

**User Guide to the
2021 Period/2020 Cohort Linked
Birth/Infant Death
Public Use File**



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2021 Period/2020 Cohort Linked Birth/Infant Death Data Set

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Introduction

The linked birth/infant death data sets (linked files) for 2017 through 2021 are released in one format that can be used for both period data and birth cohort data. This documentation is for both the 2021 period linked file and the 2020 cohort linked file.

Period file - The 2021 period linked birth/infant death data set includes two data files. The first file is the “numerator” file, which consists of all infant deaths occurring in 2021 linked to their corresponding birth certificates, whether the birth occurred in 2020 or 2021. The second file is the “denominator” file, which consists of all births occurring in 2021. It is used to provide denominators for rate computations. These same two data files are also available for Puerto Rico and Guam in the territories file; data for American Samoa, Northern Marianas, and US Virgin Islands are not included in the territories files due to insufficient numbers for analysis.

User Created Cohort file - The 2020 birth cohort linked birth/infant death data set includes three data files. The numerator for the 2020 birth cohort linked file consists of deaths to infants born in 2020 linked to their corresponding birth certificates, whether the death occurred in 2020 or 2021 (each is a separate file the user can append together). The denominator for this data set is all births occurring in 2020.

Starting with the 2017 period/ 2016 cohort data files release, users can create their own cohort files using the year 1 denominator file and years 1 and 2 numerator files (e.g., 2016 denominator and 2016 and 2017 numerator files).

For most purposes, differences between the birth cohort and period linked files are negligible. However, birth cohort files are preferred for multivariate and some other types of detailed analysis because they follow a given cohort of births for an entire year to ascertain their mortality experience. This is generally considered to be a more robust methodology than using the period file, which is essentially cross-sectional in nature. Details on creating cohort files can be found in the “User Created Cohort File” section, beginning on page 17.

Weighting

For period file use: A weight is added when using the period linked numerator file to correct in part for biases in percent of records linked by major characteristics. The number of infant deaths in the linked file are weighted to equal the sum of the linked plus unlinked infant deaths by age at death and state. The formula for computing the weights is:

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

A separate weight is computed for each state of residence of birth and each age at death category (<7 days, 7-27 days, 28 days-1 year). Thus, weights are 1.0 for states which link all of their infant deaths. The denominator file is not weighted.

For cohort file use: When creating your own cohort file, do not apply the weight included in the file. Applying the weight in a cohort file upweights the number of births and infant deaths, and accordingly, the birth count would not match the actual number of births in the US for the given year.

Single, Multiple, and Bridged Race

In 1997, the Office of Management and Budget (OMB) issued revised standards requiring Federal collection programs to allow respondents to select *one or more race categories*. Starting in 2016 data, all states and DC reported multiple race data, representing 100% of all U.S. births (see [User's Guide for the 2017 Natality File](#)).

Prior to the 2017 linked file, in order to provide uniformity and comparability of the data before all or most of the data are available in the new multiple-race format, it was necessary to “bridge” the responses of those for whom more than one race was reported (multiple race) to one, single race. Bridged race is not available in the linked file beginning with the 2020 data year. The race and Hispanic-origin groups shown in the user guide follow the 1997 standards and differ from the bridged-race categories shown in previous user guides that are based on data from 2016 and earlier. The new categories are: non-Hispanic single-race white, non-Hispanic single-race black or African American, non-Hispanic single-race American Indian or Alaska Native, non-Hispanic single-race Asian, non-Hispanic single-race Native Hawaiian or Other Pacific Islander, and Hispanic.

Age of death

Historically, the linked birth/infant death files have included information on age of the infant's death (AOD) from the general mortality file. However, a comparison of AOD information based on date of birth from the death certificate, and a calculated AOD based on the date and time of birth from the birth certificate indicates better data quality when AOD is calculated from the data and time of birth from the birth certificate. Accordingly, beginning with the 2019 data year the linked file includes revised AOD variables based on the birth date and time of birth from the natality file. The revised variables (AGED, AGER5 and AGER22) more accurately reflect AOD for those infants who lived less than 24 hours. For 2019, this change resulted in an additional 550 infant death records reported with an age of death of less than 1 day and 550 fewer records for the age of death category of 1 day. Additionally, in cases where date of birth was recorded as after the date of death, records were coded as less than 1 hour for AGER5 and

AGER22, and as zero days for AGED. For example, this revision resulted in changes for 2 records in both 2019 and 2020. Note that as a result of these changes, the AOD variables for 2019 and later are not perfectly comparable with those from 2018 and earlier years for infants who lived less than 24 hours or for 1 day.

Marital status

National estimates of births to unmarried women are based on two methods of determining marital status. In 2021, marital status was based on a direct question in 48 states, the District of Columbia, and New York City. New York (excluding New York City) used inferential procedures to compile birth statistics by marital status; a birth is categorized as nonmarital if either of these factors, listed in priority-of-use order, is present: a paternity acknowledgement was received or the father's name is missing. Beginning with 2017 data, NCHS cannot release record-level data on the marital status of the mother for births occurring in California to residents or non-residents due to state statutory restrictions. Accordingly, California data on marital status are not included in this file.

Period of gestation

Information on period of gestation is available for the entire United States. Beginning with the 2014 data year, NCHS transitioned to a new standard for estimating the gestational age of the newborn. The new measure – the obstetric estimate of gestation at delivery (OE) replaces the measure based on the data of the last normal menses (LMP). Accordingly, gestational age data in standard tables are based on the OE. However, LMP-based data continue to be available in data files. See [Measuring Gestational Age in Vital Statistics Data: Transitioning to the Obstetric Estimate](#) for more detailed information about the transition from the LMP to the OE.

Birthweight

An imputation for not-stated birthweight is added to the data set to reduce potential bias in the computation of birthweight-specific infant mortality rates. If birthweight is not stated and the period of gestation is known, birthweight is assigned the value from the previous record with the same period of gestation, race, sex, and plurality. The total number of records with birthweight imputed for 2021 was 857 in the numerator and 2,149 in the denominator. The addition of this imputation has reduced the percent of not-stated responses for birthweight from 5.02% to 0.67% in the numerator file, and from 0.09% to 0.03% in the denominator file, thus reducing the potential for underestimation when computing birthweight-specific infant mortality rates.

To only include records with birthweight that was provided on the birth certificate, users can use one of the two following examples in SAS code:

```
IF bwtimp^=1;  
OR  
IF bwtimp NE 1;
```

Incomplete National Reporting in the Period file - Using Reporting Flags

Reporting flags were developed to help the user more readily identify reporting areas for items with less than national reporting; five items in the 2021 period file have limited reporting areas. Reporting flags are included in the file to assist in accurately excluding records from areas that do not report items when tabulating data by mother's place of residence.

Positions for reporting flags are noted along with each data item in the file layout. Reporting flags should be used to generate accurate numbers by residence for items which are not reported by all states. Where applicable, reporting flags are shown in the column "Reporting Flag Position" in the file layout. Reporting flag codes are 0 (item not reported) and 1 (item reported). When using these data, select reporting flag=1 to get valid and complete data for an item (see SAS code examples below).

Translating "blanks" - In the 2021 period/2020 cohort linked files, for data items which are not common or comparable across certificate revisions, events to residents of a revised state occurring in an unrevised state, and events to residents in an unrevised state occurring in a revised state, are often represented by "blanks." Blanks should be treated as "unknowns" for tabulations.

The correct use of reporting flags and translation of blanks will result in an accurate tally of births and infant deaths for items with incomplete national reporting.

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

An example of SAS code that may be used to incorporate the correct use of reporting flags and the translation of blanks is shown below. This example is for the principal source of payment item.

Sample SAS program

```
DATA work;  
INFILE 'C: LINK.USNUMPUB' LRECL=1743;  
INPUT  
RESTATUS 104  
PAY 435 PAY_R 436 F_PAY 437
```

```
RECWT      1377-1384;
```

```
IF restatus NE 4; /* exclude foreign residents */  
IF F_pay = 1; /* select reporting area */  
IF pay=. then pay=9; /*convert blanks into unknown category*/  
RUN;
```

```
PROC FREQ; TABLES PAY; WEIGHT RECWT; /* when using the period file,  
numerator data should be weighted */
```

```
RUN;
```

In this example, “restatus” is used to exclude births to foreign residents (this is standard practice for all NCHS tabulations).

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

Although the time periods are the same, numbers of infant deaths and infant mortality rates by characteristics are not always identical between the period linked file and the vital statistics mortality file. Differences in numbers of infant deaths between the two data sources are primarily due to geographic coverage differences. For the vital statistics mortality file, all deaths occurring in the 50 states and the District of Columbia are included regardless of the place of birth of the infant. In contrast, to be included in the linked file, both the birth and death must occur in the 50 states and the District of Columbia. Also, although every effort has been made to design weights that will accurately reflect the distribution of deaths by characteristics, weighting may contribute to small differences in numbers and rates by specific variables between these two data sets. In most cases, differences between numbers of infant deaths and infant mortality rates between the linked file and those computed from the vital statistics mortality file are negligible.

Computation of rates

Infant mortality rates are the most commonly used index for measuring the risk of dying during the first year of life. For the linked birth/infant death dataset they are calculated by dividing the number of infant deaths in a calendar year by the number of live births registered for the same period and are presented as rates per 1,000 or per 100,000 live births. Both the mortality file and the linked birth/infant death file use this computation method but due to unique numbers of infant deaths, as explained in the section above on the comparison of these two files, the rates can differ for specific variables (e.g. age at death).

Rates per 1,000 live births are shown at the second decimal place to provide a more precise and sensitive measurement. For rates per 100,000 live births (by cause of death) the infant mortality rate is shown for one decimal place.

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

Random variation in infant mortality rates

The number of infant deaths and live births reported for an area represent complete counts of such events. As such, they are not subject to sampling error, although they are subject to nonsampling error in the registration process. However, when the figures are used for analytic purposes, such as the comparison of rates over time, for different areas, or among different subgroups, the number of events that actually occurred may be considered as one of a large series of possible results that could have arisen under the same circumstances (61). As a result, numbers of births, deaths, and infant mortality rates are subject to random variation. The probable range of values may be estimated from the actual figures according to certain statistical assumptions.

In general, distributions of vital events may be assumed to follow the normal distribution. When the number of events is large, the relative standard error is usually small. When the number of events is small (i.e., less than 100) and the probability of such an event is small, considerable caution must be observed in interpreting the data. Such infrequent events may be assumed to follow a Poisson probability distribution (3,4). Estimates of relative standard errors (RSE's) and 95-percent confidence intervals are shown below.

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

$$\text{RSE}(D)=100*\sqrt{\frac{1}{D}} \quad \text{where } D \text{ is the number of deaths and}$$

$$\text{RSE}(B)=100*\sqrt{\frac{1}{B}} \quad \text{where } B \text{ is the number of births.}$$

For example, if for group A the number of infant deaths was 497 while the number of live births was 81,555 yielding an infant mortality rate of 6.09 infant deaths per 1,000 live births.

The RSE of the deaths = $100*\sqrt{\frac{1}{497}} = 4.49$, while the RSE of the births =

$$100*\sqrt{\frac{1}{81,555}} = 0.35.$$

The formula for the RSE of the IMR is:

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

The RSE of the IMR for the example above

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

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

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

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

Thus, for Group A:

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

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

Thus, the chances are 95 out of 100 that the true IMR for Group A lies somewhere in the 5.55–6.63 interval.

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

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

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

where D_{adj} is the adjusted number of infant deaths (rounded to the nearest integer) used to take into account the RSE of the number of infant deaths and live births, and is computed as follows:

$$D_{\text{adj}} = \frac{D * B}{D + B}$$

$L(.95, D_{\text{adj}})$ and $U(.95, D_{\text{adj}})$ refer to the values in Table I corresponding to the value of D_{adj} .

For example, let us say that for Group B the number of infant deaths was 53, the number of live births was 9,241, and the infant mortality rate was 5.74.

$$D_{\text{adj}} = \frac{53 * 9,241}{53 + 9,241} = 53$$

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

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

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

Comparison of two infant mortality rates—If either of the two rates to be compared is based on less than 100 deaths, compute the confidence intervals for

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

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

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

Methodology

States routinely link infant death certificates to their corresponding birth certificates for legal and statistical purposes. When the birth and death of an infant occurs in different states, copies of the records are exchanged by the state of death and state of birth to establish a link. 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 annual NCHS natality and mortality files include statistical data from birth and death certificates that are provided to NCHS by states under the Vital Statistics Cooperative Program (VSCP); these files are the basis for official U.S. birth and death statistics. These data have been coded according to uniform coding specifications, have passed quality control standards and have been edited and reviewed. NCHS obtains matching birth certificate numbers from states for all infant deaths that occurred in their jurisdiction. NCHS then uses this information to extract final, edited mortality and natality data from the NCHS natality and mortality statistical files. Individual birth and death records are selected from the respective files and linked into a single statistical record to create a national linked birth-death record file.

Percent of Records Linked

The 2021 period linked file for the 50 States and D.C. includes 19,728, linked infant death records and 227 unlinked infant death records (98.9% linked and 1.1% unlinked) by place of occurrence. The period linked file is weighted to the sum of linked plus unlinked records of infant deaths with the birth reported as having occurred in the United States resulting in a total number of 19,944 weighted infant deaths by place of occurrence.

For 2021, 23 jurisdictions linked 100% of their infant deaths; 28 jurisdictions (27 states and D.C.) had less than a 100% linkage rate. Sixteen states and D.C. had a linkage of under 99%; Texas (95.4%), Delaware (95.6%), West Virginia

(97.4%), New Mexico (97.7%), California (97.9%), Indiana (98.0%), New Jersey (98.0%), Pennsylvania (98.1%), D.C. (98.4%), Kentucky (98.4%), Hawaii (98.6%), Nebraska (98.6%), North Carolina (98.8%), Oregon (98.8%), Nevada (98.9%), and Virginia (98.9%). When a high percentage of deaths are unlinked, unweighted infant mortality rates computed for these states are underestimated. Accordingly, weights are added to the file to correct for biases in the data due to lower data linkage in specific states.

The 2020 cohort linked file for the 50 States and D.C. by place of occurrence includes 19,376 linked infant death records and 143 unlinked infant death records (99.3% linked, 0.7% unlinked). The cohort linked file should not be weighted using the weight variable (recwt) in the file, as this upweights the number of births in a particular state, potentially leading to greater bias than leaving the infant death unweighted.

Confidentiality

To minimize the risk of disclosure of individual or institutional information, NCHS public-use data files do not contain the day of the birth of the newborn or the dates of birth of the mother or father. Also, for public-use files from 2005 forward, no U.S. geographic detail is identified.

Documents

The documents listed below describe in detail the procedures employed for demographic classification on both the birth and death records and medical classification on death records. These documents, while not absolutely essential to the proper interpretation of the data for a number of general applications, should nevertheless be studied carefully prior to any detailed analysis of demographic or medical data variables. In particular, there are a number of details about multiple cause-of-death coding which, if not understood and analyzed properly, may result in faulty analysis of the data. Volumes 1, 2 and 3 of the ICD-10 may be purchased from the World Health Organization (WHO) Publication Center USA, see <http://www.cdc.gov/nchs/icd/icd10.htm> . Many of the instruction manuals listed below are available electronically on the NCHS website.

- A. National Center for Health Statistics. Vital statistics, Instructions for Classifying the Underlying Cause-of-Death, ICD-10, 2022. NCHS Instruction Manual, Part 2a. Hyattsville, Maryland: Public Health Service.
- B. National Center for Health Statistics. Vital statistics, Instructions for Classifying Multiple Cause-of-Death, ICD-10, 2022. NCHS Instruction Manual, Part 2b. Hyattsville, Maryland: Public Health Service.

- C. National Center for Health Statistics. Vital statistics, ICD-10 ACME Decision Tables for Classifying Underlying Causes-of-Death, 2016. NCHS Instruction Manual, Part 2c. Hyattsville, Maryland: Public Health Service.
- D. National Center for Health Statistics. Replacement - Specifications for U.S. Standard Certificate of Birth – 2003 Revision. NCHS Instruction manual, Part 3A. Hyattsville, Maryland: Public Health Service.
- E. National Center for Health Statistics. Replacement - Specifications for U.S. Standard Certificate of Death – 2003 Revision. NCHS Instruction manual, Part 4. Hyattsville, Maryland: Public Health Service.
- F. Computer Edits for Mortality Data, Including Separate Section for Fetal Deaths Effective 2020. NCHS Instruction Manual Part 11. Hyattsville, Maryland: Public Health Service.

Instructions manuals are available at:

http://www.cdc.gov/nchs/nvss/instruction_manuals.htm

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

For more detailed information on filling out birth certificate information, see the [Facility worksheet for the live birth certificate](#) and the [Applying Best Practices for Reporting Medical and Health Information on Birth Certificates](#) training.

Cause of Death Classification

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

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

Changes in classification of causes of death due to these revisions may result in discontinuities in cause-of-death trends. Measures of this discontinuity are essential to the interpretation of mortality trends and are discussed in detail in other NCHS publications (see [Mortality Data internet page](#)).

Underlying Cause of Death Data

Mortality statistics by cause of death are compiled from entries on the medical certification portion of the death certificate. Causes of death include “all those diseases, morbid conditions or injuries which either resulted in or contributed to death and the circumstances of the accident or violence which produced these injuries”. The medical certification of death is divided into two sections. In Part I, the physician is asked to provide the causal chain of morbid conditions that led to death, beginning with the condition most proximate to death online (a) and working backwards to the initiating condition. Part I of the medical certification is designed to facilitate the selection of the underlying cause of death when two or more causes are recorded on the certificate. The underlying cause of death is defined by the WHO in the ICD-10 as “(a) the disease or injury which initiated the chain of morbid events leading directly to death, or (b) the circumstances of the accident or violence that produced the fatal injury” and is generally considered the most useful cause from a public health standpoint. Part II of the cause-of-death section of the death certificate solicits other conditions that the certifier believed contributed to death but were not in the causal chain. While some details of the death certificate vary by state, all states use the same general format for medical certification outlined in the U.S. Standard Certificate. The U.S. Standard Certificate, in turn, closely follows the format recommended by the WHO.

For a given death, the underlying cause is selected from the condition or conditions recorded by the certifier in the cause-of-death section of the death certificate. NCHS is bound by international agreement to make the selection of the underlying cause through the use of the ICD-10 classification structure, and the selection and modification rules contained in this revision of the ICD. Additional information on the underlying cause of death can be found at <http://www.cdc.gov/nchs/data/dvs/mort99doc.pdf> .

Multiple Cause of Death Data

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

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

Record axis is designed for the generation of person-based multiple cause statistics. Person-based analysis requires that each condition be coded within the context of every other condition on the same death certificate and modified or linked to such conditions as provided by ICD-10. By definition, the entity data cannot meet this requirement since the linkage provisions modify the character and placement of the information originally recorded by the certifier. Essentially, the axis of the classification has been converted from an entity basis to a record (or person) basis. The record axis codes are assigned in terms of the set of codes that best describe the overall medical certification portion of the death certificate. Additional information on multiple cause data processing can be found at <http://www.cdc.gov/nchs/data/dvs/mort99doc.pdf> .

