991 BIRTH COHORT NOT INCLUDED IN THE LINKED FILE BECAUSE THEY WERE NOT LINKED WITH THEIR CORRESPONDING BIRTH CERTIFICATES. SEE METHODOLOGY SECTION. RESIDENCE IS OF INFANT DECEDENT; RACE IS FROM DEATH CERTIFICATE.)

AREA AND RACE OF CHILD <u>1/</u>	INFANT	TOTAL NEONATAL	EARLY NEONATAL	LATE NEONATAL	POST-NEONATAL
NEW HAMPSHIRE.....	-	-	-	-	-
WHITE.....	-	-	-	-	-
BLACK.....	-	-	-	-	-
NEW JERSEY.....	31	16	13	3	15
WHITE.....	16	7	6	1	9
BLACK.....	12	8	6	2	4
NEW MEXICO.....	1	1	1	-	-
WHITE.....	1	1	1	-	-
BLACK.....	-	-	-	-	-
NEW YORK.....	41	31	24	7	10
WHITE.....	33	26	20	6	7
BLACK.....	7	5	4	1	2
NEW YORK CITY.....	19	9	8	1	10
WHITE.....	10	4	3	1	6
BLACK.....	9	5	5	-	4
NORTH CAROLINA.....	17	6	6	-	11
WHITE.....	11	4	4	-	7
BLACK.....	6	2	2	-	4
NORTH DAKOTA.....	-	-	-	-	-
WHITE.....	-	-	-	-	-
BLACK.....	-	-	-	-	-
OHIO.....	114	89	87	2	25
WHITE.....	59	47	47	-	12
BLACK.....	55	42	40	2	13
OKLAHOMA.....	31	24	23	1	7
WHITE.....	21	16	16	-	5
BLACK.....	8	6	5	1	2
OREGON.....	-	-	-	-	-
WHITE.....	-	-	-	-	-
BLACK.....	-	-	-	-	-

DOCUMENTATION TABLE 6

UNLINKED INFANT DEATHS BY RACE, AGE AT DEATH, AND STATE OF RESIDENCE:
UNITED STATES, 1991 BIRTH COHORT

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

(DATA IN THIS TABLE IS FOR INFANT DEATHS TO THE 1991 BIRTH COHORT NOT INCLUDED IN THE LINKED FILE BECAUSE
THEY WERE NOT LINKED WITH THEIR CORRESPONDING BIRTH CERTIFICATES. SEE METHODOLOGY SECTION. RESIDENCE IS
OF INFANT DECEDENT; RACE IS FROM DEATH CERTIFICATE.)

AREA AND RACE OF CHILD <u>1/</u>	INFANT	TOTAL NEONATAL	EARLY NEONATAL	LATE NEONATAL	POST- NEONATAL
PENNSYLVANIA.....	53	44	41	3	9
WHITE.....	21	18	17	1	3
BLACK.....	30	25	23	2	5
RHODE ISLAND.....	-	-	-	-	-
WHITE.....	-	-	-	-	-
BLACK.....	-	-	-	-	-
SOUTH CAROLINA.....	-	-	-	-	-
WHITE.....	-	-	-	-	-
BLACK.....	-	-	-	-	-
SOUTH DAKOTA.....	-	-	-	-	-
WHITE.....	-	-	-	-	-
BLACK.....	-	-	-	-	-
TENNESSEE.....	6	2	1	1	4
WHITE.....	5	2	1	1	3
BLACK.....	1	-	-	-	1
TEXAS.....	93	85	84	1	8
WHITE.....	58	53	52	1	5
BLACK.....	34	31	31	-	3
UTAH.....	-	-	-	-	-
WHITE.....	-	-	-	-	-
BLACK.....	-	-	-	-	-
VERMONT.....	-	-	-	-	-
WHITE.....	-	-	-	-	-
BLACK.....	-	-	-	-	-
VIRGINIA.....	19	12	9	3	7
WHITE.....	11	7	5	2	4
BLACK.....	8	5	4	1	3
WASHINGTON.....	10	6	5	1	4
WHITE.....	7	3	2	1	4
BLACK.....	3	3	3	-	-

DOCUMENTATION TABLE 6

UNLINKED INFANT DEATHS BY RACE, AGE AT DEATH, AND STATE OF RESIDENCE:
UNITED STATES, 1991 BIRTH COHORT

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

(DATA IN THIS TABLE IS FOR INFANT DEATHS TO THE 1991 BIRTH COHORT NOT INCLUDED IN THE LINKED FILE BECAUSE
THEY WERE NOT LINKED WITH THEIR CORRESPONDING BIRTH CERTIFICATES. SEE METHODOLOGY SECTION. RESIDENCE IS
OF INFANT DECEDENT; RACE IS FROM DEATH CERTIFICATE.)

AREA AND RACE OF CHILD ^{1/}	INFANT	TOTAL NEONATAL	EARLY NEONATAL	LATE NEONATAL	POST- NEONATAL
WEST VIRGINIA.....	2	2	2	-	-
WHITE.....	2	2	2	-	-
BLACK.....	-	-	-	-	-
WISCONSIN.....	2	-	-	-	2
WHITE.....	1	-	-	-	1
BLACK.....	-	-	-	-	-
WYOMING.....	1	1	1	-	-
WHITE.....	-	-	-	-	-
BLACK.....	-	-	-	-	-
FOREIGN RESIDENTS.....	3	2	2	-	1
WHITE.....	2	1	1	-	1
BLACK.....	1	1	1	-	-

^{1/} TOTALS FOR GEOGRAPHIC AREAS INCLUDES RACES OTHER THAN WHITE AND BLACK

TECHNICAL APPENDIX FROM

VITAL STATISTICS OF THE UNITED STATES

1991

VOLUME I - NATALITY



U.S. DEPARTMENT OF
HEALTH AND HUMAN SERVICES

PUBLIC HEALTH SERVICE

CENTERS FOR DISEASE CONTROL AND PREVENTION
NATIONAL CENTER FOR HEALTH STATISTICS

Section 4. Technical Appendix

	Page		Page
Definition of live birth	1	Medical risk factors for this pregnancy	12
History of birth-registration area	1	Obstetric procedures	13
Sources of data	1	Complications of labor and/or delivery	13
Natality statistics	1	Abnormal conditions of the newborn	13
Standard Certificate of Live Birth	1	Congenital anomalies of child	14
Classification of data	3	Method of delivery	14
Classification by occurrence and residence	4	Hispanic parentage	14
Geographic classification	4	Quality of data	15
Race or national origin	5	Completeness of registration	15
Age of mother	6	Completeness of reporting	15
Age of father	6	Quality control procedures	16
Live-birth order and parity	6	Small frequencies	16
Date of last live birth	7	Computation of rates and other measures	16
Educational attainment	7	Population bases	16
Marital status	7	Net census undercounts and overcounts	18
Place of delivery and attendant at birth	10	Cohort fertility tables	19
Birthweight	11	Age-sex-adjusted birth rates	19
Period of gestation	11	Total fertility rate	19
Month of pregnancy prenatal care began	11	Intrinsic vital rates	19
Number of prenatal visits	12	Seasonal adjustment of rates	19
Apgar score	12	Computation of percents, medians, and means	20
Tobacco and alcohol use during pregnancy	12	References	20
Weight gained during pregnancy	12	Symbols used in tables	20
Figure			
4-A. U.S. Standard Certificate of Live Birth: 1989 Revision			2
Text tables			
A. Percent of birth records on which specified items were not stated: United States and each State, Puerto Rico, Virgin Islands, and Guam: 1991			8
B. Sources for resident population and population including Armed Forces abroad: Birth- and death-registration States, 1900–1932, and United States, 1900–1991			17
C. Ratio of census-level resident population to resident population adjusted for estimated net census undercount by age, race, and sex: United States, April 1, 1990			18
Population tables			
4-1. Population of birth- and death-registration States, 1900–1932, and United States, 1900–1991			21
4-2. Estimated population of the United States, by age, race, and sex: July 1, 1991			22
4-3. Estimated total population and female population aged 15–44 years: United States, each division and State, Puerto Rico, Virgin Islands, and Guam: July 1, 1991			23

Definition of live birth

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

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

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

History of birth-registration area

The national birth-registration area was proposed in 1850 and established in 1915. By 1933 all 48 States and the District of Columbia were participating in the registration system. The organized territories of Hawaii and Alaska were admitted in 1929 and 1950, respectively; data from these areas were prepared separately until they became States—Alaska in 1959 and Hawaii in 1960. Currently the birth-registration system of the United States covers the 50 States, the District of Columbia, the independent registration area of New York City, Puerto Rico, the U.S. Virgin Islands, Guam, American Samoa, and the Commonwealth of the Northern Mariana Islands. However, in the statistical tabulations, “United States” refers only to the aggregate of the 50 States (including New York City) and the District of Columbia. Tabulations for Puerto Rico, the Virgin Islands, and Guam are shown separately in section 3 of this volume.

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

Because of the growth of the area for which data have been collected and tabulated, a national series of geographically comparable data before 1933 can be obtained only by estimation. Annual estimates of births have been prepared by P. K. Whelpton for 1909–34 (4) (table 1-1). These estimates include adjustments for underregistration and for States that were not part of the birth-registration area before 1933.

Sources of data

Natality statistics

Since 1985 natality statistics for all States and the District of Columbia have been based on information from the total file of records. The information is received on computer data tapes coded by the States and provided to NCHS through the Vital Statistics Cooperative Program. NCHS receives these tapes from the registration offices of all States, the District of Columbia, and New York City. Information for Puerto Rico is also received on computer tapes through the Vital Statistics Cooperative Program. Information for the Virgin Islands and Guam is obtained from microfilm copies of original birth certificates and is based on the total file of records for all years.

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

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

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

Standard Certificate of Live Birth

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

SECTION 4 – TECHNICAL APPENDIX – PAGE 2

The first standard certificate of birth was developed in 1900. Since then, it has been revised periodically by the national vital statistics agency through consultation with State health officers and registrars; Federal agencies concerned with vital statistics; national, State, and county medical societies; and others working in public health, social welfare, demography, and insurance. This procedure has assured careful evalu-

ation of each item for its current and future usefulness for legal, medical, demographic, and research purposes. New items have been added when necessary, and old items have been modified to ensure better reporting or, in some cases, dropped when their usefulness appeared to be limited.

1989 revision—Effective January 1, 1989, a revised U.S. Standard Certificate of Live Birth (figure 4-A) replaced the

TYPE/PRINT IN PERMANENT BLACK INK FOR INSTRUCTIONS SEE HANDBOOK		LOCAL FILE NUMBER		BIRTH NUMBER	
CHILD		1. CHILD'S NAME (First, Middle, Last)		2. DATE OF BIRTH (Month, Day, Year)	
		3. TIME OF BIRTH			
		4. SEX		5. CITY, TOWN, OR LOCATION OF BIRTH	
		6. COUNTY OF BIRTH			
		7. PLACE OF BIRTH: <input type="checkbox"/> Hospital <input type="checkbox"/> Freestanding Birthing Center <input type="checkbox"/> Clinic/Doctor's Office <input type="checkbox"/> Residence <input type="checkbox"/> Other (Specify) _____		8. FACILITY NAME (If not institution, give street and number)	
CERTIFIER/ ATTENDANT		9. I certify that this child was born alive at the place and time and on the date stated. Signature _____		10. DATE SIGNED (Month, Day, Year)	
		11. ATTENDANT'S NAME AND TITLE (If other than certifier) (Type/Print) Name _____ <input type="checkbox"/> M.D. <input type="checkbox"/> D.O. <input type="checkbox"/> C.N.M. <input type="checkbox"/> Other Midwife <input type="checkbox"/> Other (Specify) _____			
		12. CERTIFIER'S NAME AND TITLE (Type/Print) Name _____ <input type="checkbox"/> M.D. <input type="checkbox"/> D.O. <input type="checkbox"/> Hospital Admin. <input type="checkbox"/> C.N.M. <input type="checkbox"/> Other Midwife <input type="checkbox"/> Other (Specify) _____		13. ATTENDANT'S MAILING ADDRESS (Street and Number or Rural Route Number, City or Town, State, Zip Code)	
		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 on _____)			
FATHER		21. FATHER'S NAME (First, Middle, Last)		22. DATE OF BIRTH (Month, Day, Year)	
		23. BIRTHPLACE (State or Foreign Country)			
INFORMANT		24. I certify that the personal information provided on this certificate is correct to the best of my knowledge and belief. Signature of Parent or Other Informant _____			
INFORMATION FOR MEDICAL AND HEALTH USE ONLY					
MOTHER		25. OF HISPANIC ORIGIN? (Specify No or Yes—If yes, specify Cuban, Mexican, Puerto Rican, etc.) 25a. <input type="checkbox"/> No <input type="checkbox"/> Yes Specify: _____		26. RACE—American Indian, Black, White, etc. (Specify below) 26a. _____	
FATHER		25b. <input type="checkbox"/> No <input type="checkbox"/> Yes Specify: _____		26b. _____	
		27. EDUCATION (Specify only highest grade completed) Elementary/Secondary (0-12) | College (1-4 or 5+)		27a. _____	
		27b. _____		27b. _____	
MULTIPLE BIRTHS Enter State File Number for Male(s) LIVE BIRTH(S)		28. PREGNANCY HISTORY (Complete each section)		29. MOTHER MARRIED? (At birth, conception, or any time between) (Yes or no)	
		30. DATE LAST NORMAL MENSES BEGAN (Month, Day, Year)			
FETAL DEATH(S)		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 (Week)	
		35a. PLURALITY—Single, Twin, Triplet, etc. (Specify)		35b. IF NOT SINGLE BIRTH—Born First, Second, Third, etc. (Specify)	
		36. APGAR SCORE		37a. MOTHER TRANSFERRED PRIOR TO DELIVERY? <input type="checkbox"/> No <input type="checkbox"/> Yes If Yes, enter name of facility transferred from: _____	
		37b. INFANT TRANSFERRED? <input type="checkbox"/> No <input type="checkbox"/> Yes If Yes, enter name of facility transferred to: _____			

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

<p>38a. MEDICAL RISK FACTORS FOR THIS PREGNANCY (Check all that apply)</p> <p>Anemia (Hct. <30/Hgb. <10) 01 <input type="checkbox"/></p> <p>Cardiac disease 02 <input type="checkbox"/></p> <p>Acute or chronic lung disease 03 <input type="checkbox"/></p> <p>Diabetes 04 <input type="checkbox"/></p> <p>Genital herpes 05 <input type="checkbox"/></p> <p>Hydramnios/Oligohydramnios 06 <input type="checkbox"/></p> <p>Hemoglobinopathy 07 <input type="checkbox"/></p> <p>Hypertension, chronic 08 <input type="checkbox"/></p> <p>Hypertension, pregnancy-associated 09 <input type="checkbox"/></p> <p>Eclampsia 10 <input type="checkbox"/></p> <p>Incompetent cervix 11 <input type="checkbox"/></p> <p>Previous infant 4000+ grams 12 <input type="checkbox"/></p> <p>Previous preterm or small-for-gestational-age infant 13 <input type="checkbox"/></p> <p>Renal disease 14 <input type="checkbox"/></p> <p>Rh sensitization 15 <input type="checkbox"/></p> <p>Uterine bleeding 16 <input type="checkbox"/></p> <p>None 00 <input type="checkbox"/></p> <p>Other 17 <input type="checkbox"/></p> <p>(Specify)</p>	<p>40. COMPLICATIONS OF LABOR AND/OR DELIVERY (Check all that apply)</p> <p>Fever (> 100°F. or 38°C.) 01 <input type="checkbox"/></p> <p>Meconium, moderate/heavy 02 <input type="checkbox"/></p> <p>Premature rupture of membrane (>12 hours) 03 <input type="checkbox"/></p> <p>Abruptio placenta 04 <input type="checkbox"/></p> <p>Placenta previa 05 <input type="checkbox"/></p> <p>Other excessive bleeding 06 <input type="checkbox"/></p> <p>Seizures during labor 07 <input type="checkbox"/></p> <p>Precipitous labor (< 3 hours) 08 <input type="checkbox"/></p> <p>Prolonged labor (> 20 hours) 09 <input type="checkbox"/></p> <p>Dysfunctional labor 10 <input type="checkbox"/></p> <p>Breech/Malpresentation 11 <input type="checkbox"/></p> <p>Cephalopelvic disproportion 12 <input type="checkbox"/></p> <p>Cord prolapse 13 <input type="checkbox"/></p> <p>Anesthetic complications 14 <input type="checkbox"/></p> <p>Fetal distress 15 <input type="checkbox"/></p> <p>None 00 <input type="checkbox"/></p> <p>Other 16 <input type="checkbox"/></p> <p>(Specify)</p>	<p>43. CONGENITAL ANOMALIES OF CHILD (Check all that apply)</p> <p>Anencephalus 01</p> <p>Spina bifida/Meningocele 02</p> <p>Hydrocephalus 03</p> <p>Microcephalus 04</p> <p>Other central nervous system anomalies (Specify) 05</p> <p>Heart malformations 06</p> <p>Other circulatory/respiratory anomalies (Specify) 07</p> <p>Rectal atresia/stenosis 08</p> <p>Tracheo-esophageal fistula/Esophageal atresia 09</p> <p>Omphalocele/Gastroschisis 10</p> <p>Other gastrointestinal anomalies (Specify) 11</p> <p>Malformed genitalia 12</p> <p>Renal agenesis 13</p> <p>Other urogenital anomalies (Specify) 14</p> <p>Cleft lip/palate 15</p> <p>Polydactyly/Syndactyly/Adactyly 16</p> <p>Club foot 17</p> <p>Diaphragmatic hernia 18</p> <p>Other musculoskeletal/integumental anomalies (Specify) 19</p> <p>Down's syndrome 20</p> <p>Other chromosomal anomalies (Specify) 21</p> <p>None 00</p> <p>Other 22</p> <p>(Specify)</p>
<p>38b. OTHER RISK FACTORS FOR THIS PREGNANCY (Complete all items)</p> <p>Tobacco use during pregnancy Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p>Average number cigarettes per day _____</p> <p>Alcohol use during pregnancy Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p>Average number drinks per week _____</p> <p>Weight gained during pregnancy _____ lbs.</p>	<p>41. METHOD OF DELIVERY (Check all that apply)</p> <p>Vaginal 01 <input type="checkbox"/></p> <p>Vaginal birth after previous C-section 02 <input type="checkbox"/></p> <p>Primary C-section 03 <input type="checkbox"/></p> <p>Repeat C-section 04 <input type="checkbox"/></p> <p>Forceps 05 <input type="checkbox"/></p> <p>Vacuum 06 <input type="checkbox"/></p>	<p>42. ABNORMAL CONDITIONS OF THE NEWBORN (Check all that apply)</p> <p>Anemia (Hct. <39/Hgb. <13) 01 <input type="checkbox"/></p> <p>Birth injury 02 <input type="checkbox"/></p> <p>Fetal alcohol syndrome 03 <input type="checkbox"/></p> <p>Hyaline membrane disease/RDS 04 <input type="checkbox"/></p> <p>Meconium aspiration syndrome 05 <input type="checkbox"/></p> <p>Assisted ventilation < 30 min 06 <input type="checkbox"/></p> <p>Assisted ventilation ≥ 30 min 07 <input type="checkbox"/></p> <p>Seizures 08 <input type="checkbox"/></p> <p>None 00 <input type="checkbox"/></p> <p>Other 09 <input type="checkbox"/></p> <p>(Specify)</p>
<p>39. OBSTETRIC PROCEDURES (Check all that apply)</p> <p>Amniocentesis 01 <input type="checkbox"/></p> <p>Electronic fetal monitoring 02 <input type="checkbox"/></p> <p>Induction of labor 03 <input type="checkbox"/></p> <p>Stimulation of labor 04 <input type="checkbox"/></p> <p>Tocolysis 05 <input type="checkbox"/></p> <p>Ultrasound 06 <input type="checkbox"/></p> <p>None 00 <input type="checkbox"/></p> <p>Other 07 <input type="checkbox"/></p> <p>(Specify)</p>		

PHS-T-002
REV. 1/89

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

1978 revision. This revision provides a wide variety of new information on maternal and infant health characteristics, representing a significant departure from previous versions in both content and format. The most significant format change was the use of checkboxes to obtain detailed medical and health information about the mother and child. It has been demonstrated that this format produces higher quality and more complete information than do open-ended items.

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

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

wealth of information relevant to the etiology of low birth-weight and other adverse pregnancy outcomes.

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

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

Classification of data

One of the principal values of vital statistics data is realized through the presentation of rates that are computed by relating the vital events of a class to the population of a similarly defined class. Vital statistics and population statistics, therefore, must be classified according to similarly defined systems and tabulated in comparable groups. Even when the variables common to both, such as geographic area, age,

race, and sex, have been similarly classified and tabulated, differences between the enumeration method of obtaining population data and the registration method of obtaining vital statistics data may result in significant discrepancies.

The general rules used to classify geographic and personal items for live births are set forth in "Vital Statistics Classification and Coding Instructions for Live Birth Records, 1991," *NCHS Instruction Manual*, Part 3a. The classification of certain important items is discussed in the following pages.

Classification by occurrence and residence

All but three tabulations for States and other areas within the United States are by place of mother's residence. These three tables (1-26, 1-27, and 2-1) show births by place of occurrence. Births to U.S. residents occurring outside this country are not reallocated to the United States. In tabulations by place of residence, births occurring within the United States to U.S. citizens and to resident aliens are allocated to the usual place of residence of the mother in the United States, as reported on the birth certificate. Beginning in 1970 births to nonresidents of the United States occurring in the United States are excluded from these tabulations. From 1966 to 1969 births occurring in the United States to mothers who were nonresidents of the United States were considered as births to residents of the exact place of occurrence; in 1964 and 1965 all such births were allocated to "balance of county" of occurrence even if the birth occurred in a city. The change in coding beginning in 1970 to exclude births to nonresidents of the United States from residence data significantly affects the comparability of data with years before 1970 only for Texas.

For the total United States the tabulations by place of residence and by place of occurrence are not identical. Births to nonresidents of the United States are included in data by place of occurrence but excluded from data by place of residence, as previously indicated.

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

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

Geographic classification

The rules followed in the classification of geographic areas for live births are contained in the instruction manual

mentioned previously. The geographic code structure for 1991 is given in another manual, "Vital Records Geographic Classification, 1982," *NCHS Instruction Manual*, Part 8.

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

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

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

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

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

Population-size groups—Beginning in 1982 vital statistics data for cities and certain other urban places have been classified according to the population enumerated in the 1980 Census of Population. Data are available for individual cities and other urban places of 10,000 or more population. Data for the remaining areas not separately identified are shown in the tables under the heading "Balance of area" or "Balance of county." Classification of areas for 1970–81 was determined by the population enumerated in the 1970 Census of Population. As a result of changes in the enumerated population between 1970 and 1980, some urban places identified in previous reports are no longer included, and a number of other urban places have been added.

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

- Each town in New England, New York, and Wisconsin and each township in Michigan, New Jersey, and Pennsylvania that had no incorporated municipality as a subdivision and had either 25,000 inhabitants or more, or a population of 10,000 to 25,000 and a density of 1,000 persons or more per square mile.
- Each county in States other than those indicated above that had no incorporated municipality within its boundary and

had a density of 1,000 persons or more per square mile. (Arlington County, Virginia, is the only county classified as urban under this rule.)

- Each place in Hawaii with 10,000 or more population. (There are no incorporated cities in Hawaii.)

Race or national origin

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

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

A second factor has been the increasing incidence of interracial parentage. In 1991, 3.7 percent of births were to parents of different races, compared with just 1.0 percent in 1968. About half of these births were to white mothers and fathers of another race. There have been two major consequences of the increasing interracial parentage. One is the effect on birth rates by race. The number of white births under the former procedures has been arbitrarily limited to infants whose parents were both white (or one parent if the race of only one parent was reported). At the same time, the number of births of other races has been arbitrarily increased to include all births to white mothers and fathers of other races. Thus, if race of mother had been used, birth rates per 1,000 white women in a given age group would have been higher, while comparable rates for black women and women of other

racess would have been lower. The other consequence of increasing interracial parentage is the impact on the racial differential in various characteristics of births, particularly in cases where there is generally a large racial disparity, such as the incidence of low birthweight. In this instance, the racial differential is larger when the data are tabulated by race of mother rather than by race of child. The same effect has been noted for characteristics such as nonmarital childbearing, preterm births, late or no prenatal care, and low educational attainment of mother.

The third factor influencing the change is the growing proportion of births with race of father not stated, 16 percent in 1991 compared with 7 percent in 1968. This reflects the increase in the proportion of births to unmarried women; in many cases no information is reported on the father. These births are already assigned the race of the mother on a *de facto* basis. Tabulating births by race of mother will provide a more uniform approach, rather than a necessarily arbitrary combination of parental races.

The difference in the number of births classified by race of mother rather than by race of child varies among the specific groups, reflecting differences in the extent of mixed parentage. With the new classification by race of mother, the number of births classified as white will go up and the number for all other racial groups will go down. The percent difference in the number of live births by race of mother compared with race of child for 1991 are as follows:

White	2.1
Black.....	-5.9
American Indian.....	-20.7
Chinese.....	-6.1
Japanese.....	-16.1
Hawaiian.....	-31.0
Filipino.....	-5.1
Other Asian or Pacific Islander	-7.5

This change in the tabulation of births by race presents some problems when analyzing birth data by race, particularly trend data. The problem is likely to be acute for races other than white and black. To facilitate continuity and analysis of the data, key published tables for births in this volume, including *all* trend tables, show 1989–91 data for both race of mother and race of child. This makes it possible to distinguish the effects of this change from real changes in the data.

The categories for race or national origin are "White," "Black," "American Indian," "Chinese," "Japanese," "Hawaiian," "Filipino," "Other Asian or Pacific Islander," and "Other." Before 1978 the category "Other Asian or Pacific Islander" was not identified separately but included with "Other" races. The separation of this category allows identification of the category "Asian or Pacific Islander" by combining the new category "Other Asian or Pacific Islander" with Chinese, Japanese, Hawaiian, and Filipino.

White—The category "White" comprises births reported as white and births where race is reported as Hispanic. Before 1964 all births for which race or national origin was not stated were classified as white. Beginning in 1964 changes in the procedures for allocating race when race or national origin is

not stated have changed the composition of this category. (See discussion on “Race or national origin not stated.”)

All other—The category “All other” comprises black, American Indian, Chinese, Japanese, Hawaiian and part-Hawaiian, Filipino, other Asian or Pacific Islander including Asian Indian, and “Other.” Aleuts and Eskimos are included in “American Indian.”

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

Race or national origin not stated—If the race of the mother is not defined or not identifiable with one of the categories used in the classification and the race of the father is known, the race of the father is assigned to the mother. Where information for both parents is missing, the race of the mother is allocated electronically according to the specific race of the mother on the preceding record with a known race of mother. Data for both parents were missing for only 0.3 percent of birth certificates for 1991.

Nearly all statistics by race or national origin for the United States as a whole in 1962 and 1963 are affected by a lack of information for New Jersey, which did not report the race of the parents in those years. Birth rates by race for those years are computed on a population base that excluded New Jersey. For the method of estimating the U.S. population by age, sex, and race excluding New Jersey in 1962 and 1963, see page 4-8 in the Technical Appendix of volume I, *Vital Statistics of the United States, 1963*. Estimates of births to unmarried mothers by race for the United States, which include special estimates for New Jersey for 1962 and 1963, have been prepared and are shown in table 1-76 of this report.

Age of mother

Beginning in 1989 an item on the birth certificate asks for “Date of Birth.” In previous years, “Age (at time of this birth)” was requested. Not all States have revised this item for 1989, and therefore the age of mother either is derived from the reported month and year of birth or coded as stated on the certificate. The age of mother is edited for upper and lower limits. When the age of mother is computed to be under 10 years or 50 years or over, it is considered not stated and is assigned as described below.

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

The 1990 Census of Population derived age in completed years as of April 1, 1990, from the responses to questions on age at last birthday and month and year of birth, with the latter

given preference. In the 1960, 1970, and the 1980 Census of Population, age was also derived from month and year of birth. “Age in completed years” was asked in censuses before 1960. This was nearly the equivalent of the former birth certificate question, which the 1950 test of matched birth and census records confirms by showing a high degree of consistency in reporting age in these two sources (8).

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

Not stated date of birth of mother—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 “Vital Statistics Computer Edits for Natality Data,” *NCHS Instruction Manual*, Part 12, page 9.) In 1963 birth records with age not stated were allocated according to the age appearing on the record previously processed for a mother of identical race and parity (number of live births). For 1960–62 not stated ages were distributed in proportion to the known ages for each racial group. Before 1960 this was done for age-specific birth rates but not for the birth frequency tables, which showed a separate category for age not stated.

Age of father

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

Live-birth order and parity

Live-birth order and parity classifications shown in this volume refer to the total number of live births the mother has had including the 1991 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."

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

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

Date of last live birth

The date of last live birth was added to the U.S. Standard Certificate of Live Birth in 1968 for the purpose of providing information on child spacing. The interval since the last live birth is the difference between the date of last live birth and the date of present birth. For an interval to be computed, both the month and year of the last live birth must be valid. This interval is computed only for events to mothers who have had at least one previous live birth.

Births for which the interval since last live birth is not stated are excluded from the computation of percents and means.

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

Educational attainment

Data on the educational attainment of both parents were collected beginning in 1968 and tabulated for publication in 1969 for the first time. In 1991 data on education were obtained from 48 States, New York City, and the District of Columbia as indicated in table A.

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

equivalent grades in the American school system. Such entries are included in the category "Not stated."

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

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

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

Marital status

Beginning with 1980 data, national estimates of births to unmarried women are derived from two sources. In 1991 marital status was reported directly on the birth certificates of 44 States and the District of Columbia. In the remaining six States, which lack such an item (California, Connecticut, Michigan, Nevada, New York, and Texas), marital status is inferred from a comparison of the child's and parents' surnames. This procedure represents a substantial departure from the method used before 1980 to prepare national estimates of births to unmarried women, which assumed that the incidence of births to unmarried women in States with no direct question on marital status was the same as the incidence in reporting States in the same geographic division.

The current method uses related information on the birth certificate to improve the quality of national data on this topic, as well as to provide data for the individual nonreporting States. Beginning in 1980 a birth in a nonreporting State is classified as occurring to a married woman if the parents' surnames are the same, or if the child's and father's surnames are the same and the mother's current surname cannot be obtained from the informant item of the birth certificate. A birth is classified as occurring to an unmarried woman if the father's name is missing, if the parents' surnames are different, or if the father's and child's surnames are different and the mother's current surname is missing.

