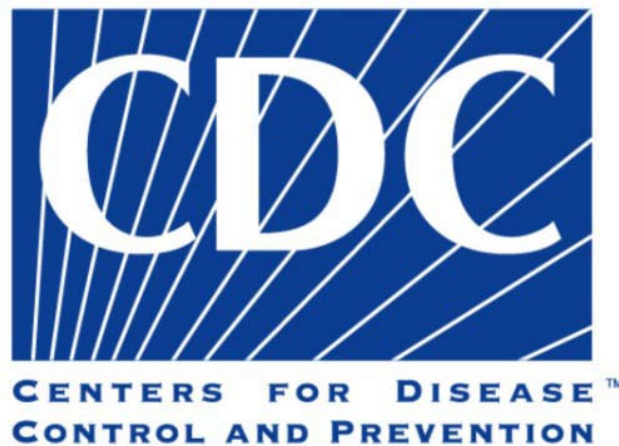


**User Guide to the
2022 Period/2021 Cohort Linked
Birth/Infant Death
Public Use File**



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

2022 Period/2021 Cohort Linked Birth/Infant Death Data Set

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Introduction

The linked birth/infant death data sets (linked files) for 2017 through 2022 are released in one format that can be used for both period data and birth cohort data. This documentation is for both the 2022 period linked file and the 2021 cohort linked file.

Period file - The 2022 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 2022 linked to their corresponding birth certificates, whether the birth occurred in 2021 or 2022. The second file is the “denominator” file, which consists of all births occurring in 2022. 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 2021 birth cohort linked birth/infant death data set includes three data files. The numerator for the 2021 birth cohort linked file consists of deaths to infants born in 2021 linked to their corresponding birth certificates, whether the death occurred in 2021 or 2022 (each is a separate file the user can append together). The denominator for this data set is all births occurring in 2021.

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. This is generally considered to be a more robust methodology than using the period file, which is 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 included for use with the period linked numerator file to correct for biases introduced by unlinked records. The number of infant deaths in the linked file are weighted to equal the sum of the linked and 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 for which all infant deaths are linked to the corresponding birth certificate. The denominator file (births) is not weighted.

For cohort file use: When creating cohort files, do not apply the record weight. Applying the weight to the cohort file upweights the number of births and infant deaths, resulting in inflated birth counts.

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 and 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 2022, marital status was based on a direct question in 49 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 (see [User Guide to the 2022 Natality Public Use File \(cdc.gov\)](#)).

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 2022 was 757 in the numerator and 1,966 in the denominator. The addition of this imputation has reduced the percent of not-stated responses for birthweight from 4.77% to 1.04% in the numerator file, and from 0.08% to 0.03% in the denominator file, thus reducing the potential for underestimation when computing birthweight-specific infant mortality rates.

To exclude records with imputed birthweight values, 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; four items in the 2022 period file have limited reporting areas: hypertension eclampsia, infertility treatment, expanded source of payment for delivery, and breastfeeding. Reporting flags are included in the file to exclude records from areas that do not report a specific item 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). Select reporting flag=1 for valid and complete data (see SAS code examples below).

Translating "blanks" - In the 2022 period/2021 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 for 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 general mortality file

Although the time periods are the same, numbers of infant deaths and infant mortality rates overall and by characteristics are not always identical between the linked file and the general mortality file. Differences in numbers of infant deaths between the two files are primarily due to geographic coverage. For the general 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 accurately reflect the number and distribution of deaths, weighting can result in small differences in numbers and rates between these two data sets. In most cases, differences between numbers of infant deaths and infant mortality rates between the linked file and the general mortality file are negligible.

Computation of rates

Infant mortality rates indicate the risk of death during the first year of life. For the linked birth/infant death dataset, rates are calculated by dividing the number of infant deaths reported in a calendar year by the number of live births reported for the same period and are presented as rates per 1,000 or per 100,000 live births. Both the general mortality file and the linked birth/infant death file use this computation method.

Rates per 1,000 live births are shown at the second decimal place to provide a more precise and sensitive measurement. Rates for cause of death are shown per 100,000 live births; these rates are shown to one decimal place.

Random variation in infant mortality rates

The number of infant deaths and live births reported for an area represent complete counts. As such, they are not subject to sampling error, but are subject to nonsampling error due to potential errors in the registration process. However, when these measures 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 (see <https://digitalassets.lib.berkeley.edu/sdtr/ucb/text/44.pdf>). 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. 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.

$$\text{The RSE of the deaths} = 100 * \sqrt{\frac{1}{497}} = 4.49, \quad \text{while the RSE of the births} = 100 * \sqrt{\frac{1}{81,555}} = 0.35.$$

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 2022 period linked file for the 50 States and D.C. includes 20,334, linked infant death records and 279 unlinked infant death records (98.6% linked and 1.4% 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 20,609 weighted infant deaths by place of occurrence.

For 2022, 26 jurisdictions (25 states and D.C.) linked 100% of their infant deaths; 25 jurisdictions had less than a 100% linkage rate. Twelve states had a linkage of under 99%; Texas (94.5%), Pennsylvania (95.8%), New Jersey (97.1%), New Mexico (97.2%), Kentucky (97.7%), California (98.0%), Louisiana (98.1%), North Carolina (98.1%), Arizona (98.3%), Missouri (98.5%), Maine (98.7%), and Nebraska (98.7%). 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 2021 cohort linked file for the 50 States and D.C. by place of occurrence includes 19,965 linked infant death records and 222 unlinked infant death records (98.9% linked, 1.1% unlinked). As previously noted, the weight variable (recwt) should not be used with the linked cohort file.

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, geographic detail such as state of birth/death is not included.

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, 2023. 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, 2023. 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 2023. 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 2021 denominator file with the 2021 and 2022 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 2021-2022 numerator with the 2021 denominator file.