Entity Axis Codes

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

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

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

2. Position indicator: The next byte indicates the position of the code on the line, i.e., it is the first (1), second (2), third (3) eighth (8) code on the line.

3. Cause category: The next four bytes represent the ICD-10 cause code.

4. The last byte is blank.

A maximum of 20 of these seven-byte codes are captured on a record for multiple cause purposes. This may consist of a maximum of 8 codes on any given line with up to 20 codes distributed across three or more lines depending on where the subject conditions are located on the certificate. Codes may be

omitted from one or more lines, e.g., line 1 with one or more codes, line 2 with no codes, line 3 with one or more codes.

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

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

3. Entity Axis Applications. The entity axis multiple cause data file is appropriate for analyses that require that each condition be coded as a stand-alone entity without linkage to other conditions and/or require information on the placement of such conditions in the death certificate. Within this framework, the entity data are appropriate to examine relationships among conditions and the validity of traditional assumptions in underlying cause selection. Additionally, the entity data provide in certain categories a more detailed code assignment that could be excluded in creating record axis data. Where such detail is needed for a study, the user should use entity data. Finally, the researcher may not wish to be bound by the assumptions used in the axis translation process.

The main limitation of entity axis data is that it does not necessarily reflect the best code for a condition when considered within the context of the medical certification as a whole. As a result, certain entity codes can be misleading or even contradict other codes in the record. For example, category K80.2 is titled "Calculus of gallbladder without cholecystitis." Within the framework of entity codes this is interpreted to mean that the codable entity itself contained no mention of cholecystitis rather than that cholecystitis was not mentioned anywhere on the record. Tabulation of records with a "K80.2" as a count of persons having Calculus of gallbladder without cholecystitis would therefore be erroneous. This illustrates the fact that under entity coding the ICD-10 titles cannot be taken literally. The user should study the rules for entity coding as they relate to his/her research prior to use of entity data. The user is further cautioned that the inclusion notes in ICD-10 that relate to modifying and combining categories are seldom applicable to entity coding (except where provided in NCHS Instruction Manual Part 2b).

In tabulating the entity axis data, one may count codes with an individual code representing the number of times the condition(s) appears in the file. In this kind of tabulation of morbid conditions, the counts among categories may be added together to produce counts for groups of codes. Alternatively, subject to the

limitations given above, one may count persons having mention of the disease represented by a code or codes. In this instance it is not correct to add counts for individual codes to create person counts for groups of codes. Since more than one code in the researcher's interest may appear together on the certificate, totaling must account for higher order interactions among codes. Up to 20 codes may be assigned on a record; therefore, a 20-way interaction is theoretically possible. All totaling must be based on mention of one or more of the categories under investigation.

Record Axis Codes

The following paragraphs describe the format and application of record-axis data. Part 2f of the Instruction Manual Series (ICD-10 TRANSAX Disease Reference Tables for classifying Multiple Causes-of-Death) describes the TRANSAX process for creating record axis data from entity axis data.

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

1. Cause category: The first four bytes represent the ICD-10 cause code.
2. The last byte is blank.

A maximum of 20 codes are captured on a record for multiple cause purposes. The codes are written in a 100-byte field with the underlying cause of death listed first, followed by ascending code order (5 bytes), with any unused bytes left blank.

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

3. Record Axis Applications. The record axis multiple cause data are the basis for NCHS core multiple cause tabulations. Location of codes is not relevant to this data, and conditions have been linked into the most meaningful categories for the certification. The most immediate consequence for the user is that the codes on the record already represent mention of a disease assignable to that particular ICD-10 category. This is in contrast to the entity code which is assigned each time such a disease is reported on different lines of the certification. Secondly, the linkage implies that within the constraints of ICD-10 the most meaningful code has been assigned. The translation process creates for the user a data file that is edited for contradictions, duplicate codes, and imprecisions. In contrast to entity axis data, record axis data are classified in a manner comparable to underlying cause of death classification thereby facilitating joint analysis of these variables. A potential disadvantage of record axis data is that some detail is sacrificed in a number of the linkages.

The user can take the record axis codes as literally representing the information conveyed in ICD-10 category titles. While knowledge of the rules for combining and linking and coding conditions is useful, it is not a prerequisite to meaningful analysis of the data as long as one is willing to accept the assumptions of the axis translation process. The user is cautioned, however, that due to special rules in mortality coding, not all linkage notes in ICD-10 are used. (NCHS Instruction Manual Part 2f).

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

Additional Information

In using the NCHS multiple cause data files, the user is urged to review the information in this document and its references. The instructional material does change from year to year and ICD revision to ICD revision. The user is cautioned that coding of specific ICD-10 categories should be checked in the appropriate instruction manual. What may appear on the surface to be the correct code by ICD-10 may in fact not be correct as given in the instruction manuals.

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

User Created Cohort File

To create a cohort file, combine the 2020 denominator file with the 2020 and 2021 numerator files using the Cohort Sequence Number (co_seqnum in position 365-371) and Year of Death (co_yod in position 372-375) variables. Below are examples of code that can be used to combine files using SAS and Stata. The SAS uses a two-step merge approach whereas the Stata example appends the two numerator files and then merges the combined 2020-2021 numerator with the 2020 denominator file.

SAS code example for creating a cohort file

```
FILENAME B20 ' '; /* put working directory path here */  
FILENAME D20 ' '; /* put working directory path here */
```

```

FILENAME D21 ' ' ;      /* put working directory path here */

DATA BORN20;           /* pull in 2020 denominator file */
INFILE B20;
INPUT
RESTATUS 104  SEQNUM_CO      365-371      CO_YOD  372-375;
IF RSTATUS < 4;

PROC SORT; BY SEQNUM_CO CO_YOD; RUN;

DATA DIED20;          /* includes infants born 2019 and 2020 */
INFILE D20;
INPUT
DOB_YY  9-12  RSTATUS 104  SEQNUM_CO      365-371
CO_YOD  372-375;
IF RSTATUS < 4 AND DOB_YY = 2020;      /* limit to infants born in 2020 */

PROC SORT; BY SEQNUM_CO CO_YOD; RUN;

DATA DIED21;          /* includes infants born 2020 and 2021 */
INFILE D21;
INPUT
DOB_YY  9-12  RSTATUS 104  SEQNUM_CO      365-371
CO_YOD  372-375;
IF RSTATUS < 4 AND DOB_YY = 2020;      /* limit to infants born in 2020 */

PROC SORT; BY SEQNUM_CO CO_YOD; RUN;

/* merge 2020 births to those infants that were born and died in 2020 */

DATA B20D20;
MERGE BORN20 DIED20; BY SEQNUM_CO CO_YOD;

/* merge 2020 births/linked deaths to 2020 births that died in 2021 */
DATA B20D2021;
MERGE B20D20 DIED21; BY SEQNUM_CO CO_YOD;
RUN;

```

Stata code example for creating a cohort file

```

set more off
cd /* put working directory path here*/
log using "cohortfromperiod2020.log", replace
      *NUMERATOR FILES*
*2020
local dat_name "VS20LINK.DETAILUS "

```

```

** The following line should contain the name of the output '.dta' file ;
local dta_name1 "alldat2020num"
** The following line should contain the name of the data dictionary file ;
local dct_name "numer_dct_2020.dct"
infile using "`dct_name'", using("`dat_name'") clear
compress
tempfile `dta_name1'
save "`dta_name1'", replace

*2021
local dat_name "VS21LINK.DETAILUS"
** The following line should contain the name of the output '.dta' file ;
local dta_name2 "alldat2021num"
** The following line should contain the name of the data dictionary file ;
local dct_name "numer_dct_2020.dct"
infile using "`dct_name'", using("`dat_name'") clear
compress
tempfile `dta_name2'
save "`dta_name2'", replace
*****APPEND TWO NUMERATOR FILES*****
append using "`dta_name1'"

egen linkid=concat(SEQNUM_CO CO_YOD)
tempfile `dta_name2'
save "`dta_name2'", replace
                                *DENOMINATOR FILE*

*2020
local dat_name "VS20LINK.DENOMUS"
** The following line should contain the name of the output '.dta' file ;
local dta_name1d "alldat2020den"
** The following line should contain the name of the data dictionary file ;
local dct_name "denom_dct_2020.dct"
infile using "`dct_name'", using("`dat_name'") clear
compress
tempfile `dta_name1d'
save "`dta_name1d'", replace

* merge denominator data with appended numerator file

egen linkid=concat(SEQNUM_CO CO_YOD)
/* Stata will not merge when there are missing values on the merge variable,
so create a new ID number that is all negative when the SEQNUM_CO variable
is missing */
gen newidmis=_n*(-1) if SEQNUM_CO==""
tostring newidmis, replace

```

```
/* check to make sure all the new ID numbers are negative (so will not link to
records from the numerator file */
codebook newidmis
/* replace linking ID with this newly generated value for records that have missing
SEQNUM_CO (that do not link to the numerator file(s) */
replace linkid=newidmis if SEQNUM_CO=""
/* merge the denominator file with the appended numerator records for 2 years */
merge 1:1 linkid using "`dta_name2'", gen(_mgnumden)
/* check the year of birth variable by merge status */
tab DOB_YY if _mgnumden==1 /* denominator only: 2020 */
tab DOB_YY if _mgnumden==2 /* numerator only: 2020 and 2021 */
tab DOB_YY if _mgnumden==3 /* matched 2020 records */

/* check the year of death variable for merged records */
tab CO_YOD if _mgnumden==3 /* matched 2020 records: Year of death
20202021 */

/* drop records that did not match, deaths where the year of
birth was either 2019 or 2021 */
drop if _mgnumden==2
save "mergedcohort_2020.dta", replace
log close
```

2019 Period Linked Birth/Infant Death Data Set

2021 Period Numerator Files:

United States

A. Record count (occurrence, unweighted):	19,728
B. Record length:	1,743

Territories

A. Record count (occurrence):	173
B. Record length:	1,743

2021 Period Denominator Files:

United States

A. Record count (occurrence):	3,669,928
B. Record length:	1,346

Territories

A. Record count (occurrence):	21,965
B. Record length:	1,346

2020 Cohort Numerator Files:

United States

A. Record count (occurrence, unweighted):	19,376
B. Record length:	1,743

2020 Cohort Denominator Files:

United States

A. Record count (occurrence):	3,549,826
B. Record length:	1,346

**2021 Period/ 2020 Cohort Linked Public
Use File Layout**

Position	Len	File*	Field	Description	Flag Position	Values	Definition
1-7	1		FILLER01	Filler		Blank	
8	1		LATEREC	Late Record Flag		0, blank 1	Not late record Late record
9-12	4	P,G	DOB_YY	Birth Year		2020-2021	Birth year
13-14	2	P,G	DOB_MM	Birth Month		01 02 03 04 05 06 07 08 09 10 11 12	January February March April May June July August September October November December
15-18	4		FILLER02	Filler		Blank	
19-22	4	P,G	DOB_TT	Time of Birth	126	0000-2359 9999	Time of Birth Not Stated
23	1	P,G	DOB_WK	Birth Day of Week		1 2 3 4 5 6 7	Sunday Monday Tuesday Wednesday Thursday Friday Saturday
24-31	8		FILLER03	Filler		Blank	
32	1	P,G	BFACIL	Birth Place (Revised) Revised data only. See field 1330 for national data.	33	1 2 3 4 5 6 7	Hospital Freestanding Birth Center Home (intended) Home (not intended) Home (unknown if intended) Clinic / Doctor's Office Other

1/ Flag Definitions: 0 Not reported either year, or not reported in either the previous or the current year, 1 Reported both years

Position	Len	File*	Field	Description	Flag Position	Values	Definition
						9	Unknown
33	1	P,G	F_BFACIL	Reporting Flag for Birth Place			See footnote
34-49	16		FILLER04	Filler			Blank
50	1	P,G	BFACIL3	Facility Recode		1 2 3	In Hospital Not in Hospital Unknown or Not Stated
51-72	22		FILLER05	Filler			Blank
73	1	P,G	MAGEIMP	Mother's Age Imputed Due to missing data, age imputed.		Blank 1	Age not imputed Age imputed
74	1	P,G	MAGEREP	Reported Age of Mother Used Flag Due to missing date of birth, reported age used.		Blank 1	Reported age not used Reported age used
75-76	2	P,G	MAGER	Mother's Age Recode 41			12 10 – 12 years, 13 13 years, 14 14 years, 15 15 years, 16 16 years, 17 17 years, 18 18 years, 19 19 years, 20 20 years, 21 21 years, 22 22 years, 23 23 years, 24 24 years, 25 25 years, 26 26 years, 27 27 years, 28 28 years, 29 29 years, 30 30 years, 31 31 years, 32 32 years, 33 33 years, 34 34 years, 35 35 years, 36 36 years, 37 37 years, 38 38 years, 39 39 years, 40 40 years, 41 41 years, 42 42 years, 43 43 years, 44 44 years, 45 45 years, 46 46 years, 47 47 years, 48 48 years, 49 49 years, 50 50 years and over
77-78	2	P,G	MAGER14	Mother's Age Recode 14		01 03 04 05 06 07 08 09 10 11 12 13 14	Under 15 Years 15 years 16 years 17 years 18 years 19 years 20-24 years 25-29 years 30-34 years 35-39 years 40-44 years 45-49 years 50-54 years
79	1	P,G	MAGER9	Mother's Age Recode 9		1 2 3 4 5	Under 15 years 15-19 years 20-24 years 25-29 years 30-34 years

1/ Flag Definitions: 0 Not reported either year, or not reported in either the previous or the current year, 1 Reported both years

Position	Len	File*	Field	Description	Flag Position	Values	Definition
						6	35-39 years
						7	40-44 years
						8	45-49 years
						9	50-54 years
80-83	2		FILLER06	Filler		Blank	
84	1	P,G	MBSTATE_REC	Mother's Nativity		1	Born in the U.S. (50 US States)
						2	Born outside the U.S. (includes possessions)
						3	Unknown or Not Stated
85-103	19		FILLER07	Filler		Blank	
104	1	P,G	RESTATUS	Residence Status			
				<u>United States</u>		1	RESIDENT: State and county of occurrence and residence are the same.
						2	INTRASTATE NONRESIDENT: State of occurrence and residence are the same but county is different.
						3	INTERSTATE NONRESIDENT: State of occurrence and residence are different but both are one of the 50 US states or District of Columbia.
						4	FOREIGN RESIDENT: The state of residence is not one of the 50 US states or District of Columbia.
				<u>U.S. Territories</u>		1	RESIDENT: State and county of occurrence and residence are the same. (Unique to Guam, all US residents are considered residents of Guam and thus are assigned 1.)
						2	INTRATERRITORY NONRESIDENT: Territory of occurrence and residence are the same but county is different.
						2	INTERTERRITORY RESIDENT: Territory of occurrence and residence are different but both are US Territories.
						3	FOREIGN RESIDENT: The residence is not a US Territory.
105-106	2	P,G	MRACE31	Mother's Race Recode 31			
				<u>United States and all Outlying Areas of the United States except Puerto Rico</u>		01	White (only) [only one race reported]
						02	Black (only)
						03	AIAN (American Indian or Alaskan Native) (only)
						04	Asian (only)
						05	NHOPI (Native Hawaiian or Other Pacific Islander) (only)
						06	Black and White
						07	Black and AIAN
						08	Black and Asian
						09	Black and NHOPI
						10	AIAN and White
						11	AIAN and Asian

1/ Flag Definitions: 0 Not reported either year, or not reported in either the previous or the current year, 1 Reported both years

Position	Len	File*	Field	Description	Flag Position	Values	Definition
						12	AIAN and NHOPI
						13	Asian and White
						14	Asian and NHOPI
						15	NHOPI and White
						16	Black, AIAN, and White
						17	Black, AIAN, and Asian
						18	Black, AIAN, and NHOPI
						19	Black, Asian, and White
						20	Black, Asian, and NHOPI
						21	Black, NHOPI, and White
						22	AIAN, Asian, and White
						23	AIAN, NHOPI, and White
						24	AIAN, Asian, and NHOPI
						25	Asian, NHOPI, and White
						26	Black, AIAN, Asian, and White
						27	Black, AIAN, Asian, and NHOPI
						28	Black, AIAN, NHOPI, and White
						29	Black, Asian, NHOPI, and White
						30	AIAN, Asian, NHOPI, and White
						31	Black, AIAN, Asian, NHOPI, and White
107	1	P,G	MRACE6	Mother's Race Recode 6			
				<u>United States and all Outlying Areas</u>		1	White (only)
				<u>of the United States except Puerto</u>		2	Black (only)
				<u>Rico</u>		3	AIAN (only)
						4	Asian (only)
						5	NHOPI (only)
						6	More than one race
108-109	2	P,G	MRACE15	Mother's Race Recode 15			
				<u>United States and all Outlying Areas</u>		01	White (only)
				<u>of the United States except Puerto</u>		02	Black (only)
				<u>Rico</u>		03	AIAN (only)
						04	Asian Indian (only)
						05	Chinese (only)
						06	Filipino (only)
						07	Japanese (only)
						08	Korean (only)
						09	Vietnamese (only)
						10	Other Asian (only)
						11	Hawaiian (only)
						12	Guamanian (only)
						13	Samoan (only)
						14	Other Pacific Islander (only)
						15	More than one race

1/ Flag Definitions: 0 Not reported either year, or not reported in either the previous or the current year, 1 Reported both years

Position	Len	File*	Field	Description	Flag Position	Values	Definition
110	1		FILLER				
111	1	P,G	MRACEIMP	Mother's Race Imputed		Blank 1 2	Mother's race not imputed Unknown race imputed All other races, formerly coded 09, imputed.
112	1	P,G	MHISPX	Mother's Hispanic Origin Recode 116		0 1 2 3 4 5 6 9	Non-Hispanic Mexican Puerto Rican Cuban Central and South American Dominican Other and Unknown Hispanic origin Hispanic origin not stated
113-114	2		FILLER08	Filler		Blank	
115	1	P,G	MHISP_R	Mother's Hispanic Origin Recode 116		0 1 2 3 4 5 9	Non-Hispanic Mexican Puerto Rican Cuban Central and South American Other and Unknown Hispanic origin Hispanic origin not stated
116	1	P,G	F_MHISP	Reporting Flag for Mother's Origin			See footnote
117	1	P,G	MRACEHISP	Mother's Race/Hispanic Origin Based on single/multiple-race (fields 105-106, 107, and 108-109)		1 2 3 4 5 6 7 8	Non-Hispanic White (only) Non-Hispanic Black (only) Non-Hispanic AIAN (only) Non-Hispanic Asian (only) Non-Hispanic NHOPI (only) Non-Hispanic more than one race Hispanic Origin unknown or not stated
118	1		FILLER09	Filler		Blank	
119	1	P,G	MAR_P	Paternity Acknowledged	123	Y N U X	Yes No Unknown Not Applicable

1/ Flag Definitions: 0 Not reported either year, or not reported in either the previous or the current year, 1 Reported both years