Because of the continued substantial increases in nonmarital childbearing throughout the 1980's, the data have been intensively evaluated in each year, 1985–91. There has been continuing concern that the current method might overstate the number of births to unmarried women because it incorporates data based on a comparison of surnames. This is because births to women who have retained their maiden surname as their legal surname after marriage would be classified as nonmarital births. The evaluation included comparisons of trends in all measures of births to unmarried mothers in States with a marital status item on the birth certificate and those States providing inferential data based on the comparison of surnames. Comparisons were made for white and black births separately and by age of mother. The results for years 1985–87

SECTION 4 - TECHNICAL APPENDIX - PAGE 8

Table A. Percent of Birth Records on Which Specified Items Were Not Stated: United States and Each State, Puerto Rico, Virgin Islands, and Guam: 1991

(Page 1 of 2)
[By place of residence]

Area	Number of births	Place of birth	Attendant at birth	Mother's birth-place	Father's age	Father's race	Hispanic origin		Educational attainment		Live-birth order	Interval since last live birth	Length of gestation	Month prenatal care began	Number of prenatal visits
							Mother	Father	Mother	Father					
Total of reporting areas ¹	4,110,907	0.0	0.1	0.2	16.9	15.7	0.9	16.1	1.4	17.9	0.5	3.6	1.0	2.1	2.9
Alabama	62,810	0.0	0.0	0.0	32.5	32.5	0.0	32.5	0.2	32.7	0.0	0.3	0.1	0.4	0.6
Alaska	11,866	-	.6	.1	14.2	14.8	.1	14.7	1.3	17.0	.1	2.0	.1	.9	1.4
Arizona	68,109	.0	.0	.2	24.8	24.7	.1	24.8	1.6	26.0	.1	1.7	.2	1.8	1.9
Arkansas	35,479	-	.0	.3	19.2	18.9	.0	18.9	.6	19.7	.1	1.7	.6	3.0	4.9
California	610,077	.0	.1	.0	7.4	3.3	.5	3.4	.7	5.0	.1	.5	* 3.8	.9	1.8
Colorado	53,813	-	.0	.0	22.0	22.8	.1	21.9	1.7	23.9	.1	1.3	.1	1.0	1.7
Connecticut	48,566	.0	.0	.3	11.9	13.2	6.5	16.8	9.7	19.8	10.6	16.4	7.2	8.4	12.1
Delaware	11,190	.0	.0	.1	31.4	31.4	.1	30.2	.2	32.2	.1	1.2	.2	.4	.5
District of Columbia	11,776	.0	.0	.1	56.8	56.7	.9	56.6	3.0	58.1	.4	4.4	1.0	6.9	7.9
Florida	194,001	.2	.0	.2	19.6	19.7	.1	20.5	.5	21.6	.1	1.1	.2	1.2	2.8
Georgia	110,288	.0	.0	.1	19.3	19.1	.3	20.6	1.0	21.8	.3	2.4	.2	1.7	2.2
Hawaii	19,922	-	-	.0	10.9	10.9	.0	10.7	.1	11.1	.0	.3	.7	7.7	6.6
Idaho	16,821	-	.1	.1	9.1	9.7	.2	9.4	2.8	12.8	.3	4.0	1.6	2.9	3.2
Illinois	194,231	.0	.2	.1	16.5	9.6	.8	9.4	.6	15.1	.1	1.2	.1	.7	1.1
Indiana	85,707	.0	.5	.2	15.3	14.6	.2	14.5	.5	15.4	.2	1.9	.1	.6	1.4
Iowa	38,989	-	.0	.1	17.4	16.5	.1	19.6	.3	20.8	.1	.8	.1	.9	2.1
Kansas	37,839	-	.0	.1	10.9	11.0	.1	11.3	.3	11.9	.1	.7	.1	.2	.9
Kentucky	54,326	.0	.2	.1	23.8	24.2	.1	24.3	.4	24.6	.1	1.0	.1	.6	1.0
Louisiana	72,193	-	.0	.0	30.2	30.2	.1	30.3	.2	30.5	.1	.4	.2	.7	1.2
Maine	16,753	.0	.2	.2	14.3	16.2	4.6	20.2	.6	16.3	.1	1.9	.3	.9	1.7
Maryland	79,184	.1	1.6	.8	6.1	6.4	3.1	6.7	5.8	12.7	3.6	9.0	5.4	10.9	17.6
Massachusetts	68,205	.0	.0	.1	14.2	12.7	.7	13.1	.5	13.4	.3	.9	.1	.4	.3
Michigan	150,198	.0	.2	.1	27.1	28.9	4.0	31.6	9.9	26.9	.3	2.5	.1	2.1	3.2
Minnesota	67,089	-	.0	.1	11.6	12.8	4.7	15.6	4.0	17.8	.7	1.5	1.6	5.6	6.1
Mississippi	43,204	.0	.0	.2	31.1	30.7	.0	31.6	.3	32.2	.0	.4	.2	.4	1.5
Missouri	78,677	-	.0	.6	24.6	23.3	.1	23.8	1.2	24.2	.1	1.5	.2	1.5	2.7
Montana	11,513	.0	.1	.1	11.4	11.6	3.8	15.1	.5	12.3	.0	2.0	.1	.7	.6
Nebraska	24,017	.0	.0	-	13.2	13.2	1.1	14.4	.1	13.5	.0	.2	.0	.2	.1
Nevada	22,026	-	.0	.5	22.5	22.6	.1	22.6	.9	23.7	.3	2.2	.1	.8	1.2
New Hampshire	16,341	.0	.0	-	10.0	10.1	-	-	.6	10.9	.1	2.3	.3	2.4	2.7
New Jersey	121,406	.2	.2	.9	12.7	13.4	.3	11.9	6.2	19.3	2.1	7.1	.6	5.1	6.6
New Mexico	27,800	-	.0	.6	26.0	24.0	-	24.0	2.9	27.2	.2	4.5	.1	2.6	3.1
New York	292,633	.0	.3	.4	19.9	19.6	3.3	22.6	* 4.7	* 29.0	1.3	20.6	.7	6.1	4.1
North Carolina	102,362	-	-	.0	19.9	19.6	.0	19.7	.2	20.1	.1	.3	.1	.3	.3
North Dakota	8,887	-	-	.0	11.0	12.5	.8	13.2	.1	12.6	.0	.3	.1	.7	.7
Ohio	165,795	.0	.0	.4	14.2	13.9	.1	13.6	.5	14.6	.1	3.0	.1	1.0	1.4
Oklahoma	47,795	.0	.0	.0	20.2	21.9	.1	21.8	1.2	23.0	3.2	5.2	3.3	5.0	7.1
Oregon	42,499	-	.0	.0	17.1	10.0	.1	9.9	1.7	13.7	.0	1.2	.1	.2	.2
Pennsylvania	168,851	.0	.0	.5	7.0	2.7	.2	2.3	1.3	6.4	.1	4.1	.1	1.5	1.4
Rhode Island	14,734	.0	.0	.4	14.5	14.6	4.6	18.4	1.2	15.8	.6	2.1	.7	3.1	3.5
South Carolina	57,572	.0	.0	.2	32.2	32.1	.1	31.1	1.5	33.2	.0	.5	.2	.6	.6
South Dakota	10,946	-	-	.0	12.9	13.0	.1	13.7	.3	14.0	.0	.4	.1	.4	.4
Tennessee	74,510	-	.0	.0	21.2	21.1	.0	21.1	.2	21.5	.0	.4	.2	1.7	1.3
Texas	317,746	.0	.1	.2	18.5	17.8	.1	17.8	1.2	19.4	.1	2.1	.5	2.2	3.9
Utah	36,033	.0	.0	.8	9.7	8.7	.1	7.6	1.1	10.3	.3	7.7	.5	2.1	2.2
Vermont	7,965	-	.0	.6	5.8	5.7	11.7	15.4	2.4	8.1	2.0	7.0	.3	4.5	3.0
Virginia	97,370	.0	.0	.2	25.5	24.1	.1	25.5	.5	26.0	.2	2.6	.2	.5	1.4
Washington	78,711	-	.5	.7	17.8	10.7	2.7	8.2	-	-	-	7.3	1.4	4.7	6.7
West Virginia	22,508	-	.0	.0	18.8	21.9	.0	21.9	.6	23.0	.1	1.3	.2	2.9	3.6
Wisconsin	72,071	-	.0	.0	16.8	23.7	.1	15.8	.1	23.9	.0	.3	.0	.1	.2
Wyoming	6,703	.1	-	.3	12.9	13.2	.1	12.8	.3	13.4	.0	2.1	.1	.6	1.1
Puerto Rico	64,373	.1	.2	.2	2.2	-	-	-	.3	2.6	.0	.3	* 1.1	.3	.1
Virgin Islands	2,427	.1	7.4	.4	23.3	28.5	3.3	31.6	1.9	26.7	.9	3.1	1.0	2.7	4.7
Guam	3,917	-	.3	.1	20.0	21.4	.2	22.9	.6	22.7	.3	1.8	.4	.7	.9

SECTION 4 - TECHNICAL APPENDIX - PAGE 9

Table A. Percent of Birth Records on Which Specified Items Were Not Stated: United States and Each State, Puerto Rico, Virgin Islands, and Guam: 1991—Con.

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

Area	Birth weight	Apgar score		Medical risk factors	Tobacco use	Alcohol use	Weight gain	Obstetric procedures	Complications of labor and/or delivery	Method of delivery	Abnormal conditions of newborn	Congenital anomalies
		1-minute	5-minute									
Total of reporting areas ¹	0.1	0.9	0.9	4.1	3.8	4.0	13.3	2.7	3.6	2.6	4.7	4.8
Alabama	0.1	0.6	0.6	0.3	0.3	0.3	4.8	0.1	0.2	0.2	0.2	0.1
Alaska	.1	.7	.7	.1	.3	.4	7.1	.1	.1	.4	.1	.1
Arizona	.3	.6	.6	.1	.8	.9	9.5	.0	.0	.3	.0	.8
Arkansas	.1	2.8	2.8	.3	.3	.4	9.8	.1	.2	.4	.3	.4
California	.0	...	...	.1	...	...	...	.1	.1	.1	2.0	.1
Colorado	.0	.6	.6	.1	1.4	1.5	9.3	.4	.1	.3	.3	.5
Connecticut	.1	6.4	6.4	24.1	23.9	25.8	45.6	22.3	24.0	16.1	30.0	32.3
Delaware	.1	.7	.6	1.8	.6	.8	2.7	1.3	1.9	.7	1.5	1.4
District of Columbia	.4	2.6	2.6	3.6	2.2	2.2	12.4	2.7	3.5	1.2	4.9	5.0
Florida	.1	.4	.4	.3	.2	.2	4.9	.5	.3	.3	.4	.4
Georgia	.1	.4	.4	1.7	.9	1.1	21.9	.1	.0	.5	.0	.0
Hawaii	.1	.7	.7	.1	1.1	1.4	15.0	.1	.0	.1	.1	.1
Idaho	.1	.6	.5	3.1	.3	1.0	11.1	3.0	3.1	.2	5.4	5.3
Illinois	.0	.4	.4	2.2	1.9	1.5	9.0	* 2.1	2.4	1.7	2.7	2.7
Indiana	.0	.8	.8	1.4	...	.5	3.1	.2	.3	.4	.3	.3
Iowa	.0	.3	.3	.1	.5	.6	4.5	.0	.1	.2	.1	.0
Kansas	.0	.2	.2	1.4	.2	.2	.4	.2	.3	1.6	.4	.4
Kentucky	.2	.4	.4	5.7	4.0	4.0	12.2	3.6	5.8	4.1	5.5	5.2
Louisiana	.1	.6	.6	.2	.6	1.0	6.6	.2	.3	.2	.3	.3
Maine	.4	.7	.7	.8	.5	.7	6.3	.5	.7	.7	.6	.4
Maryland	.2	3.3	3.3	36.4	27.3	28.1	40.2	31.6	36.3	16.9	42.8	43.9
Massachusetts	.1	.2	.2	.3	.3	.2	.7	.3	.3	.3	*.6	.7
Michigan	.2	.5	.5	4.5	3.8	3.7	11.5	.5	4.4	.7	6.3	6.7
Minnesota	.1	.9	.9	5.4	5.9	6.5	29.6	3.0	4.3	3.0	10.2	9.4
Mississippi	.1	.6	.6	.2	.3	.3	5.4	.1	.1	.1	.1	.1
Missouri	.1	.6	.5	.1	.4	.4	4.0	.1	.1	.3	.1	.1
Montana	.0	.3	.3	.1	.8	.9	1.8	.1	.0	.3	.1	.1
Nebraska	.1	.3	.3	.1	1.0	1.0	.7	.0	.1	.2	*.0	.1
Nevada	.1	1.8	1.8	.3	1.5	1.9	6.8	.2	.2	.4	.3	.3
New Hampshire	.2	.3	.3	.0	.2	.2	3.2	.0	.0	.3	.2	.2
New Jersey	.1	.4	.4	1.3	4.6	4.7	14.9	.4	.2	.2	.3	2.7
New Mexico	.1	3.7	4.0	.9	.5	.5	6.6	.3	.3	.5	.4	...
New York	.3	1.2	1.2	* 4.3	...	...	23.3	2.8	** 4.0	1.7	** 3.7	...
North Carolina	.1	.7	.6	.1	.3	.5	2.8	.1	.1	.4	.1	.1
North Dakota	.0	.3	.3	.7	.9	1.2	2.0	.2	.6	.4	.6	.5
Ohio	.1	.5	.5	.2	.8	.8	4.7	.2	.3	.4	.3	.3
Oklahoma	.5	5.9	6.0	19.3	13.4	13.9	25.5	17.4	18.6	13.0	23.7	24.1
Oregon	.0	.6	.6	.7	.7	.8	3.1	.1	.0	.2	.1	.1
Pennsylvania	.1	.4	.4	.3	.9	1.0	4.7	.2	.2	.2	.6	1.0
Rhode Island	1.0	1.0	1.0	8.8	1.9	2.1	6.7	8.3	7.9	7.0	15.4	15.7
South Carolina	.0	.3	.4	.1	.2	.2	2.5	.0	.1	.3	.1	.1
South Dakota	.1	.4	.4	.4	...	...	2.8	.4	.4	.5	2.3	2.4
Tennessee	.1	.4	.4	.1	.1	.1	13.6	.1	.1	.2	.0	.0
Texas	.2	...	...	* 21.4	11.8	12.9	33.4	11.3	** 17.0	15.1	* 20.6	21.4
Utah	.2	.5	.4	.4	.2	.3	2.1	.1	.3	.3	.8	1.0
Vermont	.4	.5	.5	1.0	1.9	3.7	1.7	.9	.9	.2	1.1	1.4
Virginia	.2	.7	.7	.4	1.0	1.0	9.7	.3	.4	.4	.5	.5
Washington	.2	.4	.4	10.6	11.1	14.8	22.0	9.7	10.6	9.0	14.2	14.9
West Virginia	.1	.3	.3	.6	1.6	2.3	18.7	.5	.6	.3	1.1	.8
Wisconsin	.0	.4	.4	.1	.2	.2	1.2	.1	.1	.1	** 4.4	.4
Wyoming	.0	.5	.5	.2	1.0	1.1	2.2	.2	.1	.1	.1	.1
Puerto Rico	.0	.4	.4	.1	.0	.0	.9	.1	.2	.0	.2	.2
Virgin Islands	.4	3.1	2.9	43.9	40.0	40.9	58.1	41.1	43.1	12.8	45.9	58.5
Guam	.3	1.8	1.6	1.0	1.2	1.3	9.5	1.2	1.1	.8	1.2	1.3

¹ Excludes data for Puerto Rico, Virgin Islands, and Guam.
² California and Puerto Rico report date last normal menses began but do not report clinical estimate of gestation.
³ Educational attainment is reported by New York city only.
⁴ Kansas does not report Rh sensitization.
⁵ New York city (but not New York State) reports these factors: genital herpes, hydramnios/oligohydramnios, hemoglobinopathy, incompetent cervix, previous infant 4000+ grams, and previous preterm or small-for-gestational-age infant.
⁶ Texas does not report genital herpes and uterine bleeding.
⁷ Arizona does not report cord prolapse.
⁸ Illinois does not report ultrasound.
⁹ Massachusetts, Nebraska, and Texas do not report birth injury.
¹⁰ Cephalopelvic disproportion is reported by New York city only.
¹¹ New York State and New York city do not report assisted ventilation less than 30 minutes and assisted ventilation of 30 minutes or more. New York city (but not New York State) reports fetal alcohol syndrome and meconium aspiration syndrome.
¹² Texas does not report cephalopelvic disproportion, anesthetic complications, and fetal distress.
¹³ Wisconsin does not report fetal alcohol syndrome.

were remarkably similar for both data sets. Nonmarital births increased at virtually the same rate for white and black women and for the various age-of-mother groups. In 1988 and 1989, however, nonmarital births increased at a slightly faster rate in the States with a marital status item on the birth certificate than in the States providing inferential data. This pattern was observed for both white and black births. In 1990 the pattern of change shifted again; births to unmarried women increased at a slightly faster rate in the States providing inferential data than in the States with a marital status item on the birth certificate. This was the case for births to unmarried white women, but births to unmarried black women increased slightly more in the reporting States than in the States providing inferential data. In 1991 the results were similar in the reporting States and in the States providing inferential data for all races and for white births. For black births nonmarital births increased in the reporting States while they declined slightly in States providing inferential data.

Due to a change in the procedures for reporting information on fathers in cases of nonmarital births in Texas, the number of births inferred to be nonmarital was lower in 1990 and 1991 than if there had been no change in the procedures.

No adjustments are made during the data processing for errors in the reporting of marital status on the birth records of the 44 reporting States and the District of Columbia because the extent of this reporting problem is unknown. When marital status is not stated on the birth certificate of a reporting area, the mother is considered married.

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

Rates for 1940 and 1950 are based on decennial census counts. In this volume, rates for 1955–91 are based on a smoothed series of population estimates (9). Because of sampling error, the original U.S. Bureau of the Census population estimates by marital status fluctuate erratically from year to year; therefore, they have been smoothed so that the rates do not show similar variations. The rates shown in this volume differ from those published in volumes of *Vital Statistics of the United States* before 1969, which were based on the original estimates provided annually by the U.S. Bureau of the Census. Birth rates by marital status for 1971–79 have been revised and differ from rates published before 1980 in volumes of *Vital Statistics of the United States* (see “Computation of rates and other measures”).

Place of delivery and attendant at birth

The 1989 revision of the U.S. Standard Certificate of Live Birth includes separate categories for freestanding birthing centers, the mother’s residence, and clinic or doctor’s office as the place of birth. In previous years place of birth was classified simply as either “In hospital” or “Not in hospital.” Births occurring in hospitals, institutions, clinics, centers, or homes were included in the category “In hospital.” In this context the word “homes” does not refer to the mother’s

residence but to an institution, such as a home for unmarried women. Birthing centers were included in either category, depending on each State’s assessment of the facility. Beginning in 1989 births occurring in clinics and in birthing centers not attached to a hospital are classified as “Not in hospital.” This change in classification may account in part for the lower proportion of “In hospital” births compared with previous years. (The change in classification of clinics should have minor impact because comparatively few births occur in these facilities, but the effect of any change in classification of freestanding birthing centers is unknown.)

Beginning in 1975 the attendant at birth and place of delivery items were coded independently, primarily to permit the identification of the person in attendance at hospital deliveries. This information for 1975–91 is presented in more detail in tables 1-87 and 1-88. The 1989 certificate includes separate classifications for “M.D.” (Doctor of Medicine), “D.O.” (Doctor of Osteopathy), “C.N.M.” (certified nurse midwife), “Other midwife,” and “Other” attendants. In earlier certificates births attended by certified nurse midwives were grouped with those attended by lay midwives. The new certificate also facilitates the identification of home births, births in freestanding birthing centers, and births in clinics or physician offices.

Data shown in this volume for the “In hospital” category for 1975–88 include all births in clinics or maternity centers, regardless of the attendant. Data for 1975–77 published before 1980 included clinic and center births in the category “In hospital” only when the attendant was a physician. Data shown for 1975–77 in tables 1-87 and 1-88, therefore, differ from data published before 1980. As a result of this change, for 1975 an additional 12,352 births are now classified as occurring in hospitals, raising the percent of births occurring in hospitals from 98.7 to 99.1. Similarly, for 1976 the number of births occurring in hospitals increased by 14,133 and the percent in hospitals raised from 98.6 to 99.1; for 1977 the increase is 15,937 and the percent in hospitals raised from 98.5 to 99.0. For 1974 and earlier the “In hospital” category includes all births in hospitals or institutions and births in clinics, centers, or maternity homes only when attended by physicians.

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

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

In 1991 there were 1,720 in-hospital births to mothers residing in Illinois, where the attendant was classified as a

midwife other than a certified nurse-midwife. Although almost all of these births were delivered by midwives certified by the American College of Nurse-Midwives, Illinois does not license or certify midwives, and hence the births were classified in the "Other midwife" category. The 1,720 in-hospital "Other midwife" Illinois births represent 65 percent of the 2,663 in-hospital "Other midwife" births in the United States in 1991.

Birthweight

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

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

Less than 500 grams	= 1 lb 1 oz or less
500–999 grams	= 1 lb 2 oz–2 lb 3 oz
1,000–1,499 grams	= 2 lb 4 oz–3 lb 4 oz
1,500–1,999 grams	= 3 lb 5 oz–4 lb 6 oz
2,000–2,499 grams	= 4 lb 7 oz–5 lb 8 oz
2,500–2,999 grams	= 5 lb 9 oz–6 lb 9 oz
3,000–3,499 grams	= 6 lb 10 oz–7 lb 11 oz
3,500–3,999 grams	= 7 lb 12 oz–8 lb 13 oz
4,000–4,499 grams	= 8 lb 14 oz–9 lb 14 oz
4,500–4,999 grams	= 9 lb 15 oz–11 lb 0 oz
5,000 grams or more	= 11 lb 1 oz or more

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

After data classified by pounds and ounces are converted to grams, median weights are computed and rounded before publication. To establish the continuity of class intervals needed to convert pounds and ounces to grams, the end points of these intervals are assumed to be half an ounce less at the lower end and half an ounce more at the upper end. For example, 2 lb 4 oz–3 lb 4 oz is interpreted as 2 lb 3 1/2 oz–3 lb 4 1/2 oz.

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

Period of gestation

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

Births occurring before 37 completed weeks of gestation are considered to be "preterm" or "premature" for purposes

of classification. At 37–41 weeks gestation, births are considered to be "term," and at 42 completed weeks and over, "postterm." These distinctions are according to the ICD-9 definitions.

The 1989 revision of the U.S. Standard Certificate of Live Birth includes a new item, "clinical estimate of gestation," that is being compared with length of gestation computed from the LMP date when the latter appears to be inconsistent with birthweight. This is done for normal-weight births of apparently short gestations and very low-birthweight births reported to be full term. The clinical estimate also was used if the date of the LMP was not reported. The period of gestation for 4.3 percent of the births in 1991 was based on the clinical estimate of gestation. For 96 percent of these records the clinical estimate was used because the LMP date was not reported. For the remaining 4 percent the clinical estimate was used because it was compatible with the reported birthweight, whereas the LMP-computed gestation was not. In cases where the reported birthweight was inconsistent with both the LMP-computed gestation and the clinical estimate of gestation, the LMP-computed gestation was used and birthweight was reclassified as "not stated." These changes result in only a very small discontinuity in the data. For further information on the use of the clinical estimate of gestation see "Computer Edits for Natality Data, Effective 1989," *NCHS Instruction Manual*, Part 12, pages 34–36.

Before 1981 the period of gestation was computed only when there was a valid month, day, and year of LMP. However, length of gestation could not be determined from a substantial number of live-birth certificates each year because the day of LMP was missing. Beginning in 1981 weeks of gestation have been imputed for records with missing day of LMP when there is a valid month and year. Each such record is assigned the gestational period in weeks of the preceding record that has a complete LMP date with the same computed months of gestation and the same 500-gram birthweight interval. The effect of the imputation procedure is to increase slightly the proportion of preterm births and to lower the proportion of births at 39, 40, 41, and 42 weeks of gestation. A more complete discussion of this procedure and its implications is presented in a previous report (10).

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

Month of pregnancy prenatal care began

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

Number of prenatal visits

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

Apgar score

One- and 5-minute Apgar scores were added to the U.S. Standard Certificate of Live Birth in 1978 to evaluate the condition of the newborn infant at 1 and 5 minutes after birth. The Apgar score is a useful measure of the need for resuscitation and a predictor of the infant's chances of surviving the first year of life. It is a summary measure of the infant's condition based on heart rate, respiratory effort, muscle tone, reflex irritability, and color. Each of these factors is given a score of 0, 1, or 2; the sum of these 5 values is the Apgar score, which ranges from 0 to 10. A score of 10 is optimum, and a low score raises some doubts about the survival and subsequent health of the infant. In 1991 the 1- and 5-minute Apgar scores were included on the birth certificates of 48 States and the District of Columbia.

Tobacco and alcohol use during pregnancy

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

Data on tobacco use were collected by 46 States and the District of Columbia in 1991. Information on alcohol use was included on the certificates of 47 States and the District of Columbia. See table A for a listing of reporting areas.

Weight gained during pregnancy

Weight gain is reported in pounds. A loss of weight is reported as zero gain. Computations of median weight gain were based on ungrouped data.

This item was included on the certificates of 49 States and the District of Columbia; California did not report this information.

Medical risk factors for this pregnancy

In 1991 this item, which includes 16 specific medical risk factors, was included on the birth certificates of all States and

the District of Columbia. Three States, however, did not include all factors on their birth certificates. See table A for more detailed information.

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

The following definitions are adapted and abbreviated from a set of definitions compiled by a committee of Federal and State health statistics officials for the Association for Vital Records and Health Statistics (11).

Definitions of medical terms

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

Cardiac disease—Disease of the heart.

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

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

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

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

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

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

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

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

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

Previous infant 4,000+ grams—The birthweight of a previous live-born child was over 4,000 grams (8 lbs 13 oz).

Previous preterm or small-for-gestational-age infant—Previous birth of an infant prior to term (before 37 completed weeks of gestation) or of an infant weighing less than the 10th percentile for gestational age using a standard weight-for-age chart.

Renal disease—Kidney disease.

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

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

Obstetric procedures

This item includes six specific obstetric procedures. Birth records with “Obstetric procedures” left blank are considered “not stated.” Data on obstetric procedures were reported by all States and the District of Columbia. Illinois did not report ultrasound.

The following definitions are adapted and abbreviated from a set of definitions compiled by a committee of Federal and State health statistics officials for the Association for Vital Records and Health Statistics (11).

Definitions of medical terms

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

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

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

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

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

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

Complications of labor and/or delivery

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

All States and the District of Columbia included this item on their birth certificates. However, not all of the complications were reported by all reporting States (see table A).

The following definitions are adapted and abbreviated from a set of definitions compiled by a committee of Federal and State health statistics officials for the Association for Vital Records and Health Statistics (11).

Definitions of medical terms

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

Meconium, moderate/heavy—Meconium consists of undigested debris from swallowed amniotic fluid, various products of secretion, excretion, and shedding by the gastrointestinal tract; moderate to heavy amounts of meconium in the amniotic fluid noted during labor and/or delivery.

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

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

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

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

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

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

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

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

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

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

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

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

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

Abnormal conditions of the newborn

This item provides information on eight specific abnormal conditions. More than one abnormal condition may be reported for a given birth or “None” may be selected. If the item is not completed it is tabulated as “not stated.” This item was included on the birth certificates of all States and the District of Columbia in 1991. However, several States did not include all conditions (see table A).

The following definitions are adapted and abbreviated from a set of definitions compiled by a committee of Federal and State health statistics officials for the Association for Vital Records and Health Statistics (11).

Definitions of medical terms

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

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

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

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

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

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

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

Seizures—A seizure of any etiology.

Congenital anomalies of child

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

The following definitions are adapted and abbreviated from a set of definitions compiled by a committee of Federal and State health statistics officials for the Association for Vital Records and Health Statistics (11).

Definitions of medical terms

Anencephalus—Absence of the cerebral hemispheres.

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

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

Microcephalus—A significantly small head.

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

Heart malformations—Congenital anomalies of the heart.

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

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

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

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

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

Malformed genitalia—Congenital anomalies of the reproductive organs.

Renal agenesis—One or both kidneys are completely absent.

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

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

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

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

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

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

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

Other chromosomal anomalies—All other chromosomal aberrations.

Method of delivery

The new birth certificate contains a checkbox item on method of delivery. The choices include vaginal delivery, with the additional options of forceps, vacuum, and vaginal birth after previous cesarean section (VBAC), as well as a choice of primary or repeat cesarean. When only forceps, vacuum, or VBAC is checked, a vaginal birth is assumed. In 1991 this information was collected from the birth certificates of all States and the District of Columbia.

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

Hispanic parentage

The 1989 revision of the U.S. Standard Certificate of Live Births includes items to identify the Hispanic origin of the

parents. Concurrent with the 1978 revision of the U.S. Certificate of Live Birth, NCHS recommended that items to identify the Hispanic or ethnic origin of the newborn's parents be included on birth certificates and has tabulated and evaluated these data from the reporting States. Forty-nine States and the District of Columbia reported Hispanic origin of the parents for 1991. New Hampshire did not report Hispanic origin.

In computing birth and fertility rates for the Hispanic population, births in New Hampshire and births with origin of mother not stated are included with non-Hispanic births rather than being distributed. Thus, rates for the Hispanic population are underestimates of the true rates to the extent that the births in the reporting area with origin of mother not stated (0.9 percent) were actually to Hispanic mothers. To compute rates for the Hispanic population for the United States as a whole, estimates by Hispanic origin and age of mother were made by inflating the figure for the reporting areas by the proportion of the U.S. Hispanic population in the nonreporting State of New Hampshire. This procedure was performed separately for each Hispanic origin subgroup. The resulting rates are, therefore, estimated for the United States.

The population with origin not stated was imputed. The effect on the rates is believed to be small.

Quality of data

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

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

Completeness of registration

An estimated 99.3 percent of all births occurring in the United States in 1991 were registered; for white births registration was 99.4 percent complete and for all other births, 98.5 percent complete. These estimates are based on the results of the 1964–68 test of birth-registration completeness according to place of delivery (in or out of hospital) and race and on the 1989 proportions of births in these categories. The primary purpose of the test was to obtain current measures of registration completeness for births in and out of hospital by race on a national basis. Data for States were not available as they had been from the previous birth-registration tests in 1940 and 1950. A detailed discussion of the method and results of the 1964–68 birth-registration test is available (12).