SAS code example for creating a cohort file

```
FILENAME B21 ' '; /* put working directory path here */
FILENAME D21 ' '; /* put working directory path here */
FILENAME D22 ' '; /* put working directory path here */

DATA BORN21; /* pull in 2021 denominator file */
INFILE B21;
INPUT
```

```

RESTATUS 104  SEQNUM_CO      365-371  CO_YOD  372-375;
IF RSTATUS < 4;

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 = 2021;    /* limit to infants born in 2021 */

PROC SORT; BY SEQNUM_CO CO_YOD; RUN;

DATA DIED22;          /* includes infants born 2021 and 2022 */
INFILE D22;
INPUT
DOB_YY  9-12  RSTATUS 104  SEQNUM_CO      365-371
CO_YOD  372-375;
IF RSTATUS < 4 AND DOB_YY = 2021;    /* limit to infants born in 2021 */

PROC SORT; BY SEQNUM_CO CO_YOD; RUN;

/* merge 2021 births to those infants that were born and died in 2021 */

DATA B21D21;
MERGE BORN21 DIED21; BY SEQNUM_CO CO_YOD;

/* merge 2021 births/linked deaths to 2021 births that died in 2022 */
DATA B21D2122;
MERGE B21D21 DIED22; 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 "cohortfromperiod2021.log", replace
      *NUMERATOR FILES*
*2021
local dat_name "VS20LINK.DETAILUS "
** The following line should contain the name of the output '.dta' file ;
local dta_name1 "alldat2021num"
** The following line should contain the name of the data dictionary file ;
local dct_name "numer_dct_2021.dct"
infile using "`dct_name'", using("`dat_name'") clear

```

```

compress
tempfile `dta_name1'
save "`dta_name1'", replace

*2022
local dat_name "VS21LINK.DETAILUS"
** The following line should contain the name of the output '.dta' file ;
local dta_name2 "alldat2022num"
** The following line should contain the name of the data dictionary file ;
local dct_name "numer_dct_2021.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*

*2021
local dat_name "VS20LINK.DENOMUS"
** The following line should contain the name of the output '.dta' file ;
local dta_name1d "alldat2021den"
** The following line should contain the name of the data dictionary file ;
local dct_name "denom_dct_2021.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: 2021 */
tab DOB_YY if _mgnumden==2 /* numerator only: 2021 and 2022 */
tab DOB_YY if _mgnumden==3 /* matched 2021 records */

/* check the year of death variable for merged records */
tab CO_YOD if _mgnumden==3 /* matched 2021 records: Year of death
20212022 */

/* drop records that did not match, deaths where the year of
birth was either 2020 or 2022 */
drop if _mgnumden==2
save "mergedcohort_2021.dta", replace
log close
```

2019 Period Linked Birth/Infant Death Data Set

2022 Period Numerator Files:

United States

A. Record count (occurrence, unweighted):	20,334
B. Record length:	1,743

Territories

A. Record count (occurrence):	168
B. Record length:	1,743

2022 Period Denominator Files:

United States

A. Record count (occurrence):	3,676,029
B. Record length:	1,346

Territories

A. Record count (occurrence):	21,672
B. Record length:	1,346

2021 Cohort Numerator Files:

United States

A. Record count (occurrence, unweighted):	19,965
B. Record length:	1,743

2021 Cohort Denominator Files:

United States

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

**2022 Period/ 2021 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		2021-2022	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 and 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 and 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	00 126 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		000-003 126 004-300 888 999	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	00 126 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 5	1 st to 3 rd month 4 th to 6 th month 7 th to final month No prenatal care 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
228-237	10		FILLER22	Filler		Blank	
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 99	Number of cigarettes daily 98 or more cigarettes daily 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
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 30.0-39.9 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	100-400 999	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 9	Less than 11 pounds 11 to 20 pounds 21 to 30 pounds 31 to 40 pounds 41 to 98 pounds 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
307	1	P,G	F_WTGAIN	Reporting Flag for Weight Gain			See footnote
308-312	5		FILLER29	Filler		Blank	
<i>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.</i>							
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
						U	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	
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 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	
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	126	1 0 9	True False Not Reported	
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_PRES	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	
422	1	P,G	F_MM_PLAC	Reporting Flag for Perineal Laceration				

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Position	Len	File*	Field	Description	Flag Position	Values	Definition
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
494	1	P,G	GESTREC3	Combined Gestation Recode 3		1	Under 37 weeks

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

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Position	Len	File*	Field	Description	Flag Position	Values	Definition
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		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
538	1	P,G	CA_MNSB	Meningomyelocele / Spina Bifida	544	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
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 Meningocele/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 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
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.

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
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

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
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

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
						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>		2022	2022
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

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
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-nnn	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	Guam, PR Puerto Rico CC 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

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
						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	Puerto Rico
						GU	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	Puerto Rico
						GU	Guam
				Puerto Rico Occurrence		PR	Puerto Rico
						AL-WY, VI,AS,GU, MP,ZZ	Foreign residents: refer to U.S. for specific code structure.
				Guam Occurrence		GU	Guam
						AL-WY	U.S. resident. Also considered a resident of Guam.
						PR,AS, VI,MP, ZZ	Foreign residents: refer to U.S. for specific code structure.

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
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

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

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, and Guam, 2022
 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	3,676,029	3,667,758	20,334	20,303	20,609	20,577	5.61
Alabama	56,681	58,149	389	389	389	389	6.69
Alaska	9,291	9,359	60	62	60	62	6.62
Arizona	79,445	78,547	471	477	479	485	6.17
Arkansas	34,583	35,471	255	270	256	272	7.67
California	420,256	419,104	1,701	1,689	1,736	1,724	4.11
Colorado	63,042	62,383	308	281	310	283	4.54
Connecticut	36,543	35,332	151	150	151	150	4.25
Delaware	11,219	10,816	84	81	84	81	7.49
Dist of Columbia	11,500	8,075	86	44	86	44	5.45
Florida	224,597	224,433	1,357	1,339	1,360	1,342	5.98
Georgia	127,054	126,130	884	891	886	893	7.08
Hawaii	15,543	15,535	85	90	85	90	5.79
Idaho	22,138	22,391	101	118	101	118	5.27
Illinois	124,648	128,350	682	716	683	718	5.59
Indiana	79,950	79,649	569	568	571	570	7.16
Iowa	36,731	36,506	168	190	168	190	5.20
Kansas	36,243	34,401	188	199	188	200	5.81
Kentucky	50,306	52,315	271	297	276	302	5.77
Louisiana	56,783	56,479	410	408	418	416	7.37
Maine	11,730	12,093	75	76	76	77	6.37
Maryland	65,412	68,782	394	415	394	415	6.03
Massachusetts	69,506	68,584	234	227	235	228	3.32
Michigan	101,355	102,321	650	651	656	657	6.42
Minnesota	63,064	64,015	299	288	299	288	4.50
Mississippi	33,676	34,675	292	316	292	316	9.11
Missouri	69,390	68,985	500	459	509	467	6.77
Montana	11,224	11,175	47	52	47	52	4.65
Nebraska	24,533	24,345	153	141	154	142	5.83
Nevada	32,920	33,193	154	149	154	149	4.49
New Hampshire	12,157	12,077	41	42	41	42	3.48
New Jersey	99,800	102,893	324	356	335	367	3.57
New Mexico	19,623	21,614	111	123	114	127	5.88
New York	109,319	114,729	467	526	474	533	4.65
New York City	99,458	93,045	410	351	410	351	3.77
North Carolina	123,714	121,562	822	811	837	825	6.79
North Dakota	11,102	9,567	44	42	44	42	4.39
Ohio	128,656	128,231	942	909	944	912	7.11
Oklahoma	46,616	48,332	321	331	323	333	6.89
Oregon	40,093	39,493	190	177	190	177	4.48
Pennsylvania	129,404	130,252	739	715	766	741	5.69
Rhode Island	10,708	10,269	41	40	41	40	3.90
South Carolina	53,908	57,820	359	390	359	391	6.76
South Dakota	12,021	11,201	93	87	93	87	7.77
Tennessee	87,853	82,265	610	542	612	544	6.61