Position	Len	File*	Field	Description	Flag Position	Values	Definition
120	1	P,G	DMAR	Marital Status			
				<u>United States and all Outlying Areas</u>		1	Married
				<u>Of the United States except Puerto Rico</u>		2	Unmarried
				<u>Rico</u>		9	Unknown, NS
				<u>Puerto Rico</u>		1	Yes
						2	Unmarried parents living together
						3	Unmarried parents not living together
						9	Unknown or not stated
121	1	P,G	MAR_IMP	Mother's Marital Status Imputed		Blank	Marital Status not imputed
						1	Marital Status imputed
122	1		FILLER10	Filler		Blank	
123	1	P,G	F_MAR_P	Reporting Flag for Paternity Acknowledged			See footnote
124	1	P,G	MEDUC	Mother's Education			
						1	8 th grade or less
						2	9 th through 12 th grade with no diploma
						3	High school graduate or GED completed
						4	Some college credit, but not a degree.
						5	Associate degree (AA,AS)
						6	Bachelor's degree (BA, AB, BS)
						7	Master's degree (MA, MS, MEng, MEd, MSW, MBA)
						8	Doctorate (PhD, EdD) or Professional Degree (MD, DDS, DVM, LLB, JD)
						9	Unknown
125	1		FILLER11	Filler		Blank	
126	1	P,G	F_MEDUC	Reporting Flag for Education of Mother			See footnote
127-141	15		FILLER11	Filler		Blank	
142	1	P,G	FAGERPT_FLG	Father's Reported Age Used		Blank	Father's reported age not used
						1	Father's reported age used
143-146	4		FILLER12	Filler		Blank	
147-148	2	P,G	FAGECOMB	Father's Combined Age (Revised)		09-98	Father's combined age in years
						99	Unknown or not stated

1/ Flag Definitions: 0 Not reported either year, or not reported in either the previous or the current year, 1 Reported both years

Position	Len	File*	Field	Description	Flag Position	Values	Definition
149-150	2	P,G	FAGE11	Father's Age Recode 11		01 02 03 04 05 06 07 08 09 10 11	Under 15 years 15-19 years 20-24 years 25-29 years 30-34 years 35-39 years 40-44 years 45-49 years 50-54 years 55-98 years Not stated
151-152	2	P,G	FRACE31	Father's Race Recode 31		01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 99	White (only) [only one race reported] Black (only) AIAN (American Indian or Alaskan Native) (only) Asian (only) NHOPI (Native Hawaiian or Other Pacific Islander) (only) Black and White Black and AIAN Black and Asian Black and NHOPI AIAN and White AIAN and Asian AIAN and NHOPI Asian and White Asian and NHOPI NHOPI and White Black, AIAN, and White Black, AIAN, and Asian Black, AIAN, and NHOPI Black, Asian, and White Black, Asian, and NHOPI Black, NHOPI, and White AIAN, Asian, and White AIAN, NHOPI, and White AIAN, Asian, and NHOPI Asian, NHOPI, and White Black, AIAN, Asian, and White Black, AIAN, Asian, and NHOPI Black, AIAN, NHOPI, and White Black, Asian, NHOPI, and White AIAN, Asian, NHOPI, and White Black, AIAN, Asian, NHOPI, and White Unknown or Not Stated

1/ Flag Definitions: 0 Not reported either year, or not reported in either the previous or the current year, 1 Reported both years

Position	Len	File*	Field	Description	Flag Position	Values	Definition
153	1	P,G	FRACE6	Father's Race Recode 6		1 2 3 4 5 6 9	White (only) Black (only) AIAN (only) Asian (only) NHOPI (only) More than one race Unknown or Not Stated
154-155	2	P,G	FRACE15	Father's Race Recode 15		01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 99	White (only) Black (only) AIAN (only) Asian Indian (only) Chinese (only) Filipino (only) Japanese (only) Korean (only) Vietnamese (only) Other Asian (only) Hawaiian (only) Guamanian (only) Samoan (only) Other Pacific Islander (only) More than one race Unknown or Not Stated
156-159	4		FILLER13	Filler			Blank
159	1	P,G	FHISPX	Father's Hispanic Origin Recode	116	0 1 2 3 4 5 6 9	Non-Hispanic Mexican Puerto Rican Cuban Central and South American Dominican Other and Unknown Hispanic origin Hispanic origin not stated
160	1	P,G	FHISP_R	Father's Hispanic Origin Recode	161	0 1 2 3 4 5 9	Non-Hispanic Mexican Puerto Rican Cuban Central and South American Other and Unknown Hispanic origin Hispanic origin not stated

1/ Flag Definitions: 0 Not reported either year, or not reported in either the previous or the current year, 1 Reported both years

Position	Len	File*	Field	Description	Flag Position	Values	Definition
161	1	P,G	F_FHISP	Reporting Flag for Father's Origin			See footnote
162	1	P,G	FRACEHISP	Father's Race/Hispanic Origin Based on single/multiple-race (fields 151-152, 153, and 154-155)		1 2 3 4 5 6 7 8 9	Non-Hispanic White (only) Non-Hispanic Black (only) Non-Hispanic AIAN (only) Non-Hispanic Asian (only) Non-Hispanic NHOPI (only) Non-Hispanic more than one race Hispanic Origin unknown or not stated Race unknown or not stated (Non-Hispanic)
163	1	P,G	FEDUC	Father's Education	165	1 2 3 4 5 6 7 8 9	8 th grade or less 9 th through 12 th grade with no diploma High school graduate or GED completed Some college credit, but not a degree. Associate degree (AA,AS) Bachelor's degree (BA, AB, BS) Master's degree (MA, MS, MEng, MEd, MSW, MBA) Doctorate (PhD, EdD) or Professional Degree (MD, DDS, DVM, LLB, JD) Unknown
164	1		FILLER14	Filler			Blank
165	1	P,G	F_FEDUC	Reporting Flag for Education of Father			See footnote
166-170	5		FILLER15	Filler			Blank
171-172	2	P,G	PRIORLIVE	Prior Births Now Living		00-30 99	Number of children still living from previous live births Unknown or not stated
173-174	2	P,G	PRIORDEAD	Prior Births Now Dead		00-30 99	Number of children dead from previous live births Unknown or not stated
175-176	2	P,G	PRIORTERM	Prior Terminations/Fetal Death		0-30 99	Number of terminations/fetal deaths Unknown or not stated
177-178	2		FILLER16	Filler			Blank
179	1	P,G	LBO_REC	Live Birth Order Recode		1-7 8 9	Live birth order 8 or more live births Unknown or not stated
180-181	2		FILLER17	Filler			Blank

1/ Flag Definitions: 0 Not reported either year, or not reported in either the previous or the current year, 1 Reported both years

Position	Len	File*	Field	Description	Flag Position	Values	Definition
182	1	P,G	TPO_REC	Total Pregnancy Order Recode		1-7 8 9	Total pregnancy order 8 or more total pregnancies Unknown or not stated
183-197	15		FILLER18	Filler		Blank	
198-200	3	P,G	ILLB_R	Interval of Last Live Birth Recode	126	000-003 004-300 888 999	Plural delivery Months since last live birth Not applicable / 1 st live birth Unknown or not stated
201-202	2	P,G	ILLB_R11	Interval Since Last Live Birth Recode 11	126	00 01 02 03 04 05 06 07 08 88 99	Zero to 3 months (plural delivery) 4 to 11 months 12 to 17 months 18 to 23 months 24 to 35 months 36 to 47 months 48 to 59 months 60 to 71 months 72 months and over Not applicable (1 st live birth) Unknown or not stated
203-205	3		FILLER19	Filler		Blank	
206-208	3	P,G	ILOO_R	Interval Since Last Other Outcome Recode	126	000-003 004-300 888 999	Plural delivery Months since last other pregnancy outcome Not applicable / 1 st natality event Unknown or not stated

1/ Flag Definitions: 0 Not reported either year, or not reported in either the previous or the current year, 1 Reported both years

Position	Len	File*	Field	Description	Flag Position	Values	Definition
209-210	2	P,G	ILOO_R11	Interval Since Last Other Outcome Recode 11	126	00 01 02 03 04 05 06 07 08 88 99	Zero to 3 months (plural delivery) 4 to 11 months 12 to 17 months 18 to 23 months 24 to 35 months 36 to 47 months 48 to 59 months 60 to 71 months 72 months and over Not applicable (1 st natality event) Unknown or not stated
211-213	3		FILLER20	Filler		Blank	
214-216	3	P,G	ILP_R	Interval Since Last Pregnancy Recode	126	000-003 004-300 888 999	Plural delivery Months since last live birth Not applicable / no previous pregnancy Unknown or not stated
217-218	2	P,G	ILP_R11	Interval Since Last Pregnancy Recode 11	126	00 01 02 03 04 05 06 07 08 88 99	Zero to 3 months (plural delivery) 4 to 11 months 12 to 17 months 18 to 23 months 24 to 35 months 36 to 47 months 48 to 59 months 60 to 71 months 72 months and over Not applicable (no previous pregnancy) Unknown or not stated
219-223	5		FILLER21	Filler		Blank	
224-225	2	P,G	PRECARE	Month Prenatal Care	226	00 01-10 99	No prenatal care Month prenatal care began Unknown or not stated
226	1	P,G	F_MPCB	Reporting Flag for Month Prenatal Care Began			See footnote
227	1	P,G	PRECARE5	Month Prenatal Care Began Recode	226	1 2 3 4	1 st to 3 rd month 4 th to 6 th month 7 th to final month No prenatal care

1/ Flag Definitions: 0 Not reported either year, or not reported in either the previous or the current year, 1 Reported both years

Position	Len	File*	Field	Description	Flag Position	Values	Definition
228-237	10		FILLER22	Filler		5 Blank	Unknown or not stated
238-239	2	P,G	PREVIS	Number of Prenatal Visits (Revised) See field 242-243 for national data		00-98 99	Number of prenatal visits Unknown or not stated
240-241	2		FILLER23	Filler		Blank	
242-243	2	P,G	PREVIS_REC	Number of Prenatal Visits Recode 244		01 02 03 04 05 06 07 08 09 10 11 12	No visits 1 to 2 visits 3 to 4 visits 5 to 6 visits 7 to 8 visits 9 to 10 visits 11 to 12 visits 13 to 14 visits 15 to 16 visits 17 to 18 visits 19 or more visits Unknown or not stated
244	1	P,G	F_TPCV	Reporting Flag for Total Prenatal Care Visits			See footnote
245-250	6		FILLER24	Filler		Blank	
251	1	P,G	WIC	WIC	252	Y N U	Yes No Unknown or not stated
252	1	P,G	F_WIC	Reporting Flag for WIC		0 1	Non-Reporting Reporting
253-254	2	P,G	CIG_0	Cigarettes Before Pregnancy 265		00-97 98 99	Number of cigarettes daily 98 or more cigarettes daily Unknown or not stated
255-256	2	P,G	CIG_1	Cigarettes 1st Trimester 266		00-97 98 99	Number of cigarettes daily 98 or more cigarettes daily Unknown or not stated
257-258	2	P,G	CIG_2	Cigarettes 2nd Trimester 267		00-97 98 99	Number of cigarettes daily 98 or more cigarettes daily Unknown or not stated
259-260	2	P,G	CIG_3	Cigarettes 3rd Trimester 268		00-97 98	Number of cigarettes daily 98 or more cigarettes daily

1/ Flag Definitions: 0 Not reported either year, or not reported in either the previous or the current year, 1 Reported both years

Position	Len	File*	Field	Description	Flag Position	Values	Definition
						99	Unknown or not stated
261	1	P,G	CIG0_R	Cigarettes Before Pregnancy Recode 265		0 1 2 3 4 5 6	Nonsmoker 1-5 6-10 11-20 21-40 41 or more Unknown or not stated
262	1	P,G	CIG1_R	Cigarettes 1st Trimester Recode 266		0 1 2 3 4 5 6	Nonsmoker 1-5 6-10 11-20 21-40 41 or more Unknown or not stated
263	1	P,G	CIG2_R	Cigarettes 2nd Trimester Recode 267		0 1 2 3 4 5 6	Nonsmoker 1-5 6-10 11-20 21-40 41 or more Unknown or not stated
264	1	P,G	CIG3_R	Cigarettes 3rd Trimester Recode 268		0 1 2 3 4 5 6	Nonsmoker 1-5 6-10 11-20 21-40 41 or more Not stated / Not on certificate
265	1	P,G	F_CIGS_0	Reporting Flag for Cigarettes before Pregnancy			See footnote
266	1	P,G	F_CIGS_1	Reporting Flag for Cigarettes 1st Trimester			See footnote
267	1	P,G	F_CIGS_2	Reporting Flag for Cigarettes 2nd Trimester			See footnote
268	1	P,G	F_CIGS_3	Reporting Flag for Cigarettes 3rd Trimester			See footnote
269	1	P,G	CIG_REC	Cigarette Recode (Revised) 270		Y N U	Yes No Unknown or not stated

1/ Flag Definitions: 0 Not reported either year, or not reported in either the previous or the current year, 1 Reported both years

Position	Len	File*	Field	Description	Flag Position	Values	Definition
270	1	P,G	F_TOBACO	Reporting Flag for Tobacco use			See footnote
271-279	9		FILLER25	Filler		Blank	
280-281	2	P,G	MHTR	Mother's Height in Inches (Recode)	282	30-78 99	Height in inches Unknown or not stated
282	1	P,G	F_M_HT	Reporting Flag for Mother's Height			See footnote
283-286	4	P,G	BMI	BMI	282	13.0-69.9 99.9	Body Mass Index Unknown or not stated
287	1	P,G	BMI_R	Body Mass Index Recode	282	1 2 3 4 5 6 9	Underweight <18.5 Normal 18.5-24.9 Overweight 25.0-29.9 Obesity I 35.0-39.9 Obesity II 35.0-39.9 Extreme Obesity III ≥ 40.0 Unknown or not stated
288-291	4		FILLER26	Filler		Blank	
292-294	3	P,G	PWgt_R	Pre-pregnancy Weight Recode	295	075-375 999	Weight in pounds Unknown or not stated
295	1	P,G	F_PWGT	Reporting Flag for Pre-pregnancy Weight			See footnote
296-298	3		FILLER27	Filler		Blank	
299-301	3	P,G	DWGT_R	Delivery Weight Recode	303	999	100-400 Weight in pounds Unknown or not stated
302	1		FILLER28	Filler		Blank	
303	1	P,G	F_DWGT	Reporting Flag for Delivery Weight			See footnote
304-305	2	P,G	WTGAIN	Weight Gain	307	00-97 98 99	Weight gain in pounds 98 pounds and over Unknown or not stated
306	1	P,G	WTGAIN_REC	Weight Gain Recode	307	1 2 3 4 5	Less than 11 pounds 11 to 20 pounds 21 to 30 pounds 31 to 40 pounds 41 to 98 pounds

1/ Flag Definitions: 0 Not reported either year, or not reported in either the previous or the current year, 1 Reported both years

Position	Len	File*	Field	Description	Flag Position	Values	Definition
						9	Unknown or not stated
307	1	P,G	F_WTGAIN	Reporting Flag for Weight Gain			See footnote
308-312	5		FILLER29	Filler		Blank	

The following checkbox fields 313-432 include data for revised states only. For national data for items that are comparable across revisions see fields 1330-1345.

313-338	30		<u>Risk Factors</u>				
	313	1	P,G	RF_PDIAB	Pre-pregnancy Diabetes	319	Y Yes
	314	1	P,G	RF_GDIAB	Gestational Diabetes	320	N No
	315	1	P,G	RF_PHYPE	Pre-pregnancy Hypertension	321	U Unknown or not stated
	316	1	P,G	RF_GHYPE	Gestational Hypertension	322	
	317	1	P,G	RF_EHYPE	Hypertension Eclampsia	323	
	318	1	P,G	RF_PPB	Previous Preterm Birth	324	
	319	1	P,G	F_RF_PDIAB	Reporting Flag for Pre-pregnancy Diabetes		See footnote
	320	1	P,G	F_RF_GDIAB	Reporting Flag for Gestational Diabetes		
	321	1	P,G	F_RF_PHYPE	Reporting Flag for Pre-pregnancy Hypertension		
	322	1	P,G	F_RF_GHYPE	Reporting Flag for Gestational Hypertension		
	323	1	P,G	F_RF_EHYPE	Reporting Flag for Hypertension Eclampsia		
	324	1	P,G	F_RF_PPB	Reporting Flag for Previous Preterm Birth		
	325	1	P,G	RF_INFT	Infertility Treatment	328	Y Yes
					Use reporting flag in field 319		N No
							U Unknown or not stated
	326	1	P,G	RF_DRG	Fertility Enhancing Drugs	329	Y Yes
							N No
							X Not applicable
							U Unknown or not stated
	327	1	P,G	RF_ART	Asst. Reproductive Technology	330	Y Yes
							N No
							X Not applicable
							U Unknown or not stated
	328	1	P,G	F_RF_INFT	Reporting Flag for Infertility Treatment		See footnote
	329	1	P,G	F_RF_DRG	Reporting Flag for Fertility Enhance Drugs		See footnote
	330	1	P,G	F_RF_ART	Reporting Flag for Reproductive Technology		See footnote
	331	1	P,G	RF_CESAR	Previous Cesareans	335	Y Yes
							N No

1/ Flag Definitions: 0 Not reported either year, or not reported in either the previous or the current year, 1 Reported both years

Position	Len	File*	Field	Description	Flag Position	Values	Definition	
						U	Unknown or not stated	
332-333	2	P,G	RF_CESARN	Number of Previous Cesareans	336	00 01-30 99	None Number of previous cesareans Unknown or not stated	
334	1		FILLER30	Filler		Blank		
335	1	P,G	F_RF_CESAR	Reporting Flag for Previous Cesarean			See footnote	
336	1	P,G	F_RF_NCESAR	Reporting Flag for Number of Previous Cesareans			See footnote	
337	1	P,G	NO_RISKS	No Risk Factors Checked	126	1 0 9	True False Not Reported	
338-342	4		FILLER31	Filler		Blank		
343-358	15		<u>Infections Present</u>					
343	1	P,G	IP_GON	Gonorrhea	348	Y	Yes	
344	1	P,G	IP_SYPH	Syphilis	349	N	No	
345	1	P,G	IP_CHLAM	Chlamydia	350	U	Unknown or not stated	
346	1	P,G	IP_HEPB	Hepatitis B	351			
347	1	P,G	IP_HEPC	Hepatitis C	352			
348	1	P,G	F_IP_GON	Reporting Flag for Gonorrhea			See footnote	
349	1	P,G	F_IP_SYPH	Reporting Flag for Syphilis				
350	1	P,G	F_IP_CHLAM	Reporting Flag for Chlamydia				
351	1	P,G	F_IP_HEPB	Reporting Flag for Hepatitis B				
352	1	P,G	F_IP_HEPC	Reporting Flag for Hepatitis C				
353	1	P,G	NO_INFEC	No Infections Checked	126	1 0 9	True False Not Reported	
354-359	6		FILLER32	Filler		Blank		
360-364	12		<u>Obstetric Procedures</u>					
360	1	P,G	OB_SUCC	Successful External Cephalic Version	363	Y N U	Yes No Unknown or not stated	
361	1	P,G	OB_FAIL	Failed External Cephalic Version	364	Y N	Yes No	