The 1964–68 test has provided an opportunity to revise the estimates of birth-registration completeness for the years

since the previous test in 1950 to reflect the improvement in registration. This has been done using registration completeness figures from the two tests by place of delivery and race. Estimates of registration completeness for four groups (based on place of delivery and race) for 1951–65 were computed by interpolation between the test results. (It was assumed that the data from the more recent test are for 1966, the midpoint of the test period.) The results of the 1964–68 test are assumed to prevail for 1966 and later years. These estimates were used with the proportions of births registered in these categories to obtain revised numbers of births adjusted for underregistration for each year. The overall percent of birth-registration completeness by race was then computed. The figures for 1951–68 shown in table 1-3 differ slightly from those shown in annual reports for years prior to 1969.

Data adjusted for underregistration for 1951–59 shown in tables 1-1, 1-4, 1-5, 1-9, 1-10, and 1-11 have been revised to be consistent with the 1964–68 test results and differ slightly from data shown in annual reports for years before 1969. For these years the published number of births and birth rates for both racial groups have been revised slightly downward because the 1964–68 test indicated that previous adjustments to registered births were slightly inflated. Because registration completeness figures by age of mother and by live-birth order are not available from the 1964–68 test, it must be assumed that the relationships among these variables have not changed since 1950.

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

The age-specific rates used in the cohort fertility tables (tables 1-15 through 1-22) are an exception to the above statement. These rates are computed from births corrected for underregistration and population estimates adjusted for underenumeration and misstatement of age. Adjusted birth and population estimates are used for the cohort rates because they are an integral part of a series of rates, estimated with a consistent methodology. It was considered desirable to maintain consistency with respect to the cohort rates, even though it means that they will not be precisely comparable with other rates shown for 5-year age groups.

Completeness of reporting

Interpretation of these data must include evaluation of item completeness. The percent "not stated" is one measure of

the quality of the data. Completeness of reporting varies among items and States. See table A for the percent of birth records on which specified items were not stated.

Quality control procedures

States in the Vital Statistics Cooperative Program are required to have an error rate of less than 2.0 percent for each item for 3 consecutive data months during the initial qualifying period. Once a State is qualified, NCHS monitors the quality of data received through independent verification of a sample of records to ensure that the item error rate is not more than approximately 4 percent. In addition, there is verification at the State level before NCHS is sent the data.

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

Small frequencies

The numbers of births reported for an area represent complete counts. As such, they are not subject to sampling error, although they are subject to errors in the registration process. However, when the figures are used for analytical purposes, such as the comparison of rates over a period of time or for different areas, the number of events that actually occurred may be considered as one of a large series of possible results that could have arisen under the same circumstances. The probable range of values may be estimated from the actual figures according to certain statistical assumptions.

In general, distributions of vital events may be assumed to follow the binomial distribution. Estimates of standard errors and tests of significance under this assumption are described in most standard statistics texts. When the number of events is large, the relative standard error, expressed as a percent of the number or rate, is usually small.

When the number of events is small (fewer than 100) and the probability of such an event is small, considerable caution must be observed in interpreting the conditions described by the figures. Events of rare nature may be assumed to follow a Poisson probability distribution. For this distribution, a simple approximation may be used to estimate the error as follows:

If N is the number of births and R is the corresponding rate, the chances are 19 in 20 that

1. The "true" number of events lies between

$$N - 2\sqrt{N} \quad \text{and} \quad N + 2\sqrt{N}$$

2. The "true" rate lies between

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

If the rate R_1 corresponding to N_1 events is compared with the rate R_2 corresponding to N_2 events, the difference between the two rates may be regarded as statistically significant if it exceeds

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

For example, suppose that the observed birth rate for area A was 15.0 per 1,000 population and that this rate was based on 50 recorded births. Given prevailing conditions, the chances are 19 in 20 that the "true" or underlying birth rate for that area lies between 10.8 and 19.2 per 1,000 population. Let it be further supposed that the birth rate for area A of 15.0 per 1,000 population is being compared with a rate of 20.0 per 1,000 population for area B, which is based on 40 recorded births. Although the difference between the rates for the two areas is 5.0, this difference is less than twice the standard error of the difference

$$2\sqrt{\frac{(15.0)^2}{50} + \frac{(20.0)^2}{40}}$$

of the two rates that is computed to be 7.6. From this, it is concluded that the difference between the rates for the two areas is not statistically significant.

Computation of rates and other measures

Population bases

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

The resident population of the birth- and death-registration States for 1900–32 and for the United States for 1900–91 is shown in table 4-1. In addition, the population including Armed Forces abroad is shown for the United States. Table B shows the sources for these populations.

In both the 1980 and 1990 censuses, a substantial number of persons did not specify a racial group that could be classified as any of the White, Black, American Indian, Eskimo, Aleut, Asian, or Pacific Islander categories on the census form (13). In 1980 the number of persons of "other" race was 6,758,319; in 1990 it was 9,804,847. In both censuses, the large majority of these persons were of Hispanic origin (based on response to a separate question on the form), and many wrote in their Hispanic origin, or Hispanic origin type (for example, Mexican, Puerto Rican) as their race. In both 1980 and 1990, persons of unspecified race were allocated to one of the four tabulated racial groups (white, black, American Indian, Asian or Pacific Islander), based on their

SECTION 4 – TECHNICAL APPENDIX – PAGE 17

Table B. Sources for resident population and population including Armed Forces abroad: Birth- and death-registration States, 1900–1932, and United States, 1900–1991

Year	Source
1991	U.S. Bureau of the Census, Unpublished data consistent with <i>Current Population Reports</i> , Series P-25, No. 1095, Feb. 1993.
1990	U.S. Bureau of the Census, Unpublished data from the 1990 census. 1990 CPH-L-74 and unpublished data consistent with <i>Current Population Reports</i> , Series P-25, No. 1095, Nov. 1992.
1989	U.S. Bureau of the Census, <i>Current Population Reports</i> , Series P-25, No. 1057, Mar. 1990.
1988	U.S. Bureau of the Census, <i>Current Population Reports</i> , Series P-25, No. 1045, Jan. 1990.
1986–87	U.S. Bureau of the Census, <i>Current Population Reports</i> , Series P-25, No. 1022, Mar. 1988.
1985	U.S. Bureau of the Census, <i>Current Population Reports</i> , Series P-25, No. 1000, Feb. 1987.
1984	U.S. Bureau of the Census, <i>Current Population Reports</i> , Series P-25, No. 985, Apr. 1986.
1983	U.S. Bureau of the Census, <i>Current Population Reports</i> , Series P-25, No. 965, Mar. 1985.
1982	U.S. Bureau of the Census, <i>Current Population Reports</i> , Series P-25, No. 949, May 1984.
1981	U.S. Bureau of the Census, <i>Current Population Reports</i> , Series P-25, No. 929, May 1983.
1980	U.S. Bureau of the Census, <i>U.S. Census of Population: 1980, Number of Inhabitants</i> , PC80-1-A1, United States Summary, 1983.
1971–79	U.S. Bureau of the Census, <i>Current Population Reports</i> , Series P-25, No. 917, July 1982.
1970	U.S. Bureau of the Census, <i>U.S. Census of Population: 1970, Number of Inhabitants</i> , Final Report PC(1)-A1, United States Summary, 1971.
1961–69	U.S. Bureau of the Census, <i>Current Population Reports</i> , Series P-25, No. 519, Apr. 1974.
1960	U.S. Bureau of the Census, <i>U.S. Census of Population: 1960, Number of Inhabitants</i> , PC(1)-A1, United States Summary, 1964.
1951–59	U.S. Bureau of the Census, <i>Current Population Reports</i> , Series P-25, No. 310, June 30, 1965.
1940–50	U.S. Bureau of the Census, <i>Current Population Reports</i> , Series P-25, No. 499, May 1973.
1930–39	U.S. Bureau of the Census, <i>Current Population Reports</i> , Series P-25, No. 499, May 1973, and National Office of Vital Statistics, <i>Vital Statistics Rates in the United States, 1900–1940, 1947</i> .
1920–29	National Office of Vital Statistics, <i>Vital Statistics Rates in the United States, 1900–1940, 1947</i> .
1917–19	Same as for 1930–39.
1900–16	Same as for 1920–29.

response to the Hispanic origin question. These four race categories conform with OMB Directive 15 and are more consistent with the race categories in vital statistics.

In 1980 the allocation of unspecified race was carried out using cross-tabulations of age, sex, race, type of Hispanic origin, and county of residence. Persons of Hispanic origin and unspecified race were allocated to either white or black, based on their Hispanic origin type. Persons of “other” race and Mexican origin were categorically assumed to be white, while persons in other Hispanic categories were distributed to white and black pro rata within the county-age-sex group. For “other-not-specified” persons who were not Hispanic, race was allocated to white, black, or Asian and Pacific Islander, based on proportions gleaned from sample data. The 20-percent sample (respondents who were enumerated on the longer census form) provided a highly detailed coding of race, which allowed identification of otherwise unidentifiable responses with a specified race category. Allocation proportions were thus established at the State level, which were used to distribute the non-Hispanic persons of “other” race in the 100-percent tabulations.

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

cated primarily on the basis of geography (District Office), rather than detailed characteristic.

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

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

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

Age	Total			White			Black		
	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female
All ages.....	0.9815	0.9721	0.9906	0.9802	0.9728	0.9873	0.9432	0.9151	0.9699
10-14 years.....	0.9882	0.9891	0.9873	0.9830	0.9841	0.9818	0.9591	0.9586	0.9595
15-19 years.....	1.0166	1.0198	1.0133	1.0094	1.0128	1.0059	0.9988	1.0016	0.9959
20-24 years.....	1.0002	0.9987	1.0017	0.9975	0.9985	0.9966	0.9593	0.9432	0.9753
25-29 years.....	0.9591	0.9439	0.9748	0.9558	0.9441	0.9681	0.9123	0.8732	0.9510
30-34 years.....	0.9687	0.9487	0.9892	0.9669	0.9518	0.9829	0.9129	0.8599	0.9651
35-39 years.....	0.9790	0.9628	0.9954	0.9764	0.9643	0.9888	0.9303	0.8908	0.9778
40-44 years.....	0.9901	0.9758	1.0044	0.9875	0.9764	0.9988	0.9410	0.8943	0.9850
45-49 years.....	0.9775	0.9633	0.9916	0.9762	0.9648	0.9877	0.9302	0.8807	0.9762
50-54 years.....	...	0.9623	...	...	0.9651	...	...	0.8802	...
55 years and older.....	...	0.9758	...	...	0.9783	...	...	0.9294	...
15-44 years.....	...	...	0.9954	...	...	0.9890	...	...	0.9739
15-54 years.....	...	0.9710	...	...	0.9710	...	...	0.9046	...

Populations for 1991—The population of the United States by age, race, and sex, and the population for each State are shown in tables 4-2 and 4-3. Monthly population figures were published in *Current Population Reports*, Series P-25, Number 1097.

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

Population estimates for 1981-89—Birth rates for 1981-89 (except those for cohorts of women in tables 1-15 through 1-22) have been revised, based on revised population estimates that are consistent with the 1990 census levels, and thus may differ from rates published in volumes of *Vital Statistics of the United States* for these years. The 1990 census counted approximately 1.5 million fewer persons than had earlier been estimated for April 1, 1990. The revised estimates for the United States by age, race, and sex were published by the U.S. Bureau of the Census in *Current Population Reports*, Series P-25, Number 1095. Population estimates by month are based on data published in *Current Population Reports*, Series P-25, Number 1094 and unpublished data. Unpublished revised estimates for States were obtained from the U.S. Bureau of the Census.

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

Population estimates for 1971-79—Birth rates for 1971-79 (except those for cohorts of women in tables 1-15 through 1-22) have been revised, based on revised population estimates that are consistent with the 1980 census levels, and thus may differ from rates published in volumes of *Vital Statistics of the United States* for these years. The 1980 census counted approximately 5.5 million more persons than had earlier been estimated for April 1, 1980 (14). The revised estimates for the

United States by age, race, and sex were published by the U.S. Bureau of the Census in *Current Population Reports*, Series P-25, Number 917. Population estimates by month are based on data published in *Current Population Reports*, Series P-25, Number 899. Unpublished revised estimates for States were obtained from the U.S. Bureau of the Census.

Population estimates for 1961-69—Birth rates in this volume for 1961-69 (except for those shown in tables 1-5 and 1-6) are based on revised estimates of the population and thus may differ slightly from rates published before 1976. The revised estimates used in computing these rates were published in *Current Population Reports*, Series P-25, Number 519. The rates shown in tables 1-5 and 1-6 for 1961-64 are based on revised estimates of the population published in *Current Population Reports*, Series P-25, Numbers 321 and 324 and may differ slightly from rates published in those years.

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

Net census undercounts and overcounts

The U.S. Bureau of the Census has conducted extensive research to evaluate the coverage of the U.S. population (including undercount, overcount, and misstatement of age, race, and sex) in the last five decennial censuses—1950, 1960, 1970, 1980, and 1990. These studies provide estimates of the national population that was not enumerated or overenumerated in the respective censuses, by age, race, and sex (15-17). The report for 1990 (unpublished data from the Bureau of the Census) includes estimates of net underenumeration and overenumeration for age, sex, and racial subgroups of the national population, modified for race consistency with previous population counts as described in the section "Population bases."

These studies indicate that there is differential coverage in the censuses among the population subgroups; that is, some

age, race, and sex groups are more completely enumerated than others. To the extent that these estimates of overcounts or undercounts are valid, that they are substantial, and that they vary among subgroups and geographic areas, census miscounts can have consequences for vital statistics measures (15). However, the effects of undercounts in the census are reduced to the extent that there is underregistration of births. If these two factors are of equal magnitude, rates based on unadjusted populations are more accurate than those based on adjusted populations because the births have not been adjusted for underregistration.

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

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

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

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

Cohort fertility tables

The various fertility measures shown for cohorts of women in tables 1-15 through 1-22 are computed from births adjusted for underregistration and population estimates corrected for underenumeration and misstatement of age. The data shown in this volume are not consistent with data published in annual reports before 1974. These data use revised population estimates prepared by the U.S. Bureau of the Census and have been expanded to include data for the two major racial groups. Heuser has prepared a detailed description of the methods used in deriving these measures as well as more detailed data for earlier years (18).

Parity distribution—The percent distribution of women by parity (number of children ever born alive to mother) shown in tables 1-17 and 1-21 is derived from cumulative birth rates by order of birth, which are shown in tables 1-16 and 1-20. The percent of zero-parity women is found by subtracting the cumulative first birth rate from 1,000 and

dividing by 10. The proportions of women at parities one through six are found from the following formula:

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

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

Birth probabilities—Shown in tables 1-18 and 1-22, birth probabilities indicate the likelihood that a woman of a certain parity and age at the beginning of the year will have a child during the year. Birth probabilities differ from central birth rates in that the denominator for birth probabilities is specific for parity as well as for age.

Age-sex-adjusted birth rates

The age-sex-adjusted birth rates shown in table 1-4 are computed by the direct method. The age distribution of women aged 10–49 years as enumerated in 1940 and the total population of the United States for that year are used as the standard populations. The birth rates by age of mother and race that are used to compute these adjusted rates are shown in table 1-9. The age-sex-adjusted birth rates show differences in the level of fertility independent of differences in the age and sex composition of the population. It is important *not* to confuse these adjusted rates with the crude rates shown in other tables.

Total fertility rate

The total fertility rate is the sum of the birth rates by age of mother (in 5-year age groups) multiplied by 5. It is an age-adjusted rate because it is based on the assumption that there are the same number of women in each age group. In table 1-9 the rate of 2,073 in 1991, 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 1991, they would have a total of 2,073 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.

Intrinsic vital rates

The intrinsic vital rates shown in table 1-6 are calculated from a stable population. A stable population is that hypothetical population, closed to external migration, that would become fixed in age-sex structure after repeated applications of a constant set of age-sex specific birth and death rates. For the mathematical derivation of intrinsic vital rates, see pages 4-13 and 4-14 in the Technical Appendix of volume I, *Vital Statistics of the United States, 1962*. The technique of calculating intrinsic vital rates is described by Barclay (19).

Seasonal adjustment of rates

The seasonally adjusted birth and fertility rates shown in table 1-8 are computed from the X-11 variant of Census Method II (20). This method of seasonal adjustment used since

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

Computation of percents, medians, and means

Percent distributions, medians, and means are computed using only events for which the characteristic is reported. The “Not stated” category is subtracted from the total before computation of these measures.

The asterisk (*) indicates that the numerator and/or denominator number is less than 20.

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SYMBOLS USED IN TABLES

Data not available	---
Category not applicable.....	...
Quantity zero.....	—
Quantity more than 0 but less than 0.05.....	0.0
Figure does not meet standards of reliability or precision.....	*

SECTION 4 - TECHNICAL APPENDIX - PAGE 21

Table 4-1. Population of Birth- and Death-Registration States, 1900-1932, and United States, 1900-1991

[Population enumerated as of April 1 for 1940, 1950, 1960, 1970, 1980, and 1990 and estimated as of July 1 for all other years]

Year	United States ¹		Year	United States ¹		Birth-registration States		Death-registration States	
	Population including Armed Forces abroad	Population residing in area		Population including Armed Forces abroad	Population residing in area	Number of States ²	Population residing in area	Number of States ²	Population residing in area
1991	252,688,000	252,177,000	1945	139,928,000	132,481,000	...	...	...	...
1990	249,225,000	248,709,873	1944	138,397,000	132,885,000	...	...	...	...
1989 ³	247,342,000	246,819,000	1943	136,739,000	134,245,000	...	...	...	...
1988 ³	245,021,000	244,499,000	1942	134,860,000	133,920,000	...	...	...	...
1987 ³	242,804,000	242,289,000	1941	133,402,000	133,121,000	...	...	...	...
1986 ³	240,651,000	240,133,000	1940	131,820,000	131,669,275	...	...	...	...
1985 ³	238,466,000	237,924,000	1939	131,028,000	130,879,718	...	...	...	...
1984 ³	236,348,000	235,825,000	1938	129,969,000	129,824,939	...	...	...	...
1983 ³	234,307,000	233,792,000	1937	128,961,000	128,824,829	...	...	...	...
1982 ³	232,188,000	231,664,000	1936	128,181,000	128,053,180	...	...	...	...
1981 ³	229,966,000	229,466,000	1935	127,362,000	127,250,232	...	...	...	...
1980	227,061,000	226,545,805	1934	126,485,000	126,373,773	...	...	...	...
1979	225,055,000	224,567,000	1933	125,690,000	125,578,763	...	...	...	...
1978	222,585,000	222,095,000	1932	124,949,000	124,840,471	47	118,903,899	47	118,903,899
1977	220,239,000	219,760,000	1931	124,149,000	124,039,648	46	117,455,229	47	118,148,987
1976	218,035,000	217,563,000	1930	123,188,000	123,076,741	46	116,544,946	47	117,236,278
1975	215,973,000	215,465,000	1929	---	121,769,939	46	115,317,450	46	115,317,450
1974	213,854,000	213,342,000	1928	---	120,501,115	44	113,636,160	44	113,636,160
1973	211,909,000	211,357,000	1927	---	119,038,062	40	104,320,830	42	107,084,532
1972	209,896,000	209,284,000	1926	---	117,399,225	35	90,400,590	41	103,822,683
1971	207,661,000	206,827,000	1925	---	115,831,963	33	88,294,564	40	102,031,555
1970	204,270,000	203,211,926	1924	---	114,113,463	33	87,000,295	39	99,318,098
1969	202,677,000	201,385,000	1923	---	111,949,945	30	81,072,123	38	96,788,197
1968	200,706,000	199,399,000	1922	---	110,054,778	30	79,560,746	37	92,702,901
1967	198,712,000	197,457,000	1921	---	108,541,489	27	70,807,090	34	87,814,447
1966	196,560,000	195,576,000	1920	---	106,466,420	23	63,597,307	34	86,079,283
1965	194,303,000	193,526,000	1919	---	105,063,000	22	61,212,076	33	83,157,982
1964	191,889,000	191,141,000	1918	---	104,550,000	20	55,153,782	30	79,008,412
1963	189,242,000	188,483,000	1917	---	103,414,000	20	55,197,952	27	70,234,775
1962	186,538,000	185,771,000	1916	---	---	11	32,944,013	26	66,971,177
1961	183,691,000	182,992,000	1915	---	100,549,013	10	31,096,697	24	61,894,847
1960	179,933,000	179,323,175	1914	---	99,117,567	...	...	24	60,963,309
1959	177,264,000	176,513,000	1913	---	97,226,814	...	...	23	58,156,740
1958	174,141,000	173,320,000	1912	---	95,331,300	...	...	22	54,847,700
1957	171,274,000	170,371,000	1911	---	93,867,814	...	...	22	53,929,644
1956	168,221,000	167,306,000	1910	---	92,406,536	...	...	20	47,470,437
1955	165,275,000	164,308,000	1909	---	90,491,525	...	...	18	44,223,513
1954	162,391,000	161,164,000	1908	---	88,708,976	...	...	17	38,634,759
1953	159,565,000	158,242,000	1907	---	87,000,271	...	...	15	34,552,837
1952	156,954,000	155,687,000	1906	---	85,436,556	...	...	15	33,782,288
1951	154,287,000	153,310,000	1905	---	83,819,666	...	...	10	21,767,980
1950	151,132,000	150,697,361	1904	---	82,164,974	...	...	10	21,332,076
1949	149,188,000	148,665,000	1903	---	80,632,152	...	...	10	20,943,222
1948	146,631,000	146,093,000	1902	---	79,160,196	...	...	10	20,582,907
1947	144,126,000	143,446,000	1901	---	77,585,128	...	...	10	20,237,453
1946	141,389,000	140,054,000	1900	---	76,094,134	...	...	10	19,965,446

¹ Alaska included beginning 1959 and Hawaii, 1960.

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

³ Figures are revised and, therefore, may differ from those published in volumes of Vital Statistics of the United States, Vol. I, Natality for 1989 and earlier years; see text.

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

SECTION 4 - TECHNICAL APPENDIX - PAGE 22

Table 4-2. Estimated Population of the United States, by Age, Race, and Sex: July 1, 1991

[Figures include Armed Forces stationed in the United States but exclude those stationed outside the United States. Due to rounding to the nearest thousand, detailed figures may not add to totals]

Age	All races			White			All other					
	Both sexes	Male	Female	Both sexes	Male	Female	Total			Black		
							Both sexes	Male	Female	Both sexes	Male	Female
All ages	252,177,000	122,979,000	129,198,000	210,899,000	103,268,000	107,631,000	41,277,000	19,711,000	21,566,000	31,164,000	14,753,000	16,412,000
Under 1 year	4,011,000	2,052,000	1,959,000	3,102,000	1,591,000	1,511,000	909,000	461,000	448,000	677,000	343,000	334,000
1-4 years	15,210,000	7,784,000	7,426,000	12,065,000	6,189,000	5,877,000	3,145,000	1,595,000	1,550,000	2,422,000	1,225,000	1,196,000
5-9 years	18,297,000	9,337,000	8,960,000	14,634,000	7,512,000	7,123,000	3,803,000	1,826,000	1,777,000	2,747,000	1,391,000	1,358,000
10-14 years	17,671,000	9,051,000	8,620,000	14,122,000	7,254,000	6,868,000	3,549,000	1,797,000	1,753,000	2,722,000	1,376,000	1,346,000
15-19 years	17,205,000	8,834,000	8,371,000	13,749,000	7,078,000	6,671,000	3,458,000	1,756,000	1,700,000	2,647,000	1,338,000	1,307,000
15-17 years	10,015,000	5,154,000	4,861,000	7,998,000	4,125,000	3,874,000	2,018,000	1,029,000	967,000	1,539,000	783,000	756,000
18-19 years	7,191,000	3,681,000	3,510,000	5,750,000	2,954,000	2,797,000	1,440,000	727,000	713,000	1,108,000	558,000	551,000
20-24 years	19,194,000	9,775,000	9,419,000	15,630,000	8,006,000	7,625,000	3,564,000	1,770,000	1,784,000	2,671,000	1,309,000	1,361,000
25-29 years	20,718,000	10,393,000	10,325,000	17,036,000	8,620,000	8,416,000	3,681,000	1,773,000	1,909,000	2,753,000	1,311,000	1,442,000
30-34 years	22,159,000	11,034,000	11,125,000	18,424,000	9,272,000	9,152,000	3,735,000	1,762,000	1,973,000	2,783,000	1,291,000	1,472,000
35-39 years	20,518,000	10,174,000	10,344,000	17,170,000	8,608,000	8,562,000	3,348,000	1,566,000	1,781,000	2,463,000	1,144,000	1,318,000
40-44 years	18,754,000	9,258,000	9,496,000	15,927,000	7,948,000	7,980,000	2,827,000	1,311,000	1,516,000	2,055,000	849,000	1,106,000
45-49 years	14,094,000	6,907,000	7,188,000	12,097,000	5,984,000	6,113,000	1,898,000	923,000	1,075,000	1,451,000	661,000	780,000
50-54 years	11,645,000	5,856,000	5,989,000	10,013,000	4,908,000	5,105,000	1,632,000	748,000	884,000	1,211,000	544,000	666,000
55-59 years	10,423,000	4,897,000	5,436,000	9,037,000	4,367,000	4,669,000	1,386,000	619,000	767,000	1,050,000	464,000	566,000
60-64 years	10,582,000	4,845,000	5,837,000	9,312,000	4,396,000	4,916,000	1,270,000	549,000	721,000	979,000	422,000	557,000
65-69 years	10,037,000	4,491,000	5,546,000	8,926,000	4,019,000	4,906,000	1,112,000	472,000	640,000	873,000	367,000	506,000
70-74 years	8,242,000	3,531,000	4,712,000	7,412,000	3,193,000	4,219,000	831,000	338,000	492,000	683,000	284,000	399,000
75-79 years	6,279,000	2,482,000	3,797,000	5,879,000	2,252,000	3,627,000	600,000	230,000	370,000	489,000	181,000	308,000
80-84 years	4,035,000	1,406,000	2,629,000	3,677,000	1,277,000	2,400,000	357,000	129,000	229,000	297,000	101,000	198,000
85 years and over	3,160,000	881,000	2,279,000	2,886,000	795,000	2,090,000	274,000	86,000	189,000	232,000	69,000	163,000

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

SECTION 4 - TECHNICAL APPENDIX - PAGE 23

Table 4-3. Estimated Total Population and Female Population Aged 15-44 Years: United States, Each Division and State, Puerto Rico, Virgin Islands, and Guam: July 1, 1991

[Figures include Armed Forces stationed in each area and exclude those stationed outside the United States. Due to rounding to the nearest thousand, detailed figures may not add to totals]

Area	Total	Female 15-44 years	Area	Total	Female 15-44 years
United States	252,177,000	59,079,000			
Geographic divisions:			South Atlantic:		
New England	13,198,000	3,162,000	Delaware	680,000	183,000
Middle Atlantic	37,778,000	8,786,000	Maryland	4,880,000	1,186,000
East North Central	42,415,000	9,919,000	District of Columbia	598,000	158,000
West North Central	17,811,000	4,021,000	Virginia	6,288,000	1,548,000
South Atlantic	44,422,000	10,413,000	West Virginia	1,801,000	408,000
East South Central	15,347,000	3,607,000	North Carolina	6,737,000	1,608,000
West South Central	27,148,000	6,426,000	South Carolina	3,880,000	888,000
Mountain	14,036,000	3,258,000	Georgia	6,623,000	1,641,000
Pacific	40,025,000	9,486,000	Florida	13,277,000	2,835,000
New England:			East South Central:		
Maine	1,235,000	287,000	Kentucky	3,713,000	873,000
New Hampshire	1,105,000	270,000	Tennessee	4,963,000	1,174,000
Vermont	587,000	137,000	Alabama	4,088,000	868,000
Massachusetts	5,996,000	1,461,000	Mississippi	2,592,000	604,000
Rhode Island	1,004,000	237,000			
Connecticut	3,291,000	770,000	West South Central:		
Middle Atlantic:			Arkansas	2,372,000	528,000
New York	18,058,000	4,278,000	Louisiana	4,262,000	1,011,000
New Jersey	7,780,000	1,811,000	Oklahoma	3,175,000	718,000
Pennsylvania	11,961,000	2,697,000	Texas	17,348,000	4,177,000
East North Central:			Mountain:		
Ohio	10,939,000	2,548,000	Montana	808,000	178,000
Indiana	5,610,000	1,313,000	Idaho	1,039,000	230,000
Illinois	11,543,000	2,698,000	Wyoming	480,000	108,000
Michigan	9,868,000	2,221,000	Colorado	3,377,000	828,000
Wisconsin	4,955,000	1,138,000	New Mexico	1,548,000	368,000
West North Central:			Arizona	3,750,000	882,000
Minnesota	4,432,000	1,034,000	Utah	1,770,000	408,000
Iowa	2,795,000	614,000	Nevada	1,284,000	298,000
Missouri	5,158,000	1,170,000	Pacific:		
North Dakota	635,000	139,000	Washington	5,018,000	1,185,000
South Dakota	703,000	151,000	Oregon	2,922,000	687,000
Nebraska	1,583,000	358,000	California	30,380,000	7,230,000
Kansas	2,495,000	557,000	Alaska	570,000	141,000
			Hawaii	1,135,000	283,000
			Puerto Rico ¹	---	---
			Virgin Islands ¹	---	---
			Guam ¹	---	---

¹ Populations for Puerto Rico, Virgin Islands, and Guam are not available for 1991.