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, 2022 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	398,132	389,741	2,139	2,113	2,257	2,228	5.72
Utah	47,072	45,768	239	230	239	230	5.03
Vermont	5,100	5,316	26	26	26	26	4.89
Virginia	95,888	95,630	571	593	572	594	6.21
Washington	82,973	83,333	361	361	362	362	4.34
West Virginia	17,923	16,929	109	123	110	124	7.32
Wisconsin	59,778	60,049	338	348	338	348	5.80
Wyoming	5,368	6,049	19	34	19	34	5.62
Puerto Rico	19,148	19,112	141	141	141	141	7.38
Guam	2,524	2,517	27	27	27	27	10.73

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 and Guam.

Documentation Table 2. Live births, infant deaths and infant mortality rates by race of mother, sex and birthweight of child: United States, 2022 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.....	3,667,758	5,544	8,470	9,782	11,676	15,288	61,276	204,345	3,350,350	1,027
Infant deaths.....	20,577	4,471	2,879	1,195	705	605	1,468	2,007	7,034	213
Infant Mortality Rate.....	5.61	806.46	339.91	122.16	60.38	39.57	23.96	9.82	2.10	207.40
Male										
Live births.....	1,874,446	2,833	4,268	5,016	5,969	7,588	29,564	92,157	1,726,523	528
Infant deaths.....	11,392	2,355	1,634	724	410	321	730	1,018	4,070	129
Infant Mortality Rate.....	6.08	831.27	382.85	144.34	68.69	42.30	24.69	11.05	2.36	244.32
Female										
Live births.....	1,793,312	2,711	4,202	4,766	5,707	7,700	31,712	112,188	1,623,827	499
Infant deaths.....	9,186	2,116	1,245	471	295	283	738	989	2,964	84
Infant Mortality Rate.....	5.12	780.52	296.29	98.83	51.69	36.75	23.27	8.82	1.83	168.34
American Indian or Alaska Native, Non-Hispanic /1										
Both sexes										
Live births.....	25,721	43	59	85	83	119	468	1,413	23,447	4
Infant deaths.....	233	36	22	14	7	6	11	27	109	-
Infant Mortality Rate.....	9.06	837.21	372.88	*	*	*	*	*	4.65	*
Male										
Live births.....	13,063	27	26	46	42	59	249	655	11,957	2
Infant deaths.....	138	24	9	10	5	3	7	15	64	-
Infant Mortality Rate.....	5.37	558.14	*	*	*	*	*	*	2.73	*
Female										
Live births.....	12,658	16	33	39	41	60	219	758	11,490	2
Infant deaths.....	95	12	13	4	2	3	4	12	44	-
Infant Mortality Rate.....	7.51	*	*	*	*	*	*	*	3.83	*
Asian, Non-Hispanic										
Both sexes										
Live births.....	218,994	251	369	451	624	850	3,698	14,376	198,357	18
Infant deaths.....	768	205	119	47	33	19	54	63	221	7
Infant Mortality Rate.....	3.51	816.73	322.49	104.21	52.88	*	14.60	4.38	1.11	*
Male										
Live births.....	112,726	138	194	239	332	426	1,843	6,630	102,916	8
Infant deaths.....	436	114	76	26	16	9	29	30	131	3
Infant Mortality Rate.....	3.87	826.09	391.75	108.79	*	*	15.74	4.52	1.27	*
Female										
Live births.....	106,268	113	175	212	292	424	1,855	7,746	95,441	10
Infant deaths.....	332	91	43	20	17	10	24	32	90	4
Infant Mortality Rate.....	3.12	805.31	245.71	94.34	*	*	12.94	4.13	0.94	*
Black, Non-Hispanic										
Both sexes										
Live births.....	511,439	1,964	2,903	3,029	3,210	3,955	14,577	46,048	435,642	111
Infant deaths.....	5,573	1,490	859	301	195	160	339	520	1,645	64
Infant Mortality Rate.....	10.90	758.66	295.90	99.37	60.75	40.46	23.26	11.29	3.78	576.58
Male										
Live births.....	259,987	999	1,408	1,550	1,610	1,912	6,745	20,178	225,518	67
Infant deaths.....	3,069	796	466	189	111	87	180	244	952	45
Infant Mortality Rate.....	11.80	796.80	330.97	121.94	68.94	45.50	26.69	12.09	4.22	671.64
Female										
Live births.....	251,452	965	1,495	1,479	1,600	2,043	7,832	25,870	210,124	44
Infant deaths.....	2,504	694	393	112	84	73	160	277	693	18
Infant Mortality Rate.....	9.96	719.17	262.88	75.73	52.50	35.73	20.43	10.71	3.30	*

Documentation Table 2. Live births, infant deaths and infant mortality rates by race of mother, sex and birthweight of child: United States, 2022 Period Data.