1/ Flag Definitions: 0 Not reported either year, or not reported in either the previous or the current year, 1 Reported both years

Position	Len	File*	Field	Description	Flag Position	Values	Definition	
						U	Unknown or not stated	
362	1		FILLER33	Filler		Blank		
363	1	P,G	F_OB_SUCC	Reporting Flag for Successful External Cephalic Version			See footnote	
364	1	P,G	F_OB_FAIL	Reporting Flag for Failed External Cephalic Version			See footnote	
365-371	7	P,G	CO_SEQNUM	Cohort Sequence Number		xxx,xxx- xxx,xxx		
372-375	4	P,G	CO_YOD	Cohort Year of Death		20XX		
376-382	7	P,G	FILLER34	Filler		Blank		
383-400	18		<u>Characteristics of Labor and Delivery</u>					
383	1	P,G	LD_INDL	Induction of Labor	389	Y	Yes	
384	1	P,G	LD_AUGM	Augmentation of Labor	390	N	No	
385	1	P,G	LD_STER	Steroids	391	U	Unknown or not stated	
386	1	P,G	LD_ANTB	Antibiotics	392			
387	1	P,G	LD_CHOR	Chorioamnionitis	393			
388	1	P,G	LD_ANES	Anesthesia	394			
389	1	P,G	F_LD_INDL	Reporting Flag for Induction of Labor			See footnote	
390	1	P,G	F_LD_AUGM	Reporting Flag for Augmentation of Labor				
391	1	P,G	F_LD_STER	Reporting Flag for Steroids				
392	1	P,G	F_LD_ANTB	Reporting Flag for Antibiotics				
393	1	P,G	F_LD_CHOR	Reporting Flag for Chorioamnionitis				
394	1	P,G	F_LD_ANES	Reporting Flag for Anesthesia				
395	1	P,G	NO_LBRDLV	No Characteristics of Labor Checked		1 0 9	True False Not Reported	
					126			
396-400	5		FILLER35	Filler		Blank		
401-409	9		<u>Method of Delivery</u>					
401	1	P,G	ME_PREP	Fetal Presentation	404	1 2 3 9	Cephalic Breech Other Unknown or not stated	

1/ Flag Definitions: 0 Not reported either year, or not reported in either the previous or the current year, 1 Reported both years

Position	Len	File*	Field	Description	Flag Position	Values	Definition	
402	1	P,G	ME_ROUT	Final Route & Method of Delivery	405	1 2 3 4 9	Spontaneous Forceps Vacuum Cesarean Unknown or not stated	
403	1	P,G	ME_TRIAL	Trial of Labor Attempted	406	Y N X U	Yes No Not applicable Unknown or not stated	
404	1	P,G	F_ME_PREP	Reporting Flag for Fetal Presentation			See footnote	
405	1	P,G	F_ME_ROUT	Reporting Flag for Final Route and Method of Delivery			See footnote	
406	1	P,G	F_ME_TRIAL	Reporting Flag for Trial of Labor Attempted			See footnote	
407	1	P,G	RDMETH_REC	Delivery Method Recode	409	1 2 3 4 5 6 9	Vaginal (excludes vaginal after previous C-section) Vaginal after previous c-section Primary C-section Repeat C-section Vaginal (unknown if previous c-section) C-section (unknown if previous c-section) Not stated	
408	1	P,G	DMETH_REC	Delivery Method Recode Combined		1 2 9	Vaginal C-Section Unknown	
409	1	P,G	F_DMETH_REC	Reporting Flag for Method of Delivery Recode			See footnote	
410-414	5		FILLER36	Filler			Blank	
415-427	18		<u>Maternal Morbidity</u>					
415	1	P,G	MM_MTR	Maternal Transfusion	421	Y	Yes	
416	1	P,G	MM_PLAC	Perineal Laceration	422	N	No	
417	1	P,G	MM_RUPT	Ruptured Uterus	423	U	Unknown or not stated	
418	1	P,G	MM_UHYST	Unplanned Hysterectomy	424			
419	1	P,G	MM_AICU	Admit to Intensive Care	425			
420	1		FILLER37	Filler			Blank	
421	1	P,G	F_MM_MTR	Reporting Flag for Maternal Transfusion			See footnote	

1/ Flag Definitions: 0 Not reported either year, or not reported in either the previous or the current year, 1 Reported both years

Position	Len	File*	Field	Description	Flag Position	Values	Definition
422	1	P,G	F_MM_PLAC	Reporting Flag for Perineal Laceration			
423	1	P,G	F_MM_RUPT	Reporting Flag for Ruptured Uterus			
424	1	P,G	F_MM_UHYST	Reporting Flag for Unplanned Hysterectomy			
425	1	P,G	F_MM_AICU	Reporting Flag for Admission to Intensive Care			
426	1		FILLER38	Filler			Blank
427	1	P,G	NO_MMORB	No Maternal Morbidity Checked	126	1 0 9	True False Not Reported
428-432	5		FILLER39	Filler			Blank
433	1	P,G	ATTEND	Attendant		1 2 3 4 5 9	Doctor of Medicine (MD) Doctor of Osteopathy (DO) Certified Nurse Midwife (CNM) Other Midwife Other Unknown or not stated
434	1	P,G	MTRAN	Mother Transferred	126	Y N U	Yes No Unknown
435	1	P,G	PAY	Payment Source	437	1 2 3 4 5 6 8 9	Medicaid Private Insurance Self-Pay Indian Health Service CHAMPUS/TRICARE Other Government (Federal, State, Local) Other Unknown
436	1	P,G	PAY_REC	Payment Recode	438	1 2 3 4 9	Medicaid Private Insurance Self Pay Other Unknown
437	1	P,G	F_PAY	Reporting Flag for Source of Payment			See footnote
438	1	P,G	F_PAY_REC	Reporting Flag for Payment Recode			See footnote
439-443	5		FILLER40	Filler			Blank
444-445	2	P,G	APGAR5	Five Minute APGAR Score	447	00-10 99	A score of 0-10 Unknown or not stated

1/ Flag Definitions: 0 Not reported either year, or not reported in either the previous or the current year, 1 Reported both years

Position	Len	File*	Field	Description	Flag Position	Values	Definition
446	1	P,G	APGAR5R	Five Minute APGAR Recode		1 2 3 4 5	A score of 0-3 A score of 4-6 A score of 7-8 A score of 9-10 Unknown or not stated
					447		
447	1	P,G	F_APGAR5	Reporting Flag for Five minute APGAR			See footnote
448-449	2	P,G	APGAR10	Ten Minute APGAR Score		00-10 88 99	A score of 0-10 Not applicable Unknown or not stated
				Use reporting flag in field 126 for 2018			
450	1	P,G	APGAR10R	Ten Minute APGAR Recode		1 2 3 4 5	A score of 0-3 A score of 4-6 A score of 7-8 A score of 9-10 Not stated/not applicable
				Use reporting flag in field 126 for 2018			
451	1	P,G	f_APGAR10	Reporting Flag for Ten minute APGAR Score			See footnote
452-453	3		FILLER41	FILLER		Blank	
454	1	P,G	DPLURAL	Plurality Recode		1 2 3 4	Single Twin Triplet Quadruplet or higher
455	1		FILLER42	Filler		Blank	
456	1	P,G	IMP_PLUR	Plurality Imputed		Blank 1	Plurality is imputed Plurality is not imputed
457-458	2		FILLER43	Filler		Blank	
459	1	P,G	SETORDER_R	Set Order Recode	126	1 1 st , 2 2 nd , 3 3 rd , 4 4 th , 5 5 th to 16 th 9	Unknown or not stated
460-474	15		FILLER44	Filler		Blank	
475	1	P,G	SEX	Sex of Infant		M F	Male Female
476	1	P,G	IMP_SEX	Imputed Sex		Blank 1	Infant Sex not Imputed Infant Sex is Imputed

1/ Flag Definitions: 0 Not reported either year, or not reported in either the previous or the current year, 1 Reported both years

Position	Len	File*	Field	Description	Flag Position	Values	Definition
477-478	2	P,G	DLMP_MM	Last Normal Menses Month		01 02 03 04 05 06 07 08 09 10 11 12 99	January February March April May June July August September October November December Unknown or not stated
479-480	2		FILLER45	Filler		Blank	
481-484	4	P,G	DLMP_YY	Last Normal Menses Year		nnnn 9999	Year of last normal menses Unknown or not stated
485-487	3		FILLER46	Filler		Blank	
487	1		COMPGST_IMP	Computed Gestation Imputation Flag		Blank 1	Computed Gestation is not imputed Computed Gestation is imputed
488	1	P,G	COMBGST_IMP	Combined Gestation Imputed		Blank 1	Combined Gestation is not imputed Combined Gestation is imputed
489	1	P,G	OBGEST_FLG	Obstetric Estimate of Gestation Used Flag		Blank 1	Clinical Estimate is not used Clinical Estimate is used
490-491	2	P,G	COMBGEST	Combined Gestation – Detail in Weeks		17-47 99	17 th through 47 th week of Gestation Unknown
492-493	2	P,G	GESTREC10	Combined Gestation Recode 10		01 02 03 04 05 06 07 08 09 10 99	Under 20 weeks 20-27 weeks 28-31 weeks 32-33 weeks 34-36 weeks 37-38 weeks 39 weeks 40 weeks 41 weeks 42 weeks and over Unknown

1/ Flag Definitions: 0 Not reported either year, or not reported in either the previous or the current year, 1 Reported both years

Position	Len	File*	Field	Description	Flag Position	Values	Definition
494	1	P,G	GESTREC3	Combined Gestation Recode 3		1 2 3	Under 37 weeks 37 weeks and over Not stated
495-497	3		FILLER47	Filler		Blank	
498	1	P,G	LMPUSED	Computed (LMP) Gestation Used Flag		Blank 1	LMP not used for gestation LMP used for gestation
499-500	2	P,G	OEGest_Comb	Obstetric Estimate Edited (NCHS Standard item)		17-47 99	Weeks of gestation Not stated
501-502	2	P,G	OEGest_R10	Obstetric Estimate Recode10 (NCHS Standard item)		01 02 03 04 05 06 07 08 09 10 99	Under 20 weeks 20-27 weeks 28-31 weeks 32-33 weeks 34-36 weeks 37-38 weeks 39 weeks 40 weeks 41 weeks 42 weeks and over Unknown
503	1	P,G	OEGest_R3	Obstetric Estimate Recode 3 (NCHS Standard Item)		1 2 3	Under 37 weeks 37 weeks and over Not stated
504-508	5		FILLER48	FILLER		Blank	
509-510	2	P,G	BWTR14	Birth Weight Recode 14		01 02 03 04 05 06 07 08 09 10 11 12 13	227 - 499 grams 500 – 749 grams 750 – 999 grams 1000 - 1249 grams 1250 – 1499 grams 1500 – 1999 grams 2000 – 2499 grams 2500 – 2999 grams 3000 – 3499 grams 3500 – 3999 grams 4000 – 4499 grams 4500 – 4999 grams 5000 – 8165 grams

1/ Flag Definitions: 0 Not reported either year, or not reported in either the previous or the current year, 1 Reported both years

Position	Len	File*	Field	Description	Flag Position	Values	Definition
						14	Not Stated
511	1	P,G	BWTR4	Birth Weight Recode 4		1 2 3 4	227 - 1499 grams 1500 – 2499 grams 2500 - 8165 grams Unknown or not stated
512-515	4	P,G	BRTHWGT	Imputed Birth Weight		0227-8165 9999	Number of grams Not stated birth weight
516	1	P,G	BWTIMP	Birth Weight Imputed Flag		Blank 1	Birth Weight is not imputed Birth Weight is imputed

The following checkbox fields 517-566 include data for revised states only. For national data for items that are comparable across revisions see fields 1340-1345.

517-536	20	<u>Abnormal Conditions of the Newborn</u>					
517	1	P,G	AB_AVEN1	Assisted Ventilation	524	Y	Yes
518	1	P,G	AB_AVEN6	Assisted Ventilation > 6 hrs	525	N	No
519	1	P,G	AB_NICU	Admission to NICU	526	U	Unknown or not stated
520	1	P,G	AB_SURF	Surfactant	527		
521	1	P,G	AB_ANTI	Antibiotics	528		
522	1	P,G	AB_SEIZ	Seizures	529		
523	1		FILLER50	Filler		Blank	
524	1	P,G	F_AB_AVEN1	Reporting Flag for Assisted Ventilation			See footnote
525	1	P,G	F_AB_AVEN6	Reporting Flag for Assisted Ventilation >6 hrs			
526	1	P,G	F_AB_NICU	Reporting Flag for Admission to NICU			
527	1	P,G	F_AB_SURF	Reporting Flag for Surfactant			
528	1	P,G	F_AB_ANTI	Reporting Flag for Antibiotics			
529	1	P,G	F_AB_SEIZ	Reporting Flag for Seizures			
530	1		FILLER51	Filler		Blank	
531	1	P,G	NO_ABNORM	No Abnormal Conditions Checked	126	1 0 9	True False Not Reported
532-536	5		FILLER52	Filler		Blank	
537-566	30	<u>Congenital Anomalies of the Newborn</u>					
537	1	P,G	CA_ANEN	Anencephaly	543	Y	Yes

1/ Flag Definitions: 0 Not reported either year, or not reported in either the previous or the current year, 1 Reported both years

Position	Len	File*	Field	Description	Flag Position	Values	Definition
538	1	P,G	CA_MNSB	Meningomyelocele / Spina Bifida	544	N	No
539	1	P,G	CA_CCHD	Cyanotic Congenital Heart Disease	545	U	Unknown or not stated
540	1	P,G	CA_CDH	Congenital Diaphragmatic Hernia	546		
541	1	P,G	CA_OMP	Omphalocele	547		
542	1	P,G	CA_GAST	Gastroschisis	548		
543	1	P,G	F_CA_ANEN	Reporting Flag for Anencephaly			See footnote
544	1	P,G	F_CA_MNSB	Flag for Meningomyelocele/Spina Bifida			
545	1	P,G	F_CA_CCHD	Reporting Flag for Cyanotic Congenital Heart Disease			
546	1	P,G	F_CA_CDH	Reporting Flag for Congenital Diaphragmatic Hernia			
547	1	P,G	F_CA_OMP	Reporting Flag for Omphalocele			
548	1	P,G	F_CA_GAST	Reporting Flag for Gastroschisis			
549	1	P,G	CA_LIMB	Limb Reduction Defect	555	Y	Yes
550	1	P,G	CA_CLEFT	Cleft Lip w/ or w/o Cleft Palate	556	N	No
551	1	P,G	CA_CLPAL	Cleft Palate alone	557	U	Unknown or not stated
552	1	P,G	CA_DOWN	Down Syndrome	558	C P N U	Confirmed Pending No Unknown
553	1	P,G	CA_DISOR	Suspected Chromosomal Disorder	559	C P N U	Confirmed Pending No Unknown
554	1	P,G	CA_HYPO	Hypospadias	560	Y N U	Yes, anomaly reported No, anomaly not reported Unknown
555	1	P,G	F_CA_LIMB	Reporting Flag for Limb Reduction Defect			See footnote
556	1	P,G	F_CA_CLEFT	Flag for Cleft Lip with or without Cleft Palate			
557	1	P,G	F_CA_CLPAL	Reporting Flag for Cleft Plate Alone			
558	1	P,G	F_CA_DOWN	Reporting Flag for Down Syndrome			
559	1	P,G	F_CA_DISOR	Reporting Flag for Suspected Chromosomal Disorder			
560	1	P,G	F_CA_HYPO	Reporting Flag for Hypospadias			
561	1	P,G	NO_CONGEN	No Congenital Anomalies Checked	126	1 0 9	True False Not Reported
562-566	5		FILLER53	Filler			Blank
567	1	P,G	ITRAN	Infant Transferred	126	Y N	Yes No

1/ Flag Definitions: 0 Not reported either year, or not reported in either the previous or the current year, 1 Reported both years

Position	Len	File*	Field	Description	Flag Position	Values	Definition
						U	Unknown or not stated
568	1	P,G	ILIVE	Infant Living at Time of Report	126	Y N U	Yes No Unknown or not stated
569	1	P,G	BFED	Infant Being Breastfed	570	Y N U	Yes No Unknown or not stated
570	1	P,G	F_BFED	Reporting Flag for Breastfed at Discharge			See footnote
571-1345	759	P,G	FILLER54	Filler		Blank	
1346	1	P,G	FLGND	Match Status		1 Blank	Record in both files Record not in both files

The Denominator file section of the files ends here. Documentation of the Mortality Section of the Numerator (Linked) file begins on the next page.