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

TECHNICAL APPENDIX FROM

VITAL STATISTICS OF THE UNITED STATES

1990

VOLUME II - MORTALITY



U.S. DEPARTMENT OF
HEALTH AND HUMAN SERVICES

PUBLIC HEALTH SERVICE

CENTERS FOR DISEASE CONTROL AND PREVENTION
NATIONAL CENTER FOR HEALTH STATISTICS

Section 7. Technical Appendix

<p>Sources of data 1</p> <p style="padding-left: 20px;">Death and fetal-death statistics 1</p> <p style="padding-left: 20px;">Standard certificates and reports 2</p> <p>History 2</p> <p>Classification of data 5</p> <p style="padding-left: 20px;">Classification by occurrence and residence 5</p> <p style="padding-left: 20px;">Geographic classification 5</p> <p style="padding-left: 20px;">State or country of birth 6</p> <p style="padding-left: 20px;">Age 6</p> <p style="padding-left: 20px;">Race 6</p> <p style="padding-left: 20px;">Hispanic origin 6</p> <p style="padding-left: 20px;">Marital status 7</p> <p style="padding-left: 20px;">Educational attainment 7</p> <p style="padding-left: 20px;">Place of death and status of decedent 8</p> <p style="padding-left: 20px;">Mortality by month and date of death 8</p> <p style="padding-left: 20px;">Report of autopsy 8</p> <p style="padding-left: 20px;">Cause of death 8</p> <p style="padding-left: 20px;">Maternal deaths 11</p> <p style="padding-left: 20px;">Infant deaths 11</p>	<p>Fetal deaths 14</p> <p>Perinatal mortality 18</p> <p>Quality of data 18</p> <p style="padding-left: 20px;">Completeness of registration 18</p> <p style="padding-left: 20px;">Massachusetts data 19</p> <p style="padding-left: 20px;">Alabama data 19</p> <p style="padding-left: 20px;">Alaska data 19</p> <p style="padding-left: 20px;">Quality control procedures 19</p> <p style="padding-left: 20px;">Estimates of errors arising from 50-percent sample for 1972 20</p> <p>Computation of rates and other measures 20</p> <p style="padding-left: 20px;">Population bases 20</p> <p style="padding-left: 20px;">Net census undercount 22</p> <p style="padding-left: 20px;">Age-adjusted death rates 23</p> <p style="padding-left: 20px;">Life tables 24</p> <p style="padding-left: 20px;">Random variation in numbers of deaths, death rates, and mortality rates and ratios 24</p> <p>References 25</p> <p>Symbols used in tables 27</p>
Figures	
<p>7-A. U.S. Standard Certificate of Death 3</p> <p>7-B. U.S. Standard Report of Fetal Death 4</p>	
Text tables	
<p>A. Ratio of infant, neonatal, postneonatal, maternal, and perinatal mortality rates with race for live births tabulated according to race of mother to those with race for live births tabulated according to race of child: United States, 1990 12</p> <p>B. Infant mortality rates by race of mother for the period 1985–87 and for birth cohorts, 1985–87; and ratio of birth cohort to period rates: United States 13</p> <p>C. Infant mortality rates by specified Hispanic origin and race for non-Hispanic origin for three methods of allocating “unknown origins”: Total of 45 States, New York State (including and excluding New York City), and the District of Columbia, 1990 13</p> <p>D. Infant mortality rates by specified Hispanic origin of mother and race of mother for mothers of non-Hispanic origin for the period 1986–87 and birth cohorts 1986 and 1987 combined; and ratio of birth cohort to period rates: Total of 18 reporting States and the District of Columbia 14</p> <p>E. Period of gestation at which fetal-death reporting is required: Each reporting area, 1990 16</p> <p>F. Numbers of deaths and ratios of deaths for selected causes according to Alaska and NCHS, 1990 19</p> <p>G. Sources for resident population and population including Armed Forces abroad: Birth- and death-registration States, 1900–32, and United States, 1900–90 20</p> <p>H. Age-adjusted death rates for selected causes by race and sex, unadjusted and adjusted for estimated net census undercount: United States, 1990 23</p>	

Population tables

7-1.	Population of birth- and death-registration States, 1900–1932, and United States, 1900–1990	28
7-2.	Enumerated population of the United States, by 5-year age groups, race, and sex: April 1, 1990	29
7-3.	Enumerated population, by age, for the United States, each division and State, Puerto Rico, Virgin Islands, and Guam: April 1, 1990	30
7-4.	Ratio of census-level resident population to resident population adjusted for estimated net census undercount by age, sex, and race: April 1, 1990	31

Sources of data

Death and fetal-death statistics

Mortality statistics for 1990 are, as for all previous years except 1972, based on information from records of all deaths occurring in the United States. Fetal-death statistics for every year are based on all reports of fetal death received by the National Center for Health Statistics (NCHS).

The death-registration system and the fetal-death reporting system of the United States encompass the 50 States, the District of Columbia, New York City (which is independent of New York State for the purpose of death registration), Puerto Rico, the Virgin Islands, Guam, American Samoa, and the Commonwealth of the Northern Marianas. In the statistical tabulations of this publication, *United States* refers only to the aggregate of the 50 States (including New York City) and the District of Columbia. Tabulations for Guam, Puerto Rico, and the Virgin Islands are shown separately in this volume. No data have ever been included for American Samoa or the Trust Territory of the Pacific Islands.

The Virgin Islands was admitted to the registration area for deaths in 1924; Puerto Rico, in 1932; and Guam, in 1970. Tabulations of death statistics for Puerto Rico and the Virgin Islands were regularly shown in the annual volumes of *Vital Statistics of the United States* from the year of their admission through 1971 except for the years 1967–69, and tabulations for Guam were included for 1970 and 1971. Death statistics for Puerto Rico, the Virgin Islands, and Guam were not included in the 1972 volume but have been included in section 8 of the volumes for each of the years 1973–78 and in section 9 beginning with 1979. Information for 1972 for these three areas was published in the respective annual vital statistics reports of the Department of Health of the Commonwealth of Puerto Rico, the Department of Health of the Virgin Islands, and the Department of Public Health and Social Services of the Government of Guam.

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

Beginning with 1971, an increasing number of States have provided NCHS, via the Vital Statistics Cooperative Program (VSCP), computer tapes of data coded according to NCHS specifications. The year State-coded demographic data were first transmitted on computer tape to NCHS is shown below for each of the States, New York City, Puerto Rico, and the District

of Columbia, all of which now furnish demographic or nonmedical data on tape.

1971	Florida	1977	Alaska Idaho Massachusetts New York City Ohio Puerto Rico
1972	Maine Missouri New Hampshire Rhode Island Vermont	1978	Indiana Utah Washington
1973	Colorado Michigan New York (except New York City)	1979	Connecticut Hawaii Mississippi New Jersey Pennsylvania Wyoming
1974	Illinois Iowa Kansas Montana Nebraska Oregon South Carolina	1980	Arkansas New Mexico South Dakota
1975	Louisiana Maryland North Carolina Oklahoma Tennessee Virginia Wisconsin	1982	North Dakota
1976	Alabama Kentucky Minnesota Nevada Texas West Virginia	1985	Arizona California Delaware Georgia District of Columbia

For the Virgin Islands and Guam, mortality statistics for 1990 are based on information obtained directly by NCHS from copies of the original certificates received from the registration offices.

In 1974, States began coding medical (cause-of-death) data on computer tapes according to NCHS specifications. The year State-coded medical data were first transmitted to NCHS is shown below for the 30 States now furnishing such data. NCHS contracted with Colorado, Kansas, and Mississippi to precode medical data for all deaths on computer tape for the five States that were added in 1988. Vermont subcontracted with Pennsylvania to code its medical data.

1974	1984
Iowa	Maryland
Michigan	New York State (except New York City)
	Vermont
1975	1986
Louisiana	California
Nebraska	Florida
North Carolina	Texas
Virginia	
Wisconsin	
1980	1988
Colorado	Alaska
Kansas	Delaware
Massachusetts	Idaho
Mississippi	North Dakota
New Hampshire	Wyoming
Pennsylvania	
South Carolina	
1981	1989
Maine	Georgia
	Indiana
	Washington
1983	
Minnesota	

For 1990 and previous years except 1972, NCHS coded the medical information from copies of the original certificates received from the registration offices for all deaths occurring in those States that were not furnishing NCHS with medical data coded according to NCHS specifications. For 1981 and 1982, these procedures were modified because of a coding and processing backlog resulting from personnel and budgetary restrictions. To produce the mortality files on a timely basis with reduced resources, NCHS used State-coded underlying cause-of-death information supplied by 19 States for 50 percent of the records; for the other 50 percent of the records for these States as well as for 100 percent of the records for the remaining 21 registration areas, NCHS coded the medical information. Mortality statistics for 1972 were based on information obtained from a 50-percent sample of death records instead of from all records as in other years. The sampling resulted from personnel and budgetary restrictions. Sampling variation associated with

the 50-percent sample is described in “Estimates of errors arising from 50-percent sample for 1972.”

Fetal-death data are obtained directly from copies of original reports of fetal deaths received by NCHS, except New York State (excluding New York City), which submitted State-coded data in 1990.

Standard certificates and reports

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

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

New revisions of the U.S. Standard Certificate of Death and the U.S. Standard Report of Fetal Death were recommended for State use beginning on January 1, 1989. The U.S. Standard Certificate of Death and the U.S. Standard Report of Fetal Death are in figures 7-A and 7-B (1).

Among the major changes were the addition of a new item on educational attainment and changes to improve the medical certification of cause of death. Additional lines to report causes of death were added as well as more complete instructions with examples for properly completing the cause of death. Also, for the first time, the U.S. Standard Certificate of Death includes a question on the Hispanic origin of the decedent. A number of States had included an Hispanic-origin identifier on their certificates, resulting in data shown in this volume for years before 1989. To obtain information on type of place of death, the format of the item was changed from an open-ended question to a checkbox.

History

The first death statistics published by the Federal Government concerned events in 1850 and were based on statistics collected during the decennial census of that year. In 1880 a national “registration area” was created for deaths. Originally consisting of two States—Massachusetts and New Jersey—the District of Columbia, and several large cities having efficient

SECTION 7 - TECHNICAL APPENDIX - PAGE 3

TYPEPRINT IN PERMANENT BLACK INK FOR INSTRUCTIONS SEE OTHER SIDE AND HANDBOOK		LOCAL FILE NUMBER		U.S. STANDARD CERTIFICATE OF DEATH				STATE FILE NUMBER	
1. DECEDENT'S NAME (First, Middle, Last)							2. SEX	3. DATE OF DEATH (Month, Day, Year)	
4. SOCIAL SECURITY NUMBER		5a. AGE—Last Birthday (Years)	5b. UNDER 1 YEAR Months: Days:	5c. UNDER 1 DAY Hours: Minutes:		6. DATE OF BIRTH (Month, Day, Year)		7. BIRTHPLACE (City and State or Foreign Country)	
8. WAS DECEDENT EVER IN U.S. ARMED FORCES? (Yes or no)			9a. PLACE OF DEATH (Check only one, see instructions on other side) HOSPITAL <input type="checkbox"/> Inpatient <input type="checkbox"/> ER/Outpatient <input type="checkbox"/> DOA <input type="checkbox"/> OTHER <input type="checkbox"/> Nursing Home <input type="checkbox"/> Residence <input type="checkbox"/> Other (Specify)						
9b. FACILITY NAME (If not institution, give street and number)					9c. CITY, TOWN, OR LOCATION OF DEATH			9d. COUNTY OF DEATH	
10. MARITAL STATUS—Married, Never Married, Widowed, Divorced (Specify)		11. SURVIVING SPOUSE (If wife, give maiden name)		12a. DECEDENT'S USUAL OCCUPATION (Give kind of work done during most of working life. Do not use retired)		12b. KIND OF BUSINESS/INDUSTRY			
13a. RESIDENCE—STATE		13b. COUNTY		13c. CITY, TOWN, OR LOCATION		13d. STREET AND NUMBER			
13a. INSIDE CITY LIMITS? (Yes or no)		13i. ZIP CODE		14. WAS DECEDENT OF HISPANIC ORIGIN? (Specify No or Yes - if yes, specify Cuban, Mexican, Puerto Rican, etc.) <input type="checkbox"/> No <input type="checkbox"/> Yes		15. RACE—American Indian, Black, White, etc (Specify)		16. DECEDENT'S EDUCATION (Specify only highest grade completed) Elementary/Secondary (0-12) College (1-4 or 6+)	
17. FATHER'S NAME (First, Middle, Last)					18. MOTHER'S NAME (First, Middle, Maiden Surname)				
19a. INFORMANT'S NAME (Type/Print)					19b. MAILING ADDRESS (Street and Number or Rural Route Number, City or Town, State, Zip Code)				
20a. METHOD OF DISPOSITION <input type="checkbox"/> Burial <input type="checkbox"/> Cremation <input type="checkbox"/> Removal from State <input type="checkbox"/> Donation <input type="checkbox"/> Other (Specify)			20b. PLACE OF DISPOSITION (Name of cemetery, crematory, or other place)			20c. LOCATION—City or Town, State			
21a. SIGNATURE OF FUNERAL SERVICE LICENSEE OR PERSON ACTING AS SUCH			21b. LICENSE NUMBER (of Licensee)		22. NAME AND ADDRESS OF FACILITY				
23a. Complete items 23a-c only when certifying physician is not available at time of death to certify cause of death			23a. To the best of my knowledge, death occurred at the time, date, and place stated Signature and Title			23b. LICENSE NUMBER		23c. DATE SIGNED (Month, Day, Year)	
24. TIME OF DEATH M			25. DATE PRONOUNCED DEAD (Month, Day, Year)			26. WAS CASE REFERRED TO MEDICAL EXAMINER/CORONER? (Yes or no)			
27. PART I. Enter the diseases, injuries, or complications that caused the death. Do not enter the mode of dying such as cardiac or respiratory arrest, shock, or heart failure. List only one cause on each line. IMMEDIATE CAUSE (Final disease or condition resulting in death) → a. _____ DUE TO (OR AS A CONSEQUENCE OF) b. _____ DUE TO (OR AS A CONSEQUENCE OF) c. _____ DUE TO (OR AS A CONSEQUENCE OF) d. _____ Sequentially list conditions, if any leading to immediate cause. Enter UNDERLYING CAUSE (Disease or injury that initiated events resulting in death) LAST								Approximate Interval Between Onset and Death	
PART II. Other significant conditions contributing to death but not resulting in the underlying cause given in Part I						28a. WAS AN AUTOPSY PERFORMED? (Yes or no)		28b. WERE AUTOPSY FINDINGS AVAILABLE PRIOR TO COMPLETION OF CAUSE OF DEATH? (Yes or no)	
29. MANNER OF DEATH <input type="checkbox"/> Natural <input type="checkbox"/> Pending Investigation <input type="checkbox"/> Accident <input type="checkbox"/> Could not be Determined <input type="checkbox"/> Suicide <input type="checkbox"/> Homicide		30a. DATE OF INJURY (Month, Day, Year)		30b. TIME OF INJURY M	30c. INJURY AT WORK? (Yes or no)	30d. DESCRIBE HOW INJURY OCCURRED			
		30e. PLACE OF INJURY—At home, farm, street, factory, office, building, etc. (Specify)			30f. LOCATION (Street and Number or Rural Route Number, City or Town, State)				
31a. CERTIFIER (Check only one)		<input type="checkbox"/> CERTIFYING PHYSICIAN (Physician certifying cause of death when another physician has pronounced death and completed item 23) To the best of my knowledge, death occurred due to the cause(s) and manner as stated <input type="checkbox"/> PRONOUNCING AND CERTIFYING PHYSICIAN (Physician both pronouncing death and certifying to cause of death) To the best of my knowledge, death occurred at the time, date, and place, and due to the cause(s) and manner as stated <input type="checkbox"/> MEDICAL EXAMINER/CORONER On the basis of examination and/or investigation, in my opinion, death occurred at the time, date, and place, and due to the cause(s) and manner as stated							
31b. SIGNATURE AND TITLE OF CERTIFIER					31c. LICENSE NUMBER		31d. DATE SIGNED (Month, Day, Year)		
32. NAME AND ADDRESS OF PERSON WHO COMPLETED CAUSE OF DEATH (ITEM 27) (Type/Print)									
33. REGISTRAR'S SIGNATURE								34. DATE FILED (Month, Day, Year)	

PHS T 003

Figure 7-A. U.S. Standard Certificate of Death

TYPE/PRINT IN PERMANENT BLACK INK FOR INSTRUCTIONS SEE HANDBOOK		U.S. STANDARD REPORT OF FETAL DEATH				STATE FILE NUMBER			
PARENTS		1. FACILITY NAME (If not institution, give street and number)		2. CITY, TOWN, OR LOCATION OF DELIVERY		3. COUNTY OF DELIVERY	4. DATE OF DELIVERY (Month, Day, Year)	5. SEX OF FETUS	
MOTHER		6a. MOTHER'S NAME (First, Middle, Last)			6b. MAIDEN SURNAME		7. DATE OF BIRTH (Month, Day, Year)		
FATHER		8a. RESIDENCE-STATE		8b. COUNTY		8c. CITY, TOWN, OR LOCATION		8d. STREET AND NUMBER	
MOTHER		9a. INSIDE CITY LIMITS? (Yes or no)		9b. ZIP CODE		9c. FATHER'S NAME (First, Middle, Last)		10. DATE OF BIRTH (Month, Day, Year)	
MOTHER		11. OF HISPANIC ORIGIN? (Specify No or Yes—If yes, specify Cuban, Mexican, Puerto Rican, etc.)		12. RACE—American Indian, Black, White, etc. (Specify below)		13. EDUCATION (Specify only highest grade completed)		14. OCCUPATION AND BUSINESS/INDUSTRY (Worked during last year)	
MOTHER		11a. <input type="checkbox"/> No <input type="checkbox"/> Yes		12a.		13a. Elementary/Secondary (0-12)		14a. Occupation	
MOTHER		11b. <input type="checkbox"/> No <input type="checkbox"/> Yes		12b.		13b. College (13-16 or 5+)		14b. Business/Industry	
MOTHER		Specify:		Specify:		Specify:		Specify:	
MOTHER		11c. <input type="checkbox"/> No <input type="checkbox"/> Yes		12c.		13c.		14c.	
MOTHER		Specify:		Specify:		Specify:		Specify:	
MOTHER		11d. <input type="checkbox"/> No <input type="checkbox"/> Yes		12d.		13d.		14d.	
MOTHER		Specify:		Specify:		Specify:		Specify:	
MOTHER		11e. <input type="checkbox"/> No <input type="checkbox"/> Yes		12e.		13e.		14e.	
MOTHER		Specify:		Specify:		Specify:		Specify:	
MOTHER		11f. <input type="checkbox"/> No <input type="checkbox"/> Yes		12f.		13f.		14f.	
MOTHER		Specify:		Specify:		Specify:		Specify:	
MOTHER		11g. <input type="checkbox"/> No <input type="checkbox"/> Yes		12g.		13g.		14g.	
MOTHER		Specify:		Specify:		Specify:		Specify:	
MOTHER		11h. <input type="checkbox"/> No <input type="checkbox"/> Yes		12h.		13h.		14h.	
MOTHER		Specify:		Specify:		Specify:		Specify:	
MOTHER		11i. <input type="checkbox"/> No <input type="checkbox"/> Yes		12i.		13i.		14i.	
MOTHER		Specify:		Specify:		Specify:		Specify:	
MOTHER		11j. <input type="checkbox"/> No <input type="checkbox"/> Yes		12j.		13j.		14j.	
MOTHER		Specify:		Specify:		Specify:		Specify:	
MOTHER		11k. <input type="checkbox"/> No <input type="checkbox"/> Yes		12k.		13k.		14k.	
MOTHER		Specify:		Specify:		Specify:		Specify:	
MOTHER		11l. <input type="checkbox"/> No <input type="checkbox"/> Yes		12l.		13l.		14l.	
MOTHER		Specify:		Specify:		Specify:		Specify:	
MOTHER		11m. <input type="checkbox"/> No <input type="checkbox"/> Yes		12m.		13m.		14m.	
MOTHER		Specify:		Specify:		Specify:		Specify:	
MOTHER		11n. <input type="checkbox"/> No <input type="checkbox"/> Yes		12n.		13n.		14n.	
MOTHER		Specify:		Specify:		Specify:		Specify:	
MOTHER		11o. <input type="checkbox"/> No <input type="checkbox"/> Yes		12o.		13o.		14o.	
MOTHER		Specify:		Specify:		Specify:		Specify:	
MOTHER		11p. <input type="checkbox"/> No <input type="checkbox"/> Yes		12p.		13p.		14p.	
MOTHER		Specify:		Specify:		Specify:		Specify:	
MOTHER		11q. <input type="checkbox"/> No <input type="checkbox"/> Yes		12q.		13q.		14q.	
MOTHER		Specify:		Specify:		Specify:		Specify:	
MOTHER		11r. <input type="checkbox"/> No <input type="checkbox"/> Yes		12r.		13r.		14r.	
MOTHER		Specify:		Specify:		Specify:		Specify:	
MOTHER		11s. <input type="checkbox"/> No <input type="checkbox"/> Yes		12s.		13s.		14s.	
MOTHER		Specify:		Specify:		Specify:		Specify:	
MOTHER		11t. <input type="checkbox"/> No <input type="checkbox"/> Yes		12t.		13t.		14t.	
MOTHER		Specify:		Specify:		Specify:		Specify:	
MOTHER		11u. <input type="checkbox"/> No <input type="checkbox"/> Yes		12u.		13u.		14u.	
MOTHER		Specify:		Specify:		Specify:		Specify:	
MOTHER		11v. <input type="checkbox"/> No <input type="checkbox"/> Yes		12v.		13v.		14v.	
MOTHER		Specify:		Specify:		Specify:		Specify:	
MOTHER		11w. <input type="checkbox"/> No <input type="checkbox"/> Yes		12w.		13w.		14w.	
MOTHER		Specify:		Specify:		Specify:		Specify:	
MOTHER		11x. <input type="checkbox"/> No <input type="checkbox"/> Yes		12x.		13x.		14x.	
MOTHER		Specify:		Specify:		Specify:		Specify:	
MOTHER		11y. <input type="checkbox"/> No <input type="checkbox"/> Yes		12y.		13y.		14y.	
MOTHER		Specify:		Specify:		Specify:		Specify:	
MOTHER		11z. <input type="checkbox"/> No <input type="checkbox"/> Yes		12z.		13z.		14z.	
MOTHER		Specify:		Specify:		Specify:		Specify:	
MOTHER		11aa. <input type="checkbox"/> No <input type="checkbox"/> Yes		12aa.		13aa.		14aa.	
MOTHER		Specify:		Specify:		Specify:		Specify:	
MOTHER		11ab. <input type="checkbox"/> No <input type="checkbox"/> Yes		12ab.		13ab.		14ab.	
MOTHER		Specify:		Specify:		Specify:		Specify:	
MOTHER		11ac. <input type="checkbox"/> No <input type="checkbox"/> Yes		12ac.		13ac.		14ac.	
MOTHER		Specify:		Specify:		Specify:		Specify:	
MOTHER		11ad. <input type="checkbox"/> No <input type="checkbox"/> Yes		12ad.		13ad.		14ad.	
MOTHER		Specify:		Specify:		Specify:		Specify:	
MOTHER		11ae. <input type="checkbox"/> No <input type="checkbox"/> Yes		12ae.		13ae.		14ae.	
MOTHER		Specify:		Specify:		Specify:		Specify:	
MOTHER		11af. <input type="checkbox"/> No <input type="checkbox"/> Yes		12af.		13af.		14af.	
MOTHER		Specify:		Specify:		Specify:		Specify:	
MOTHER		11ag. <input type="checkbox"/> No <input type="checkbox"/> Yes		12ag.		13ag.		14ag.	
MOTHER		Specify:		Specify:		Specify:		Specify:	
MOTHER		11ah. <input type="checkbox"/> No <input type="checkbox"/> Yes		12ah.		13ah.		14ah.	
MOTHER		Specify:		Specify:		Specify:		Specify:	
MOTHER		11ai. <input type="checkbox"/> No <input type="checkbox"/> Yes		12ai.		13ai.		14ai.	
MOTHER		Specify:		Specify:		Specify:		Specify:	
MOTHER		11aj. <input type="checkbox"/> No <input type="checkbox"/> Yes		12aj.		13aj.		14aj.	
MOTHER		Specify:		Specify:		Specify:		Specify:	
MOTHER		11ak. <input type="checkbox"/> No <input type="checkbox"/> Yes		12ak.		13ak.		14ak.	
MOTHER		Specify:		Specify:		Specify:		Specify:	
MOTHER		11al. <input type="checkbox"/> No <input type="checkbox"/> Yes		12al.		13al.		14al.	
MOTHER		Specify:		Specify:		Specify:		Specify:	
MOTHER		11am. <input type="checkbox"/> No <input type="checkbox"/> Yes		12am.		13am.		14am.	
MOTHER		Specify:		Specify:		Specify:		Specify:	
MOTHER		11an. <input type="checkbox"/> No <input type="checkbox"/> Yes		12an.		13an.		14an.	
MOTHER		Specify:		Specify:		Specify:		Specify:	
MOTHER		11ao. <input type="checkbox"/> No <input type="checkbox"/> Yes		12ao.		13ao.		14ao.	
MOTHER		Specify:		Specify:		Specify:		Specify:	
MOTHER		11ap. <input type="checkbox"/> No <input type="checkbox"/> Yes		12ap.		13ap.		14ap.	
MOTHER		Specify:		Specify:		Specify:		Specify:	
MOTHER		11aq. <input type="checkbox"/> No <input type="checkbox"/> Yes		12aq.		13aq.		14aq.	
MOTHER		Specify:		Specify:		Specify:		Specify:	
MOTHER		11ar. <input type="checkbox"/> No <input type="checkbox"/> Yes		12ar.		13ar.		14ar.	
MOTHER		Specify:		Specify:		Specify:		Specify:	
MOTHER		11as. <input type="checkbox"/> No <input type="checkbox"/> Yes		12as.		13as.		14as.	
MOTHER		Specify:		Specify:		Specify:		Specify:	
MOTHER		11at. <input type="checkbox"/> No <input type="checkbox"/> Yes		12at.		13at.		14at.	
MOTHER		Specify:		Specify:		Specify:		Specify:	
MOTHER		11au. <input type="checkbox"/> No <input type="checkbox"/> Yes		12au.		13au.		14au.	
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MOTHER		11av. <input type="checkbox"/> No <input type="checkbox"/> Yes		12av.		13av.		14av.	
MOTHER		Specify:		Specify:		Specify:		Specify:	
MOTHER		11aw. <input type="checkbox"/> No <input type="checkbox"/> Yes		12aw.		13aw.		14aw.	
MOTHER		Specify:		Specify:		Specify:		Specify:	
MOTHER		11ax. <input type="checkbox"/> No <input type="checkbox"/> Yes		12ax.		13ax.		14ax.	
MOTHER		Specify:		Specify:		Specify:		Specify:	
MOTHER		11ay. <input type="checkbox"/> No <input type="checkbox"/> Yes		12ay.		13ay.		14ay.	
MOTHER		Specify:		Specify:		Specify:		Specify:	
MOTHER		11az. <input type="checkbox"/> No <input type="checkbox"/> Yes		12az.		13az.		14az.	
MOTHER		Specify:		Specify:		Specify:		Specify:	
MOTHER		11ba. <input type="checkbox"/> No <input type="checkbox"/> Yes		12ba.		13ba.		14ba.	
MOTHER		Specify:		Specify:		Specify:		Specify:	
MOTHER		11bb. <input type="checkbox"/> No <input type="checkbox"/> Yes		12bb.		13bb.		14bb.	
MOTHER		Specify:		Specify:		Specify:		Specify:	
MOTHER		11bc. <input type="checkbox"/> No <input type="checkbox"/> Yes		12bc.		13bc.		14bc.	
MOTHER		Specify:		Specify:		Specify:		Specify:	
MOTHER		11bd. <input type="checkbox"/> No <input type="checkbox"/> Yes		12bd.		13bd.		14bd.	
MOTHER		Specify:		Specify:		Specify:		Specify:	
MOTHER		11be. <input type="checkbox"/> No <input type="checkbox"/> Yes		12be.		13be.		14be.	
MOTHER		Specify:		Specify:		Specify:		Specify:	
MOTHER		11bf. <input type="checkbox"/> No <input type="checkbox"/> Yes		12bf.		13bf.		14bf.	
MOTHER		Specify:		Specify:		Specify:		Specify:	
MOTHER		11bg. <input type="checkbox"/> No <input type="checkbox"/> Yes		12bg.		13bg.		14bg.	
MOTHER		Specify:		Specify:		Specify:		Specify:	
MOTHER		11bh. <input type="checkbox"/> No <input type="checkbox"/> Yes		12bh.		13bh.		14bh.	
MOTHER		Specify:		Specify:		Specify:		Specify:	
MOTHER		11bi. <input type="checkbox"/> No <input type="checkbox"/> Yes		12bi.		13bi.		14bi.	
MOTHER		Specify:		Specify:		Specify:		Specify:	
MOTHER		11bj. <input type="checkbox"/> No <input type="checkbox"/> Yes		12bj.		13bj.		14bj.	
MOTHER		Specify:		Specify:		Specify:		Specify:	
MOTHER		11bk. <input type="checkbox"/> No <input type="checkbox"/> Yes		12bk.		13bk.		14bk.	
MOTHER		Specify:		Specify:		Specify:		Specify:	
MOTHER		11bl. <input type="checkbox"/> No <input type="checkbox"/> Yes		12bl.		13bl.		14bl.	
MOTHER		Specify:		Specify:		Specify:		Specify:	
MOTHER		11bm. <input type="checkbox"/> No <input type="checkbox"/> Yes		12bm.		13bm.		14bm.	
MOTHER		Specify:		Specify:		Specify:		Specify:	
MOTHER		11bn. <input type="checkbox"/> No <input type="checkbox"/> Yes		12bn.		13bn.		14bn.	
MOTHER		Specify:		Specify:		Specify:		Specify:	
MOTHER		11bo. <input type="checkbox"/> No <input type="checkbox"/> Yes		12bo.		13bo.		14bo.	
MOTHER		Specify:		Specify:		Specify:		Specify:	
MOTHER		11bp. <input type="checkbox"/> No <input type="checkbox"/> Yes		12bp.		13bp.		14bp.	
MOTHER		Specify:		Specify:		Specify:		Specify:	
MOTHER		11bq. <input type="checkbox"/> No <input type="checkbox"/> Yes		12bq.		13bq.		14bq.	
MOTHER		Specify:		Specify:		Specify:		Specify:	
MOTHER		11br. <input type="checkbox"/> No <input type="checkbox"/> Yes		12br.		13br.		14br.	
MOTHER		Specify:		Specify:		Specify:		Specify:	
MOTHER		11bs. <input type="checkbox"/> No <input type="checkbox"/> Yes		12bs.		13bs.		14bs.	
MOTHER		Specify:		Specify:		Specify:		Specify:	
MOTHER		11bt. <input type="checkbox"/> No <input type="checkbox"/> Yes		12bt.		13bt.		14bt.	
MOTHER		Specify:		Specify:		Specify:		Specify:	
MOTHER		11bu. <input type="checkbox"/> No <input type="checkbox"/> Yes		12bu.		13bu.		14bu.	
MOTHER		Specify:		Specify:		Specify:		Specify:	
MOTHER		11bv. <input type="checkbox"/> No <input type="checkbox"/> Yes		12bv.		13bv.		14bv.	
MOTHER		Specify:		Specify:		Specify:		Specify:	
MOTHER		11bw. <input type="checkbox"/> No <input type="checkbox"/> Yes		12bw.		13bw.		14bw.	
MOTHER		Specify:		Specify:		Specify:		Specify:	
MOTHER		11bx. <input type="checkbox"/> No <input type="checkbox"/> Yes		12bx.		13bx.		14bx.	
MOTHER		Specify:		Specify:		Specify:		Specify:	
MOTHER		11by. <input type="checkbox"/> No <input type="checkbox"/> Yes		12by.		1			

systems for death registrations, the death-registration area continued to expand until 1933, when it included the entire United States for the first time. Tables showing data for death-registration States include the District of Columbia for all years; registration cities in nonregistration States are not included. For more details on the history of the death-registration area, see the *Vital Statistics of the United States, 1979*, Volume II, Mortality, Part A, section 7, pages 3 and 4 and *Vital Statistics of the United States, 1950*, Volume I, chapter 1, pages 2–19. Statistics on fetal deaths were first published for the birth-registration area in 1918 and then every year beginning with 1922.