[Rates are per 1,000 live births]

Native Hawaiian or Other Pacific Islander, Non-Hispanic

Both sexes

Live births.....	10,122	19	15	29	33	55	161	552	9,257	1
Infant deaths.....	86	17	7	4	6	5	4	4	37	1
Infant Mortality Rate.....	8.50	*	*	*	*	*	*	*	4.00	*

Male

Live births.....	5,243	10	6	16	18	27	84	276	4,805	1
Infant deaths.....	44	8	3	2	3	2	3	3	19	1
Infant Mortality Rate.....	8.39	*	*	*	*	*	*	*	*	*

Female

Live births.....	4,879	9	9	13	15	28	77	276	4,452	-
Infant deaths.....	41	9	4	2	3	3	1	1	18	-
Infant Mortality Rate.....	8.40	*	*	*	*	*	*	*	*	*

White, Non-Hispanic

Both sexes

Live births.....	1,840,739	1,712	2,793	3,539	4,610	6,196	25,927	86,591	1,709,108	263
Infant deaths.....	8,324	1,432	1,009	484	276	259	674	854	3,250	86
Infant Mortality Rate.....	4.52	836.45	361.26	136.76	59.87	41.80	26.00	9.86	1.90	327.00

Male

Live births.....	942,920	856	1,405	1,789	2,344	3,082	12,423	38,807	882,081	133
Infant deaths.....	4,613	735	563	287	172	141	327	449	1,899	40
Infant Mortality Rate.....	4.89	858.64	400.71	160.42	73.38	45.75	26.32	11.57	2.15	300.75

Female

Live births.....	897,819	856	1,388	1,750	2,266	3,114	13,504	47,784	827,027	130
Infant deaths.....	3,712	697	446	198	103	118	347	405	1,351	46
Infant Mortality Rate.....	4.13	814.25	321.33	113.14	45.45	37.89	25.70	8.48	1.63	353.85

Hispanic

Both sexes

Live births.....	937,421	1,255	1,999	2,305	2,685	3,574	14,196	47,982	863,368	57
Infant deaths.....	4,581	1,022	710	302	155	141	317	470	1,439	25
Infant Mortality Rate.....	4.89	814.34	355.18	131.02	57.73	39.45	22.33	9.80	1.67	438.60

Male

Live births.....	477,401	652	1,046	1,187	1,380	1,824	7,126	22,277	441,869	40
Infant deaths.....	2,529	541	420	178	81	73	148	244	822	22
Infant Mortality Rate.....	5.30	829.75	401.53	149.96	58.70	40.02	20.77	10.95	1.86	550.00

Female

Live births.....	460,020	603	953	1,118	1,305	1,750	7,070	25,705	421,499	17
Infant deaths.....	2,052	481	290	124	74	68	169	226	617	3
Infant Mortality Rate.....	4.46	797.68	304.30	110.91	56.70	38.86	23.90	8.79	1.46	*

* 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, 2022 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.....	3,667,758	23,369	33,663	44,135	279,381	2,453,495	648,257	173,326	9,461	2,671
Infant deaths.....	20,577	8,515	1,477	929	2,315	5,948	876	300	40	179
Infant Mortality Rate.....	5.61	364.37	43.88	21.05	8.29	2.42	1.35	1.73	4.23	67.02
Less than 2,500 grams										
Live births.....	316,381	23,205	32,747	40,536	119,432	96,810	2,800	483	56	312
Infant deaths.....	13,330	8,438	1,435	839	1,430	1,090	50	15	3	30
Infant Mortality Rate.....	42.13	363.63	43.82	20.70	11.97	11.26	17.86	*	*	96.15
Less than 500 grams										
Live births.....	5,544	5,469	62	-	2	1	-	-	-	10
Infant deaths.....	4,471	4,420	42	-	-	-	-	-	-	9
Infant Mortality Rate.....	806.46	808.19	677.42	*	*	*	*	*	*	*
500-749 grams										
Live births.....	8,470	7,777	646	28	10	2	-	-	-	7
Infant deaths.....	2,879	2,753	110	10	1	-	-	-	-	5
Infant Mortality Rate.....	339.91	353.99	170.28	*	*	*	*	*	*	*
750-999 grams										
Live births.....	9,782	6,574	2,915	181	46	47	2	2	-	15
Infant deaths.....	1,195	931	216	29	9	3	-	1	-	6
Infant Mortality Rate.....	122.16	141.62	74.10	160.22	*	*	*	*	*	*
1,000-1,249 grams										
Live births.....	11,676	2,795	7,192	1,167	296	181	25	5	2	13
Infant deaths.....	705	245	326	75	41	15	1	-	-	2
Infant Mortality Rate.....	60.38	87.66	45.33	64.27	138.51	*	*	*	*	*
1,250-1,499 grams										
Live births.....	15,288	394	9,127	3,796	1,599	316	27	12	1	16
Infant deaths.....	605	52	309	107	100	35	-	-	-	3
Infant Mortality Rate.....	39.57	131.98	33.86	28.19	62.54	110.76	*	*	*	*
1,500-1,999 grams										
Live births.....	61,276	124	11,116	20,409	24,089	5,274	164	34	4	62
Infant deaths.....	1,468	28	334	386	450	249	16	3	1	2
Infant Mortality Rate.....	23.96	225.81	30.05	18.91	18.68	47.21	*	*	*	*
2,000-2,499 grams										
Live births.....	204,345	72	1,689	14,955	93,390	90,989	2,582	430	49	189
Infant deaths.....	2,007	9	98	233	829	789	32	11	2	3
Infant Mortality Rate.....	9.82	*	58.02	15.58	8.88	8.67	12.39	*	*	*