Position	Len	File*	Field	Description	Flag Position	Values	Definition
1347-1355	9	P,G	FILLER55	Filler			Blank
1356-1358	3	P,G	AGEDX	Age at Death in Days		000	0 days, also includes unknown hours and minutes and when reporting errors for date of death
						001-364	Number of days
1359	1	P,G	AGER5X	Infant age recode 5		1	Under 1 hour (includes unknown hours and minutes, and when reporting errors for date of death)
						2	1 – 23 hours
						3	1 – 6 days
						4	7 – 27 days (late neonatal)
						5	28 days and over (postneonatal)
1360-1361	2	P,G	AGER22X	Infant age recode 22		Blank	Age 1 year and over or not stated
						01	Under 1 hour (includes unknown hours and minutes, and when reporting errors for date of death)
						02	1 – 23 hours
						03	1 day
						04	2 days
						05	3 days
						06	4 days
						07	5 days
						08	6 days
						09	7 days
						10	14 – 20 days
						11	21 – 27 days
						12	1 month
						13	2 months
						14	3 months
						15	4 months
						16	5 months
						17	6 months
						18	7 months
						19	8 months
						20	9 months
						21	10 months
						22	11 months
1362	1	P,G	MANNER	Manner of Death		1	Accident
						2	Suicide
						3	Homicide
						4	Pending investigation

1/ Flag Definitions: 0 Not reported either year, or not reported in either the previous or the current year, 1 Reported both years

Position	Len	File*	Field	Description	Flag Position	Values	Definition
						5	Could not determine
						6	Self-inflicted
						7	Natural
						Blank	Not specified
1363	1	P,G	DISPO	Method of Disposition		B	Burial
						C	Cremation
						O	Other
						U	Unknown
1364	1	P,G	AUTOPSY	Autopsy		Y	Yes
						N	No
						U	Unknown
1365	1	P,G	FILLER56	Filler		Blank	
1366	1	P,G	PLACE	Place of injury for causes W00-Y34, except Y06.- and Y07.-		0	Home
						1	Residential institution
						2	School, other institution and public administrative area
						3	Sports and athletics area
						4	Street and highway
						5	Trade and service area
						6	Industrial and construction area
						7	Farm
						8	Other Specified Places
						9	Unspecified place
						Blank	Cause other than W00-Y34, except Y06.- and Y07.-
1367	1	P,G	FILLER57	Filler		Blank	
<u>UNDERLYING CAUSE OF DEATH</u>							
1368-1371	4	P,G	UCOD	ICD Code (10 th Revision) See the <u>International Classification of Diseases</u> , 1992 Revision, Volume I.			
1372	1	P,G	FILLER57	Filler		Blank	
1373-1375	3	P,G	UCODR130	130 Infant Cause Recode			
1376	1	P,G	FILLER58	Filler		Blank	
1377-1384	8	P,G	RECWT	Record Weight for period file		1.0-1.XXXXXXX	

1/ Flag Definitions: 0 Not reported either year, or not reported in either the previous or the current year, 1 Reported both years

Position	Len	File*	Field	Description	Flag Position	Values	Definition
1385-1386	2	P,G	FILLER59	Filler			Blank
<u>MULTIPLE CONDITIONS</u>							
1387-1388	2	P,G	EANUM	Number of Entity-Axis Conditions		00-20	Code range
1389-1528	140	P,G	ENTITY	Entity-Axis Conditions Space has been provided for a maximum of 20 conditions. Each condition takes 7 positions in the record. The 7 th position will be blank. Records that do not have 20 conditions are blank in the unused area.			
				Position 1:	Part/line number on certificate		
				1	...	Part I, line 1 (a)	
				2	...	Part I, line 2 (b)	
				3	...	Part I, line 3 (c)	
				4	...	Part I, line 4 (d)	
				5	...	Part I, line 5 (e)	
				6	...	Part II,	
				Position 2:	Sequence of condition within part/line		
				1-7	...	Code range	
				Position 3 – 6:	Condition code		
1389-1395	7	P,G		1 st Condition			
1396-1402	7	P,G		2 nd Condition			
1403-1409	7	P,G		3 rd Condition			
1410-1416	7	P,G		4 th Condition			
1417-1423	7	P,G		5 th Condition			
1424-1430	7	P,G		6 th Condition			
1431-1437	7	P,G		7 th Condition			
1438-1444	7	P,G		8 th Condition			
1445-1451	7	P,G		9 th Condition			
1452-1458	7	P,G		10 th Condition			
1459-1465	7	P,G		11 th Condition			
1466-1472	7	P,G		12 th Condition			
1473-1479	7	P,G		13 th Condition			
1480-1486	7	P,G		14 th Condition			
1487-1493	7	P,G		15 th Condition			
1494-1500	7	P,G		16 th Condition			
1501-1507	7	P,G		17 th Condition			
1508-1514	7	P,G		18 th Condition			
1515-1521	7	P,G		19 th Condition			
1522-1528	7	P,G		20 th Condition			
1529-1530	2	P,G	FILLER60	Filler			Blank

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Position	Len	File*	Field	Description	Flag Position	Values	Definition
1531-1532	2	P,G	RANUM	Number of Record-Axis Conditions		00-20	Code range
1533-1632	100	P,G	RECORD	Record-Axis Conditions Space has been provided for a maximum of 20 conditions. Each condition takes 5 positions in the record. The 5 th position will be blank. Records that do not have 20 conditions are blank in the unused area. Positions 1 – 4: Condition Code			
1533-1537	5	P,G		1 st Condition			
1538-1542	5	P,G		2 nd Condition			
1543-1547	5	P,G		3 rd Condition			
1548-1552	5	P,G		4 th Condition			
1553-1557	5	P,G		5 th Condition			
1558-1562	5	P,G		6 th Condition			
1563-1567	5	P,G		7 th Condition			
1568-1572	5	P,G		8 th Condition			
1573-1577	5	P,G		9 th Condition			
1578-1582	5	P,G		10 th Condition			
1583-1587	5	P,G		11 th Condition			
1588-1592	5	P,G		12 th Condition			
1593-1597	5	P,G		13 th Condition			
1598-1602	5	P,G		14 th Condition			
1603-1607	5	P,G		15 th Condition			
1608-1612	5	P,G		16 th Condition			
1613-1617	5	P,G		17 th Condition			
1618-1622	5	P,G		18 th Condition			
1623-1627	5	P,G		19 th Condition			
1628-1632	5	P,G		20 th Condition			
1633-1669	37	P,G	FILLER61	Filler		Blank	
1670	1	P,G	HOSPD	<u>Place of Death and Decedent's Status</u>		1 2 3 4 5 6 7 9	Hospital, clinic or Medical Center – Inpatient Hospital, clinic or Medical Center – Outpatient or admitted to Emergency Room Hospital, clinic or Medical Center – Dead on Arrival Decedent's home Hospice facility Nursing home/long term care Other Place of death unknown
1671	1	P,G	DWEEKDAY	<u>Day of Week of Death</u>		1	Sunday

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Position	Len	File*	Field	Description	Flag Position	Values	Definition
						2	Monday
						3	Tuesday
						4	Wednesday
						5	Thursday
						6	Friday
						7	Saturday
						9	Unknown
1672-1675	4	P,G	DOD_YY	<u>Death Year</u>		2021	2021
1676-1741	66	P,G	FILLER62	Filler			
1742-1743	2	P,G	DOD_MM	<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

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Position	Len	File*	Field	Description	Flag Position	Values	Definition
ADDENDUM							
Detailed geographic information for the territories.							
24-25	2	T,G	OSTATE	Occurrence Postal State <u>U.S. Territories</u>		GU	Guam, PR Puerto Rico
28-30	3	T,G	OCNTYFIPS	Occurrence FIPS County		000-999	County of Occurrence
31	1	T,G	OCNTYPOP	Occurrence County Population		0 1 2 9	County of 1,000,000 or more County of 500,000 to 1,000,000 County of 250,000 to 500,000 County less than 250,000
80-81	2	T,G	MBCNTRY	Mother's Birth Country		AA-ZZ	See Geographic Documentation
85-86	2	G	MRCNTRY	Mother's Residence Country		AA-ZZ	See Geographic Documentation
89-90	2	T,G	MRSTATEPSTL	Mother's Residence Postal State <u>U.S. Territories</u> <u>Foreign</u>		GU CC ZZ	Guam, PR Puerto Rico Canada, CU Cuba, MX Mexico, XX Not Applicable, ZZ Not Classifiable
91-93	3	T,G	MRCNTYFIPS	Mother's FIPS County		000-998 999	See Geographic Tables Foreign
99	1	T,G	RCNTY_POP	Population of Residence County		0 1 2 9 Z	County of 1,000,000 or more County of 500,000 to 1,000,000 County of 250,000 to 500,000 County less than 250,000 Foreign resident
100	1	G	RCITY_POP	Population of Residence City		0 1 2 9 Z	City of 1,000,000 or more City of 500,000 to 1,000,000 City of 250,000 to 500,000 All other areas in the US Foreign resident
103	1	T,G	RECTYPE	Record Type		1 2	RESIDENT: State and county of occurrence and residence are the same. NONRESIDENT: State and county of occurrence and residence are different.
1635	1	D	RESTATUS	Death Resident Status Puerto Rico Occurrence		1	RESIDENTS Territory and County-equivalent of

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Position	Len	File*	Field	Description	Flag Position	Values	Definition
						2	Occurrence and Residence are the same. INTRASTATE NONRESIDENTS
						3	Territory of Occurrence and Residence are the same, but County-equivalent is different. INTERTERRITORY NONRESIDENTS Territory of occurrence and residence are different, but both are a Territory.
						4	FOREIGN RESIDENTS Occurred in Puerto Rico to a resident of any other place.
				Guam Occurrence		1	RESIDENTS Occurred in Guam to a resident of Guam or to a resident of the U.S.
						3	INTERTERRITORY NONRESIDENTS Territory of occurrence and residence are different, but both are a Territory.
						4	FOREIGN RESIDENTS Occurred in Guam to a resident of any place other than Guam or the U.S.
1636-1637	2	DOSTATE		State of Occurrence (FIPS) of Death		PR GU	Puerto Rico Guam
1638-1640	3	DOCNTY		County of Occurrence (FIPS) of Death Counties and county equivalents (independent and coextensive cities) are numbered alphabetically within each State and identify each county. (Note: To uniquely identify a county, both the state and county codes must be used.) A complete list of counties is shown in the Geographic Code Outline further back in this document.		001-nnn	Code range
1641-1643	3	FILLER048		FILLER			Blank
1644-1645	2	DRSTATE		State of Residence (FIPS)		PR GU	Puerto Rico Guam
				Puerto Rico Occurrence		PR AL-WY, VI,AS,GU, MP,ZZ	Puerto Rico Foreign residents: refer to U.S. for specific code structure.
				Guam Occurrence		GU AL-WY, PR,AS, VI,MP, ZZ	Guam U.S. resident. Also considered a resident of Guam. Foreign residents: refer to U.S. for specific code structure.

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Position	Len	File*	Field	Description	Flag Position	Values	Definition
1646-1647	2	FILLER049		FILLER			Blank
1648-1649	2	DRSTCNTRY		State/Country of Residence of Death Recode			
				Territorial resident		PR GU	Puerto Rico Guam
				Foreign residents		CC MX CU YY	Canada Mexico Cuba Remainder of the world
				Puerto Rico Occurrence		PR AL-ZZ	Puerto Rico Foreign residents: refer to U.S. for specific code structure.
				Guam Occurrence		GU AL-WY PR,VI,AS, MP,ZZ	Guam U.S. resident. Also considered a resident of Guam Foreign residents: refer to U.S. for specific code structure.
1650-1652	3	DRCNTY		County of Residence (FIPS) of Death (To uniquely identify a county, both the state and county codes must be used.)			
						000 001-nnn	Foreign residents Code range
1653-1665	13	FILLER69		FILLER			Blank
1666	1	DRCNTYPOP		Population Size of County of Residence of Death Based on the results of the 2010 Census			
						0 1 2 9 Z	County of 1,000,000 or more County of 500,000 to 1,000,000 County of 250,000 to 500,000 County of less than 250,000 Foreign residents

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

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

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

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130 S Limited
 Recode T Sex Age Cause Title and ICD-10 Codes Included

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

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

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

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

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

Documentation Table 1. Live births and infant death by state of occurrence of birth and by state of residence at birth United States, Puerto Rico, Virgin Islands, and Guam, 2021 Period Data.

(Residence of birth is of the Mother)

State	Live Births		Infant Deaths				Infant Mortality Rate
	Occurrence	Residence	Unweighted		Weighted 1/		
			Occurrence	Residence	Occurrence	Residence	
United States /2	3,669,928	3,664,292	19,728	19,712	19,944	19,927	5.44
Alabama	56,610	58,054	422	439	422	439	7.56
Alaska	9,281	9,367	66	69	66	69	7.37
Arizona	78,387	77,916	423	423	426	426	5.47
Arkansas	35,120	35,965	285	308	286	309	8.59
California	421,088	420,608	1,687	1,678	1,722	1,713	4.07
Colorado	63,560	62,949	330	313	331	314	4.99
Connecticut	36,920	35,670	165	166	165	166	4.65
Delaware	10,871	10,482	57	50	57	50	4.77
Dist of Columbia	12,035	8,660	77	58	78	59	6.81
Florida	216,534	216,260	1,277	1,275	1,277	1,275	5.90
Georgia	125,059	124,073	776	776	776	776	6.25
Hawaii	15,636	15,620	72	72	73	73	4.67
Idaho	22,156	22,427	101	115	101	115	5.13
Illinois	128,502	132,189	713	742	714	743	5.62
Indiana	80,251	79,946	500	529	511	540	6.75
Iowa	36,845	36,835	140	147	140	147	3.99
Kansas	36,359	34,705	183	184	183	184	5.30
Kentucky	50,201	52,214	304	316	309	321	6.15
Louisiana	57,625	57,437	409	416	409	416	7.24
Maine	11,681	12,006	56	60	56	60	5.00
Maryland	65,098	68,285	385	408	385	409	5.99
Massachusetts	70,076	69,137	232	222	233	223	3.23
Michigan	103,992	104,980	646	652	647	653	6.22
Minnesota	63,497	64,425	314	311	314	311	4.83
Mississippi	34,060	35,156	315	329	316	330	9.39
Missouri	70,183	69,453	455	403	458	406	5.85
Montana	11,245	11,231	52	55	52	55	4.90
Nebraska	24,779	24,609	133	133	135	135	5.49
Nevada	33,283	33,686	184	191	187	194	5.76
New Hampshire	12,670	12,625	53	50	53	50	3.96
New Jersey	98,603	101,497	327	356	333	362	3.57
New Mexico	19,779	21,391	85	98	88	102	4.77
New York	112,279	117,122	474	525	480	531	4.53
New York City	99,262	93,620	386	345	386	345	3.69
North Carolina	122,683	120,466	807	800	816	809	6.72
North Dakota	11,673	10,112	37	28	37	28	2.77
Ohio	130,194	129,791	936	910	942	916	7.06
Oklahoma	46,699	48,410	325	344	326	345	7.13
Oregon	41,623	40,914	166	153	168	155	3.79
Pennsylvania	131,545	132,622	729	699	742	712	5.37
Rhode Island	11,001	10,464	49	45	49	45	4.30
South Carolina	53,202	57,185	395	414	396	415	7.26
South Dakota	12,210	11,369	78	69	78	69	6.07
Tennessee	87,212	81,717	579	505	579	505	6.18

Documentation Table 1. Live births and infant death by state of occurrence of birth and by state of residence at birth United States, Puerto Rico, Virgin Islands, and Guam, 2020 Period Data, continued.

(Residence of birth is of the Mother)

State	Live Births		Infant Deaths				Infant Mortality Rate
	Occurrence	Residence	Unweighted		Weighted 1/		
			Occurrence	Residence	Occurrence	Residence	
Texas	380,216	373,594	1,926	1,891	2,014	1,977	5.29
Utah	47,955	46,712	231	214	231	214	4.58
Vermont	5,120	5,384	16	17	16	17	*
Virginia	96,062	95,825	551	565	557	571	5.96
Washington	83,493	83,911	360	366	360	366	4.36
West Virginia	18,318	17,198	116	114	120	117	6.80
Wisconsin	61,547	61,781	319	330	320	331	5.36
Wyoming	5,648	6,237	24	34	24	34	5.45
Puerto Rico	19,332	19,304	134	134	134	134	6.94
Guam	2,633	2,622	39	39	41	41	15.64

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

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

Documentation Table 2. Live births, infant deaths and infant mortality rates by race of mother, sex and birthweight of child: United States, 2021 Period Data.

[Rates are per 1,000 live births]

Race of mother and sex	Total	<500 grams	500-749 grams	750-999 grams	1000-1249 grams	1250-1499 grams	1500-1999 grams	2000-2499 grams	2500 grams or more	Not Stated
All races										
Both sexes										
Live births.....	3,664,292	5,381	8,701	9,994	11,958	15,541	61,672	199,905	3,349,955	1,185
Infant deaths.....	19,928	4,383	2,921	1,123	689	576	1,518	1,875	6,710	134
Infant Mortality Rate.....	5.44	814.53	335.71	112.37	57.62	37.06	24.61	9.38	2.00	113.08
Male										
Live births.....	1,873,416	2,650	4,333	5,091	6,009	7,661	29,777	90,916	1,726,372	607
Infant deaths.....	10,930	2,231	1,671	703	377	312	780	962	3,814	79
Infant Mortality Rate.....	5.83	841.89	385.65	138.09	62.74	40.73	26.19	10.58	2.21	130.15
Female										
Live births.....	1,790,876	2,731	4,368	4,903	5,949	7,880	31,895	108,989	1,623,583	578
Infant deaths.....	8,998	2,152	1,249	419	312	264	738	913	2,897	55
Infant Mortality Rate.....	5.02	787.99	285.94	85.46	52.45	33.50	23.14	8.38	1.78	95.16
American Indian or Alaska Native, Non-Hispanic /1										
Both sexes										
Live births.....	26,124	32	51	75	75	99	454	1,335	23,999	4
Infant deaths.....	195	24	13	10	5	4	12	15	112	-
Infant Mortality Rate.....	7.46	750.00	*	*	*	*	*	*	4.67	*
Male										
Live births.....	13,343	15	22	39	33	49	229	638	12,315	3
Infant deaths.....	101	13	5	6	2	3	5	7	59	-
Infant Mortality Rate.....	3.87	*	*	*	*	*	*	*	2.46	*
Female										
Live births.....	12,781	17	29	36	42	50	225	697	11,684	1
Infant deaths.....	95	11	8	4	3	1	7	8	52	-
Infant Mortality Rate.....	7.43	*	*	*	*	*	*	*	4.45	*
Asian, Non-Hispanic										
Both sexes										
Live births.....	213,813	263	389	485	602	825	3,564	13,670	193,983	32
Infant deaths.....	788	223	138	69	35	22	42	62	192	6
Infant Mortality Rate.....	3.69	847.91	354.76	142.27	58.14	26.67	11.78	4.54	0.99	*
Male										
Live births.....	110,083	145	200	269	318	438	1,788	6,354	100,555	16
Infant deaths.....	443	126	80	44	19	13	20	32	105	3
Infant Mortality Rate.....	4.02	868.97	400.00	163.57	*	*	11.19	5.04	1.04	*
Female										
Live births.....	103,730	118	189	216	284	387	1,776	7,316	93,428	16
Infant deaths.....	345	97	58	24	15	9	21	30	87	3
Infant Mortality Rate.....	3.33	822.03	306.88	111.11	*	*	11.82	4.10	0.93	*
Black, Non-Hispanic										
Both sexes										
Live births.....	517,889	1,913	2,950	3,066	3,374	4,075	15,082	45,742	441,561	126
Infant deaths.....	5,463	1,511	857	284	177	152	380	493	1,558	49
Infant Mortality Rate.....	10.55	789.86	290.51	92.63	52.46	37.30	25.20	10.78	3.53	388.89
Male										
Live births.....	262,679	952	1,447	1,500	1,660	1,941	7,052	20,339	227,721	67
Infant deaths.....	3,035	789	492	173	100	81	204	255	912	27
Infant Mortality Rate.....	11.55	828.78	340.01	115.33	60.24	41.73	28.93	12.54	4.00	402.99
Female										
Live births.....	255,210	961	1,503	1,566	1,714	2,134	8,030	25,403	213,840	59
Infant deaths.....	2,428	722	365	112	78	72	176	238	645	21
Infant Mortality Rate.....	9.51	751.30	242.85	71.52	45.51	33.74	21.92	9.37	3.02	355.93

Documentation Table 2. Live births, infant deaths and infant mortality rates by race of mother, sex and birthweight of child: United States, 2021 Period Data.