Classification of data

The principal value of vital statistics data is realized through the presentation of rates, which are computed by relating the vital events of a class to the population of a similarly defined class. Vital statistics and population statistics must therefore be classified according to similarly defined systems and tabulated in comparable groups. Even when the variables common to both, such as geographic area, age, sex, and race, have been similarly classified and tabulated, differences between the enumeration method of obtaining population data and the registration method of obtaining vital statistics data may result in significant discrepancies.

The general rules used in the classification of geographic and personal items for deaths and fetal deaths for 1990 are set forth in two NCHS instruction manuals (2,3). A discussion of the classification of certain important items is presented below.

Classification by occurrence and residence

Tabulations for the United States and specified geographic areas in this volume are classified by place of residence unless stated as by place of occurrence. Before 1970, resident mortality statistics for the United States included all deaths occurring in the United States, with deaths of “nonresidents of the United States” assigned to place of death. “Deaths of nonresidents of the United States” refers to deaths that occur in the United States of nonresident aliens; nationals residing abroad; and residents of Puerto Rico, the Virgin Islands, Guam, and other territories of the United States. Beginning with 1970, deaths of nonresidents of the United States are not included in tables by place of residence.

Tables by place of occurrence, on the other hand, include deaths of both residents and nonresidents of the United States. Consequently, for each year beginning with 1970, the total number of deaths in the United States by place of occurrence was somewhat greater than the total by place of residence. For 1990, this difference amounted to 3,427 deaths. Mortality statistics by place of occurrence are shown in tables 1-11, 1-19, 1-20, 1-30, 1-31, 1-32, 3-1, 3-6, 8-1, and 8-7.

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

United States were allocated as deaths of residents of the balance of the county in which they occurred.

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

A comparison of the results of this study of deaths with those for a previous matched record study of births (5) showed that the quality of residence data had improved considerably between 1950 and 1960. Both studies found that events in urban areas were overstated by the NCHS classification in comparison with the U.S. Bureau of the Census classification. The magnitude of the difference was substantially less for deaths in 1960 than it was for births in 1950.

The improvement is attributed to an item added in 1956 to the U.S. Standard Certificates of Birth and of Death, asking whether residence was inside or outside city limits. This new item aided in properly allocating the residence of persons living near cities but outside the corporate limits.

Geographic classification

The rules followed in the classification of geographic areas for deaths and fetal deaths are contained in the two instruction manuals referred to previously (2,3). The geographic codes assigned by the NCHS during data reduction of source information on birth, death, and fetal-death records are given in another instruction manual (6). Beginning with 1982 data, the geographic codes were modified to reflect results of the 1980 census. For 1970–81, codes are based on results of the 1970 census.

Metropolitan statistical areas—The Metropolitan statistical areas (MSA's) and Primary metropolitan statistical areas (PMSA's) used in this volume are those established by the U.S. Office of Management and Budget as of April 1, 1990, and used by the U.S. Bureau of the Census (7), except in the New England States.

Outside the New England States, an MSA has either a city with a population of at least 50,000 or a Bureau of the Census urbanized area of at least 50,000 and a total MSA population of at least 100,000. A PMSA consists of a large urbanized county or cluster of counties that demonstrate very strong internal economic and social links and has a population over 1 million. When PMSA's are defined, the larger area of which they are component parts is designated a Consolidated Metropolitan Statistical Area (CMSA) (8).

In the New England States, the U.S. Office of Management and Budget uses towns and cities rather than counties as geographic components of MSA's and PMSA's. However, NCHS cannot use this classification for these States because its data are not coded to identify all towns. Instead, NCHS uses New England County Metropolitan Areas (NECMA's). Made up of county units, these areas are established by the U.S. Office of Management and Budget (9).

Metropolitan and nonmetropolitan counties—Independent cities and counties included in MSA's and PMSA's or in

NECMA's are included in data for metropolitan counties; all other counties are classified as nonmetropolitan.

Population-size groups—In 1990, vital statistics data for cities and certain other urban places were classified according to the population enumerated in the 1980 Census of Population. Data are available for individual cities and other urban places of 10,000 or more population. Data for the remaining areas not separately identified are shown in the tables under the heading “balance of area” or “balance of county.” For the years 1970–81, classification of areas was determined by the population enumerated in the 1970 Census of Population. Beginning with 1982 data, some urban places identified in previous reports were deleted and others were added because of changes occurring in the enumerated population between 1970 and 1980.

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

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

Before 1964, places were classified as “urban” or “rural.” The technical appendixes for earlier years discuss the previous classification system.

State or country of birth

Mortality statistics by State or country of birth (table 1-36) became available beginning with 1979. State or country of birth of a decedent is assigned to 1 of the 50 States or the District of Columbia; or to Puerto Rico, the Virgin Islands, or Guam—if specified on the death certificate. The place of birth is also tabulated for Canada, Cuba, Mexico, and for the Remainder of the World. Deaths for which information on State or country of birth was unknown, not stated, or not classifiable accounted for a small proportion of all deaths in 1990, about 1.1 percent.

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

Age

The age recorded on the death record is the age at last birthday. With respect to the computation of death rates, the age classification used by the U.S. Bureau of the Census is based also on the age of the person in completed years.

For computation of age-specific and age-adjusted death rates, deaths with age not stated are excluded. For life table computation, deaths with age not stated are distributed proportionately.

Race

For vital statistics in the United States in 1990, deaths are classified by race—white, black, American Indian, Chinese, Hawaiian, Japanese, Filipino, Other Asian or Pacific Islander, and Other. Mortality data for Filipino and Other Asian or Pacific Islander were shown for the first time in 1979.

The white category includes, in addition to persons reported as white, those reported as Mexican, Puerto Rican, Cuban, and all other Caucasians. The American Indian category includes American, Alaskan, Canadian, Eskimo, and Aleut. If the racial entry on the death certificate indicates a mixture of Hawaiian and any other race, the entry is coded to Hawaiian. If the race is given as a mixture of white and any other race, the entry is coded to the appropriate nonwhite race. If a mixture of races other than white is given (except Hawaiian), the entry is coded to the first race listed. This procedure for coding the first race listed has been used since 1969. Before 1969, if the entry for race was a mixture of black and any other race except Hawaiian, the entry was coded to black.

Most of the tables in this volume, however, do not show data for this detailed classification by race. In all the tables, the divisions are white, all other (including black), and black separately.

Race not stated—For 1990, the number of death records for which race was unknown, not stated, or not classifiable was 5,424, or 0.3 percent of the total deaths. Death records with race entry not stated are assigned to a racial designation as follows: If the preceding record is coded white, the code assignment is made to white; if the code is other than white, the assignment is made to black. Before 1964, all records with race not stated were assigned to white except records of residents of New Jersey for 1962–64.

New Jersey, 1962–64—New Jersey omitted the race item from its certificates of live birth, death, and fetal death used in the beginning of 1962. The item was restored during the latter part of 1962. However, the certificate revision without the race item was used for most of 1962 as well as 1963. Therefore, figures by race for 1962 and 1963 exclude New Jersey. For 1964, 6.8 percent of the death records used for residents of New Jersey did not contain the race item.

Adjustments made in vital statistics to account for the omission of the race item in New Jersey for part of the certificates filed during 1962–64 are described in the technical appendixes of the *Vital Statistics of the United States* for each of those data years.

Hispanic origin

Mortality statistics for the Hispanic-origin population are based on information for those States and the District of Columbia that included items on the death certificate to identify Hispanic or ethnic origin of decedents. Data for 1990 were

obtained from the District of Columbia and all States except Louisiana, New Hampshire, and Oklahoma.

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

Was decedent of Hispanic origin?

(Specify No or Yes—If Yes, specify Cuban, Mexican, Puerto Rican, etc.) _____ No _____ Yes

Specify:

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

Ancestry—Mexican, Puerto Rican, Cuban, African, English, Irish, German, Homong, etc., (specify)

For 1990, mortality data in tables 1-37 and 2-21 are based on deaths to residents of all 47 reporting States and the District of Columbia. In tables 1-38, 1-43, and 1-44, mortality data for the Hispanic-origin population are based on deaths to residents of 45 States, New York State (excluding New York City), and the District of Columbia whose data were at least 90 percent complete on a place-of-occurrence basis and considered to be sufficiently comparable to be used for analysis. The 45 States are Alabama, Alaska, Arizona, Arkansas, California, Colorado, Delaware, Florida, Georgia, Hawaii, Idaho, Illinois, Indiana, Iowa, Kansas, Kentucky, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Montana, Nebraska, Nevada, New Jersey, New Mexico, North Carolina, North Dakota, Ohio, Oregon, Pennsylvania, Rhode Island, South Carolina, South Dakota, Tennessee, Texas, Utah, Vermont, Virginia, Washington, West Virginia, Wisconsin, and Wyoming. Data for Connecticut and New York City are excluded from tables 1-38, 1-43, and 1-44 because of the large proportion of deaths (in excess of 10 percent) occurring in these geographic areas for which Hispanic origin was not stated or was unknown. Because New York City accounts for about one-half of the deaths to Puerto Ricans, the resulting mortality data may not be comparable with previous years. Louisiana, New Hampshire, and Oklahoma were excluded because their death certificates did not have an Hispanic or ancestry item.

In tables 2-22–2-25, the reporting area is based on deaths to residents of the same 45 States, New York State (excluding New York City), and the District of Columbia whose mortality data for all ages and whose live birth data were at least 90 percent complete on a place-of-occurrence basis and considered to be sufficiently comparable to be used for analysis.

The 45 States, New York State (excluding New York City), and the District of Columbia for which general mortality data are shown in this report accounted for about 89 percent of the Hispanic population in the United States in 1990. This included about 99 percent of the Mexican population, 58 percent of the Puerto Rican population, 92 percent of the Cuban population, and 81 percent of the “Other Hispanic” population (10). Accordingly, some caution should be exercised in generalizing mortality patterns from the reporting area to the Hispanic-origin population (especially Puerto Ricans) of the entire United

States. For qualifications regarding infant mortality of the Hispanic-origin population, see “Infant deaths.”

Alabama—In 1990 for Alabama, 127 deaths were erroneously coded to Puerto Rican rather than to non-Hispanic. The corresponding number of deaths for Puerto Ricans for 1989 was 15. As a result, the number of deaths for Puerto Ricans for the 45 States, New York State (excluding New York City), and the District of Columbia should be about 2 percent lower than the figures shown.

Marital status

Mortality statistics by marital status (tables 1-34 and 1-35) were published in 1979 for the first time since 1961. (They were previously published in the annual volumes for 1949–51 and 1959–61.) Several reports analyzing mortality by marital status have been published, including the special study based on 1959–61 data (11). Reference to earlier reports is given in the appendix of part B of the 1959–61 special study.

Mortality statistics by marital status are tabulated separately for never married, married, widowed, and divorced. Certificates on which the marriage is specified as being annulled are classified as never married. Where marital status is specified as separated or common-law marriage, it is classified as married. Of the 2,094,183 resident deaths 15 years of age and over in 1990, 10,791 certificates (0.5 percent) had marital status not stated.

Educational attainment

Beginning with the 1989 data year, mortality data on educational attainment are being tabulated from information reported on the death certificate. As a result of the revisions of the U.S. Standard Certificate of Death (1), this item was added to the certificates of a large number of States:

- Decedent's Education (specify only highest grade completed)
- Elementary/Secondary (0–12) College (1–4 or 5+)

Mortality data on educational attainment for 1990 (table 1-45) are based on deaths to residents of 43 States and the District of Columbia. Data for seven States—Georgia, Louisiana, New York, Oklahoma, Rhode Island, South Dakota, and Washington—are excluded from this table because their death certificates did not include an educational attainment item, and New York City data are excluded because the education item on its death certificate was considered not comparable to be used for analysis.

In tables 1-46 and 1-47, the data are based on deaths to residents of 28 States and the District of Columbia whose data were at least 90 percent complete on a place-of-occurrence basis. The 28 States are Alabama, Arizona, California, Colorado, Delaware, Florida, Hawaii, Idaho, Illinois, Iowa, Kansas, Massachusetts, Michigan, Minnesota, Missouri, Montana, Nebraska, New Hampshire, North Dakota, Ohio, Oregon, Pennsylvania, South Carolina, Texas, Utah, Vermont, Wisconsin, and Wyoming. Data for Alaska, Arkansas, Connecticut, Indiana, Kentucky, Maine, Maryland, Mississippi, Nevada, New Jersey,

New Mexico, North Carolina, Tennessee, Virginia, and West Virginia are excluded because more than 10 percent of their death certificates were classified to “unknown educational attainment.”

Place of death and status of decedent

Mortality statistics by place of death were published in 1979 for the first time since 1958 (tables 1-30–1-32). In addition, mortality data also were available for the first time in 1979 for the status of decedent when death occurred in a hospital or medical center. The 1990 data were obtained from the following two items appearing on the revised U.S. Standard Certificate of Death (1):

- Item 9a. Place of Death (check only one)
Hospital: Inpatient, ER/Outpatient, DOA
Other: Nursing Home, Residence, Other (specify)
- Item 9b. Facility Name (If not institution, give street and number)

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

Except for Oklahoma, all of the States (including New York City) and the District of Columbia have item 9 (or its equivalent) on their certificates. Louisiana’s certificate was revised in 1989, but the computer system was not changed. Therefore, the same detail categories used in 1988 were used in 1989 and 1990. As a result, not all categories were available. For all reporting States and the District of Columbia in the VSCP, NCHS accepts the state definition, classification, or code for hospitals, medical centers, nursing homes, or other institutions.

Effective with data year 1980, the coding of place of death and status of decedent was modified. A new coding category was added: “Death on arrival—hospital, clinic, medical center name not given.” Deaths coded to this category are tabulated in tables 1-30–1-32. Had the 1979 coding categories been used, these deaths would have been tabulated as “Place unknown.”

California—For the first 5 months of data year 1989, California coded “residence” to “other” for “Place of death.”

Mortality by month and date of death

Deaths by month have been tabulated regularly and published in the annual volume for each year beginning with data year 1900. For 1990, deaths by month are shown in tables 1-20, 1-21, 1-24, 1-33, 2-14–2-16, and 3-7.

Date of death was published for the first time for data year 1972. In addition, unpublished data for selected causes by date of death for 1962 are available from NCHS.

Numbers of deaths by date of death in this volume are shown in table 1-33 for the total number of deaths and for the numbers of deaths for the following three causes, for which the

greatest interest in date of occurrence of death has been expressed: Motor vehicle accidents, Suicide, and Homicide and legal intervention.

These data show the frequency distribution of deaths for the selected causes by day of the week. They also make it possible to identify holidays with peak numbers of deaths from specified causes.

Report of autopsy

Before 1972, the last year for which autopsy data were tabulated was 1958. Beginning in 1972, all registration areas requested information on the death certificate as to whether an autopsy was performed. For 1990, autopsies were reported on 239,591 death certificates, 11.2 percent of the total (table 1-29).

Information indicating whether autopsy findings were used in determining the cause of death was tabulated for 1972–73 for all but nine registration areas and from 1974–77 for all but eight registration areas. The item “autopsy findings used” was deleted from the 1978 U.S. Standard Certificate of Death.

For nine of the cause-of-death categories shown in table 1-29, autopsies were reported as performed for 50 percent or more of all deaths (Meningococcal infection; Measles; Pregnancy with abortive outcome; Other complications of pregnancy, childbirth, and the puerperium; Symptoms, signs, and ill-defined conditions; Motor vehicle accidents; Suicide; Homicide and legal intervention; and All other external causes). Autopsies were reported for only 7.1 percent of the Major cardiovascular diseases.

Cause of death

Cause-of-death classification—Since 1949, cause-of-death statistics have been based on the underlying cause of death, which is defined as “(a) the disease or injury which initiated the train of events leading directly to death, or (b) the circumstances of the accident or violence which produced the fatal injury” (12).

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

As a statistical datum, underlying cause of death is a simple, one-dimensional statistic; it is conceptually easy to understand and a well-accepted measure of mortality. It identifies the initiating cause of death and is therefore most useful to public health officials in developing measures to prevent the onset of the chain of events leading to death. The rules for

selecting the underlying cause of death are included in ICD as a means of standardizing classification, which contributes toward comparability and uniformity in mortality medical statistics among countries.

Tabulation lists—Beginning with data year 1979, the cause-of-death statistics published by NCHS have been classified according to the *Ninth Revision of the International Classification of Diseases (ICD-9)* (12). In addition to specifying that ICD-9 be used, WHO also recommends how the data should be tabulated to promote international comparability. The recommended system for tabulating data in ICD-9 allows countries to construct their mortality and morbidity tabulation lists from the rubrics of the WHO Basic Tabulation List (BTL) if the rubrics from the WHO mortality and morbidity lists, respectively, are included. This tabulation system for the Ninth Revision is more flexible than that of the Eighth Revision, in which specific lists were recommended for tabulating mortality and morbidity data.

The BTL recommended under the Ninth Revision consists of 57 two-digit rubrics that when added equal the “all causes” total. Identified within each two-digit rubric are up to nine three-digit rubrics that are numbered from zero to eight and whose total does not equal the two-digit rubric. The two-digit BTL rubrics 01–46 are used for the tabulation of nonviolent deaths according to ICD categories 001–799. Rubrics relating to chapter 17 (nature-of-injury causes 47–56) are not used by NCHS for selecting underlying cause of death; rather, preference is given to rubrics E47–E56. The 57th two-digit rubric VO is the Supplementary Classification of Factors Influencing Health Status and Contact with Health Services and is not appropriate for the tabulation of mortality data. The WHO Mortality List, a subset of the titles contained in the BTL, consists of 50 rubrics that are the minimum necessary for the national display of mortality data.

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

The Each-Cause List is made up of each three-digit category of the WHO Detailed List to which deaths may be validly assigned and most four-digit subcategories. The list is used for tabulation for the entire United States. The published Each-Cause table does not show the four-digit subcategories provided for Motor vehicle accidents (E810–E825); however, these subcategories that identify persons injured are shown in the accident tables of this report (section 5). Special fifth-digit subcategories also are used in the accident tables to identify place of accident when deaths from nontransport accidents are shown. These are not shown in the Each-Cause table.

The List of 282 Selected Causes of Death is constructed from BTL rubrics 01–46 and E47–E56. Each of the 56 BTL two-digit titles can be obtained either directly or by combining titles in the List. The three-digit level of the BTL is modified more extensively. Where more detail was desired, categories not shown in the three-digit rubrics were added to the List of 282

Selected Causes of Death. Where less detail was needed, the three-digit rubrics were combined. Moreover, each of the 50 rubrics of the WHO Mortality List can be obtained from the List of 282 Selected Causes of Death.

The List of 72 Selected Causes of Death was constructed by combining titles in the List of 282 Selected Causes of Death. It is used in tables published for the United States, for each State, and for metropolitan statistical areas.

The List of 61 Selected Causes of Infant Death shows more detailed titles for Congenital anomalies and Certain conditions originating in the perinatal period than any other list except the Each-Cause List.

The List of 34 Selected Causes of Death was created by combining titles in the List of 72 Selected Causes. A table using this list is published for detailed geographic areas.

Beginning with data for 1987, changes were made in these lists to accommodate the introduction in the United States of new category numbers *042–*044 for Human immunodeficiency virus (HIV) infection. The changes are described in the Technical Appendix from *Vital Statistics for the United States, 1987*.

Effect of list revisions—The International Lists or adaptations of them, used in the United States since 1900, have been revised approximately every 10 years so the disease classifications may be consistent with advances in medical science and with changes in diagnostic practice. Each revision of the International Lists has produced some break in comparability of cause-of-death statistics. Cause-of-death statistics beginning with 1979 are classified by NCHS according to the ICD-9 (12). For a discussion of each of the classifications used with death statistics since 1900, see *Vital Statistics of the United States, 1979*, Volume II, Mortality, Part A, section 7, pages 9–14.

A dual coding study was undertaken in which the Ninth and the Eighth Revisions were compared to measure the extent of discontinuity in cause-of-death statistics resulting from introducing the new Revision. A study for the List of 72 Selected Causes of Death and the List of 10 Selected Causes of Infant Death has been published (13). The List of 10 Selected Causes of Infant Death is a basic NCHS tabulation list not used in this volume but used for provisional data in the *Monthly Vital Statistics Report*, another NCHS publication. Comparability studies were also undertaken between the Eighth and Seventh, Seventh and Sixth, and Sixth and Fifth Revisions. For additional information about these studies, see the Technical Appendix from *Vital Statistics for the United States, 1979*.

Significant coding changes under the Ninth Revision—Since the implementation of ICD-9 in the United States, effective with mortality data for 1979, several coding changes have been introduced. The more important changes are discussed as follows. In early 1983, a change that affected data from 1981 to 1986 was made in the coding of acquired immunodeficiency syndrome (AIDS) and HIV infection. Also effective with data year 1981 was a coding change for poliomyelitis. For data year 1982, the definition of child was changed (which affects the classification of deaths to a number of categories, including Child battering and other maltreatment), and guidelines for coding deaths to the category Child battering and other maltreatment (ICD category number E967) were

changed also. During the calendar year 1985, detailed instructions for coding motor vehicle accidents involving all-terrain vehicles (ATV's) were implemented to ensure consistency in coding these accidents. Effective with data year 1986, "primary" and "invasive" tumors, unspecified, were classified as "malignant"; these neoplasms had been classified to Neoplasms of unspecified nature (ICD-9 category number 239).

Beginning with data for 1987, NCHS introduced new category numbers *042–*044 for classifying and coding HIV infection, formerly referred to as human T-cell lymphotropic virus-III/lymphadenopathy associated virus (HTLV-III/LAV) infection. The asterisk appearing before the category numbers indicates these codes are not part of ICD-9. Also changed effective with data year 1987 were coding rules for the conditions "dehydration" and "disseminated intravascular coagulopathy." Effective with data year 1988, minor content changes were made to the classification for HIV infection. Detailed discussion of these changes may be found in the technical appendix for previous volumes.

Coding in 1990—The rules and instructions used in coding the 1990 mortality medical data remained essentially the same as those used for the 1988 and 1989 data.

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

A number of studies have been undertaken on the quality of medical certification on the death certificate. In general, these have been for relatively small samples and for limited geographic areas. A bibliography prepared by NCHS (14), covering 128 references over 23 years, indicates no definitive conclusions have been reached about the quality of medical certification on the death certificate. No country has a well-defined program for systematically assessing the quality of medical certifications reported on death certificates or for measuring the error effects on the levels and trends of cause-of-death statistics.

One index of the quality of reporting causes of death is the proportion of death certificates coded to the Ninth Revision, Chapter XVI, Symptoms, signs, and ill-defined conditions (ICD-9 category numbers 780–799). Although deaths occur for which it is impossible to determine the underlying cause, this proportion indicates the care and consideration given to the certification by the medical certifier. This proportion also may be used as a rough measure of the specificity of the medical diagnoses made by the certifier in various areas. In 1990, a record low of 1.1 percent of all reported deaths in the United States were assigned to this category compared with 1.3 for 1989. However, trends in the percent of deaths assigned to this category vary by age. Although the percent of deaths in this category for all ages combined has generally remained stable since 1980, decreases

have occurred for the age group 55–64 years since 1983, for age group 65–74 years since 1982, for age group 75–84 years since 1986, and for 10-year age groups from 15 to 54 years since 1988. Between 1989 and 1990, the percent decreased for all age groups, except for the age group under 1 year of age; the percent for this age group was unchanged.

Automated selection of underlying cause of death—Before data year 1968, mortality medical data were based on manual coding of an underlying cause of death for each certificate in accordance with WHO rules. Effective with data year 1968, NCHS converted to computerized coding of the underlying cause and manual coding of all causes (multiple causes) on the death certificate. This system is called "Automated Classification of Medical Entities" (ACME) (15).

Beginning with data year 1990, another computer system was implemented. This system, called "Mortality Medical Indexing, Classification, and Retrieval" (MICAR) (16,17), automates the coding of the multiple causes of death. The MICAR system is a major and logical step forward in the evolution of processing mortality data. MICAR takes advantage of the increasing capabilities of electronic data processing to produce information that is more consistently handled than manually processed information. In addition, MICAR ultimately will provide more detailed information on the conditions reported on the death certificates than is available in the ICD classification (18). In this first year of implementation, only about 5 percent (94,372) of the Nation's death records were multiple cause coded using MICAR with subsequent processing through ACME. This includes at least a portion of the data from the following States: Alabama, Kentucky, Oregon, Rhode Island, and West Virginia. The remainder of the national file was processed by either NCHS or the States using only the ACME system. Tests have been conducted on the comparability of MICAR and manually-coded records. (See "Medical items on the death certificate.")

The ACME system applies the same rules for selecting the underlying cause as would be applied manually by a nosologist; however, under this system, the computer consistently applies the same criteria, thus eliminating intercoder variation in this step of the process.

The ACME computer program requires the coding of all conditions shown on the medical certification. These codes are matched automatically against decision tables that consistently select the underlying cause of death for each record according to the international rules. The decision tables provide the comprehensive relationships among the conditions classified by ICD when applying the rules of selection and modification.

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

the ACME computer program, as well as by using the ACME decision tables, are documented in NCHS instruction manuals (15,19,20).

Cause-of-death ranking—Cause-of-death ranking (except for infants) is based on numbers of deaths assigned to categories in the List of 72 Selected Causes of Death and the category Human immunodeficiency virus infection (*042–*044); cause-of-death ranking for infants is based on the List of 61 Selected Causes of Infant Death and HIV infection. HIV infection was added to the list of rankable causes effective with data year 1987.

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

Maternal deaths

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

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

Under the Eighth Revision, maternal deaths were assigned to the category “Complications of pregnancy, childbirth, and the puerperium” (ICDA-8 category numbers 630–678). Although WHO did not define maternal mortality, an NCHS classification rule existed that limited the definition of a maternal death to a death that occurred within a year after termination of pregnancy from any “maternal cause,” that is, any cause within the range of ICDA-8 category numbers 630–678. This rule applied only if a duration was given for the condition. If no duration was specified and the underlying cause of death was a maternal condition, the duration was assumed to be within a year and the death was coded by NCHS as a maternal death. The change from an under-1-year limitation for duration used in the Eighth Revision to an under-42-days limitation used in the Ninth Revision did not have much effect on the comparability of maternal mortality statistics. However, comparability was affected by the following classification change. Under the Ninth Revision, maternal causes of death have been expanded to include Indirect obstetric causes (ICD-9 category numbers 647–648). These causes include Infective and parasitic conditions as well

as other conditions present in the mother and classifiable elsewhere but that complicate pregnancy, childbirth, and the puerperium, such as Syphilis, Tuberculosis, Diabetes mellitus, Drug dependence, and Congenital cardiovascular disorders.

Maternal mortality rates are computed on the basis of the number of live births. The maternal mortality rate indicates the likelihood of a pregnant woman dying of maternal causes. The number of live births used in the denominator is an approximation of the population of pregnant women who are at risk of a maternal death.

Race—Beginning with the 1989 data year, NCHS changed the method of tabulating live birth and fetal death data by race from race of child to race of mother. This resulted in a discontinuity in maternal mortality rates by race between 1989 and 1990 and previous years; see section on “Change in tabulation of race data for live births and fetal deaths” under “Infant deaths.”

Infant deaths

Age—Infant death is defined as a death under 1 year of age. The term excludes fetal deaths. Infant deaths usually are divided into two categories according to age, neonatal and postneonatal. Neonatal deaths are those that occur during the first 27 days of life; postneonatal deaths are those that occur between 28 days and 1 year of age. Generally, it has been believed that different factors influencing the child’s survival predominate in these two periods: Factors associated with prenatal development, heredity, and the birth process were considered dominant in the neonatal period; environmental factors, such as nutrition, hygiene, and accidents, were considered more important in the postneonatal period. Recently, however, the distinction between these two periods has blurred due in part to advances in neonatology, which have enabled more very small premature infants to survive the neonatal period.

Rates—Infant mortality rates shown in sections 2 and 8 are the most commonly used indices for measuring the risk of dying during the first year of life; they are calculated by dividing the number of infant deaths in a calendar year by the number of live births registered for the same period and are presented as rates per 1,000 or per 100,000 live births. Infant mortality rates use the number of live births in the denominator to approximate the population at risk of dying before the first birthday. This measure is an approximation because some live births will not have been exposed to a full year’s risk of dying and some of the infants who die during a year will have been born in the previous year. The error introduced in the infant mortality rate by this inexactness is usually small, especially when the birth rate is relatively constant from year to year (21,22). Other sources of error in the infant mortality rate have been attributed to differences in applying the definitions for infant death and fetal death when registering the event (23,24).

In contrast to infant mortality rates based on live births, infant death rates shown in section 1 are based on the estimated population under 1 year of age. Infant death rates, which appear in tabulations of age-specific death rates, are calculated by dividing the number of infant deaths in a calendar year by the estimated midyear population of persons under 1 year of age

and are presented as rates per 100,000 population in this age group. Patterns and trends in the infant death rate may differ somewhat from those of the more commonly used “infant mortality rate,” mainly because of differences in the nature of the denominator and in the time reference. Whereas the population denominator for the infant death rate is estimated using data on births, infant deaths, and migration for the 12-month period of July–June, the denominator for the infant mortality rate is a count of births occurring during the 12 months of January–December. The difference in the time reference can result in different trends between the two indices during periods when birth rates are moving up or down markedly.

The infant death rate also is subject to greater imprecision than is the infant mortality rate because of problems of enumerating and estimating the population under 1 year of age (24).

Change in tabulation of race data for live births and fetal deaths—Beginning with the 1989 data year, NCHS changed the method of tabulating live birth and fetal death data by race from race of child to race of mother. This results in infant, fetal, perinatal, and maternal mortality rates for 1989 that are not comparable with those published for previous years, because live births comprise the denominator of these rates. To facilitate continuity and ease of interpretation, key published tables for 1989 and 1990, including all trend tables, will show data computed on the basis of live births and fetal deaths tabulated by both race of mother and race of child. This will make it possible to distinguish the effects of this change from real changes in the data.

As in previous years, race for infant and maternal deaths (the numerator of the rate) is tabulated by the race of the decedent. For fetal and perinatal mortality rates, the numerator and the denominator of the rates are affected because the change to race of mother affects fetal deaths and live births.