Documentation Table 3. Live births, infant deaths, and infant mortality rates by birthweight, race of mother, and gestational age: United States, 2022 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.....	3,350,350	78	906	3,595	159,934	2,356,660	645,439	172,837	9,405	1,496
Infant deaths.....	7,034	2	38	90	883	4,856	826	285	37	18
Infant Mortality Rate.....	2.10	*	41.94	25.03	5.52	2.06	1.28	1.65	3.93	*
Not Stated										
Live births.....	1,027	86	10	4	15	25	18	6	-	863
Infant deaths.....	213	75	4	-	1	1	1	-	-	131
Infant Mortality Rate.....	207.40	872.09	*	*	*	*	*	*	*	151.80
American Indian or Alaskan Native, Non-Hispanic /1										
Total										
Live births.....	25,721	190	284	368	2,393	17,271	4,051	1,024	80	60
Infant deaths.....	233	71	11	11	29	93	11	2	1	4
Infant Mortality Rate.....	9.06	373.68	*	*	12.12	5.38	*	*	*	*
Less than 2,500 grams										
Live births.....	2,270	186	278	326	883	573	5	5	2	12
Infant deaths.....	124	71	11	8	14	19	-	-	1	-
Infant Mortality Rate.....	54.63	381.72	*	*	*	*	*	*	*	*
Less than 500 grams										
Live births.....	43	42	1	-	-	-	-	-	-	-
Infant deaths.....	36	35	1	-	-	-	-	-	-	-
Infant Mortality Rate.....	837.21	833.33	*	*	*	*	*	*	*	*
500-749 grams										
Live births.....	59	56	1	2	-	-	-	-	-	-
Infant deaths.....	22	21	-	1	-	-	-	-	-	-
Infant Mortality Rate.....	372.88	375.00	*	*	*	*	*	*	*	*
750-999 grams										
Live births.....	85	58	23	1	1	1	-	-	-	1
Infant deaths.....	14	10	3	-	1	-	-	-	-	-
Infant Mortality Rate.....	*	*	*	*	*	*	*	*	*	*
1,000-1,249 grams										
Live births.....	83	22	50	7	3	1	-	-	-	-
Infant deaths.....	7	3	3	1	-	-	-	-	-	-
Infant Mortality Rate.....	*	*	*	*	*	*	*	*	*	*
1,250-1,499 grams										
Live births.....	119	5	78	23	11	2	-	-	-	-
Infant deaths.....	6	1	4	1	-	-	-	-	-	-
Infant Mortality Rate.....	*	*	*	*	*	*	*	*	*	*
1,500-1,999 grams										
Live births.....	468	2	108	155	163	37	-	-	-	3
Infant deaths.....	11	-	-	4	1	6	-	-	-	-
Infant Mortality Rate.....	*	*	*	*	*	*	*	*	*	*
2,000-2,499 grams										
Live births.....	1,413	1	17	138	705	532	5	5	2	8
Infant deaths.....	27	-	-	1	12	13	-	-	1	-
Infant Mortality Rate.....	19.11	*	*	*	*	*	*	*	*	*
2,500 grams or more										
Live births.....	23,447	4	6	42	1,510	16,698	4,046	1,019	78	44
Infant deaths.....	109	-	-	3	15	73	11	2	-	4
Infant Mortality Rate.....	4.65	*	*	*	*	4.37	*	*	*	*

Documentation Table 3. Live births, infant deaths, and infant mortality rates by birthweight, race of mother, and gestational age: United States, 2022 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.....	511,439	7,496	7,984	9,506	49,567	339,068	77,646	18,671	1,175	326
Infant deaths.....	5,573	2,642	368	245	537	1,480	192	58	9	43
Infant Mortality Rate.....	10.90	352.45	46.09	25.77	10.83	4.36	2.47	3.11	*	131.90
Less than 2,500 grams										
Live births.....	75,686	7,446	7,844	8,976	26,395	24,128	717	104	13	63
Infant deaths.....	3,865	2,613	356	231	346	294	11	4	-	9
Infant Mortality Rate.....	51.07	350.93	45.39	25.74	13.11	12.19	*	*	*	*
Less than 500 grams										
Live births.....	1,964	1,947	12	-	-	-	-	-	-	5
Infant deaths.....	1,490	1,477	9	-	-	-	-	-	-	4
Infant Mortality Rate.....	758.66	758.60	*	*	*	*	*	*	*	*
500-749 grams										
Live births.....	2,903	2,694	199	6	2	-	-	-	-	2
Infant deaths.....	859	813	43	2	-	-	-	-	-	2
Infant Mortality Rate.....	295.90	301.78	216.08	*	*	*	*	*	*	*
750-999 grams										
Live births.....	3,029	2,045	921	39	9	9	-	-	-	6
Infant deaths.....	301	244	46	8	1	-	-	-	-	2
Infant Mortality Rate.....	99.37	119.32	49.95	*	*	*	*	*	*	*
1,000-1,249 grams										
Live births.....	3,210	650	2,094	334	84	41	4	-	-	3
Infant deaths.....	195	68	93	17	11	6	-	-	-	-
Infant Mortality Rate.....	60.75	104.62	44.41	*	*	*	*	*	*	*
1,250-1,499 grams										
Live births.....	3,955	77	2,286	1,059	459	67	4	1	-	2
Infant deaths.....	160	8	85	32	25	9	-	-	-	-
Infant Mortality Rate.....	40.46	*	37.18	30.22	54.47	*	*	*	*	*
1,500-1,999 grams										
Live births.....	14,577	19	2,108	4,924	6,153	1,314	43	6	1	9
Infant deaths.....	339	1	66	118	102	49	3	-	-	-
Infant Mortality Rate.....	23.26	*	31.31	23.96	16.58	37.29	*	*	*	*
2,000-2,499 grams										
Live births.....	46,048	14	224	2,614	19,688	22,697	666	97	12	36
Infant deaths.....	520	3	14	54	207	230	8	4	-	1
Infant Mortality Rate.....	11.29	*	*	20.66	10.51	10.13	*	*	*	*
2,500 grams or more										
Live births.....	435,642	14	140	528	23,169	314,933	76,926	18,566	1,162	204
Infant deaths.....	1,645	-	12	14	190	1,186	179	54	9	-
Infant Mortality Rate.....	3.78	*	*	*	8.20	3.77	2.33	2.91	*	*
Not Stated										
Live births.....	111	36	-	2	3	7	3	1	-	59
Infant deaths.....	64	29	-	-	-	-	1	-	-	34
Infant Mortality Rate.....	576.58	805.56	*	*	*	*	*	*	*	576.27
Native Hawaiian or Other Pacific Islander, Non-Hispanic										
Total										
Live births.....	10,122	58	110	141	899	6,565	1,749	538	39	23
Infant deaths.....	86	28	10	2	9	31	1	2	-	2
Infant Mortality Rate.....	8.50	482.76	*	*	*	4.72	*	*	*	*