[Rates are per 1,000 live births]

Native Hawaiian or Other Pacific Islander, Non-Hispanic

Both sexes

Live births.....	9,531	14	35	33	37	45	168	557	8,640	2
Infant deaths.....	74	10	16	2	-	2	7	3	32	1
Infant Mortality Rate.....	7.76	*	*	*	*	*	*	*	3.70	*

Male

Live births.....	4,872	8	19	19	16	24	87	268	4,430	1
Infant deaths.....	43	5	9	1	-	1	3	1	22	1
Infant Mortality Rate.....	8.83	*	*	*	*	*	*	*	4.97	*

Female

Live births.....	4,659	6	16	14	21	21	81	289	4,210	1
Infant deaths.....	30	5	7	1	-	1	4	2	10	-
Infant Mortality Rate.....	6.44	*	*	*	*	*	*	*	*	*

White, Non-Hispanic

Both sexes

Live births.....	1,887,656	1,698	2,931	3,722	4,705	6,436	26,632	86,871	1,754,370	291
Infant deaths.....	8,236	1,407	1,072	458	284	250	690	812	3,226	36
Infant Mortality Rate.....	4.36	828.62	365.75	123.05	60.36	38.84	25.91	9.35	1.84	123.71

Male

Live births.....	968,370	791	1,483	1,883	2,369	3,145	12,781	39,274	906,494	150
Infant deaths.....	4,514	680	622	290	158	132	349	413	1,853	17
Infant Mortality Rate.....	4.66	859.67	419.42	154.01	66.69	41.97	27.31	10.52	2.04	*

Female

Live births.....	919,286	907	1,448	1,839	2,336	3,291	13,851	47,597	847,876	141
Infant deaths.....	3,722	727	450	168	126	117	341	399	1,374	19
Infant Mortality Rate.....	4.05	801.54	310.77	91.35	53.94	35.55	24.62	8.38	1.62	*

Hispanic

Both sexes

Live births.....	885,916	1,186	1,979	2,245	2,680	3,478	13,489	44,454	816,228	177
Infant deaths.....	4,246	973	687	244	160	131	319	399	1,312	21
Infant Mortality Rate.....	4.79	820.40	347.15	108.69	59.70	37.67	23.65	8.98	1.61	118.64

Male

Live births.....	450,807	595	985	1,191	1,385	1,761	6,728	20,706	417,351	105
Infant deaths.....	2,303	495	386	161	84	72	163	204	720	17
Infant Mortality Rate.....	5.11	831.93	391.88	135.18	60.65	40.89	24.23	9.85	1.73	*

Female

Live births.....	435,109	591	994	1,054	1,295	1,717	6,761	23,748	398,877	72
Infant deaths.....	1,943	478	301	83	76	58	156	195	592	4
Infant Mortality Rate.....	4.47	808.80	302.82	78.75	58.69	33.78	23.07	8.21	1.48	*

* Figure does not meet standard of reliability or precision: based on fewer than 20 deaths in the numerator

- Quantity zero

1/ Includes Aleut and Eskimos

Documentation Table 3. Live births, infant deaths, and infant mortality rates by birthweight, race of mother, and gestational age: United States, 2021 period data

[Rates are per 1,000 live births]

Birthweight	Gestation									
	Total	<28 Weeks	28-31 Weeks	32-33 Weeks	34-36 Weeks	37-39 Weeks	40 Weeks	41 Weeks	42 Weeks or more	Not Stated
All Races										
Total										
Live births.....	3,664,292	23,527	34,731	44,746	280,975	2,458,106	641,615	168,621	8,979	2,992
Infant deaths.....	19,928	8,323	1,429	866	2,278	5,615	943	254	34	186
Infant Mortality Rate.....	5.44	353.76	41.14	19.35	8.11	2.28	1.47	1.51	3.79	62.17
Less than 2,500 grams										
Live births.....	313,152	23,443	33,837	41,070	118,399	92,814	2,782	429	61	317
Infant deaths.....	13,084	8,315	1,383	777	1,450	1,038	57	16	7	41
Infant Mortality Rate.....	41.78	354.69	40.87	18.92	12.25	11.18	20.49	*	*	129.34
Less than 500 grams										
Live births.....	5,381	5,278	71	3	5	2	-	-	-	22
Infant deaths.....	4,383	4,331	30	3	-	1	-	-	-	18
Infant Mortality Rate.....	814.53	820.58	422.54	*	*	*	*	*	*	*
500-749 grams										
Live births.....	8,701	7,969	681	24	13	2	-	-	-	12
Infant deaths.....	2,921	2,785	117	5	6	1	-	-	-	6
Infant Mortality Rate.....	335.71	349.48	171.81	*	*	*	*	*	*	*
750-999 grams										
Live births.....	9,994	6,697	2,980	209	47	40	5	4	-	12
Infant deaths.....	1,123	881	195	29	10	3	-	1	-	3
Infant Mortality Rate.....	112.37	131.55	65.44	138.76	*	*	*	*	*	*
1,000-1,249 grams										
Live births.....	11,958	2,896	7,332	1,167	326	191	26	5	-	15
Infant deaths.....	689	234	314	79	42	15	3	-	-	3
Infant Mortality Rate.....	57.62	80.80	42.83	67.69	128.83	*	*	*	*	*
1,250-1,499 grams										
Live births.....	15,541	402	9,482	3,734	1,553	314	31	10	-	15
Infant deaths.....	576	39	295	118	89	31	1	-	-	3
Infant Mortality Rate.....	37.06	97.01	31.11	31.60	57.31	98.73	*	*	*	*
1,500-1,999 grams										
Live births.....	61,672	116	11,588	20,357	24,156	5,211	152	23	12	57
Infant deaths.....	1,518	36	354	334	508	265	14	1	1	5
Infant Mortality Rate.....	24.61	310.34	30.55	16.41	21.03	50.85	*	*	*	*
2,000-2,499 grams										
Live births.....	199,905	85	1,703	15,576	92,299	87,054	2,568	387	49	184
Infant deaths.....	1,875	10	78	209	795	721	38	14	6	3
Infant Mortality Rate.....	9.38	*	45.80	13.42	8.61	8.28	14.80	*	*	*

Documentation Table 3. Live births, infant deaths, and infant mortality rates by birthweight, race of mother, and gestational age: United States, 2021 period data -Con.

[Rates are per 1,000 live births]

Birthweight	Gestation									
	Total	<28 Weeks	28-31 Weeks	32-33 Weeks	34-36 Weeks	37-39 Weeks	40 Weeks	41 Weeks	42 Weeks or more	Not Stated
2,500 grams or more										
Live births.....	3,349,955	80	893	3,676	162,576	2,365,289	638,830	168,191	8,918	1,502
Infant deaths.....	6,710	5	45	89	828	4,577	886	238	27	15
Infant Mortality Rate.....	2.00	*	50.39	24.21	5.09	1.94	1.39	1.42	3.03	*
Not Stated										
Live births.....	1,185	4	1	-	-	3	3	1	-	1,173
Infant deaths.....	134	3	1	-	-	-	-	-	-	130
Infant Mortality Rate.....	113.08	*	*	*	*	*	*	*	*	110.83
American Indian or Alaskan Native, Non-Hispanic /1										
Total										
Live births.....	26,124	162	249	391	2,394	17,641	4,170	1,002	65	50
Infant deaths.....	195	47	10	8	33	76	12	5	2	1
Infant Mortality Rate.....	7.46	290.12	*	*	13.78	4.31	*	*	*	*
Less than 2,500 grams										
Live births.....	2,121	162	237	322	829	542	18	5	-	6
Infant deaths.....	68	47	10	4	4	3	-	-	-	-
Infant Mortality Rate.....	32.06	290.12	*	*	*	*	*	*	*	*
Less than 500 grams										
Live births.....	32	31	1	-	-	-	-	-	-	-
Infant deaths.....	24	23	1	-	-	-	-	-	-	-
Infant Mortality Rate.....	750.00	741.94	*	*	*	*	*	*	*	*
500-749 grams										
Live births.....	51	47	4	-	-	-	-	-	-	-
Infant deaths.....	13	12	1	-	-	-	-	-	-	-
Infant Mortality Rate.....	*	*	*	*	*	*	*	*	*	*
750-999 grams										
Live births.....	75	56	18	1	-	-	-	-	-	-
Infant deaths.....	10	10	-	-	-	-	-	-	-	-
Infant Mortality Rate.....	*	*	*	*	*	*	*	*	*	*
1,000-1,249 grams										
Live births.....	75	23	42	5	1	4	-	-	-	-
Infant deaths.....	5	2	3	-	-	-	-	-	-	-
Infant Mortality Rate.....	*	*	*	*	*	*	*	*	*	*
1,250-1,499 grams										
Live births.....	99	3	59	29	5	3	-	-	-	-
Infant deaths.....	4	-	2	1	-	1	-	-	-	-
Infant Mortality Rate.....	*	*	*	*	*	*	*	*	*	*
1,500-1,999 grams										
Live births.....	454	1	92	161	163	33	1	-	-	3
Infant deaths.....	12	-	3	3	4	2	-	-	-	-
Infant Mortality Rate.....	*	*	*	*	*	*	*	*	*	*
2,000-2,499 grams										
Live births.....	1,335	1	21	126	660	502	17	5	-	3
Infant deaths.....	15	-	-	1	11	3	-	-	-	-
Infant Mortality Rate.....	*	*	*	*	*	*	*	*	*	*
2,500 grams or more										
Live births.....	23,999	-	12	69	1,565	17,099	4,152	997	65	40
Infant deaths.....	112	-	-	3	18	70	12	5	2	1
Infant Mortality Rate.....	4.67	*	*	*	*	4.09	*	*	*	*

Documentation Table 3. Live births, infant deaths, and infant mortality rates by birthweight, race of mother, and gestational age: United States, 2021 period data -Con.

[Rates are per 1,000 live births]

Birthweight	Gestation									
	Total	<28 Weeks	28-31 Weeks	32-33 Weeks	34-36 Weeks	37-39 Weeks	40 Weeks	41 Weeks	42 Weeks or more	Not Stated
Black, Non-Hispanic										
Total										
Live births.....	517,889	7,445	8,640	9,556	50,693	345,079	76,943	18,057	1,085	391
Infant deaths.....	5,463	2,600	373	216	557	1,383	213	52	4	64
Infant Mortality Rate.....	10.55	349.23	43.17	22.60	10.99	4.01	2.77	2.88	*	163.68
Less than 2,500 grams										
Live births.....	76,202	7,424	8,513	9,017	26,649	23,749	685	84	11	70
Infant deaths.....	3,856	2,598	370	204	355	296	21	-	-	12
Infant Mortality Rate.....	50.60	349.95	43.46	22.62	13.32	12.46	30.66	*	*	*
Less than 500 grams										
Live births.....	1,913	1,885	18	1	1	1	-	-	-	7
Infant deaths.....	1,511	1,495	8	1	-	-	-	-	-	7
Infant Mortality Rate.....	789.86	793.10	*	*	*	*	*	*	*	*
500-749 grams										
Live births.....	2,950	2,726	209	8	4	-	-	-	-	3
Infant deaths.....	857	820	33	2	-	-	-	-	-	2
Infant Mortality Rate.....	290.51	300.81	157.89	*	*	*	*	*	*	*
750-999 grams										
Live births.....	3,066	2,005	975	63	14	7	-	1	-	1
Infant deaths.....	284	222	52	7	2	1	-	-	-	-
Infant Mortality Rate.....	92.63	110.72	53.33	*	*	*	*	*	*	*
1,000-1,249 grams										
Live births.....	3,374	691	2,252	289	97	32	6	-	-	7
Infant deaths.....	177	46	95	19	11	3	2	-	-	1
Infant Mortality Rate.....	52.46	66.57	42.18	*	*	*	*	*	*	*
1,250-1,499 grams										
Live births.....	4,075	78	2,481	1,035	408	70	2	-	-	1
Infant deaths.....	152	8	90	30	18	5	-	-	-	1
Infant Mortality Rate.....	37.30	*	36.28	28.99	*	*	*	*	*	*
1,500-1,999 grams										
Live births.....	15,082	25	2,331	4,928	6,324	1,419	34	6	3	12
Infant deaths.....	380	4	82	93	121	72	7	-	-	1
Infant Mortality Rate.....	25.20	*	35.18	18.87	19.13	50.74	*	*	*	*
2,000-2,499 grams										
Live births.....	45,742	14	247	2,693	19,801	22,220	643	77	8	39
Infant deaths.....	493	2	10	51	203	214	12	-	-	-
Infant Mortality Rate.....	10.78	*	*	18.94	10.25	9.63	*	*	*	*
2,500 grams or more										
Live births.....	441,561	19	127	539	24,044	321,329	76,258	17,973	1,074	198
Infant deaths.....	1,558	-	3	12	202	1,087	192	52	4	5
Infant Mortality Rate.....	3.53	*	*	*	8.40	3.38	2.52	2.89	*	*
Not Stated										
Live births.....	126	2	-	-	-	1	-	-	-	123
Infant deaths.....	49	2	-	-	-	-	-	-	-	47
Infant Mortality Rate.....	388.89	*	*	*	*	*	*	*	*	382.11
Native Hawaiian or Other Pacific Islander, Non-Hispanic										
Total										
Live births.....	9,531	79	111	148	869	6,264	1,594	417	28	21
Infant deaths.....	74	27	4	5	4	22	7	-	1	3
Infant Mortality Rate.....	7.76	341.77	*	*	*	3.51	*	*	*	*

Documentation Table 3. Live births, infant deaths, and infant mortality rates by birthweight, race of mother, and gestational age: United States, 2021 period data -Con.

[Rates are per 1,000 live births]

Birthweight	Gestation									
	Total	<28 Weeks	28-31 Weeks	32-33 Weeks	34-36 Weeks	37-39 Weeks	40 Weeks	41 Weeks	42 Weeks or more	Not Stated
Less than 2,500 grams										
Live births.....	889	79	104	124	334	231	12	2	-	3
Infant deaths.....	40	27	4	3	3	-	1	-	-	2
Infant Mortality Rate.....	44.99	341.77	*	*	*	*	*	*	*	*
Less than 500 grams										
Live births.....	14	13	-	-	-	-	-	-	-	1
Infant deaths.....	10	9	-	-	-	-	-	-	-	1
Infant Mortality Rate.....	*	*	*	*	*	*	*	*	*	*
500-749 grams										
Live births.....	35	33	2	-	-	-	-	-	-	-
Infant deaths.....	16	16	-	-	-	-	-	-	-	-
Infant Mortality Rate.....	*	*	*	*	*	*	*	*	*	*
750-999 grams										
Live births.....	33	22	10	-	1	-	-	-	-	-
Infant deaths.....	2	2	-	-	-	-	-	-	-	-
Infant Mortality Rate.....	*	*	*	*	*	*	*	*	*	*
1,000-1,249 grams										
Live births.....	37	10	21	5	-	1	-	-	-	-
Infant deaths.....	-	-	-	-	-	-	-	-	-	-
Infant Mortality Rate.....	*	*	*	*	*	*	*	*	*	*
1,250-1,499 grams										
Live births.....	45	1	26	8	7	2	-	-	-	1
Infant deaths.....	2	-	-	1	1	-	-	-	-	-
Infant Mortality Rate.....	*	*	*	*	*	*	*	*	*	*
1,500-1,999 grams										
Live births.....	168	-	37	59	57	14	-	-	-	1
Infant deaths.....	7	-	2	2	2	-	-	-	-	1
Infant Mortality Rate.....	*	*	*	*	*	*	*	*	*	*
2,000-2,499 grams										
Live births.....	557	-	8	52	269	214	12	2	-	-
Infant deaths.....	3	-	2	-	-	-	1	-	-	-
Infant Mortality Rate.....	*	*	*	*	*	*	*	*	*	*
2,500 grams or more										
Live births.....	8,640	-	7	24	535	6,033	1,582	415	28	16
Infant deaths.....	32	-	-	2	1	22	6	-	1	-
Infant Mortality Rate.....	3.70	*	*	*	*	3.65	*	*	*	*
Not Stated										
Live births.....	2	-	-	-	-	-	-	-	-	2
Infant deaths.....	1	-	-	-	-	-	-	-	-	1
Infant Mortality Rate.....	*	*	*	*	*	*	*	*	*	*
White, Non-Hispanic										
Total										
Live births.....	1,887,656	8,223	14,603	20,845	135,452	1,256,971	345,825	98,583	5,939	1,215
Infant deaths.....	8,236	2,899	631	386	1,052	2,639	424	126	18	60
Infant Mortality Rate.....	4.36	352.55	43.21	18.52	7.77	2.10	1.23	1.28	*	49.38
Less than 2,500 grams										
Live births.....	132,995	8,188	14,190	18,979	52,361	37,819	1,099	198	25	136
Infant deaths.....	4,973	2,897	601	336	650	442	17	9	4	16
Infant Mortality Rate.....	37.39	353.81	42.35	17.70	12.41	11.69	*	*	*	*

Documentation Table 3. Live births, infant deaths, and infant mortality rates by birthweight, race of mother, and gestational age: United States, 2021 period data -Con.

[Rates are per 1,000 live births]

Birthweight	Gestation									
	Total	<28 Weeks	28-31 Weeks	32-33 Weeks	34-36 Weeks	37-39 Weeks	40 Weeks	41 Weeks	42 Weeks or more	Not Stated
500-749 grams										
Live births.....	1,979	1,833	131	11	1	1	-	-	-	2
Infant deaths.....	687	657	26	1	1	1	-	-	-	-
Infant Mortality Rate.....	347.15	358.43	198.47	*	*	*	*	*	*	*
750-999 grams										
Live births.....	2,245	1,602	591	26	11	11	2	-	-	2
Infant deaths.....	244	203	37	3	1	-	-	-	-	-
Infant Mortality Rate.....	108.69	126.72	62.61	*	*	*	*	*	*	*
1,000-1,249 grams										
Live births.....	2,680	751	1,533	270	67	48	7	1	-	3
Infant deaths.....	160	50	68	25	14	2	-	-	-	-
Infant Mortality Rate.....	59.70	66.58	44.36	92.59	*	*	*	*	*	*
1,250-1,499 grams										
Live births.....	3,478	106	2,186	791	316	60	13	2	-	4
Infant deaths.....	131	6	67	28	22	7	1	-	-	-
Infant Mortality Rate.....	37.67	*	30.65	35.40	69.62	*	*	*	*	*
1,500-1,999 grams										
Live births.....	13,489	29	2,832	4,353	5,146	1,054	50	5	4	16
Infant deaths.....	319	10	69	66	108	62	2	-	1	1
Infant Mortality Rate.....	23.65	*	24.36	15.16	20.99	58.82	*	*	*	*
2,000-2,499 grams										
Live births.....	44,454	22	487	3,669	21,002	18,517	623	96	9	29
Infant deaths.....	399	1	28	38	171	144	11	5	-	1
Infant Mortality Rate.....	8.98	*	57.49	10.36	8.14	7.78	*	*	*	*
2,500 grams or more										
Live births.....	816,228	21	248	945	40,450	582,299	153,913	36,807	1,285	260
Infant deaths.....	1,312	3	8	16	164	875	192	49	2	1
Infant Mortality Rate.....	1.61	*	*	*	4.05	1.50	1.25	1.33	*	*
Not Stated										
Live births.....	177	1	-	-	-	-	-	-	-	176
Infant deaths.....	21	1	-	-	-	-	-	-	-	20
Infant Mortality Rate.....	118.64	*	*	*	*	*	*	*	*	113.64

-/ Quality Zero

*/ Figure does not meet standard of reliability or precision: based on fewer than 20 deaths in the numerator

1/ Includes Aleuts and Eskimos

Documentation Table 4. Live births, infant deaths and infant mortality rates by birthweight, race of mother, and age at death: United States, 2021 period data.