As noted in detail in the Technical Appendix from *Vital Statistics of the United States, 1989*, Volume I, Natality, data on live births and fetal deaths are tabulated by the race of the mother. When the race of the mother is unknown, the race of the mother is assigned to the father’s race; when information for both parents is missing, the race of the mother is assigned to the specific race of the mother of the preceding record with known race. In previous years, birth and fetal death tabulations were calculated by race of child as determined statistically by an algorithm based on information reported for the mother and

father. In cases of mixed parentage where only one parent was white, the child was assigned to the other parent’s race. When neither parent was white, the child was assigned the race of the father, except if either parent was Hawaiian, the child was assigned to Hawaiian. If race was not reported for one parent, the child was assigned the race of the parent for whom race was given.

The change in the tabulation of live births and fetal deaths by race reflects three factors over the past two decades: the topical content of the birth certificate has been expanded to include considerable health and demographic information related to the mother, the increasing incidence of interracial parentage, and the growing proportion of births for which the race of the father is not reported.

Quantitatively, the change in the basis for tabulating live births and fetal deaths by race results in more white births and fetal deaths and fewer to the black population and to other races. Consequently, infant, fetal, perinatal, and maternal mortality rates under the new classification tend to be lower for white infants and higher for infants of other races (table A). In general, discontinuities are larger for infant and maternal mortality rates, where only the denominator of the rate is affected by the change, than for fetal and perinatal mortality rates, where the numerator and the denominator are affected. For some minority race groups, the effect of the change is quite large.

The change in the race classification of live births and fetal deaths presents challenges to those analyzing infant, fetal, perinatal, and maternal mortality data, particularly trend data. To facilitate analysis of infant mortality by race, reports will be prepared showing historic data tabulated by race of mother.

Comparison of race data from birth and death certificates—Regardless of whether vital events are tabulated by race of mother or by race of child, inconsistencies exist in reporting race for the same infant between birth and death certificates, based on results of studies in which race on the birth and death certificates for the same infant were compared (25).

These reporting inconsistencies can result in systematic biases in infant mortality rates by specified race, in particular, underestimates for specified races other than white or black. In the computation of race-specific infant mortality rates published in *Vital Statistics of the United States*, the race item for the numerator comes from the death certificate, and for the denominator, from the birth certificate. Biases in the rates may arise

Table A. Ratio of Infant, neonatal, postneonatal, maternal, and perinatal mortality rates with race for live births tabulated according to race of mother to those with race for live births tabulated according to race of child: United States, 1990

Race	Infant deaths	Neonatal deaths	Postneonatal deaths	Maternal deaths	Fetal deaths	Perinatal definition		
						I	II	III
All races	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
White	0.99	0.98	1.00	1.00	1.00	0.99	0.98	0.99
Black	1.06	1.06	1.05	1.00	1.02	1.04	1.04	1.04
American Indian	1.26	1.26	1.26	*	1.06	1.13	1.13	1.12
Chinese	1.08	1.04	1.09	*	1.00	1.00	1.04	1.04
Japanese	1.20	1.19	*	*	0.96	1.02	1.04	1.03
Hawaiian	1.44	1.42	1.46	*	1.04	1.16	1.21	1.19
Filipino	1.03	1.06	1.09	*	1.00	1.04	1.03	1.03
Other Asian	1.10	1.06	1.05	*	1.03	1.03	1.06	1.06
Other races	*	*	*	*	1.23	1.25	1.24	1.23

Table B. Infant mortality rates by race of mother for the period 1985–87 and for birth cohorts, 1985–87; and ratio of birth cohort to period rates: United States

[Rates per 1,000 live births in specified groups]

Race	Period rate 1985–87	Birth cohort rate 1985–87	Ratio cohort/ period rates
All races	10.4	10.1	0.97
White	8.8	8.5	0.97
Black	18.9	18.2	0.96
American Indian	12.2	13.3	1.09
Chinese	5.5	6.0	1.09
Japanese	5.3	6.6	1.25
Filipino	5.1	7.2	1.41
Other Asian and Pacific Islander	7.0	8.3	1.19

NOTE: Births for race not stated are not distributed.

because of possible inconsistencies in reporting race on these two vital records. Race of the mother and father is reported on the birth certificate by the mother at the time of delivery; whereas race of the deceased infant is reported on the death certificate by the funeral director based on observation or on information supplied by an informant, such as a parent. Previous studies have noted the race for an infant who died and was of a smaller minority race group is sometimes reported as white on the death certificate, but is reported as the minority race group on the birth certificate, resulting, in the aggregate, in understatement of infant mortality for smaller race groups (25).

Estimates can be made of the degree of bias in race-specific infant mortality rates by comparing rates for birth cohorts based on the newly available linked birth and infant death data set (26,27) with period rates based on mortality data published in *Vital Statistics of the United States* for the same year(s).

The comparison of cohort and period rates is somewhat affected by small differences in the events included in the numerators of the two rates. The numerator of the cohort rate is comprised of infant deaths to the cohort of infants born in a calendar year whereas the numerator of the period rate is comprised of infant deaths occurring in the calendar year.

Based on data comparing infant mortality rates from the linked data set for the birth cohorts of 1985–87 with period rates constructed for 1985–87, bias in the rates for the two major race groups—white and black—is small (table B). However, cohort rates for the smaller race groups are estimated to be higher than period rates by 9 to 41 percent. Cohort rates have not been adjusted to reflect the approximately 2 percent of infant death records that were not linked to their corresponding birth records. Because of systematic understatement of infant mortality rates based on period data, data from the national linked files should be used to measure infant mortality for races other than black and white. For the major race groups, period data are a close approximation of the rates based on linked files.

Hispanic origin—Infant mortality rates for the Hispanic-origin population are based on numbers of resident infant deaths reported to be of Hispanic origin and numbers of resident live births by Hispanic origin of mother for the 45 States, New York State (excluding New York City), and the District of Columbia. In computing infant mortality rates, deaths and live births of unknown origin are not distributed among the specified Hispanic and non-Hispanic groups. Because the percent of infant deaths of unknown origin for 1990 was 1.6 percent and the percent of live births of unknown origin was 1.0 percent, infant mortality rates by specified Hispanic origin and race for non-Hispanic origin are slightly underestimated.

Caution should be exercised when comparing infant mortality rates among the Hispanic populations (especially Puerto Ricans) and non-Hispanic populations for 1990. Because the percent unknown origin for all ages for New York City was about 19 percent on a place-of-occurrence basis, infant mortality data for New York City was excluded from tables 2-22–2-25. The percent unknown origin on a place-of-residence basis for infant deaths for New York City for 1990 was about 28 percent (about 5 percent for live births). Also, because New York City accounted for about 33 percent of the live births to Puerto Ricans in the United States in 1990, excluding the data

Table C. Infant mortality rates by specified Hispanic origin and race for non-Hispanic origin for three methods of allocating "unknown origins": Total of 45 States, New York State (including and excluding New York City), and the District of Columbia, 1990

[Rate per 1,000 live births in specific group]

Method and area	All origins	Hispanic					Non-Hispanic		
		Total	Mexican	Puerto Rican	Cuban ¹	Other Hispanic	Total ²	White	Black
No allocation									
45 States, New York (excluding New York City), D.C.	9.1	7.8	7.7	10.2	7.6	7.2	9.3	7.4	17.9
45 States, New York (including New York City), D.C.	9.2	7.7	7.7	8.7	7.2	7.2	9.3	7.4	17.7
Proportional allocation of all areas combined									
45 States, New York (excluding New York City), D.C.	9.1	7.8	7.8	10.3	7.6	7.2	9.4	7.5	18.0
45 States, New York (including New York City), D.C.	9.2	7.8	7.8	8.8	7.4	7.4	9.5	7.6	18.1
Proportional allocation for each area and summed									
45 States, New York (excluding New York City), D.C.	9.1	7.8	7.8	10.3	7.6	7.2	9.4	7.5	18.1
45 States, New York (including New York City), D.C.	9.2	7.9	7.7	9.4	7.3	7.7	9.5	7.5	18.3

¹Includes Central and South American and Other and unknown Hispanic

²Includes races other than white and black.

for New York City may have an impact on infant mortality rates for the Hispanic population, especially for Puerto Ricans.

Table C shows the effects of including and excluding infant deaths and live births for New York City for 1990 in the infant mortality rates for the total area using three methods. The three methods are as follows: (a) No allocation of infant deaths (or live births), (b) proportional allocation of infant deaths (and live births) for all geographic areas combined, and (c) proportional allocation of infant deaths (and live births) for each geographic area separately and then combined for the total area.

Proportional allocation assumes that the percent distribution of deaths (and live births) of unknown origin is the same as for deaths (and live births) of known origin.

Method c is believed to be the best method for comparing the impact of including or excluding data for New York City, because of geographic variation in the race and ethnic composition of the population. For method c and using the rates excluding New York City as the base, the difference in infant mortality rates is no greater than 1 percent between including and excluding New York City for all origins, total Hispanic, Mexican, total non-Hispanic, non-Hispanic white, and non-Hispanic black. However, the difference is about 10 percent for Puerto Ricans, 7 percent for Other Hispanic, and 4 percent for Cubans. It is unclear whether including or excluding New York City data produces the better rates.

In addition, as discussed above for specified races, period infant mortality rates for specific Hispanic-origin groups tend to be underestimated when compared with rates based on the national linked birth and infant death data set as shown in table D. Comparisons also are affected by the approximate 2 percent of infant death records that are not linked to the corresponding birth records.

Caution should be exercised when generalizing from the ratios of cohort-to-period rates for 1986–87 with data for 1990, because the area for Hispanic data has expanded from 18 States and the District of Columbia in 1986–87 to 45 States, New York State (excluding New York City), and the District of Columbia in 1990. The Hispanic area for 1986–87 included Arizona,

Arkansas, California, Colorado, District of Columbia, Georgia, Hawaii, Illinois, Indiana, Kansas, Mississippi, Nebraska, New Jersey, New York, North Dakota, Ohio, Texas, Utah, and Wyoming.

Small numbers of infant deaths for specific Hispanic-origin groups can result in infant mortality rates subject to relatively large random variation (see “Random variation in numbers of deaths, death rates, and mortality rates and ratios.”)

Tabulation list—Causes of death for infants are tabulated according to a list of causes that is different from the list of causes for the population of all ages, except for the Each Cause List. (See “Cause-of-death classification” under “Cause of death.”)

California—From 1985 to 1988, data on age at death for California were biased in the categories 1–23 hours and 1 day because of processing errors that affected selected infants who died within 24 hours after birth. Specifically, some infants who died within 1–23 hours of birth were erroneously coded as dying at 1 day after birth. The effect of these errors on national data for the years 1985–88 shown in table 2-4 is negligible. The problem was identified and corrected for 1989 and subsequent years.

Fetal deaths

In May 1950, WHO recommended the following definition of fetal death be adopted for international use:

Death prior to the complete expulsion or extraction from its mother of a product of conception, irrespective of the duration of pregnancy; the death is indicated by the fact that after such separation, the fetus does not breathe or show any other evidence of life such as beating of the heart, pulsation of the umbilical cord, or definite movement of voluntary muscles (28).

The term “fetal death” was defined on an all-inclusive basis to end confusion arising from the use of such terms as stillbirth, spontaneous abortion, and miscarriage.

Shortly thereafter, this definition was adopted by NCHS as the nationally recommended standard. All registration areas except Puerto Rico have definitions similar to the standard definition (29). Puerto Rico has no formal definition.

As another step toward increasing comparability of data on fetal deaths for different countries, WHO recommended that for statistical purposes fetal deaths be classified as early, intermediate, and late. These groups are defined as follows:

- Less than 20 completed weeks of gestation (early fetal deaths) Group I
- 20 completed weeks of gestation but less than 28 (intermediate fetal deaths) Group II
- 28 completed weeks of gestation and over (late fetal deaths) Group III
- Gestation period not classifiable in groups I, II, and III Group IV

As shown in table 3-11, Group IV consists of fetal deaths with gestation not stated but presumed to be 20 weeks or more.

Table D. Infant mortality rates by specified Hispanic origin of mother and race of mother for mothers of non-Hispanic origin for the period 1986–87 and birth cohorts 1986 and 1987 combined; and ratio of birth cohort to period rates: Total of 18 reporting States and the District of Columbia

[Rates per 1,000 live births in specified group. Figures for origin not stated included in “All origins” but not distributed among origin groups]

Origin	Period rate 1986–87	Birth cohort rate 1986–87	Ratio cohort/period rates
All origins	10.1	9.7	0.96
Hispanic total	8.0	8.3	1.04
Mexican	7.6	7.9	1.04
Puerto Rican	7.9	10.9	1.37
Cuban	6.5	7.9	1.22
Other Hispanic ¹	9.1	8.3	0.91
Non-Hispanic total ²	9.9	9.9	1.00
Non-Hispanic white	8.3	8.2	0.99
Non-Hispanic black	17.5	17.7	1.01

¹Includes Central and South American, and Other and unknown Hispanic.
²Includes races other than white and black.

Until 1939, the nationally recommended procedure for registration of a fetal death required the filing of a live-birth certificate and a death certificate. In 1939, a separate Standard Certificate of Stillbirth (fetal death) was created to replace the former procedure. This was revised in 1949, 1956, 1968, 1978, and 1989. The 1989 U.S. Standard Report of Fetal Death is shown in figure 7-B.

The 1977 revision of the *Model State Vital Statistics Act and Model State Vital Statistics Regulations* (30) recommended spontaneous fetal deaths at a gestation of 20 weeks or more or a weight of 350 grams or more and all induced terminations of pregnancy regardless of gestational age be reported and further be reported on separate forms. These forms should be considered legally required statistical reports rather than legal documents.

Beginning with fetal deaths reported in 1970, procedures were implemented that attempted to separate reports of spontaneous fetal deaths from those of induced terminations of pregnancy. These procedures were implemented because the health implications of spontaneous fetal deaths are different from those of induced terminations of pregnancy. These procedures are still used.

Comparability and completeness of data—Registration area requirements for reporting fetal deaths vary. Most of the areas require reporting of fetal death at gestations of 20 weeks or more. Table E shows the minimum period of gestation required by each State to report fetal death. Substantial evidence exists that indicates some fetal deaths for which reporting is required are not reported (31).

Underreporting of fetal deaths is most likely to occur in the earlier part of the required reporting period for each State. Thus, for States requiring reporting of all periods of gestation, fetal deaths occurring at younger gestational ages are less completely reported. The reporting of fetal deaths at 20–23 weeks of gestation may be more complete for those States that report fetal deaths at all periods of gestation than for others.

To maximize the comparability of data by year and by State, most of the tables in section 3 are based on fetal deaths occurring at gestations of 20 weeks or more. These tables also include fetal deaths for which gestation is not stated for those States requiring reporting at 20 weeks or more gestation only. Beginning with 1969, fetal deaths of not stated gestation were excluded for States requiring reporting of all products of conception except for those with a stated birthweight of 500 grams or more. In 1990, this rule was applied to the following States: Georgia, Hawaii, New York (including New York City), Rhode Island, and Virginia. Each year, there are exceptions to this procedure.

Arkansas—Since 1971, Arkansas has been using two reporting forms for fetal deaths: A confidential Spontaneous Abortion form that is not sent to NCHS and a Fetal Death Certificate that is. During the period 1971–80, it is believed that most spontaneous fetal deaths of less than 20 weeks' gestation were reported on the confidential form and, therefore, were not reported to NCHS. During the period 1981–83, Arkansas specified that fetal deaths of less than 28 weeks' gestation or weighing less than 1,000 grams could be reported on the confidential form; beginning with 1984 data, the State specified

that fetal deaths of 20 weeks' gestation or weighing 500 grams be reported on the Fetal Death Certificate. Because of these changes, the comparability of counts of early fetal deaths may be affected. In particular, counts of fetal deaths at 20 to 27 weeks for 1981–83 were not comparable between Arkansas and other reporting areas or with Arkansas data for 1984–90. It is believed that reporting has improved but is still not comparable with data for 1980 and earlier years.

Colorado—Although Colorado State law requires reporting fetal deaths of all periods of gestation, beginning in 1989 the State provides to NCHS only data for fetal deaths of 20 weeks' gestation or more.

Maine—Maine uses two reporting forms for fetal deaths: A Report of Abortion (Spontaneous and Induced) and a Report of Fetal Death. Most spontaneous fetal deaths at less than 20 weeks' gestation are reported on the Report of Abortion, and, therefore, are excluded from fetal death counts in this volume.

Maryland—From the counts of frequencies by month, it appears that not all fetal deaths occurring in the first quarter of 1989 were reported. This may account in part for the lower number of fetal deaths and fetal mortality rates for Maryland for 1989 relative to 1990.

Wisconsin—Beginning in 1986, Wisconsin changed its reporting requirements for spontaneous fetal deaths from "20 weeks" to "20 weeks or 350 grams."

Revised Report of Fetal Death for 1989—Beginning with data for 1989, new items were added to the U.S. Standard Report of Fetal Death, including Hispanic origin of the mother and father, medical and other risk factors of pregnancy, obstetric procedures, and method of delivery. In addition, questions on complications of labor and/or delivery and congenital anomalies of fetus were changed from an open-ended question to a checkbox format to ensure more complete reporting of information. However, because of differences in implementation dates of the new fetal death report for reporting States, and because of inexperience in reporting and processing the new items, reporting of the new items in individual States may be incomplete for 1990. The data quality and completeness of many of these items are being evaluated.

The tabulation of items in the fetal death section is limited to those States whose reporting is sufficiently complete. For fetal deaths, data are published when a State has a response for the item on at least 20 percent of the records.

Period of gestation—The period of gestation is the number of completed weeks elapsed between the first day of the last normal menstrual period (LMP) and the date of delivery. The first day of 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 LMP. Data on period of gestation are computed from information on "date of delivery" and "date last normal menses began." If "date last normal menses began" is not on the record or if the calculated gestation falls beyond a duration considered biologically plausible, the "Physician's estimate of gestation" is used.

To improve data quality, beginning with data for 1989, NCHS instituted a new computer edit to check for consistency between gestation and birthweight (32). Briefly, if LMP gestation is inconsistent with birthweight, and the physician's esti-

SECTION 7 – TECHNICAL APPENDIX – PAGE 16

Table E. Period of gestation at which fetal-death reporting is required: Each reporting area, 1990

Area	All periods of gestation	16 weeks	20 weeks	20 weeks or 350 grams	20 weeks or 400 grams	5 months	350 grams	500 grams
Alabama			X					
Alaska			X					
Arizona			¹ X					
Arkansas	² X							
California			X					
Colorado	² X							
Connecticut			X					
Delaware			X					
District of Columbia						X		
Florida			X					
Georgia	X							
Hawaii	X							
Idaho				X				
Illinois			X					
Indiana			X					
Iowa			X					
Kansas								X
Kentucky				X				
Louisiana				X				
Maine	² X							
Maryland			³ X					
Massachusetts				X				
Michigan					X			
Minnesota			X					
Mississippi				X				
Missouri				X				
Montana			X					
Nebraska			X					
Nevada			X					
New Hampshire				X				
New Jersey			X					
New Mexico								X
New York								X
New York excluding New York City	X							
New York City	X							
North Carolina			X					
North Dakota			X					
Ohio			X					
Oklahoma			X					
Oregon			⁴ X					
Pennsylvania		X						
Rhode Island	X							
South Carolina				X				
South Dakota								
Tennessee								⁵ X
Texas			X					
Utah			X					
Vermont			⁶ X					
Virginia	X							
Washington			X					
West Virginia			X					
Wisconsin				X				
Wyoming			X					
Puerto Rico							X	
Virgin Islands	X							
Guam			X					

¹If gestational age is unknown, weight of 350 grams or more.

²Although State law requires the reporting of fetal deaths of all periods of gestation, only data for fetal deaths of 20 weeks or more gestation are provided to NCHS.

³If gestational age is unknown, weight of 500 grams or more.

⁴If gestational age is unknown, weight of 400 grams or more, or crown-heel length of 28 centimeters or more.

⁵If weight is unknown, 22 completed weeks' gestation or more.

⁶If gestational age is unknown, weight of 400 or more grams, 15 or more ounces.

mate is consistent, the physician's estimate is used; if both are inconsistent, LMP gestation is used, and birthweight is assigned to unknown. When the period of gestation is reported in months on the report, it is allocated to gestational intervals in weeks as follows:

- 1–3 months to under 16 weeks
- 4 months to 16–19 weeks
- 5 months to 20–23 weeks
- 6 months to 24–27 weeks
- 7 months to 28–31 weeks
- 8 months to 32–35 weeks
- 9 months to 40 weeks
- 10 months and over to 43 weeks and over

All areas except Puerto Rico reported LMP, and all areas except California, the District of Columbia, Louisiana, Maryland, and Oklahoma reported physician's estimate of gestation. Nebraska also was excluded because of the large proportion of unknown.

Birthweight—Most of the 55 registration areas do not specify how weight should be given, that is, in pounds and ounces or in grams. In the tabulation and presentation of birthweight data, the metric system (grams) has been used to facilitate comparison with other data published in the United States and internationally. Birthweight specified in pounds and ounces is assigned the equivalent of the gram intervals, as follows:

- Less than 350 grams = 0 lb 12 oz or less
- 350–499 grams = 0 lb 13 oz–1 lb 1 oz
- 500–999 grams = 1 lb 2 oz–2 lb 3 oz
- 1,000–1,499 grams = 2 lb 4 oz–3 lb 4 oz
- 1,500–1,999 grams = 3 lb 5 oz–4 lb 6 oz
- 2,000–2,499 grams = 4 lb 7 oz–5 lb 8 oz
- 2,500–2,999 grams = 5 lb 9 oz–6 lb 9 oz
- 3,000–3,499 grams = 6 lb 10 oz–7 lb 11 oz
- 3,500–3,999 grams = 7 lb 12 oz–8 lb 13 oz
- 4,000–4,499 grams = 8 lb 14 oz–9 lb 14 oz
- 4,500–4,999 grams = 9 lb 15 oz–11 lb 0 oz
- 5,000 grams or more = 11 lb 1 oz or more

With the introduction of ICD–9, the birthweight classification intervals for perinatal mortality statistics were shifted downward by 1 gram as shown above. Previously, the intervals were, for example, 1,001–1,500, 1,501–2,000, and so forth. Beginning in 1989, NCHS instituted a consistency check between birthweight and gestation; see previous section on gestation.

Race—Beginning with data for 1989, NCHS changed the method of tabulating fetal death, perinatal, and live birth data by race from race of child to race of mother. This has resulted in a discontinuity in fetal mortality rates by race between 1989 and 1990 relative to previous years; see "Change in tabulation of race data for live births and fetal deaths" under "Infant deaths."

Hispanic origin of mother—Fetal mortality data for the Hispanic-origin population are based on fetal deaths to mothers of Hispanic origin who were residents of those States and the District of Columbia that included items on the report of fetal death to identify Hispanic or ethnic origin of mother. Data for 1990 were obtained from 44 States and the District of Columbia; areas not supplying data were Louisiana, Maryland, Massachusetts, New Hampshire, Oklahoma, and Rhode Island.

For 1990, fetal and perinatal mortality data in table 3-19 are for 44 States and the District of Columbia and tables 3-20, 4-6, and 4-7 are for 36 States and the District of Columbia that had an item on Hispanic or ethnic origin on the death certificate, birth certificate, and report of fetal death and whose data for all three files were at least 90 percent complete on a place-of-occurrence basis and considered to be sufficiently comparable to be used for analysis. The States included are Alabama, Alaska, Arizona, Arkansas, California, Colorado, Delaware, Florida, Georgia, Hawaii, Idaho, Illinois, Indiana, Iowa, Kansas, Kentucky, Minnesota, Mississippi, Missouri, Montana, Nebraska, Nevada, New Jersey, North Carolina, Ohio, Oregon, Pennsylvania, South Carolina, South Dakota, Tennessee, Texas, Utah, Vermont, West Virginia, Wisconsin, and Wyoming.

The 36 States and the District of Columbia for which fetal and perinatal data by Hispanic origin are shown accounted for about 81 percent of the Hispanic population in 1990, including 93 percent of the Mexican population, 45 percent of the Puerto Rican population, 88 percent of the Cuban population, and 65 percent of the "Other Hispanic" population (10). Accordingly, caution should be exercised in generalizing mortality patterns from the reporting area to the Hispanic-origin population (especially Puerto Ricans) of the entire United States. (See also "Hispanic origin" under "Classification of Data").

Total-birth order—Total-birth order refers to the sum of live births and other terminations (including spontaneous fetal deaths and induced terminations of pregnancy) a woman has had, including the fetal death being recorded. For example, if a woman has given birth to two live babies and to one born dead, the next fetal death to occur is counted as number four in total-birth order.

Beginning with implementation of the 1989 revision of the U.S. Standard Report of Fetal Death, total-birth order is calculated from three items on pregnancy history: number of previous live births now living; number of previous live births now dead; and number of other terminations (spontaneous and induced at anytime after conception). For prior years, total-birth order was calculated from four items, see the Technical Appendix from *Vital Statistics of the United States, 1988, Volume II, Mortality, Part A*.

Although all registration areas use the two standard items pertaining to number of previous live births, registration areas phrase the item on pertaining to other terminations of pregnancy differently. Total-birth order for all areas is calculated from the sum of available information. Thus, information on total-birth order may not be completely comparable among the registration areas. In addition, there may be substantial underreporting of other terminations of pregnancy on the fetal death report.

Marital status—Table 3-3 shows fetal deaths and fetal-death rates by mother's marital status. The following States were excluded from this table because their reports of fetal death did not include an item on marital status: California, Connecticut, Maryland, Michigan, Nevada, New York (including New York City), Ohio, and Texas. Because live births comprise the denominator of the rate, marital status must be reported for mothers of live births also. Marital status of the mother of the live birth is inferred for States that did not report it on the birth certificate.

Beginning with data for 1989, fetal deaths reports with marital status not stated are shown as not stated in frequencies, but are proportionally distributed for rate computations into either the married or unmarried categories according to the percent of fetal death reports with stated marital status that fall into each category for the reporting States. Before 1989, fetal death reports with not-stated marital status were assigned to the married category. Because of this change, fetal death frequencies and rates by marital status for 1989 and 1990 are not strictly comparable with those for previous years.

No quantitative data exist on the characteristics of unmarried women who do not report, misreport their marital status, or fail to register fetal deaths. Underreporting may be greater for the unmarried group than for the married group.

Age of mother—Beginning with data for 1989, the U.S. Standard Report of Fetal Death asks for the mother's date of birth. Age of mother is computed from the mother's date of birth and the date of the termination of the pregnancy. For those States whose certificates do not contain an item for the mother's date of birth, reported age of the mother (in years) is used. The age of the mother is edited in NCHS for upper and lower limits. When mothers are reported to be under 10 years of age or 50 years of age and over, the age of the mother is considered not stated and is assigned as follows: Age on all fetal-death records with age of mother not stated is assigned according to the age appearing on the record previously processed for a mother of identical race and having the same total-birth order (total of live births and other terminations).

Sex of fetus—Beginning with data for 1989, for all fetal deaths of 20 or more weeks gestation, not-stated sex of fetus is assigned the sex of the fetus from the previous record. Before 1989, no such assignment was made.

Plurality—All registration areas except Louisiana report the plurality of the fetus. Although Louisiana has not reported this item for many years, prior to 1989, data for Louisiana was erroneously converted to a plurality of 1 (single birth) and included in United States totals. Beginning with 1989 data, Louisiana is excluded from tables reporting plurality of the fetus. For reporting areas, not-stated plurality of the fetus is assigned to single births.

Perinatal mortality

Perinatal definitions—Beginning with data year 1979, perinatal mortality data for the United States and each State have been published in section 4. WHO recommends in ICD-9, "national perinatal statistics should include all fetuses and infants delivered weighing at least 500 grams (or when birthweight is unavailable, the corresponding gestational age (22 weeks) or body length (25 cm crown-heel)), whether alive or dead..." It further recommends, "countries should present, solely for international comparisons, 'standard perinatal statistics' in which both the numerator and denominator of all rates are restricted to fetuses and infants weighing 1,000 grams or more (or, where birthweight is unavailable, the corresponding gestational age (28 weeks) or body length (35 cm crown-heel))." Because birthweight and gestational age are not reported on the death certificate in the United States, NCHS was unable

to adopt these definitions. Three definitions of perinatal mortality are used by NCHS: Perinatal Definition I, generally used for international comparisons, which includes fetal deaths of 28 weeks' gestation or more and infant deaths of less than 7 days; Perinatal Definition II, which includes fetal deaths of 20 weeks' gestation or more and infant deaths of less than 28 days; and Perinatal Definition III, which includes fetal deaths of 20 weeks' gestation or more and infant deaths of less than 7 days.

Variations in fetal death reporting requirements and practices have implications for comparing perinatal rates among States. Because reporting is generally sporadic near the lower limit of the reporting requirement, States that require reporting of all products of pregnancy, regardless of gestation, are likely to have more complete reporting of fetal deaths at 20 weeks or more than those States that do not. The larger number of fetal deaths reported for these "all periods" States may result in higher perinatal mortality rates than those rates reported for States whose reporting is less complete. Accordingly, reporting completeness may account, in part, for differences among the State perinatal rates, particularly differences for Definitions II and III, which use data for fetal deaths at 20-27 weeks.

Not stated—Fetal deaths with gestational age not stated are presumed to be of 20 weeks' gestation or more if the State requires reporting of all fetal deaths at a gestational age of 20 weeks or more or the fetus weighed 500 grams or more in those States requiring reporting of all fetal deaths, regardless of gestational age. For Definition I, fetal deaths at a gestation not stated but presumed to have been of 20 weeks or more are allocated to the category 28 weeks or more, according to the proportion of fetal deaths with stated gestational age that falls into that category. For Definitions II and III, fetal deaths at a presumed gestation of 20 weeks or more are included with those at a stated gestation of 20 weeks or more.

The allocation of not-stated gestational age for fetal deaths is made individually for each State, for metropolitan and nonmetropolitan areas, and separately for the entire United States. Accordingly, the sum of perinatal deaths for the areas according to Definition I may not equal the total number of perinatal deaths for the United States.

Race—Beginning with the 1989 data year, NCHS changed the method of tabulating fetal death and live birth data by race from race of child to race of mother. This has resulted in a discontinuity in perinatal mortality rates by race between 1989 and previous years; see "Change in tabulation of race data for live births and fetal deaths" under "Infant deaths."

Hispanic origin—See "Hispanic origin of mother" under "Fetal deaths."

Quality of data

Completeness of registration

All States have adopted laws requiring the registration of births and deaths and the reporting of fetal deaths. It is believed that more than 99 percent of the births and deaths occurring in this country are registered.