Documentation Table 3. Live births, infant deaths, and infant mortality rates by birthweight, race of mother, and gestational age: United States, 2022 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.....	864	58	105	124	313	247	13	2	-	2
Infant deaths.....	48	28	10	2	5	1	-	-	-	1
Infant Mortality Rate.....	55.56	482.76	*	*	*	*	*	*	*	*
Less than 500 grams										
Live births.....	19	19	-	-	-	-	-	-	-	-
Infant deaths.....	17	17	-	-	-	-	-	-	-	-
Infant Mortality Rate.....	*	*	*	*	*	*	*	*	*	*
500-749 grams										
Live births.....	15	13	2	-	-	-	-	-	-	-
Infant deaths.....	7	7	-	-	-	-	-	-	-	-
Infant Mortality Rate.....	*	*	*	*	*	*	*	*	*	*
750-999 grams										
Live births.....	29	18	10	-	1	-	-	-	-	-
Infant deaths.....	4	2	2	-	-	-	-	-	-	-
Infant Mortality Rate.....	*	*	*	*	*	*	*	*	*	*
1,000-1,249 grams										
Live births.....	33	6	25	-	-	1	-	-	-	1
Infant deaths.....	6	1	4	-	-	-	-	-	-	1
Infant Mortality Rate.....	*	*	*	*	*	*	*	*	*	*
1,250-1,499 grams										
Live births.....	55	1	36	11	6	1	-	-	-	-
Infant deaths.....	5	1	2	-	2	-	-	-	-	-
Infant Mortality Rate.....	*	*	*	*	*	*	*	*	*	*
1,500-1,999 grams										
Live births.....	161	1	26	58	59	15	2	-	-	-
Infant deaths.....	4	-	2	2	-	-	-	-	-	-
Infant Mortality Rate.....	*	*	*	*	*	*	*	*	*	*
2,000-2,499 grams										
Live births.....	552	-	6	55	247	230	11	2	-	1
Infant deaths.....	4	-	-	-	3	1	-	-	-	-
Infant Mortality Rate.....	*	*	*	*	*	*	*	*	*	*
2,500 grams or more										
Live births.....	9,257	-	5	17	586	6,318	1,736	536	39	20
Infant deaths.....	37	-	-	-	4	30	1	2	-	-
Infant Mortality Rate.....	4.00	*	*	*	*	4.75	*	*	*	*
Not Stated										
Live births.....	1	-	-	-	-	-	-	-	-	1
Infant deaths.....	1	-	-	-	-	-	-	-	-	1
Infant Mortality Rate.....	*	*	*	*	*	*	*	*	*	*
White, Non-Hispanic										
Total										
Live births.....	1,840,739	7,968	14,062	19,872	131,736	1,223,444	338,988	97,684	5,974	1,011
Infant deaths.....	8,324	2,914	626	414	1,042	2,686	407	149	21	66
Infant Mortality Rate.....	4.52	365.71	44.52	20.83	7.91	2.20	1.20	1.53	3.52	65.28
Less than 2,500 grams										
Live births.....	131,368	7,894	13,659	18,110	51,843	38,427	1,078	207	25	125
Infant deaths.....	4,988	2,875	608	375	636	454	21	6	1	12
Infant Mortality Rate.....	37.97	364.20	44.51	20.71	12.27	11.81	19.48	*	*	*

Documentation Table 3. Live births, infant deaths, and infant mortality rates by birthweight, race of mother, and gestational age: United States, 2022 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.....	1,999	1,851	132	8	6	-	-	-	-	2
Infant deaths.....	710	686	20	2	1	-	-	-	-	1
Infant Mortality Rate.....	355.18	370.61	151.52	*	*	*	*	*	*	*
750-999 grams										
Live births.....	2,305	1,611	636	36	7	12	1	-	-	2
Infant deaths.....	302	232	60	6	2	-	-	-	-	1
Infant Mortality Rate.....	131.02	144.01	94.34	*	*	*	*	*	*	*
1,000-1,249 grams										
Live births.....	2,685	759	1,584	231	63	36	7	2	-	3
Infant deaths.....	155	51	75	16	8	3	-	-	-	1
Infant Mortality Rate.....	57.73	67.19	47.35	*	*	*	*	*	*	*
1,250-1,499 grams										
Live births.....	3,574	109	2,183	870	317	84	5	3	-	3
Infant deaths.....	141	21	69	17	21	11	-	-	-	1
Infant Mortality Rate.....	39.45	192.66	31.61	*	66.25	*	*	*	*	*
1,500-1,999 grams										
Live births.....	14,196	34	2,929	4,770	5,290	1,109	41	7	1	15
Infant deaths.....	317	6	86	66	91	63	4	-	-	1
Infant Mortality Rate.....	22.33	*	29.36	13.84	17.20	56.81	*	*	*	*
2,000-2,499 grams										
Live births.....	47,982	20	536	3,573	22,392	20,656	638	111	13	43
Infant deaths.....	470	3	28	59	193	174	8	4	1	-
Infant Mortality Rate.....	9.80	*	52.24	16.51	8.62	8.42	*	*	*	*
2,500 grams or more										
Live births.....	863,368	18	278	978	41,823	611,235	165,854	41,325	1,551	306
Infant deaths.....	1,439	-	9	27	215	946	176	59	5	2
Infant Mortality Rate.....	1.67	*	*	27.61	5.14	1.55	1.06	1.43	*	*
Not Stated										
Live births.....	57	7	-	-	-	1	1	1	-	47
Infant deaths.....	25	6	-	-	-	-	-	-	-	19
Infant Mortality Rate.....	438.60	*	*	*	*	*	*	*	*	*