[Infant deaths are under 1 year. Neonatal deaths are under 28 days; early neonatal, 0-6 days; late neonatal, 7-27 days. Postneonatal deaths are 28 days to less than 12 months. Rates are per 1,000 live births]

Birthweight and race of mother	Live Births	Infant	Total Neonatal	Early Neonatal	Late Neonatal	Post-Neonatal
All Races						
Total (all birthweights)	3,664,292	19,928	12,797	10,082	2,715	7,131
Rate		5.44	3.49	2.75	0.74	1.95
Less than 2,500 grams	313,152	13,084	10,377	8,580	1,797	2,707
Rate		41.78	33.14	27.40	5.74	8.64
Less than 500 grams	5,381	4,383	4,269	4,055	214	115
Rate		814.53	793.35	753.58	39.77	21.37
500-749 grams	8,701	2,921	2,449	1,844	605	471
Rate		335.71	281.46	211.93	69.53	54.13
750-999 grams	9,994	1,123	876	609	267	246
Rate		112.37	87.65	60.94	26.72	24.61
1,000-1,249 grams	11,958	689	509	384	126	180
Rate		57.62	42.57	32.11	10.54	15.05
1,250-1,499 grams	15,541	576	410	321	88	166
Rate		37.06	26.38	20.66	5.66	10.68
1,500-1,749 grams	23,207	699	451	349	103	248
Rate		30.12	19.43	15.04	4.44	10.69
1,750-1,999 grams	38,465	818	474	368	107	344
Rate		21.27	12.32	9.57	2.78	8.94
2,000-2,499 grams	199,905	1,875	938	651	287	937
Rate		9.38	4.69	3.26	1.44	4.69
2,500 grams or more	3,349,955	6,710	2,293	1,376	917	4,417
Rate		2.00	0.68	0.41	0.27	1.32
Not Stated	1,185	134	127	126	1	7
Rate		113.08	107.17	106.33	*	*
American Indian or Alaskan Native, Non-Hispanic /1						
Total (all birthweights)	26,124	195	100	67	32	96
Rate		7.46	3.83	2.56	1.22	3.67
Less than 2,500 grams	2,121	84	63	47	16	20
Rate		39.60	29.70	22.16	*	9.43
Less than 500 grams	32	24	22	21	1	2
Rate		750.00	687.50	656.25	*	*
500-749 grams	51	13	11	7	4	2
Rate		*	*	*	*	*
750-999 grams	75	10	8	5	3	2
Rate		*	*	*	*	*
1,000-1,249 grams	75	5	1	0	1	4
Rate		*	*	*	*	*
1,250-1,499 grams	99	4	4	3	1	0
Rate		*	*	*	*	*

Documentation Table 4. Live births, infant deaths and infant mortality rates by birthweight, race of mother, and age at death: United States, 2021 period data.

[Infant deaths are under 1 year. Neonatal deaths are under 28 days; early neonatal, 0-6 days; late neonatal, 7-27 days. Postneonatal deaths are 28 days to less than 12 months. Rates are per 1,000 live births]

Birthweight and race of mother	Live Births	Infant	Total Neonatal	Early Neonatal	Late Neonatal	Post-Neonatal
1,500-1,749 grams	162	5	3	2	1	2
Rate		*	*	*	*	*
1,750-1,999 grams	292	7	5	3	2	2
Rate		*	*	*	*	*
2,000-2,499 grams	1,335	15	9	6	3	6
Rate		*	*	*	*	*
2,500 grams or more	23,999	112	36	20	16	75
Rate		4.67	1.50	0.83	*	3.13
Not Stated	4	-	-	-	-	-
Rate		*	*	*	*	*
Asian, Non-Hispanic						
Total (all birthweights)	213,813	788	594	463	131	193
Rate		3.69	2.78	2.17	0.61	0.90
Less than 2,500 grams	19,798	590	512	412	101	78
Rate		29.80	25.86	20.81	5.10	3.94
Less than 500 grams	263	223	221	213	8	2
Rate		847.91	840.30	809.89	*	*
500-749 grams	389	138	126	86	39	12
Rate		354.76	323.91	221.08	100.26	*
750-999 grams	485	69	52	32	19	17
Rate		142.27	107.22	65.98	*	*
1,000-1,249 grams	602	35	28	17	11	6
Rate		58.14	46.51	*	*	*
1,250-1,499 grams	825	22	17	13	4	5
Rate		26.67	*	*	*	*
1,500-1,749 grams	1,254	22	19	15	4	3
Rate		17.54	*	*	*	*
1,750-1,999 grams	2,310	19	10	9	1	9
Rate		8.23	*	*	*	*
2,000-2,499 grams	13,670	62	39	25	14	23
Rate		4.54	2.85	1.83	*	1.68
2,500 grams or more	193,983	192	76	46	30	116
Rate		0.99	0.39	0.24	0.15	0.60
Not Stated	32	6	6	6	-	-
Rate		*	*	*	*	*
Black, Non-Hispanic						
Total (all birthweights)	517,889	5,463	3,291	2,583	708	2,172
Rate		10.55	6.35	4.99	1.37	4.19
Less than 2,500 grams	76,202	3,856	2,873	2,347	526	983
Rate		50.60	37.70	30.80	6.90	12.90

Documentation Table 4. Live births, infant deaths and infant mortality rates by birthweight, race of mother, and age at death: United States, 2021 period data.

[Infant deaths are under 1 year. Neonatal deaths are under 28 days; early neonatal, 0-6 days; late neonatal, 7-27 days. Postneonatal deaths are 28 days to less than 12 months. Rates are per 1,000 live births]

Birthweight and race of mother	Live Births	Infant	Total Neonatal	Early Neonatal	Late Neonatal	Post-Neonatal
Less than 500 grams	1,913	1,511	1,458	1,371	87	53
Rate		789.86	762.15	716.68	45.48	27.71
500-749 grams	2,950	857	666	478	188	192
Rate		290.51	225.76	162.03	63.73	65.08
750-999 grams	3,066	284	217	149	68	67
Rate		92.63	70.78	48.60	22.18	21.85
1,000-1,249 grams	3,374	177	100	69	31	77
Rate		52.46	29.64	20.45	9.19	22.82
1,250-1,499 grams	4,075	152	87	60	27	65
Rate		37.30	21.35	14.72	6.63	15.95
1,500-1,749 grams	5,764	176	82	59	23	94
Rate		30.53	14.23	10.24	3.99	16.31
1,750-1,999 grams	9,318	204	90	59	30	114
Rate		21.89	9.66	6.33	3.22	12.23
2,000-2,499 grams	45,742	493	174	102	71	319
Rate		10.78	3.80	2.23	1.55	6.97
2,500 grams or more	441,561	1,558	371	189	182	1,187
Rate		3.53	0.84	0.43	0.41	2.69
Not Stated	126	49	47	47	-	2
Rate		388.89	373.02	373.02	*	*
Native Hawaiian or Other Pacific Islander, Non-Hispanic						
Total (all birthweights)	9,531	74	41	32	9	32
Rate		7.76	4.30	3.36	*	3.36
Less than 2,500 grams	889	40	34	28	6	6
Rate		44.99	38.25	31.50	*	*
Less than 500 grams	14	10	10	10	-	-
Rate		*	*	*	*	*
500-749 grams	35	16	14	10	4	2
Rate		*	*	*	*	*
750-999 grams	33	2	2	1	1	-
Rate		*	*	*	*	*
1,000-1,249 grams	37	-	-	-	-	-
Rate		*	*	*	*	*
1,250-1,499 grams	45	2	2	2	-	-
Rate		*	*	*	*	*
1,500-1,749 grams	64	5	2	2	-	3
Rate		*	*	*	*	*
1,750-1,999 grams	104	2	1	1	-	1
Rate		*	*	*	*	*
2,000-2,499 grams	557	3	3	2	1	-
Rate		*	*	*	*	*

Documentation Table 4. Live births, infant deaths and infant mortality rates by birthweight, race of mother, and age at death: United States, 2021 period data.

[Infant deaths are under 1 year. Neonatal deaths are under 28 days; early neonatal, 0-6 days; late neonatal, 7-27 days. Postneonatal deaths are 28 days to less than 12 months. Rates are per 1,000 live births]

Birthweight and race of mother	Live Births	Infant	Total Neonatal	Early Neonatal	Late Neonatal	Post-Neonatal
2,500 grams or more	8,640	32	6	3	3	26
Rate		3.70	*	*	*	3.01
Not Stated	2	1	1	1	-	-
Rate		*	*	*	*	*
White, Non-Hispanic						
Total (all birthweights)	1,887,656	8,236	5,251	4,111	1,140	2,984
Rate		4.36	2.78	2.18	0.60	1.58
Less than 2,500 grams	132,995	4,973	3,990	3,315	676	983
Rate		37.39	30.00	24.93	5.08	7.39
Less than 500 grams	1,698	1,407	1,368	1,293	75	39
Rate		828.62	805.65	761.48	44.17	22.97
500-749 grams	2,931	1,072	922	714	208	150
Rate		365.75	314.57	243.60	70.97	51.18
750-999 grams	3,722	458	369	274	96	89
Rate		123.05	99.14	73.62	25.79	23.91
1,000-1,249 grams	4,705	284	231	180	51	53
Rate		60.36	49.10	38.26	10.84	11.26
1,250-1,499 grams	6,436	250	194	166	28	55
Rate		38.84	30.14	25.79	4.35	8.55
1,500-1,749 grams	9,980	317	223	178	45	94
Rate		31.76	22.34	17.84	4.51	9.42
1,750-1,999 grams	16,652	373	236	190	46	137
Rate		22.40	14.17	11.41	2.76	8.23
2,000-2,499 grams	86,871	812	447	321	126	365
Rate		9.35	5.15	3.70	1.45	4.20
2,500 grams or more	1,754,370	3,226	1,225	760	464	2,002
Rate		1.84	0.70	0.43	0.26	1.14
Not Stated	291	36	36	36	-	-
Rate		123.71	123.71	123.71	*	*
Hispanic						
Total (all birthweights)	885,916	4,246	2,899	2,303	596	1,347
Rate		4.79	3.27	2.60	0.67	1.52
Less than 2,500 grams	69,511	2,913	2,378	1,973	406	535
Rate		41.91	34.21	28.38	5.84	7.70
Less than 500 grams	1,186	973	959	922	37	14
Rate		820.40	808.60	777.40	31.20	*
500-749 grams	1,979	687	586	444	142	101
Rate		347.15	296.11	224.36	71.75	51.04
750-999 grams	2,245	244	185	114	71	59
Rate		108.69	82.41	50.78	31.63	26.28

Documentation Table 4. Live births, infant deaths and infant mortality rates by birthweight, race of mother, and age at death: United States, 2021 period data.

[Infant deaths are under 1 year. Neonatal deaths are under 28 days; early neonatal, 0-6 days; late neonatal, 7-27 days. Postneonatal deaths are 28 days to less than 12 months. Rates are per 1,000 live births]

Birthweight and race of mother	Live Births	Infant	Total Neonatal	Early Neonatal	Late Neonatal	Post-Neonatal
1,000-1,249 grams	2,680	160	126	101	24	34
Rate		59.70	47.01	37.69	8.96	12.69
1,250-1,499 grams	3,478	131	90	67	23	40
Rate		37.67	25.88	19.26	6.61	11.50
1,500-1,749 grams	5,118	145	100	74	25	45
Rate		28.33	19.54	14.46	4.88	8.79
1,750-1,999 grams	8,371	174	113	89	24	60
Rate		20.79	13.50	10.63	2.87	7.17
2,000-2,499 grams	44,454	399	219	160	59	180
Rate		8.98	4.93	3.60	1.33	4.05
2,500 grams or more	816,228	1,312	500	309	191	812
Rate		1.61	0.61	0.38	0.23	0.99
Not Stated	177	21	21	21	-	-
Rate		118.64	118.64	118.64	*	*

*/ Figure does not meet standard of reliability or precision: based on fewer than 20 deaths in the numerator

-/ Quantity zero

Documentation Table 5. Infant deaths and infant mortality rates by age of death and birthweight for 10 major causes of infant death: United States, 2021 period data

[Infant deaths are under 1 year. Neonatal deaths are under 28 days; early neonatal, 0-6 days; late neonatal, 7-27 days. Postneonatal deaths are 28 days to less than 12 months. Rates are per 100,000 live births]

Cause of death and birthweight	Live Births	Total Infant				
		Deaths	Total Neonatal	Early Neonatal	Late Neonatal	Post-Neonatal
All birthweights						
All Causes	3,664,292	19,928	12,797	10,082	2,715	7,131
		543.8	349.2	275.1	74.1	194.6
Congenital malformations (Q00-Q99).....		3,990	2,850	2,270	581	1,140
		108.9	77.8	62.0	15.9	31.1
Short gestation and low birthweight nec (P07).....		2,957	2,891	2,788	103	66
		80.7	78.9	76.1	2.8	1.8
Maternal complications of pregnancy (P01).....		1,113	1,104	1,090	14	9
		30.4	30.1	29.8	*	*
Sudden infant death syndrome (R95).....		1,458	154	23	131	1,304
		39.8	4.2	0.6	3.6	35.6
Accidents (unintentional injuries) (V01-X59).....		1,300	120	28	91	1,181
		35.5	3.3	0.8	2.5	32.2
Complications of placenta, cord, membranes (P02).....		663	645	603	42	18
		18.1	17.6	16.5	1.2	*
Bacterial sepsis of newborn (P36).....		560	541	245	296	19
		15.3	14.8	6.7	8.1	0.5
Respiratory distress of newborn (P22).....		413	400	310	91	13
		11.3	10.9	8.5	2.5	*
Diseases of the circulatory system (I00-I99).....		399	84	47	37	315
		10.9	2.3	1.3	1.0	8.6
Neonatal hemorrhage (P50-P52, P54).....		344	335	265	70	9
		9.4	9.1	7.2	1.9	*
All other causes.....		6,728	3,672	2,413	1,259	3,056
		183.6	100.2	65.9	34.4	83.4
Less than 2,500 grams						
All Causes	313,152	13,084	10,377	8,580	1,797	2,707
		4178.2	3313.7	2739.9	573.8	864.4
Congenital malformations (Q00-Q99).....		2,581	2,018	1,676	342	563
		824.2	644.4	535.2	109.2	179.8
Short gestation and low birthweight nec (P07).....		2,890	2,827	2,726	101	63
		922.9	902.8	870.5	32.3	20.1
Maternal complications of pregnancy (P01).....		1,070	1,061	1,047	14	9
		341.7	338.8	334.3	*	*
Sudden infant death syndrome (R95).....		341	30	4	26	311
		108.9	*	*	8.3	99.3
Accidents (unintentional injuries) (V01-X59).....		267	29	10	19	237
		85.3	9.3	*	*	75.7
Complications of placenta, cord, membranes (P02).....		552	541	513	28	11
			172.8	163.8	8.9	*
Bacterial sepsis of newborn (P36).....		502	486	212	274	16
		160.3	155.2	67.7	87.5	*

Documentation Table 5. Infant deaths and infant mortality rates by age of death and birthweight for 10 major causes of infant death: United States, 2021 period data -Con.

[Infant deaths are under 1 year. Neonatal deaths are under 28 days; early neonatal, 0-6 days; late neonatal, 7-27 days. Postneonatal deaths are 28 days to less than 12 months. Rates are per 100,000 live births]

Cause of death and birthweight	Live Births	Total Infant				
		Deaths	Total Neonatal	Early Neonatal	Late Neonatal	Post-Neonatal
Respiratory distress of newborn (P22).....		407	394	305	90	13
		130.0	125.8	97.4	28.7	*
Diseases of the circulatory system (I00-I99).....		204	49	30	19	156
		65.1	15.7	9.6	*	49.8
Neonatal hemorrhage (P50-P52, P54).....		307	301	240	60	6
		98.0	96.1	76.6	19.2	*
All other causes.....		3,962	2,640	1,817	823	1,322
		1265.2	843.0	580.2	262.8	422.2
2,500 grams or more						
All Causes	3,349,955	6,710	2,293	1,376	917	4,417
		200.3	68.5	41.1	27.4	131.9
Congenital malformations (Q00-Q99).....		1,403	827	589	238	576
		41.9	24.7	17.6	7.1	17.2
Short gestation and low birthweight nec (P07).....		8	5	3	2	3
		*	*	*	*	*
Maternal complications of pregnancy (P01).....		17	17	17	-	-
		*	*	*	*	*
Sudden infant death syndrome (R95).....		1,117	124	19	105	993
		33.3	3.7	*	3.1	29.6
Accidents (unintentional injuries) (V01-X59).....		1,033	91	18	72	942
		30.8	2.7	*	2.2	28.1
Complications of placenta, cord, membranes (P02).....		94	87	73	14	7
		2.8	2.6	2.2	*	*
Bacterial sepsis of newborn (P36).....		57	54	33	20	3
		1.7	1.6	1.0	0.6	*
Respiratory distress of newborn (P22).....		6	6	5	1	-
		*	*	*	*	*
Diseases of the circulatory system (I00-I99).....		195	35	17	18	160
		5.8	1.0	*	*	4.8
Neonatal hemorrhage (P50-P52, P54).....		37	34	24	10	3
		1.1	1.0	0.7	*	*
All other causes.....		2,743	1,013	577	436	1,730
		81.9	30.2	17.2	13.0	51.6

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

-/ Quantity zero

Documentation Table 6. Live births, infant deaths, and infant mortality rates by gestational age and age at death: United States, 2021 period data

[Rates are per 1,000 live births]

Age at Death	Total	Gestation								
		<28 Weeks	28-31 Weeks	32-33 Weeks	34-36 Weeks	37-39 Weeks	40 Weeks	41 Weeks	42 Weeks or more	Not Stated
Total										
Live births.....	3,664,292	23,527	34,731	44,746	280,975	2,458,106	641,615	168,621	8,979	2,992
Infant deaths.....	19,928	8,323	1,429	866	2,278	5,615	943	254	34	186
Infant Mortality Rate.....	5.44	353.76	41.14	19.35	8.11	2.28	1.47	1.51	3.79	62.17
Early Neonatal										
Live births.....	3664292	23,527	34,731	44,746	280,975	2,458,106	641,615	168,621	8,979	2,992
Infant deaths.....	10,082	6,471	798	396	848	1,138	184	70	13	163
Infant Mortality Rate.....	2.75	275.05	22.98	8.85	3.02	0.46	0.29	0.42	*	54.48
Late Neonatal										
Live births.....	3664292	23,527	34,731	44,746	280,975	2,458,106	641,615	168,621	8,979	2,992
Infant deaths.....	2,715	1,067	256	132	329	763	124	33	4	6
Infant Mortality Rate.....	0.74	45.35	7.37	2.95	1.17	0.31	0.19	0.20	*	*
Postneonatal										
Live births.....	3664292	23,527	34,731	44,746	280,975	2,458,106	641,615	168,621	8,979	2,992
Infant deaths.....	7,131	785	374	338	1,101	3,714	635	151	17	17
Infant Mortality Rate.....	1.95	33.37	10.77	7.55	3.92	1.51	0.99	0.90	*	*

*/ Figure does not meet standard of reliability or precision: based on fewer than 20 deaths in the numerator

Documentation Table 1. Live births and infant death by state of occurrence of birth and by state of residence at birth: United States, 2020 Cohort Data.