Table F. Numbers of deaths and ratios of deaths for selected causes according to Alaska and NCHS, 1990

[Data by place of occurrence include deaths of nonresidents. Numbers after causes of death are category numbers of the Ninth Revision International Classification of Diseases, 1975]

Causes	Alaska	NCHS	Ratio Alaska/NCHS
All causes ¹	2,214	2,216	1.00
Symptoms, signs, and ill-defined conditions 780-799	48	54	0.89
Accidents and adverse effects E800-E949	395	446	0.89
Motor vehicle accidents E810-E825	118	102	1.16
All other accidents and adverse effects E800-E807, E826-E949	277	344	0.81
Suicide E950-E959	122	71	1.72
Homicide and legal intervention E960-E978	45	31	1.45
All other external causes E980-E999	2	6	0.33

¹For two deaths underlying cause of death was not on the 1990 Alaska file sent to NCHS for evaluation.

Reporting requirements for fetal deaths vary from State to State (see "Comparability and completeness of data"). Overall reporting is not as complete for fetal deaths as for births and deaths, but it is believed to be relatively complete for fetal deaths at a gestation of 28 weeks or more. National statistical data on fetal deaths include only fetal deaths occurring at a stated or presumed gestation of 20 weeks or more.

Massachusetts data

The 1964 statistics for deaths exclude approximately 6,000 deaths registered in Massachusetts, primarily to residents of that State. Microfilm copies of these records were not received by NCHS. Figures for the United States and the New England Division are affected also.

Alabama data

The 1988 statistics for deaths show no deaths assigned to the city of Prattville in Autauga County. The death records that should have been assigned to this area were instead assigned to the Balance of county because of a processing error.

Alaska data

Numbers of deaths occurring in Alaska for each of the years 1988-90 are in error for all causes of death combined and for selected causes because NCHS did not receive changes resulting from amended records. An estimate of the effect of these omissions can be derived by comparing NCHS counts of records processed through the VSCP with counts prepared by the State of Alaska as shown in table F. Differences are concentrated among selected causes of death, principally Symptoms, signs, and ill-defined conditions (ICD-9 category numbers 780-799) and external causes. Differences for other categories

in the List of 72 Selected Causes of Death and Human immunodeficiency virus infection did not exceed a total of three deaths.

Quality control procedures

Demographic items on the death certificate—As previously indicated, for 1990 the mortality data for these items were obtained from two sources—photocopies of the original certificates furnished by the Virgin Islands and Guam and records on data tape furnished by the 50 States, the District of Columbia, New York City, and Puerto Rico. For the Virgin Islands and Guam, which sent only copies of the original certificates, the demographic items were coded for 100 percent of the death certificates. The demographic coding for 100 percent of the certificates was independently verified.

As part of the quality control procedures for mortality data, each registration area goes through a calibration period, during which it must achieve the specified error tolerance level of 2 percent per item for 3 consecutive months, based on independent verification by NCHS of a 50-percent sample of that area's records. When the area has achieved the required error tolerance level, a sample of 70-80 records per month is used to monitor quality of coding. All areas providing data on computer tapes before 1990 have achieved the specified error tolerance; accordingly, the demographic items on about 70-80 records per area per month were independently verified by NCHS. The estimated average error rate for all demographic items in 1990 was 0.25 percent.

These verification procedures involve controlling for two types of error (coding and entering into the data record tape) at the same time, and the error rates are a combined measure of both types. It may be assumed that the entering errors are randomly distributed across all items on the record, but this assumption cannot be made as readily for coding errors. Although systematic errors in coding infrequent events may escape detection during sample verification, it is probable some of these errors were detected during the initial period when 50 percent of the file was being verified, thus providing an opportunity to retrain the coders.

Medical items on the death certificate—As is true for demographic data, mortality medical data also are subject to quality control procedures to control for errors of both coding and data entry. Each of the 30 registration areas that furnished NCHS with coded medical information in 1990 according to NCHS specifications had to qualify for sample verification first. During an initial calibration period, the area had to demonstrate that its staff could achieve a specified error tolerance level of less than 5 percent for coding all medical items. After the area had achieved the required error tolerance level, a sample of 70-80 records per month was used to monitor quality of medical coding. For the 30 reporting States, the average coding error rate in 1990 was estimated at just over 4 percent.

For the remaining 20 States, the District of Columbia, New York City, Puerto Rico, the Virgin Islands, and Guam, NCHS coded the medical items for 100 percent of the death records. A 1-percent sample of the records was coded independently for quality control purposes. The estimated average error rate for these areas was about 3 percent.

The ACME system for selecting the underlying cause of death through computer application contributes to the quality control of medical items on the death certificate. (See "Automated selection of underlying cause of death.")

The MICAR system automates the coding of multiple causes of death. The quality of the data produced by MICAR is better than the quality of the data produced using manual multiple cause-of-death coding. The version of MICAR used to process 1990 records processed about 85 percent of the mortality records with an average error rate of 0.42 percent on an underlying-cause basis and a rate of 0.74 percent on a multiple-cause basis.

Demographic items on the report of fetal death—For 1990, all data on fetal deaths, except for New York State (excluding New York City), were coded under contract by the U.S. Bureau of the Census. Coding and entering of information on data tapes were verified on a 100-percent basis because of the relatively small number of records involved.

Other control procedures—After coding and entering on data tape are completed, record counts are balanced against control totals for each shipment of records from a registration area. Editing procedures ensure that records with inconsistent or impossible codes are modified. Inconsistent codes are those, for example, indicating a contradiction between cause of death and age or sex of the decedent. Records so identified during the computer editing process are either corrected by reference to the source record or adjusted by arbitrary code assignment (33). Further, conditions specified on a list of infrequent or rare causes of death are confirmed by the certifier or a State Health Officer. All subsequent operations in tabulating and in preparing tables are verified during the computer processing or by statistical clerks.

Estimates of errors arising from 50-percent sample for 1972

Death statistics for 1972 in this report (excluding fetal-death statistics) are based on a 50-percent sample of all deaths occurring in the 50 States and the District of Columbia. A description of the sample design and a table of the percent errors of the estimated numbers of deaths by size of estimate and total deaths in the area are shown in the Technical Appendix from *Vital Statistics of the United States, 1972, Volume II, Mortality, Part A*.

Computation of rates and other measures

Population bases

The population bases from which death rates shown in this report are computed are prepared by the U.S. Bureau of the Census. Rates for 1940, 1950, 1960, 1970, 1980, and 1990 are based on the population enumerated as of April 1 in the censuses for those years. Rates for all other years use the estimated midyear (July 1) population. Death rates for the United States, individual States, and Metropolitan areas are based on the total resident populations of the respective areas. Except as noted, these populations exclude the Armed Forces abroad but include the Armed Forces stationed in each area.

The resident populations of the birth- and death-registration States for 1900–32, and of the United States for 1900–90, and revised populations for 1981–89 are shown in table 7-1. In addition, the population including Armed Forces abroad is shown for the United States. Table G lists the sources for these populations.

Table G. Source for resident population and population including Armed Forces abroad: Birth- and death-registration States, 1900–32, and United States, 1900–90

Year	Source
1990	U.S. Bureau of the Census, Unpublished data from the 1990 census. 1990 CPH-L-74 and unpublished data consistent with <i>Current Population Reports, Series P-25, No. 1095</i> .
1989	U.S. Bureau of the Census, <i>Current Population Reports, Series P-25, No. 1057, 1990</i> .
1988	U.S. Bureau of the Census, <i>Current Population Reports, Series P-25, No. 1045, 1990</i> .
1986–87	U.S. Bureau of the Census, <i>Current Population Reports, Series P-25, No. 1022, Mar. 1988</i> .
1985	U.S. Bureau of the Census, <i>Current Population Reports, Series P-25, No. 1000, Feb. 1987</i> .
1984	U.S. Bureau of the Census, <i>Current Population Reports, Series P-25, No. 985, Apr. 1986</i> .
1983	U.S. Bureau of the Census, <i>Current Population Reports, Series P-25, No. 965, Mar. 1985</i> .
1982	U.S. Bureau of the Census, <i>Current Population Reports, Series P-25, No. 949, May 1984</i> .
1981	U.S. Bureau of the Census, <i>Current Population Reports, Series P-25, No. 929, May 1983</i> .
1980	U.S. Bureau of the Census, <i>U.S. Census of Population: 1980, Number of Inhabitants, PC80-1A1, United States Summary, 1983</i> .
1971–79	U.S. Bureau of the Census, <i>Current Population Reports, Series P-25, No. 917, July 1982</i> .
1970	U.S. Bureau of the Census, <i>U.S. Census of Population: 1970, Number of Inhabitants, Final Report PC(1)-A1, United States Summary, 1971</i> .
1961–69	U.S. Bureau of the Census, <i>Current Population Reports, Series P-25, No. 519, April 1974</i> .
1960	U.S. Bureau of the Census, <i>U.S. Census of Population: 1960, Number of Inhabitants, PC(1)-A1, United States Summary, 1964</i> .
1951–59	U.S. Bureau of the Census, <i>Current Population Reports, Series P-25, No. 310, June 30, 1965</i> .
1940–50	U.S. Bureau of the Census, <i>Current Population Reports, Series P-25, No. 499, May 1973</i> .
1930–39	U.S. Bureau of the Census, <i>Current Population Reports, Series P-25, No. 499, May 1973</i> , and National Office of Vital Statistics, <i>Vital Statistics Rates in the United States, 1900–1940, 1947</i> .
1920–29	National Office of Vital Statistics, <i>Vital Statistics Rates in the United States, 1900–1940, 1947</i> .
1917–19	Same as for 1930–39.
1900–16	Same as for 1920–29.

In the 1980 and 1990 censuses, a substantial number of persons did not specify a racial group that could be classified as any of the white, black, American Indian, Eskimo, Aleut, Asian, or Pacific Islander categories on the census form (34). In 1980, the number of persons of "Other" race was 6,758,319; in 1990, it was 9,804,847. In both censuses, the large majority of these persons were of Hispanic origin (based on response to a separate question on the form), and many wrote in their Hispanic origin, or Hispanic origin type (for example, Mexican and Puerto Rican) as their race. In 1980 and 1990, persons of unspecified race were allocated to one of the four tabulated racial groups (white, black, American Indian, Asian and Pacific Islander) based on their responses to the Hispanic origin question. These four race categories conform with OMB Directive 15 and are more consistent with the race categories in vital statistics.

In 1980, the allocation of unspecified race was determined using cross-tabulations of age, sex, race, type of Hispanic origin, and county of residence. Persons of Hispanic origin and unspecified race were allocated to either white or black based on their Hispanic origin type. Persons of "Other" race and Mexican origin were categorically assumed to be white, while persons in other Hispanic categories were distributed to white and black pro rata within the county-age-sex group. For "Other-race-not-specified" persons who were not Hispanic, race was allocated to white, black, or Asian and Pacific Islander based on proportions gleaned from sample data. The 20-percent sample (respondents who were enumerated on the longer census form) provided a highly detailed coding of race, which allowed identification of otherwise unidentifiable responses with a specified race category. Thus, allocation proportions were established at the State level and were used to distribute the non-Hispanic persons of "Other" race in the 100-percent tabulations.

In 1990, the race modification procedure was implemented using individual census records. Persons whose race could not be specified were assigned to a racial category using a pool of "race donors" that consisted of persons of specified race who had the identical responses to the Hispanic origin question and who were within the auspices of the same census District Office. As in the 1980 census, it appeared that the underlying assumption made in the 1990 census was that the Hispanic origin response was the major criterion for allocating race. Unlike those responding to the 1980 census who could be assigned only to the racial groups white or black, persons of Hispanic origin, including Mexican, responding to the 1990 census could be assigned to any racial group. Also, in the 1990 census, the non-Hispanic component of "Other" race was allocated primarily on the basis of geography (district office), rather than detailed characteristic.

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

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

Population for 1990—The population of the United States enumerated by age, race, and sex for 1990 is shown in table 7-2, and the population for each State by broad age groups follows in table 7-3. The figures have been modified as described.

Population estimates for 1981–89—Death rates in this volume for 1981–89 are based on revised populations that are consistent with the 1990 census level (34,35). They are, therefore, not comparable with death rates published in *Vital Statistics of the United States*, Volume II, Mortality, for 1981–89, and in other NCHS publications for those years. The 1990 census counted approximately 1.5 million fewer persons than had been estimated earlier for April 1, 1990.

Populations for 1980—The population of the United States by age, race, and sex, and the population for each State are shown in tables 7-2 and 7-3 of *Vital Statistics of the United States, 1980*, Volume II, Mortality. The figures by race have been modified as described.

Population estimates for 1971–79—Death rates in this volume for 1971–79 used revised population estimates that are consistent with the 1980 census levels. The 1980 census enumerated approximately 5.5 million more persons than had been estimated for April 1, 1980 (36). These revised estimates for the United States by age, race, and sex are published by the U.S. Bureau of the Census in *Current Population Reports*, Series P-25, Number 917. Unpublished revised estimates for States were obtained from the U.S. Bureau of the Census. For Puerto Rico, the Virgin Islands, and Guam, revised estimates are published in *Current Population Reports*, Series P-25, Number 919.

Population estimates for 1961–69—Death rates in this volume for 1961–69 are based on revised estimates of the population and thus may differ slightly from rates published before 1976. The rates shown in tables 1-1 and 1-2, the life table values in table 6-5, and the population estimates in table 7-1 for each year during 1961–69 have been revised to reflect modified population bases as published in the U.S. Bureau of the Census, *Current Population Reports*, Series P-5, Number 519. The data shown in table 1-10 for 1961–69 have not been revised.

Rates and ratios based on live births—Infant and maternal mortality rates and fetal death and perinatal mortality ratios are computed on the basis of the number of live births. Fetal death and perinatal mortality rates are computed on the basis of the number of live births and fetal deaths. Counts of live births are published annually in *Vital Statistics of the United States*, Volume I, Natality.

New Jersey—As previously indicated, data by race are not available for New Jersey for 1962 and 1963. Therefore, for 1962 and 1963 NCHS estimated a population by age, race, and sex that excluded New Jersey for rates shown by race. The methodology used to estimate the revised population excluding New Jersey is discussed in the technical appendixes of the 1962 and 1963 volumes.

Net census undercount

Errors can be introduced into the annual rates as a result of underenumeration of deaths and the misreporting of demographic characteristics. Errors in rates can also result from enumeration errors in the latest decennial census. This is because annual population estimates for the postcensal interval, which are used in the denominator for calculating death rates, are computed using the decennial census count as a base (34). Net census undercount results from the miscounting and misreporting of demographic characteristics such as age. Age-specific death rates are affected by the net census undercount and the misreporting of age on the death certificate (37). To the extent that the net undercount is substantial and that it varies among subgroups and geographic areas, it may have important consequences for vital statistics measures.

Because death rates based on a population adjusted for net census undercount may be more accurate than rates based on an unadjusted population, the possible impact of net census undercount on death rates must be considered. This can be done on a national basis using results of studies conducted by the U.S. Bureau of the Census on the completeness of coverage of the U.S. population (including underenumeration and misstatement of age, race, and sex). Such studies were conducted in the last five decennial censuses—1950, 1960, 1970, 1980, and 1990. From this work have come estimates of the national population that were not counted by age, race, and sex (38–41). The reports for 1990 (unpublished data from the U.S. Bureau of the Census) include estimates of net underenumeration and overenumeration for age, sex, and racial subgroups of the national population modified for race consistency with previous population counts as described in the section “Population Bases.” These studies indicate that, although coverage was improved over previous censuses, there was differential coverage among the population subgroups; that is, some age, race, and sex groups were more completely counted than others.

Because estimates of net census undercount are not available by age, race, and sex for individual States and counties, it is not feasible to adjust for net census undercount when presenting rates in routine tabulations. Nevertheless, it is important to be aware that net census undercounts can affect levels of observed vital rates.

Age, race, and sex—If adjustments were made for net census undercount, the size of denominators of the death rates generally would increase and the rates, therefore, would decrease. The adjusted rates for 1990 can be computed by multiplying the reported rates by ratios of the census-level resident population to the resident population adjusted for the estimated net census undercount (table 7-4). A ratio of less than 1.0 indicates a net census undercount and, when applied, results in a corresponding decrease in the death rate. A ratio greater than 1.0—indicates a net census overcount—and when multiplied by the reported rate results in an increase in the death rate.

Coverage ratios for all ages show that, in general, females were more completely enumerated than males and the white population more completely enumerated than the black population in the 1990 Census of Population. Underenumeration varied by age group for the total population, with the greatest differences found for persons aged 85 years and over. All other age groups were overcounted or undercounted by less than 4.0 percent. Among the age-sex-race groups, underenumeration was highest (13.3 percent) for black males aged 25–34 years. In contrast, white females in this age group were underenumerated by 2.5 percent.

If vital statistics measures were calculated with adjustments for net census undercounts for each population subgroup, the resulting rates would be differentially reduced from their original levels; that is, rates for those groups with the greatest estimated undercounts would show the greatest relative reductions due to these adjustments. Similar effects would be evident in the opposite direction for groups with overcounts. Consequently, the ratio of mortality between the rates for males and females and between the rates for the white population and the black population usually would be reduced.

Similarly, the differences between the death rates among subgroups of the population by cause of death would be affected by adjustments for net census undercounts. For example, in 1990 for the age group 35–39 years, the ratio of the unadjusted death rate for Homicide and legal intervention for black males to that for white males is 6.92, whereas the ratio of the death rates adjusted for net census undercount is 7.54. For Ischemic heart disease for males aged 40–44 years, the ratio of the death rate for the black population to that for the white population is 1.12 using the unadjusted rates, but it is 1.22 when adjusted for estimated underenumeration.

Summary measures—The effect of net census undercount on age-adjusted death rates and life table values depends on the underenumeration of each age group and on the distribution of deaths by age. Thus, the age-adjusted death rate in 1990 for All causes would decrease from 520.2 to 512.7 per 100,000 population if the age-specific death rates were corrected for net census undercount (table H). For Diseases of the heart, the age-adjusted death rate for white males would decrease from 202.0 to 198.1 per 100,000 population, a decline of 2.0 percent. For black males, the change from an unadjusted rate of 275.9 to an adjusted rate of 256.7 would amount to a decrease of 7.0 percent. For HIV infection, the rate for black males would decrease from 44.2 to 39.0 and for white males from 15.0 to 14.4.

SECTION 7 – TECHNICAL APPENDIX – PAGE 23

Table H. Age-adjusted death rates for selected causes by race and sex, unadjusted and adjusted for estimated net census undercount: United States, 1990

[Based on age-specific death rates per 100,000 population in specified group. Computed by the direct method, using as the standard population the age distribution of the total population of the United States as enumerated in 1940. See Age-adjusted death rates. Numbers after causes of death are category numbers of the Ninth Revision International Classification of Diseases, 1975. Beginning 1987 includes category numbers *042–*044. See "Cause of death"]

<i>Race, sex, and adjustment for net census undercount</i>	<i>All causes</i>	<i>Human immunodeficiency virus infection (*042–*044)</i>	<i>Malignant neoplasms including lymphatic and hematopoietic tissues (140–209)</i>	<i>Diabetes mellitus (250)</i>	<i>Diseases of heart (390–399, 402, 404–424)</i>	<i>Cerebrovascular diseases (430–438)</i>	<i>Homicide and legal intervention (E860–E878)</i>
All Races							
Both Sexes							
Unadjusted	520.2	9.8	135.0	11.7	152.0	27.7	10.2
Adjusted	512.7	9.6	133.3	11.5	149.9	27.3	10.1
Male							
Unadjusted	680.2	17.7	166.3	12.3	206.7	30.2	18.3
Adjusted	664.3	17.0	162.4	12.1	202.1	29.6	16.9
Female							
Unadjusted	390.6	2.1	112.7	11.1	106.9	25.7	4.2
Adjusted	387.9	2.1	112.6	11.0	107.9	25.4	4.2
White							
Both Sexes							
Unadjusted	492.8	8.0	131.5	10.4	146.9	25.5	5.9
Adjusted	485.9	7.8	129.9	10.2	145.0	25.2	5.7
Male							
Unadjusted	644.3	15.0	160.3	11.3	202.0	27.7	8.9
Adjusted	631.0	14.4	156.9	11.1	198.2	27.3	8.7
Female							
Unadjusted	369.9	1.1	111.2	9.5	103.1	23.8	2.6
Adjusted	367.0	1.0	110.8	9.5	102.2	23.5	2.7
Black							
Both Sexes							
Unadjusted	789.2	25.7	182.0	24.8	213.5	48.4	39.5
Adjusted	760.0	23.9	177.0	24.1	207.2	46.9	37.4
Male							
Unadjusted	1,061.3	44.2	248.1	23.6	275.9	56.1	68.7
Adjusted	980.8	39.0	230.9	21.9	256.7	52.3	62.9
Female							
Unadjusted	581.6	9.9	137.2	25.4	168.1	42.7	13.0
Adjusted	579.4	9.7	138.4	25.7	168.2	42.7	12.7

If death rates by age were adjusted, the corresponding life expectancy at birth computed from these rates would change. When calculating life expectancy, the impact of an undercount or overcount is greatest at the younger ages. In general, the effect of correcting the death rates is to increase the estimate of life expectancy at birth. For example, adjustment for net census undercount would increase life expectancy in 1990 by an estimated 0.2 years, from 75.4 years to 75.6 years for the total U.S. population.

Adjustment for differential underenumeration among race-sex groups would lead to greater changes in life expectancy for some groups than for other groups. For males and females, increases would be 0.3 and 0.1 years, respectively; for the black population and white population, 0.6 and 0.2 years, respectively. The largest increase would be for black males, 1.2 years, followed by white males (0.3 years), black females (0.2 years), and white females (0.2 years).

Age-adjusted death rates

Age-adjusted death rates shown in this volume are computed using the distribution in 10-year age intervals of the

enumerated population of the United States in 1940 as the standard population. Each figure represents the rate that would have existed had the age-specific rates of the particular year prevailed in a population whose age distribution was the same as that of the United States in 1940. The rates for the total population and for each race-sex group were adjusted using the same standard population. It is important not to compare age-adjusted death rates with crude rates. The standard 1940 population, on the basis of one million total population, is as follows:

<i>Age</i>	<i>Number</i>
All ages	1,000,000
Under 1 year	15,343
1–4 years	64,718
5–14 years	170,368
15–24 years	181,877
25–34 years	182,088
35–44 years	139,237
45–54 years	117,811
55–64 years	80,294
65–74 years	48,428
75–84 years	17,303
85 years and over	2,770

Life tables

U.S. abridged life tables are constructed by reference to a standard table (42). Life tables for the decennial period 1979–81 are used as the standard life tables in constructing the 1980–90 abridged life tables. Life table values for 1981–89 appearing in this volume are based on revised intercensal estimates of the populations for those years. Therefore, these life table values may differ from life table values of those years published in previous volumes.

Life tables for the decennial period 1969–71 are used as the standard life tables in constructing the 1970–79 abridged life tables. Life table values for 1970–73 were first revised in *Vital Statistics of the United States, 1977*; before 1977, life table values for 1970–73 were constructed using the 1959–61 decennial life tables. In addition, life table values for 1951–59, 1961–69, and 1971–79 appearing in this volume are based on revised intercensal estimates of the populations for those years. As such, these life table values may differ from life table values for those years published in previous volumes.

There has been an increasing interest in data on the average length of life (\hat{e}_0) for single calendar years before the initiation of the annual abridged life table series for selected race-sex groups in 1945. The figures in table 6-5 for the race and sex groups for the following years were estimated to meet these needs (43).

Years	Race and sex groups
1900-45	Total
1900-47	Male
1900-47	Female
1900-50	White
1900-44	White, male
1900-44	White, female
1900-50	All other
1900-44	All other, male
1900-44	All other, female

The geographic areas covered in life tables before 1929–31 were limited to the death-registration areas. Life tables for 1900–02 and 1909–11 were constructed using mortality data from the 1900 death-registration States—10 States and the District of Columbia—and for 1919–21 from the 1920 death-registration States—34 States and the District of Columbia. The tables for 1929–31 through 1958 cover the conterminous United States. Decennial life table values for the 3-year period 1959–61 were derived from data that include Alaska and Hawaii for each year (table 6-4). Data for each year shown in table 6-5 include Alaska beginning in 1959 and Hawaii beginning in 1960. It is believed that the inclusion of these two States does not materially affect life table values.

Random variation in numbers of deaths, death rates, and mortality rates and ratios

Deaths and population-based rates—Except for those reported in 1972, the numbers of deaths reported for a community represent complete counts of such events. As such, they are not subject to sampling error, although they are subject to errors

in the registration process. However, when the figures are used for analytical purposes, such as the comparison of rates over a period or for different areas, the number of events that actually occurred may be considered as one of a large series of possible results that could have arisen under the same circumstances (44). The probable range of values may be estimated from the actual figures according to certain statistical assumptions.

In general, distributions of vital events may be assumed to follow the binomial distribution. Estimates of standard error and tests of significance under this assumption are described in most standard statistics texts. When the number of events is large, the standard error, expressed as a percent of the number or rate, is usually small.

When the number of events is small (perhaps less than 100) and the probability of such an event is small, considerable caution must be observed in interpreting the conditions described by the figures. This is particularly true for infant mortality rates, cause-specific death rates, and death rates for counties. Events of a rare nature may be assumed to follow a Poisson probability distribution. For this distribution, a simple approximation may be used to estimate a confidence interval, as follows.

If N is the number of registered deaths in the population and R is the corresponding rate, the chance is 19 in 20 that

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

covers the “true” number of events.

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

covers the “true” rate.

If the rate R_1 corresponding to N_1 events is compared with the rate R_2 corresponding to N_2 events, the difference between the two rates may be regarded as statistically significant at the 0.05 level of significance, if it exceeds

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

For example, if the observed death rate for a community were 10.0 per 1,000 population and if this rate were based on 20 recorded deaths, the chance is 19 in 20 that the “true” death rate for that community lies between 5.5 and 14.5 per 1,000 population. If the death rate for this community of 10.0 per 1,000 population were being compared with a rate of 15.0 per 1,000 population for a second community, which is based on 25 recorded deaths, the difference between the rates for the two communities is 5.0. This difference is less than twice the standard error of the difference

$$2\sqrt{\frac{(10.0)^2}{20} + \frac{(15.0)^2}{25}}$$

of the two rates, which is computed to be 7.5. From this, it is concluded that the difference between the rates for the two communities is not statistically significant at the 0.05 level of significance.

Rates, proportions, and ratios—Beginning in 1989, an asterisk is shown in place of a rate based on fewer than 20 deaths. These rates have a relative standard error of 23 percent or more and therefore are considered highly variable. For age-adjusted death rates, this criterion is applied to the sum of the age-specific deaths.

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SECTION 7 – TECHNICAL APPENDIX – PAGE 26

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SYMBOLS USED IN TABLES

Data not available	---
Category not applicable	---
Quantity zero	—
Quantity more than 0 but less than 0.05	0.0
Figure does not meet standards of reliability or precision (estimate is based on fewer than 20 events in numerator or denominator)	*

SECTION 7 - TECHNICAL APPENDIX - PAGE 28

Table 7-1. Population of Birth- and Death-Registration States, 1900-1932, and United States, 1900-1990

[Population enumerated as of April 1 for 1940, 1950, 1960, 1970, 1980, and 1990 and estimated as of July 1 for all other years]

Year	United States ¹		Year	United States ¹		Birth-registration States		Death-registration States	
	Population including Armed Forces abroad	Population residing in area		Population including Armed Forces abroad	Population residing in area	Number of States ²	Population residing in area	Number of States ²	Population residing in area
1990	249,225,000	248,709,873							
1989 ³	247,342,000	246,819,000	1944	138,397,000	132,885,000	...	...	...	...
1988 ³	245,021,000	244,499,000	1943	136,739,000	134,245,000	...	...	...	...
1987 ³	242,804,000	242,269,000	1942	134,860,000	133,920,000	...	...	...	...
1986 ³	240,851,000	240,133,000	1941	133,402,000	133,121,000	...	...	...	...
1985 ³	238,466,000	237,924,000	1940	131,820,000	131,669,275	...	...	...	...
1984 ³	236,348,000	235,825,000	1939	131,028,000	130,879,718	...	...	...	...
1983 ³	234,307,000	233,792,000	1938	129,969,000	129,824,939	...	...	...	...
1982 ³	232,188,000	231,664,000	1937	128,961,000	128,824,829	...	...	...	...
1981 ³	229,966,000	229,466,000	1936	128,181,000	128,053,180	...	...	...	...
1980	227,061,000	226,545,805	1935	127,362,000	127,250,232	...	...	...	...
1979	225,055,000	224,567,000	1934	126,485,000	126,373,773	...	...	...	...
1978	222,585,000	222,095,000	1933	125,690,000	125,578,763	...	...	...	...
1977	220,239,000	219,760,000	1932	124,949,000	124,840,471	47	118,903,899	47	118,903,899
1976	218,035,000	217,563,000	1931	124,148,000	124,039,648	46	117,455,229	47	118,148,987
1975	215,979,000	215,465,000	1930	123,188,000	123,076,741	46	116,544,946	47	117,238,278
1974	213,854,000	213,342,000	1929	---	121,769,939	46	115,317,450	46	115,317,450
1973	211,909,000	211,357,000	1928	---	120,501,115	44	113,636,160	44	113,636,160
1972	209,896,000	209,284,000	1927	---	119,038,062	40	104,320,830	42	107,064,532
1971	207,861,000	206,827,000	1926	---	117,399,225	35	90,400,590	41	103,822,683
1970	204,270,000	203,211,826	1925	---	115,831,963	33	88,284,564	40	102,031,555
1969	202,677,000	201,385,000	1924	---	114,113,463	33	87,000,295	39	99,318,098
1968	200,706,000	199,399,000	1923	---	111,949,945	30	81,072,123	38	96,768,187
1967	198,712,000	197,457,000	1922	---	110,054,778	30	79,560,746	37	92,702,901
1966	196,560,000	195,576,000	1921	---	108,541,489	27	70,807,090	34	87,814,447
1965	194,303,000	193,526,000	1920	---	106,466,420	23	63,597,307	34	86,079,263
1964	191,888,000	191,141,000	1919	105,063,000	104,512,110	22	61,212,076	33	83,157,982
1963	189,242,000	188,483,000	1918	104,550,000	103,202,801	20	55,153,782	30	78,006,412
1962	186,538,000	185,771,000	1917	103,414,000	103,265,913	20	55,197,852	27	70,234,775
1961	183,691,000	182,992,000	1916	---	101,965,984	11	32,944,013	26	66,971,177
1960	179,933,000	179,323,175	1915	---	100,549,013	10	31,096,697	24	61,894,847
1959	177,264,000	176,513,000	1914	---	98,117,567	...	...	24	60,963,309
1958	174,141,000	173,320,000	1913	---	97,226,814	...	...	23	58,156,740
1957	171,274,000	170,371,000	1912	---	95,331,300	...	...	22	54,847,700
1956	168,221,000	167,306,000	1911	---	93,867,814	...	...	22	53,929,644
1955	165,275,000	164,308,000	1910	---	92,406,536	...	...	20	47,470,437
1954	162,391,000	161,164,000	1909	---	90,491,525	...	...	18	44,223,513
1953	159,565,000	158,242,000	1908	---	88,708,976	...	...	17	38,634,759
1952	156,954,000	155,687,000	1907	---	87,000,271	...	...	15	34,552,837
1951	154,287,000	153,310,000	1906	---	85,436,556	...	...	15	33,782,288
1950	151,132,000	150,697,361	1905	---	83,819,666	...	...	10	21,767,980
1949	149,188,000	148,665,000	1904	---	82,164,974	...	...	10	21,332,076
1948	146,631,000	146,093,000	1903	---	80,632,152	...	...	10	20,943,222
1947	144,126,000	143,446,000	1902	---	79,160,196	...	...	10	20,582,907
1946	141,389,000	140,054,000	1901	---	77,585,128	...	...	10	20,237,453
1945	139,928,000	132,481,000	1900	---	76,094,134	...	...	10	19,985,448

¹ Alaska included beginning 1959 and Hawaii, 1960

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

³ Populations are revised and, therefore, differ from those published in "Vital Statistics of the United States," Vol. II, Mortality, Part A, for 1989 and earlier years; see text.