-/ 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, 2022 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)	3,667,758	20,577	13,158	10,304	2,854	7,419
Rate		5.61	3.59	2.81	0.78	2.02
Less than 2,500 grams	316,381	13,330	10,496	8,640	1,856	2,835
Rate		42.13	33.18	27.31	5.87	8.96
Less than 500 grams	5,544	4,471	4,317	4,070	247	154
Rate		806.46	778.68	734.13	44.55	27.78
500-749 grams	8,470	2,879	2,417	1,776	641	462
Rate		339.91	285.36	209.68	75.68	54.55
750-999 grams	9,782	1,195	916	628	288	279
Rate		122.16	93.64	64.20	29.44	28.52
1,000-1,249 grams	11,676	705	525	398	127	180
Rate		60.38	44.96	34.09	10.88	15.42
1,250-1,499 grams	15,288	605	436	338	98	169
Rate		39.57	28.52	22.11	6.41	11.05
1,500-1,749 grams	22,957	651	432	346	86	219
Rate		28.36	18.82	15.07	3.75	9.54
1,750-1,999 grams	38,319	818	481	377	104	337
Rate		21.35	12.55	9.84	2.71	8.79
2,000-2,499 grams	204,345	2,007	972	706	266	1,035
Rate		9.82	4.76	3.45	1.30	5.06
2,500 grams or more	3,350,350	7,034	2,462	1,468	994	4,572
Rate		2.10	0.73	0.44	0.30	1.36
Not Stated	1,027	213	201	196	5	12
Rate		207.40	195.72	190.85	*	*
American Indian or Alaskan Native, Non-Hispanic /1						
Total (all birthweights)	25,721	233	135	96	38	98
Rate		9.06	5.25	3.73	1.48	3.81
Less than 2,500 grams	2,270	124	95	75	20	29
Rate		54.63	41.85	33.04	8.81	12.78
Less than 500 grams	43	36	35	31	4	1
Rate		837.21	813.95	720.93	*	*
500-749 grams	59	22	19	17	2	3
Rate		*	*	*	*	*
750-999 grams	85	14	13	8	5	1
Rate		*	*	*	*	*
1,000-1,249 grams	83	7	5	3	2	2
Rate		*	*	*	*	*
1,250-1,499 grams	119	6	6	3	3	-
Rate		*	*	*	*	*

Documentation Table 4. Live births, infant deaths and infant mortality rates by birthweight, race of mother, and age at death: United States, 2022 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	182	5	2	2	-	3
Rate		*	*	*	*	*
1,750-1,999 grams	286	6	2	1	1	4
Rate		*	*	*	*	*
2,000-2,499 grams	1,413	27	12	9	3	15
Rate		*	*	*	*	*
2,500 grams or more	23,447	109	39	21	18	69
Rate		4.65	1.66	0.90	*	2.94
Not Stated	4	-	-	-	-	-
Rate		*	*	*	*	*
Asian, Non-Hispanic						
Total (all birthweights)	218,994	768	542	441	102	225
Rate		3.51	2.47	2.01	0.47	1.03
Less than 2,500 grams	20,619	540	435	363	72	105
Rate		26.19	21.10	17.61	3.49	5.09
Less than 500 grams	251	205	201	194	7	4
Rate		816.73	800.80	772.91	*	*
500-749 grams	369	119	97	77	20	22
Rate		322.49	262.87	208.67	54.20	59.62
750-999 grams	451	47	36	22	14	11
Rate		104.21	79.82	48.78	*	*
1,000-1,249 grams	624	33	28	21	7	5
Rate		52.88	44.87	33.65	*	*
1,250-1,499 grams	850	19	14	11	3	5
Rate		*	*	*	*	*
1,500-1,749 grams	1,331	21	15	12	3	6
Rate		15.78	*	*	*	*
1,750-1,999 grams	2,367	32	17	10	7	15
Rate		13.52	*	*	*	*
2,000-2,499 grams	14,376	63	26	15	11	36
Rate		4.38	1.81	*	*	2.50
2,500 grams or more	198,357	221	100	71	29	121
Rate		1.11	0.50	0.36	0.15	0.61
Not Stated	18	7	7	7	-	-
Rate		*	*	*	*	*
Black, Non-Hispanic						
Total (all birthweights)	511,439	5,573	3,296	2,582	714	2,277
Rate		10.90	6.44	5.05	1.40	4.45
Less than 2,500 grams	75,686	3,865	2,842	2,321	521	1,023
Rate		51.07	37.55	30.67	6.88	13.52

Documentation Table 4. Live births, infant deaths and infant mortality rates by birthweight, race of mother, and age at death: United States, 2022 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	1,964	1,490	1,422	1,326	97	67
Rate		758.66	724.03	675.15	49.39	34.11
500-749 grams	2,903	859	664	469	195	195
Rate		295.90	228.73	161.56	67.17	67.17
750-999 grams	3,029	301	199	131	67	102
Rate		99.37	65.70	43.25	22.12	33.67
1,000-1,249 grams	3,210	195	130	94	36	65
Rate		60.75	40.50	29.28	11.21	20.25
1,250-1,499 grams	3,955	160	92	67	25	67
Rate		40.46	23.26	16.94	6.32	16.94
1,500-1,749 grams	5,576	146	74	50	24	72
Rate		26.18	13.27	8.97	4.30	12.91
1,750-1,999 grams	9,001	193	87	68	18	107
Rate		21.44	9.67	7.55	*	11.89
2,000-2,499 grams	46,048	520	174	115	58	347
Rate		11.29	3.78	2.50	1.26	7.54
2,500 grams or more	435,642	1,645	393	201	191	1,252
Rate		3.78	0.90	0.46	0.44	2.87
Not Stated	111	64	62	60	2	2
Rate		576.58	558.56	540.54	*	*
Native Hawaiian or Other Pacific Islander, Non-Hispanic						
Total (all birthweights)	10,122	86	48	34	14	38
Rate		8.50	4.74	3.36	*	3.75
Less than 2,500 grams	864	48	38	27	11	9
Rate		55.56	43.98	31.25	*	*
Less than 500 grams	19	17	17	14	3	-
Rate		*	*	*	*	*
500-749 grams	15	7	6	2	4	1
Rate		*	*	*	*	*
750-999 grams	29	4	4	3	1	-
Rate		*	*	*	*	*
1,000-1,249 grams	33	6	6	5	1	-
Rate		*	*	*	*	*
1,250-1,499 grams	55	5	4	3	1	1
Rate		*	*	*	*	*
1,500-1,749 grams	69	4	-	-	-	4
Rate		*	*	*	*	*
1,750-1,999 grams	92	-	-	-	-	-
Rate		*	*	*	*	*
2,000-2,499 grams	552	4	1	-	1	3
Rate		*	*	*	*	*