(Residence at birth is of the mother)

State	Live Births		Infant Deaths		Infant Mortality Rate
	Occurrence	Residence	Occurrence	Residence	
United States	3,549,826	3,613,647	19,376	19,346	5.35
Alabama	56,333	57,647	414	417	7.23
Alaska	9,400	9,469	49	48	5.07
Arizona	7,489	76,947	383	389	5.06
Arkansas	34,334	35,251	247	264	7.49
California	420,900	420,259	1632	1621	3.86
Colorado	62,067	61,494	309	288	4.68
Connecticut	34,982	33,460	147	147	4.39
Delaware	10,789	10,392	55	54	5.20
Dist of Columbia	12,405	8,874	74	48	5.41
Florida	209,866	209,671	1186	1184	5.65
Georgia	123,310	122,473	776	776	6.34
Hawaii	15,783	15,785	79	78	4.94
Idaho	21,297	21,533	84	103	4.78
Illinois	129,982	133,298	697	741	5.56
Indiana	79,046	78,616	511	524	6.67
Iowa	35,966	36,114	155	161	4.46
Kansas	35,874	34,376	213	230	6.69
Kentucky	49,548	51,668	294	320	6.19
Louisiana	57,463	57,328	420	425	7.41
Maine	11,295	11,539	73	70	6.07
Maryland	65,536	68,554	379	393	5.92
Massachusetts	67,205	66,428	246	252	2.42
Michigan	103,122	104,074	670	679	6.52
Minnesota	62,603	63,443	286	271	4.27
Mississippi	34,479	35,473	264	289	8.15
Missouri	69,960	69,285	464	411	5.93
Montana	10,820	10,791	51	54	5.00
Nebraska	24,654	24,291	144	139	5.72
Nevada	33,250	33,653	159	158	4.69
New Hampshire	11,841	11,791	48	53	4.49
New Jersey	95,498	97,954	325	369	3.77
New Mexico	20,519	21,903	103	112	5.11
New York	109,052	112,699	480	501	4.45
New York City	100,021	96,639	384	348	3.60
North Carolina	118,616	116,730	801	784	6.72
North Dakota	11,551	10,059	55	51	5.07
Ohio	129,730	129,191	871	839	6.49
Oklahoma	46,092	47,623	262	269	5.65
Oregon	40,370	39,820	190	165	4.14
Pennsylvania	129,642	130,693	736	716	5.48
Rhode Island	10,646	10,101	56	43	4.26

Documentation Table 1. Live births and infant death by state of occurrence of birth and by state of residence at birth: United States, 2019 Cohort Data.

(Residence at birth is of the mother)

State	Live Births		Infant Deaths		Infant Mortality Rate
	Occurrence	Residence	Occurrence	Residence	
South Carolina	52,076	55,704	347	386	6.93
South Dakota	11,620	10,960	76	76	6.93
Tennessee	84,393	78,689	580	514	6.53
Texas	374,613	368,190	1943	1898	5.15
Utah	46,933	45,702	256	243	5.32
Vermont	4,953	5,133	14	16	*
Virginia	94,794	94,749	545	554	5.85
Washington	82,821	83,086	349	357	4.30
West Virginia	18,372	17,323	113	117	6.75
Wisconsin	60,293	60,594	365	374	6.17
Wyoming	5,622	6,128	16	27	4.41

*/ Figure does not meet standard of reliability or precision: based on fewer than 20 deaths in the numerator

Documentation Table 2. Live births, infant deaths and infant mortality rates by race of mother, sex and birthweight of child: United States, 2020 cohort data.

[Rates are per 1,000 live births]

Race of mother and sex	Total	<500 grams	500-749 grams	750-999 grams	1000-1249 grams	1250-1499 grams	1500-1999 grams	2000-2499 grams	2500 grams or more	Not Stated
All races										
Both sexes										
Live births.....	3,613,647	5,560	8,264	9,654	11,303	14,454	58,180	191,132	3,313,212	1,888
Infant deaths.....	19,346	4,525	2,797	1,081	663	555	1,396	1,742	6,453	134
Infant Mortality Rate.....	5.35	813.85	338.46	111.97	58.66	38.40	23.99	9.11	1.95	70.97
Male										
Live births.....	1,848,092	2,747	4,102	4,897	5,761	7,235	28,091	86,862	1,707,359	1,038
Infant deaths.....	10,718	2,327	1,615	670	356	324	725	885	3,735	81
Infant Mortality Rate.....	5.80	847.11	393.71	136.82	61.79	44.78	25.81	10.19	2.19	78.03
Female										
Live births.....	1,765,555	2,813	4,162	4,757	5,542	7,219	30,089	104,270	1,605,853	850
Infant deaths.....	8,628	2,198	1,182	411	307	231	671	857	2,718	53
Infant Mortality Rate.....	4.89	781.37	284.00	86.40	55.40	32.00	22.30	8.22	1.69	62.35
American Indian or Alaskan Native, non-Hispanic /1										
Both sexes										
Live births.....	26,813	42	56	83	69	95	413	1,372	24,670	13
Infant deaths.....	196	31	22	9	2	5	11	17	98	1
Infant Mortality Rate.....	7.31	738.10	392.86	*	*	*	*	*	3.97	*
Male										
Live births.....	13,779	24	34	36	35	47	231	638	12,728	6
Infant deaths.....	108	19	17	4	-	3	3	8	53	1
Infant Mortality Rate.....	7.84	*	*	*	*	*	*	*	4.16	*
Female										
Live births.....	13,034	18	22	47	34	48	182	734	11,942	7
Infant deaths.....	88	12	5	5	2	2	8	9	45	-
Infant Mortality Rate.....	6.75	*	*	*	*	*	*	*	3.77	*
Asian, non-Hispanic										
Both sexes										
Live births.....	219,068	218	343	456	547	738	3,383	13,059	200,282	42
Infant deaths.....	687	175	117	45	30	19	57	64	177	3
Infant Mortality Rate.....	3.14	802.75	341.11	98.68	54.84	*	16.85	4.90	0.88	*
Male										
Live births.....	112,795	107	178	236	285	375	1,783	6,064	103,744	23
Infant deaths.....	377	91	77	23	17	10	28	30	100	1
Infant Mortality Rate.....	3.34	850.47	432.58	97.46	*	*	15.70	4.95	0.96	*

Documentation Table 2. Live births, infant deaths and infant mortality rates by race of mother, sex and birthweight of child: United States, 2020 cohort data.

[Rates are per 1,000 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
Female										
Live births.....	106,273	111	165	220	262	363	1,600	6,995	96,538	19
Infant deaths.....	310	84	40	22	13	9	29	34	77	2
Infant Mortality Rate.....	2.92	756.76	242.42	100.00	*	*	18.13	4.86	0.80	*
Black, non-Hispanic										
Both sexes										
Live births.....	529,811	2,098	2,984	3,034	3,323	4,037	14,789	45,157	454,184	205
Infant deaths.....	5,467	1,648	846	288	165	148	338	460	1,538	36
Infant Mortality Rate.....	10.32	785.51	283.51	94.92	49.65	36.66	22.85	10.19	3.39	175.61
Male										
Live births.....	269,341	1,046	1,441	1,478	1,639	1,947	6,894	20,167	234,612	117
Infant deaths.....	3,031	861	483	177	87	86	178	228	911	20
Infant Mortality Rate.....	20.30	1575.53	587.09	194.86	100.67	76.01	49.03	22.81	6.56	307.69
Female										
Live births.....	260,470	1052	1543	1556	1684	2090	7895	24990	219572	88
Infant deaths.....	2,436	787	363	111	78	62	160	232	627	16
Infant Mortality Rate.....	9.35	748.10	235.26	71.34	46.32	29.67	20.27	9.28	2.86	*
Native Hawaiian or Other Pacific Islander, non-Hispanic										
Both sexes										
Live births.....	9,626	17	20	22	41	46	157	512	8,807	4
Infant deaths.....	65	16	5	3	6	-	2	8	25	-
Infant Mortality Rate.....	6.75	*	*	*	*	*	*	*	2.84	*
Male										
Live births.....	4,922	7	10	13	23	25	71	266	4,504	3
Infant deaths.....	37	6	4	1	4	-	2	5	15	-
Infant Mortality Rate.....	7.52	*	*	*	*	*	*	*	*	*
Female										
Live births.....	4,704	10	10	9	18	21	86	246	4,303	1
Infant deaths.....	28	10	1	2	2	-	-	3	10	-
Infant Mortality Rate.....	5.95	*	*	*	*	*	*	*	*	*
White, non-Hispanic										
Both sexes										
Live births.....	1,843,432	1,736	2,778	3,516	4,470	5,942	24,888	82,982	1,716,327	793
Infant deaths.....	8,020	1,470	1,043	451	303	244	628	785	3,052	44
Infant Mortality Rate.....	4.35	846.77	375.45	128.27	67.79	41.06	25.23	9.46	1.78	55.49

Documentation Table 2. Live births, infant deaths and infant mortality rates by race of mother, sex and birthweight of child: United States, 2020 cohort data.

[Rates are per 1,000 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
Male										
Live births.....	945,464	845	1,370	1,810	2,267	3,003	11,895	37,600	886,239	435
Infant deaths.....	4,459	740	590	273	164	143	320	405	1,801	23
Infant Mortality Rate.....	4.72	875.74	430.66	150.83	72.34	47.62	26.90	10.77	2.03	52.87
Female										
Live births.....	897,968	891	1,408	1,706	2,203	2,939	12,993	45,382	830,088	358
Infant deaths.....	3,561	730	453	178	139	101	308	380	1,251	21
Infant Mortality Rate.....	3.97	819.30	321.73	104.34	63.10	34.37	23.71	8.37	1.51	58.66
Hispanic										
Both sexes										
Live births.....	866,713	1,173	1,761	2,164	2,413	3,050	12,398	41,356	802,216	182
Infant deaths.....	3,981	952	630	235	130	116	298	333	1,265	22
Infant Mortality Rate.....	4.59	811.59	357.75	108.60	53.87	38.03	24.04	8.05	1.58	120.88
Male										
Live births.....	441,401	576	896	1,136	1,273	1,569	6,183	19,089	410,562	117
Infant deaths.....	2,188	484	364	161	69	69	161	171	691	18
Infant Mortality Rate.....	4.96	840.28	406.25	141.73	54.20	43.98	26.04	8.96	1.68	*
Female										
Live births.....	425,312	597	865	1,028	1,140	1,481	6,215	22,267	391,654	65
Infant deaths.....	1,793	468	266	74	61	47	137	162	574	4
Infant Mortality Rate.....	4.22	783.92	307.51	71.98	53.51	31.74	22.04	7.28	1.47	*

* Figure does not meet standard of reliability or precision: based on fewer than 20 deaths in the numerator

- Quantity zero

1/ Includes Aleut and Eskimos

Documentation Table 3. Live births, infant deaths, and infant mortality rates by birthweight, race of mother, and gestational age: United States, 2020 cohort data

[Rates are per 1,000 live births]

Birthweight	Gestation									
	Total	<28 Weeks	28-31 Weeks	32-33 Weeks	34-36 Weeks	37-39 Weeks	40 Weeks	41 Weeks	42 Weeks or more	Not Stated
All Races										
Live births.....	3,613,647	23,286	32,463	41,671	267,067	2,403,945	657,711	176,163	8,863	2,478
Infant deaths.....	19,346	8,354	1,312	849	2,112	5,338	890	274	35	182
Infant Mortality Rate.....	5.35	358.76	40.42	20.37	7.91	2.22	1.35	1.56	3.95	73.45
American Indian or Alaskan Native, non-Hispanic /1										
Live births.....	26,813	177	261	379	2,292	18,128	4,349	1,127	57	43
Infant deaths.....	196	62	8	7	25	72	16	3	2	1
Infant Mortality Rate.....	7.31	350.28	*	*	10.91	3.97	*	*	*	*
Asian, non-Hispanic										
Live births.....	219,068	960	1,517	2,079	14,076	152,255	39,743	8,239	163	36
Infant deaths.....	687	331	53	28	75	155	32	8	1	4
Infant Mortality Rate.....	3.14	344.79	34.94	13.47	5.33	1.02	0.81	*	*	*
Black, non-Hispanic										
Live births.....	529,811	7,802	8,381	9,354	50,522	350,572	81,986	19,799	1,095	300
Infant deaths.....	5,467	2,736	348	204	518	1,342	206	56	8	49
Infant Mortality Rate.....	10.32	350.68	41.52	21.81	10.25	3.83	2.51	2.83	*	163.33
Native Hawaiian or Other Pacific Islander, non-Hispanic										
Live births.....	9,626	72	98	126	862	6,162	1,746	517	30	13
Infant deaths.....	65	27	4	3	7	16	4	3	1	-
Infant Mortality Rate.....	6.75	375.00	*	*	*	*	*	*	*	*
White, non-Hispanic										
Live births.....	1,843,432	8,043	13,681	18,914	127,041	1,216,622	350,445	101,848	5,837	1,001
Infant deaths.....	8,020	2,976	579	388	967	2,516	384	129	17	64
Infant Mortality Rate.....	4.35	370.01	42.32	20.51	7.61	2.07	1.10	1.27	*	63.94
Hispanic										
Live births.....	866,713	5,241	7,273	9,276	63,434	584,438	157,185	38,205	1,313	348
Infant deaths.....	3,981	1,806	265	182	435	997	205	57	3	31
Infant Mortality Rate.....	4.59	344.59	36.44	19.62	6.86	1.71	1.30	1.49	*	89.08

* Figure does not meet standard of reliability or precision: based on fewer than 20 deaths in the numerator

- Quantity zero

/1/ Includes Aleut and Eskimos

Documentation Table 4. Infant deaths and infant mortality rates by age of death and birthweight for 10 major causes of infant death: United States, 2020 cohort data

[Infant deaths are under 1 year. Neonatal deaths are under 28 days; early neonatal, 0-6 days; late neonatal, 7-27 days. Postneonatal deaths are 28 days to less than 12 months. Rates are per 100,000 live births]

Cause of death and birthweight	Live Births	Total Infant				
		Deaths	Total Neonatal	Early Neonatal	Late Neonatal	Postneonatal
All birthweights						
All Causes	3,613,647	19,346	12,755	10,243	2,512	6,591
		535.4	353.0	283.5	69.5	182.4
Congenital malformations (Q00-Q99).....		3,929	2,856	2,274	582	1,073
		108.7	79.0	62.9	16.1	29.7
Short gestation and low birthweight nec (P07).....		3,106	3,047	2,960	87	59
		86.0	84.3	81.9	2.4	1.6
Maternal complications of pregnancy (P01).....		1,103	1,090	1,065	25	13
		30.5	30.2	29.5	0.7	*
Sudden infant death syndrome (R95).....		1,395	141	19	122	1,254
		38.6	3.9	*	3.4	34.7
Accidents (unintentional injuries) (V01-X59).....		1,241	112	37	75	1,129
		34.3	3.1	1.0	2.1	31.2
Complications of placenta, cord, membranes (P02).....		696	677	643	34	19
		19.3	18.7	17.8	0.9	*
Bacterial sepsis of newborn (P36).....		537	518	238	280	19
		14.9	14.3	6.6	7.8	*
Respiratory distress of newborn (P22).....		386	383	304	79	3
		10.7	10.6	8.4	2.2	*
Diseases of the circulatory system (I00-I99).....		358	81	46	35	277
		9.9	2.2	1.3	1.0	7.7
Neonatal hemorrhage (P50-P52, P54).....		314	303	230	73	11
		8.7	8.4	6.4	2.0	*
All other causes.....		6,281	3,547	2,427	1,120	2,734
		173.8	98.2	67.2	31.0	75.7
Less than 2,500 grams						
All Causes	298,547	12,759	10,362	8723	1639	2397
		4273.7	3470.8	2921.8	549.0	802.9
Congenital malformations (Q00-Q99).....		2,447	1,937	1,630	307	510
		819.6	648.8	546.0	102.8	170.8
Short gestation and low birthweight nec (P07).....		3,029	2,970	2,884	86	59
		1014.6	994.8	966.0	28.8	19.8
Maternal complications of pregnancy (P01).....		1,056	1,043	1,018	25	13
		353.7	349.4	341.0	*	*
Sudden infant death syndrome (R95).....		281	18	-	18	263
		94.1	*	*	*	88.1
Accidents (unintentional injuries) (V01-X59).....		242	24	12	12	218
		81.1	8.0	*	*	73.0

Documentation Table 4. Infant deaths and infant mortality rates by age of death and birthweight for 10 major causes of infant death: United States, 2020 cohort data

[Infant deaths are under 1 year. Neonatal deaths are under 28 days; early neonatal, 0-6 days; late neonatal, 7-27 days. Postneonatal deaths are 28 days to less than 12 months. Rates are per 100,000 live births]

Cause of death and birthweight	Live Births	Total Infant				
		Deaths	Total Neonatal	Early Neonatal	Late Neonatal	Post-Neonatal
Complications of placenta, cord, membranes (P02).....		606	593	570	23	13
		203.0	198.6	190.9	7.7	*
Bacterial sepsis of newborn (P36).....		475	458	210	248	17
		159.1	153.4	70.3	83.1	*
Respiratory distress of newborn (P22).....		376	373	295	78	3
		125.9	124.9	98.8	26.1	*
Diseases of the circulatory system (I00-I99).....		163	39	26	13	124
		54.6	13.1	8.7	*	41.5
Neonatal hemorrhage (P50-P52, P54).....		284	276	214	62	8
		95.1	92.5	71.7	20.8	*
All other causes.....		3,800	2,631	1,864	767	1,169
		1272.8	881.3	624.4	256.9	391.6
2,500 grams or more						
All Causes	3,313,212	6,453	2,263	1,393	870	4,190
		194.8	68.3	42.0	26.3	126.5
Congenital malformations (Q00-Q99).....		1,475	913	639	274	562
		44.5	27.6	19.3	8.3	17.0
Short gestation and low birthweight nec (P07).....		8	8	7	1	-
		*	*	*	*	*
Maternal complications of pregnancy (P01).....		20	20	20	-	-
		0.6	0.6	0.6	*	*
Sudden infant death syndrome (R95).....		1,113	123	19	104	990
		33.6	3.7	*	3.1	29.9
Accidents (unintentional injuries) (V01-X59).....		997	87	24	63	910
		30.1	2.6	0.7	1.9	27.5
Complications of placenta, cord, membranes (P02).....		82	76	65	11	6
		2.5	2.3	2.0	*	*
Bacterial sepsis of newborn (P36).....		62	60	28	32	2
		1.9	1.8	0.9	1.0	*
Respiratory distress of newborn (P22).....		8	8	7	1	0
		*	*	*	*	*
Diseases of the circulatory system (I00-I99).....		194	41	20	21	153
		5.9	1.2	0.6	0.6	4.6
Neonatal hemorrhage (P50-P52, P54).....		28	26	15	11	2
		0.9	0.8	*	*	*
All other causes.....		2,466	901	549	352	1,565
		74.4	27.2	16.6	10.6	47.2

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

-/ Quantity zero