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

SECTION 7 - TECHNICAL APPENDIX - PAGE 29

Table 7-2. Enumerated Population of the United States, by 5-Year Age Groups, Race, and Sex: April 1, 1990

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

Age	All races			White			All other					
	Both sexes	Male	Female	Both sexes	Male	Female	Total			Black		
							Both sexes	Male	Female	Both sexes	Male	Female
All ages	248,709,873	121,239,348	127,470,525	208,704,165	102,142,817	106,561,348	40,005,708	19,096,531	20,909,177	30,483,281	14,420,331	16,062,950
Under 1 year	3,945,974	2,018,404	1,927,570	3,127,256	1,603,750	1,523,506	818,718	414,654	404,064	638,132	322,495	315,637
1-4 years	14,811,673	7,580,824	7,231,049	11,832,870	6,071,090	5,761,780	2,978,803	1,509,534	1,469,269	2,301,264	1,168,852	1,132,412
5-9 years	18,034,778	9,232,031	8,802,747	14,502,300	7,444,026	7,058,274	3,532,478	1,788,005	1,744,473	2,711,338	1,371,638	1,339,700
10-14 years	17,060,469	8,736,800	8,321,669	13,870,059	7,022,591	6,847,468	3,380,410	1,716,209	1,674,201	2,629,473	1,328,861	1,301,212
15-19 years	17,681,711	9,172,834	8,708,877	14,350,716	7,379,551	6,971,165	3,530,995	1,793,283	1,737,712	2,714,244	1,370,304	1,343,940
20-24 years	19,131,578	9,742,551	9,389,027	15,837,244	8,009,507	7,827,737	3,484,334	1,733,044	1,751,290	2,654,938	1,299,074	1,355,864
25-29 years	21,327,869	10,702,497	10,625,372	17,638,338	8,926,907	8,711,431	3,689,531	1,775,590	1,913,941	2,779,588	1,322,573	1,457,015
30-34 years	21,832,857	10,961,819	10,871,038	18,189,778	9,144,433	9,045,345	3,843,079	1,717,386	1,925,693	2,717,889	1,289,918	1,427,771
35-39 years	19,845,733	9,833,180	10,012,553	16,851,817	8,342,551	8,509,266	3,183,916	1,480,629	1,703,287	2,359,348	1,084,253	1,275,095
40-44 years	17,589,034	8,876,472	8,712,562	15,001,279	7,476,422	7,524,857	2,587,755	1,200,050	1,387,705	1,881,629	867,882	1,013,747
45-49 years	13,743,577	6,739,157	7,004,420	11,826,034	5,851,065	5,974,969	1,917,543	888,092	1,029,451	1,413,272	644,853	788,419
50-54 years	11,313,073	5,483,144	5,819,929	9,744,459	4,773,156	4,971,303	1,588,614	719,988	848,626	1,177,519	530,296	647,223
55-59 years	10,487,443	5,008,415	5,479,028	9,130,851	4,404,374	4,726,477	1,356,592	604,041	752,551	1,040,889	480,001	560,888
60-64 years	10,625,209	4,946,854	5,678,355	9,380,602	4,408,887	4,971,715	1,244,807	537,667	706,940	971,780	418,147	553,633
65-69 years	10,065,835	4,507,539	5,558,296	8,983,876	4,047,535	4,936,443	1,081,857	460,004	621,853	859,694	380,853	478,841
70-74 years	7,979,660	3,399,275	4,580,385	7,191,013	3,079,801	4,111,212	788,647	319,474	469,173	638,077	252,967	385,110
75-79 years	6,102,929	2,388,895	3,714,034	5,518,341	2,165,061	3,353,280	584,588	223,834	360,754	483,535	178,895	304,640
80-84 years	3,909,046	1,355,830	2,553,216	3,566,268	1,232,184	2,334,084	342,778	123,646	219,132	288,283	88,351	199,932
85 years and over	3,021,425	841,227	2,180,198	2,780,962	759,826	2,001,136	260,463	81,401	179,062	222,632	66,270	156,362

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

SECTION 7 - TECHNICAL APPENDIX - PAGE 30

Table 7-3. Enumerated Population, by Age, for the United States, Each Division and State, Puerto Rico, Virgin Islands, and Guam: April 1, 1990

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

Division and State	Total	Under 5 years	5-19 years	20-44 years	45-64 years	65 years and over
United States	248,709,873	18,757,647	52,976,958	99,727,071	48,169,302	31,078,895
Geographic divisions:						
New England:						
Maine	1,227,928	87,250	261,032	484,497	232,287	162,862
New Hampshire	1,109,252	85,786	229,047	470,343	199,552	124,524
Vermont	562,758	41,979	121,636	231,048	102,208	65,887
Massachusetts	6,016,425	421,349	1,139,668	2,530,390	1,110,013	815,005
Rhode Island	1,003,464	66,493	194,919	405,355	184,948	148,749
Connecticut	3,287,116	233,433	616,100	1,345,607	648,345	443,631
Middle Atlantic:						
New York	17,990,455	1,292,180	3,554,235	7,274,550	3,529,377	2,340,113
New Jersey	7,730,188	545,807	1,480,989	3,124,278	1,554,093	1,025,021
Pennsylvania	11,881,643	810,712	2,364,274	4,517,606	2,367,611	1,821,440
East North Central:						
Ohio	10,847,115	796,503	2,355,792	4,203,819	2,088,160	1,402,841
Indiana	5,544,159	404,681	1,244,351	2,151,114	1,050,076	683,937
Illinois	11,430,602	866,139	2,450,901	4,551,356	2,132,786	1,429,420
Michigan	9,295,297	713,578	2,055,911	3,683,452	1,738,255	1,104,101
Wisconsin	4,891,769	365,625	1,077,027	1,908,866	890,098	650,153
West North Central:						
Minnesota	4,375,099	341,251	956,839	1,760,484	770,655	545,870
Iowa	2,776,755	195,477	613,238	1,019,447	522,927	425,666
Missouri	5,117,073	374,992	1,101,651	1,946,789	978,133	715,508
North Dakota	638,800	48,510	147,610	241,608	110,133	80,939
South Dakota	696,004	55,324	164,579	251,848	122,139	102,114
Nebraska	1,578,385	121,173	356,482	594,449	283,614	222,667
Kansas	2,477,574	191,072	547,372	954,270	442,883	341,977
South Atlantic:						
Delaware	666,168	49,892	136,429	272,122	127,440	80,285
Maryland	4,781,468	365,079	940,436	2,046,499	915,095	514,359
District of Columbia	606,900	38,457	103,442	275,690	112,227	77,084
Virginia	6,187,358	450,601	1,263,046	2,650,974	1,161,349	661,388
West Virginia	1,793,477	108,490	396,899	653,024	367,234	267,830
North Carolina	6,628,637	469,176	1,376,313	2,702,799	1,280,150	800,199
South Carolina	3,486,703	263,156	786,754	1,397,352	645,392	394,049
Georgia	6,478,216	506,342	1,447,826	2,711,709	1,161,797	650,542
Florida	12,937,926	873,022	2,359,433	4,799,547	2,549,998	2,355,926
East South Central:						
Kentucky	3,685,296	254,595	825,827	1,436,509	703,366	484,999
Tennessee	4,877,185	340,067	1,042,886	1,920,848	957,241	616,143
Alabama	4,040,587	289,923	913,127	1,536,670	780,969	519,898
Mississippi	2,573,216	200,236	646,866	945,858	460,871	319,385
West South Central:						
Arkansas	2,350,725	168,319	529,774	848,646	455,203	348,783
Louisiana	4,219,973	342,606	1,031,033	1,633,627	746,288	486,419
Oklahoma	3,145,585	230,802	708,960	1,183,653	599,214	422,956
Texas	16,986,510	1,420,210	3,996,700	6,958,130	2,903,036	1,708,434
Mountain:						
Montana	799,065	60,258	184,929	297,675	150,006	106,197
Idaho	1,006,749	81,549	260,437	367,645	176,217	120,901
Wyoming	453,588	35,428	114,268	176,291	80,635	46,966
Colorado	3,294,394	256,970	705,465	1,417,964	585,631	328,364
New Mexico	1,515,069	129,274	365,631	590,580	267,684	161,900
Arizona	3,665,228	300,395	800,412	1,442,183	646,222	476,016
Utah	1,722,850	172,252	519,240	637,002	244,874	149,482
Nevada	1,201,833	94,484	235,600	502,674	242,462	126,613
Pacific:						
Washington	4,866,692	374,057	1,031,511	2,010,238	877,972	572,914
Oregon	2,842,321	205,649	600,714	1,115,456	530,737	389,765
California	29,760,021	2,473,619	6,260,172	12,816,880	5,097,499	3,111,851
Alaska	550,043	55,977	131,875	257,621	82,475	22,095
Hawaii	1,108,229	85,448	227,300	470,029	201,725	123,727
Puerto Rico	3,522,037	---	---	---	---	---
Virgin Islands	101,809	---	---	---	---	---
Guam	133,152	---	---	---	---	---

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

SECTION 7 - TECHNICAL APPENDIX - PAGE 31

Table 7-4. Ratio of Census-Level Resident Population to Resident Population Adjusted for Estimated Net Census Undercount by Age, Sex, and Race: April 1, 1990

Age	All races			White			Black		
	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female
All ages	0.9815	0.9721	0.9906	0.9802	0.9728	0.9873	0.9432	0.8151	0.8989
Under 5 years	0.9632	0.9634	0.9629	0.9677	0.9685	0.9669	0.9160	0.9139	0.9182
Under 1 year .....	.9886	.9884	.9889	.9730	.9734	.9725	.9239	.9214	.9284
1-4 years .....	.9617	.9621	.9613	.9664	.9672	.9654	.9139	.9119	.9189
5-14 years .....	.9761	.9768	.9753	.9740	.9750	.9730	.9410	.9402	.9418
5-9 years .....	.9649	.9655	.9642	.9657	.9665	.9649	.9241	.9230	.9282
10-14 years .....	.9882	.9891	.9873	.9830	.9841	.9818	.9591	.9586	.9596
15-24 years	1.0081	1.0088	1.0073	1.0032	1.0053	1.0010	.9789	.9723	.9695
15-19 years	1.0186	1.0188	1.0133	1.0084	1.0128	1.0059	.9988	1.0016	.9989
20-24 years	1.0002	.9987	1.0017	.9975	.9985	.9966	.9593	.9432	.9793
25-34 years .....	.9639	.9463	.9821	.9614	.9480	.9755	.9126	.8886	.9089
25-29 years .....	.9591	.9439	.9748	.9558	.9441	.9681	.9123	.8732	.9010
30-34 years .....	.9687	.9487	.9692	.9669	.9518	.9828	.9129	.8599	.9061
35-44 years .....	.9842	.9689	.9998	.9816	.9700	.9935	.9350	.9067	.9010
35-39 years .....	.9790	.9628	.9954	.9764	.9643	.9888	.9303	.8806	.9778
40-44 years .....	.9901	.9758	1.0044	.9875	.9764	.9988	.9410	.8943	.9080
45-54 years .....	.9780	.9628	.9929	.9772	.9649	.9894	.9322	.8806	.9799
45-49 years .....	.9775	.9633	.9816	.9762	.9648	.9877	.9302	.8807	.9782
50-54 years .....	.9785	.9623	.9844	.9784	.9651	.9914	.9346	.8802	.9844
55-64 years .....	.9824	.9640	.9995	.9828	.9684	.9962	.9545	.8875	1.0138
55-59 years .....	.9784	.9609	.9968	.9801	.9656	.9941	.9426	.8790	.9899
60-64 years .....	.9854	.9671	1.0020	.9853	.9712	.9982	.9675	.8989	1.0887
65-74 years .....	.9960	.9784	1.0101	.9935	.9781	1.0060	1.0211	.9704	1.0888
65-69 years .....	.9980	.9776	1.0152	.9943	.9762	1.0096	1.0336	.9788	1.0773
70-74 years .....	.9934	.9795	1.0040	.9926	.9807	1.0017	1.0049	.9589	1.0876
75-84 years	1.0021	1.0046	1.0006	1.0038	1.0066	1.0021	.9971	.9913	1.0004
75-79 years	1.0082	1.0064	1.0084	1.0077	1.0065	1.0065	1.0258	1.0126	1.0397
80-84 years .....	.9927	1.0015	.9881	.9978	1.0068	.9931	.9524	.9547	.9812
85 years and over .....	.9411	.9592	.9342	.9512	.9696	.9444	.8503	.8827	.8373

SOURCE: Unpublished data from the U.S. Bureau of the Census

1991 ADDENDUM TO "TECHNICAL APPENDIX" OF VITAL STATISTICS OF THE UNITED STATES, 1990, VOLUME II, MORTALITY, PART A

To assist the users of the mortality public-use data tapes, attached is a copy of the "Technical Appendix" of the Vital Statistics of the United States, 1989, Volume II, Mortality, Part A. This technical appendix provides certain qualifications that are essential to using, analyzing, and interpreting the data on those tapes. Certain modifications to the attached technical appendix are essential to make it applicable to the mortality file for the 1991 data year. Those modifications, which will appear in the printed version of the 1991 technical appendix, include the following:

I. Source of data

State-coded medical data:

1991

Arkansas

For 1991, of the States in the VSCP, 31 States submitted precoded medical data for all death certificates on computer tape. NCHS contracted with Colorado, Kansas, and Mississippi to precode medical data for all deaths on computer tape for the five States that were added in 1988. In addition, Delaware, Idaho, Maine, North Dakota, Vermont, and Wyoming contracted with a private company to provide the precoded medical data. Kansas continued to precode the medical data for Alaska.

The remaining 19 VSCP States, New York City, and the District of Columbia submitted copies of the original certificates from which NCHS coded the medical data

All States submitted precoded demographic data for all death certificates on computer tape in 1991.

Data for Puerto Rico, the Virgin Islands, and Guam are not available on the mortality public-use data tapes.

II. Classification of data

A. Automated selection of underlying cause of death:

Prior to data for 1968, mortality medical data were based on manual coding of an underlying cause of death for each certificate in accordance with WHO rules. Effective with data year 1968, NCHS converted to computerized coding of the underlying cause and manual coding of all causes (multiple causes) on the death certificate. In this system, called "Automated Classification of Medical Entities" (ACME), the multiple cause codes serve

as inputs to the computer software that employs WHO rules to select the underlying cause. Since 1968, many States also have implemented ACME and provide multiple cause and underlying cause data to NCHS in electronic form.

Beginning with data year 1990, another computer system was implemented. This system, called "Mortality Medical Indexing, Classification, and Retrieval" (MICAR) (1,2), automates the coding of the multiple causes of death. In addition, MICAR ultimately can provide more detailed information on the conditions reported on the death certificates than is available through the International Classification of Diseases (ICD) code structure. In the first year of implementation, only about 5 percent (94,372) of the nation's death records were coded using MICAR with subsequent processing through ACME. For 1991, approximately 26 percent (573,416) of the nation's death records were coded using MICAR. The following States implemented MICAR on at least a portion of their 1991 data: Arkansas, Florida Indiana, and Washington. NCHS expanded the use of MICAR to code at least a portion of the death records from the following States: Alabama, Connecticut, Hawaii, Kentucky, Missouri, Montana, Nevada, New Mexico, Ohio, Oregon, Rhode Island, South Dakota, Tennessee, Utah, West Virginia, the District of Columbia, and New York City. The remainder of the national file was processed by either NCHS or States using only the ACME system.

B. Hispanic origin.

Data for 1991 were obtained from the District of Columbia and all States except New Hampshire, and Oklahoma, which were excluded because their death certificates did not include an item to identify Hispanic or ethnic origin.

For 1991, mortality data published in Vital Statistics of the United States (VSUS) tables 1-37, 1-38, 1-43, 1-44, and 2-21 are based on deaths to residents of all 47 States, New York State (excluding New York City), and the District of Columbia whose data were at least 90 percent complete on a place-of-occurrence basis. Data for New York City were excluded because more than 10 percent of its death certificates were classified to "unknown origin." Because about half of the deaths to Puerto Ricans are accounted for by New York City, the resulting mortality data may not be comparable with that of previous years.

Infant mortality--In tables 2-22, 2-23, 2-24, and 2-25 the data are based on deaths to residents of the same 47 States, New York State (excluding New York City), and the District of Columbia whose mortality data for all ages and whose live birth data were at least 90 percent complete on a place-of-occurrence basis and considered to be sufficiently comparable to be used for analysis. In computing infant mortality rates, deaths and live births of unknown origin are not distributed among the specified Hispanic and non-Hispanic groups. Because the percent of infant deaths of unknown origin was 1.6 and the percent of live births of unknown origin was 0.8 for the 47 States, New York State (excluding New York City), and the District of Columbia for 1991, infant mortality rates by specified Hispanic origin and race for non-Hispanic origin may be underestimated.

Infant mortality rates by Hispanic origin may be biased, because of inconsistencies in reporting Hispanic or ethnic origin between the birth and death certificates for the same infant. Estimates of reporting bias have been made by comparing rates based on the linked file of infant deaths and live births with those where the Hispanic or ethnic origin of infant death is based on information from the death certificate (3).

In 1990 the 47 States, New York State (excluding New York City), and the District of Columbia accounted for about 91 percent of the Hispanic population in the United States, including about 99 percent of the Mexican population, 63 percent of the Puerto Rican population, 94 percent of the Cuban population, and 83 percent of the "Other Hispanic" population (4).

C. Educational attainment.

Mortality data on educational attainment for 1991 in VSUS table 1-45 are based on deaths to residents of 44 States, New York State (excluding New York City), and the District of Columbia. Data for five States (Georgia, Oklahoma, Rhode Island, South Dakota, and Washington) are excluded from this table because their death certificates did not include an educational attainment item and for New York City data are excluded because the education item on its death certificate was considered not sufficiently comparable to be used for analysis.

In tables 1-46 and 1-47 the data are based on deaths to residents of 30 States, New York State, (excluding New York City), and the District of Columbia whose data were at least 90 percent complete on a place-of-occurrence basis. These 30 States are Alabama, Arizona, California, Colorado, Delaware, Florida, Hawaii, Idaho, Illinois, Indiana, Iowa, Kansas, Louisiana, Massachusetts, Michigan, Minnesota, Missouri, Montana, Nebraska, New Hampshire, North Dakota, Ohio, Oregon, Pennsylvania, South Carolina, Texas, Utah, Vermont, Wisconsin, and Wyoming. Data for Alaska, Arkansas, Connecticut, Kentucky, Maine, Maryland, Mississippi, Nevada, New Jersey, New Mexico, North Carolina, Tennessee, Virginia, and West Virginia are excluded because more than 10 Percent of their death certificates were classified to "unknown educational attainment."

D. Occupation and industry.

Deaths by occupation and industry are included on the 1991 public-use data tapes. These data were included for the first time for 1985. These data were obtained from the following items that appear on the U.S. Standard Certificate of Death:

- o (Item 14a) USUAL OCCUPATION (Give kind of work done during most of working Life, even if retired.)
- o (Item 14b) KIND OF BUSINESS OR INDUSTRY

The occupation and industry mortality data were provided to NCHS by the following 21 reporting States:

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

These data were coded using the NCHS Part 19 instruction manual (5). The occupation and industry titles corresponding to the 3-digit occupation codes and the 3-digit industry

codes are shown in a Bureau of the Census publication (6). In addition to the codes shown in Census publication, the following special codes were created:

<u>Occupation</u>	<u>Industry</u>
905 Military	942 Military
913 Retired	951 Retired
914 Homemaker	961 Homemaker, student, unemployed volunteer
915 Student	
916 Volunteer	
917 Unemployed, never worked, disabled	

Special summary occupation and industry lists were created and are shown elsewhere in this documentation. Also, a special cause-of-death list was created including possible occupationally-related causes of death. This list is the List of 52 selected causes shown elsewhere in this documentation.

The 1991 occupation and industry mortality data will not appear in Vital Statistics of the United States, 1991.

III. Quality of data:

Alaska Data

Numbers of deaths occurring in Alaska for 1980-1991 are in error for selected causes because NCHS did not receive changes resulting from amended records. Differences are concentrated among selected causes of death, principally Symptoms, signs, and ill-defined conditions (ICD-9 Nos. 780-799) and external causes, including Accidents and adverse effects (ICD-9 Nos. E800-E949), Suicide (ICD-9 Nos. E950-E959), and Homicide and legal intervention (ICD-9 Nos. E960-E978).

IV. Population bases for computing rates:

The Population used for computing death rates (furnished by the U.S. Bureau of the Census) represents the population residing in the specified area. Death rates for 1991 are based on populations estimates as of July 1, 1991 (7,8). The estimates are based on the 1990 census counts. The 1990 census counts by race were modified to be consistent with Office of Management and Budget categories and historical categories for death data.

Death rates and life table values for 1981-89 have been recomputed, based on revised populations for those years that are consistent with the 1990 census levels (9,10). They are, therefore, not comparable

with death rates and life table values published in other NCHS publications for those years.

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3. National Center for Health Statistics. Technical appendix. Vital statistics of the United States, 1989, vol II, mortality, part A. Washington: Public Health Service. 1993.
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1992 ADDENDUM TO "TECHNICAL APPENDIX" OF VITAL STATISTICS OF THE UNITED STATES, 1990, VOLUME II, MORTALITY, PART A

To assist the users of the mortality public-use data tapes, attached is a copy of the "Technical Appendix" of the Vital Statistics of the United States, 1990, Volume II, Mortality, Part A. This technical appendix provides certain qualifications that are essential to using, analyzing, and interpreting the data on those tapes. Certain modifications to the attached technical appendix are essential to make it applicable to the mortality file for the 1992 data year. Those modifications, which will appear in the printed version of the 1992 technical appendix, include the following:

I. Sources of data

State-coded medical data:

1992
Montana
1991
Arkansas

For 1992, of the States in the VSCP, 32 States submitted precoded medical data for all death certificates on computer tape. In addition, Delaware, Maine, Montana, North Dakota, Vermont, and Wyoming contracted with a private company to provide NCHS with precoded medical data. Kansas continued to provide the medical data for Alaska. Iowa provided precoded medical data for Idaho.

The remaining 18 VSCP States, New York City, and the District of Columbia submitted copies of the original certificates from which NCHS coded the medical data

For 1992, approximately 35 percent (800,000) of the nation's death records were multiple-cause coded using MICAR. In addition to the four States which implemented MICAR in 1991 (Arkansas, Florida, Indiana, and Washington), on at least a portion of their data, the following States implemented MICAR beginning with 1992 data: Georgia, Maryland, New Hampshire, and Vermont. NCHS expanded the use of MICAR to code at least a portion of the death records from the following States: Alabama, Arizona, Connecticut, Hawaii, Illinois, Kentucky, Missouri, Montana, Nevada, New Jersey, New Mexico, Ohio, Oregon, Rhode Island, South Dakota, Tennessee, Utah, West Virginia, the District of Columbia, and New York City. The remainder of the national file was processed by either NCHS or States using only the ACME system.

All States submitted precoded demographic data for all death certificates on computer tape in 1992.

Data for Puerto Rico, the Virgin Islands, and Guam are not available on the mortality public-use data tapes.

II. Classification of data

A. Race:

Other races--Beginning with data year 1992, All records coded as "other races"(0.01 percent of the total deaths) were assigned to the specified nonwhite race of the previous record.

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

In one study a sample of 340,000 death certificates was compared with census records for a four-month period in 1960 (1). Percent agreement was 99.8 percent for white decedents, and 98.2 percent for black decedents; but less for the smaller minority groups. In another study 29,713 death certificates were compared with responses to the race questions from a total of 12 CPS conducted by the U.S. Bureau of the Census for the years 1979-1985 (2). In this study, called the National Longitudinal Mortality Study (NLMS), agreement for white decedents was 99.2 and for black 98.2; agreement was less for the smaller race groups. In 1986, the National Mortality Followback Survey conducted by the National Center for Health Statistics asked death certificate informants about the race of decedents 25 years old and over. The total sample was 18,733 decedents (3). The rates of agreement were similar to those observed in the other studies.

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

Quality of data on Hispanic origin--A recent study examined the reliability of Hispanic origin reported on 43,520 death

certificates with that reported on a total of 12 CPS conducted by the U.S. Bureau of the Census for the years 1979-1985. In this study, agreement was 89.7 percent for any report of Hispanic origin. The ratio of deaths for CPS divided by deaths for death certificate was 1.07 percent indicating net underreporting of Hispanic origin on death certificates as compared with self reports on the surveys. The sample was too small to assess the reliability of specified Hispanic groups.

B. Hispanic origin.

Data for 1992 were obtained from the District of Columbia and all States except New Hampshire, and Oklahoma, which were excluded because their death certificates did not include an item to identify Hispanic or ethnic origin.

For 1992, mortality data published in Vital Statistics of the United States (VSUS) tables 1-37, 1-38, 1-43, 1-44, and 2-23 are based on deaths to residents of all 48 States and the District of Columbia whose data were at least 80 percent complete on a place-of-occurrence basis.

Infant mortality-In tables 2-24, 2-25, 2-26, and 2-27 the data are based on deaths to residents of the same 48 states and the District of Columbia whose mortality data for all ages and whose live birth data were at least 80 percent complete on a place-of-occurrence basis and considered to be sufficiently comparable to be used for analysis. In computing infant mortality rates, deaths and live births of unknown origin are not distributed among the specified Hispanic and non-Hispanic groups. Because the percent of infant deaths of unknown origin was 2.4 and the percent of live births of unknown origin was 1.0 for the 48 States and the District of Columbia for 1992, infant mortality rates by specified Hispanic origin and race for non-Hispanic origin may be underestimated.

Infant mortality rates by Hispanic origin may be biased, because of inconsistencies in reporting Hispanic or ethnic origin between the birth and death certificates for the same infant. Estimates of reporting bias have been made by comparing rates based on the linked file of infant deaths and live births with those where the Hispanic or ethnic origin of infant death is based on information from the death certificate (4).

In 1990 the 48 States and the District of Columbia accounted for about 99.6 percent of the Hispanic population in the United States, including about 99.5 percent of the Mexican population, 99.7 percent of the Puerto Rican population, 99.8 percent of the Cuban population, and 99.6 percent of the "Other Hispanic" population (5).

C. Educational attainment.

Mortality data on educational attainment for 1992 in VSUS table 1-45 are based on deaths to residents of 45 States and the District of Columbia. Data for five States (Georgia, Oklahoma, Rhode Island, South Dakota, and Washington) are excluded from this table because their death certificates did not include an educational attainment item and for New York City data are excluded because the education item on its death certificate was considered not sufficiently comparable to be used for analysis.

In tables 1-46 and 1-47 the data are based on deaths to residents of 42 States and the District of Columbia whose data were at least 80 percent complete on a place-of-occurrence basis. These 42 States are Alabama, Alaska, Arizona, Arkansas, California, Colorado, Delaware, Florida, Hawaii, Idaho, Illinois, Indiana, Iowa, Kansas, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Montana, Nebraska, Nevada, New Hampshire, New Jersey, New Mexico, North Carolina, North Dakota, Ohio, Oregon, Pennsylvania, South Carolina, Tennessee, Texas, Utah, Vermont, Virginia, Washington, Wisconsin, and Wyoming. Data for Connecticut, Kentucky, and West Virginia are excluded because more than 20 Percent of their death certificates were classified to "unknown educational attainment."

D. Occupation and industry.

Deaths by occupation and industry are included on the 1992 public-use data tapes. These data were included for the first time for 1985. These data were obtained from the following items that appear on the U.S. Standard Certificate of Death:

- o (Item 14a) USUAL OCCUPATION (Give kind of work done during most of working life, even if retired.)
- o (Item 14b) KIND OF BUSINESS OR INDUSTRY

The occupation and industry mortality data were provided to NCHS by the following 21 reporting States:

Colorado	North Carolina
Georgia	Ohio
Idaho	Oklahoma
Indiana	Rhode Island
Kansas	South Carolina
Kentucky	Utah
Maine	Vermont
Nevada	Washington

New Hampshire
New Jersey
New Mexico

West Virginia
Wisconsin

These data were coded using the NCHS Part 19 instruction manual (6). The occupation and industry titles corresponding to the 3-digit occupation codes and the 3-digit industry codes are shown in a Bureau of the Census publication (7). In addition to the codes shown in Census publication, the following special codes were created:

<u>Occupation</u>	<u>Industry</u>
905 Military	942 Military
913 Retired	951 Retired
914 Homemaker	961 Homemaker, student, unemployed volunteer
915 Student	
916 Volunteer	
917 Unemployed, never worked, disabled	

Special summary occupation and industry lists were created and are shown elsewhere in this documentation. Also, a special cause-of-death list was created including possible occupationally-related causes of death. This list is the List of 52 selected causes shown elsewhere in this documentation.

The 1992 occupation and industry mortality data will not appear in Vital Statistics of the United States, 1992.

III. Quality of data:

Amended records for Alabama, Alaska, Hawaii, and New Jersey-Numbers of deaths occurring in Alabama, Alaska, Hawaii, and New Jersey for 1991 are in error for all causes of death combined and for selected causes because NCHS did not receive changes resulting from amended records. An estimate of the effect of these omissions can be derived by comparing NCHS counts of records processed through the VSCP with counts prepared by the respective States. Differences are concentrated among selected causes of death, principally Symptoms, signs, and ill-defined conditions (ICD-9 Nos. 780-799) and external causes.

IV. Population bases for computing rates:

The population used for computing death rates (furnished by the U.S. Bureau of the Census) represents the population residing in the specified area. Death rates for 1992 are based on populations estimates as of July 1, 1992 (8,9). The estimates are based on the 1990 census counts. The 1990 census counts by race were modified to be consistent with the U.S. Office of Management and Budget categories and

historical categories for death data (10).

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