Documentation Table 4. Live births, infant deaths and infant mortality rates by birthweight, race of mother, and age at death: United States, 2022 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	9,257	37	8	5	3	29
Rate		4.00	*	*	*	3.13
Not Stated	1	1	1	1	-	-
Rate		*	*	*	*	*
White, Non-Hispanic						
Total (all birthweights)	1,840,739	8,324	5,318	4,104	1,214	3,006
Rate		4.52	2.89	2.23	0.66	1.63
Less than 2,500 grams	131,368	4,988	3,993	3,276	717	995
Rate		37.97	30.40	24.94	5.46	7.57
Less than 500 grams	1,712	1,432	1,388	1,307	81	44
Rate		836.45	810.75	763.43	47.31	25.70
500-749 grams	2,793	1,009	882	655	227	127
Rate		361.26	315.79	234.51	81.27	45.47
750-999 grams	3,539	484	391	278	113	93
Rate		136.76	110.48	78.55	31.93	26.28
1,000-1,249 grams	4,610	276	211	162	49	64
Rate		59.87	45.77	35.14	10.63	13.88
1,250-1,499 grams	6,196	259	205	158	47	53
Rate		41.80	33.09	25.50	7.59	8.55
1,500-1,749 grams	9,592	296	213	179	34	83
Rate		30.86	22.21	18.66	3.54	8.65
1,750-1,999 grams	16,335	378	244	190	54	134
Rate		23.14	14.94	11.63	3.31	8.20
2,000-2,499 grams	86,591	854	458	347	111	396
Rate		9.86	5.29	4.01	1.28	4.57
2,500 grams or more	1,709,108	3,250	1,241	746	495	2,009
Rate		1.90	0.73	0.44	0.29	1.18
Not Stated	263	86	84	82	2	2
Rate		327.00	319.39	311.79	*	*
Hispanic						
Total (all birthweights)	937,421	4,581	3,138	2,482	657	1,442
Rate		4.89	3.35	2.65	0.70	1.54
Less than 2,500 grams	73,996	3,116	2,548	2,100	449	568
Rate		42.11	34.43	28.38	6.07	7.68
Less than 500 grams	1,255	1,022	992	942	50	29
Rate		814.34	790.44	750.60	39.84	23.11
500-749 grams	1,999	710	612	444	168	98
Rate		355.18	306.15	222.11	84.04	49.02
750-999 grams	2,305	302	239	161	78	62
Rate		131.02	103.69	69.85	33.84	26.90

Documentation Table 4. Live births, infant deaths and infant mortality rates by birthweight, race of mother, and age at death: United States, 2022 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	2,685	155	116	91	25	38
Rate		57.73	43.20	33.89	9.31	14.15
1,250-1,499 grams	3,574	141	107	89	18	34
Rate		39.45	29.94	24.90	*	9.51
1,500-1,749 grams	5,387	143	106	85	21	37
Rate		26.55	19.68	15.78	3.90	6.87
1,750-1,999 grams	8,809	174	113	95	17	61
Rate		19.75	12.83	10.78	*	6.92
2,000-2,499 grams	47,982	470	263	192	71	207
Rate		9.80	5.48	4.00	1.48	4.31
2,500 grams or more	863,368	1,439	565	357	208	875
Rate		1.67	0.65	0.41	0.24	1.01
Not Stated	57	25	25	25	-	-
Rate		438.60	438.60	438.60	*	*

*/ 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, 2022 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	3,667,758	20,577	13,158	10,304	2,854	7,419
		561.0	358.8	280.9	77.8	202.3
Congenital malformations (Q00-Q99).....		4,004	2,777	2,207	570	1,227
		109.2	75.7	60.2	15.5	33.5
Short gestation and low birthweight nec (P07).....		2,884	2,808	2,709	99	76
		78.6	76.6	73.9	2.7	2.1
Maternal complications of pregnancy (P01).....		1,213	1,201	1,176	25	12
		33.1	32.7	32.1	0.7	*
Sudden infant death syndrome (R95).....		1,531	156	24	133	1,375
		41.7	4.3	0.7	3.6	37.5
Accidents (unintentional injuries) (V01-X59).....		1,351	148	24	124	1,203
		36.8	4.0	0.7	3.4	32.8
Complications of placenta, cord, membranes (P02).....		634	617	581	36	17
		17.3	16.8	15.8	1.0	*
Bacterial sepsis of newborn (P36).....		640	605	280	325	35
		17.5	16.5	7.6	8.9	1.0
Respiratory distress of newborn (P22).....		458	445	337	108	13
		12.5	12.1	9.2	2.9	*
Diseases of the circulatory system (I00-I99).....		358	57	33	24	301
		9.8	1.6	0.9	0.7	8.2
Neonatal hemorrhage (P50-P52, P54).....		337	330	231	100	7
		9.2	9.0	6.3	2.7	*
All other causes.....		7,168	4,015	2,704	1,311	3,153
		195.4	109.5	73.7	35.7	86.0
Less than 2,500 grams						
All Causes	316,381	13,330	10,496	8,640	1,856	2,835
		4213.3	3317.5	2730.9	586.6	896.1
Congenital malformations (Q00-Q99).....		2,503	1,889	1,593	296	614
		791.1	597.1	503.5	93.6	194.1
Short gestation and low birthweight nec (P07).....		2,784	2,711	2,613	98	73
		880.0	856.9	825.9	31.0	23.1
Maternal complications of pregnancy (P01).....		1,139	1,127	1,109	18	12
		360.0	356.2	350.5	*	*
Sudden infant death syndrome (R95).....		349	22	4	18	327
		110.3	7.0	*	*	103.4
Accidents (unintentional injuries) (V01-X59).....		293	23	7	16	270
		92.6	7.3	*	*	85.3
Complications of placenta, cord, membranes (P02).....		534	520	498	22	14
		168.8	164.4	157.4	7.0	*
Bacterial sepsis of newborn (P36).....		568	537	239	298	31
		179.5	169.7	75.5	94.2	9.8

Documentation Table 5. Infant deaths and infant mortality rates by age of death and birthweight for 10 major causes of infant death: United States, 2022 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).....		451	438	332	106	13
		142.6	138.4	104.9	33.5	*
Diseases of the circulatory system (I00-I99).....		175	33	22	11	142
		55.3	10.4	7.0	*	44.9
Neonatal hemorrhage (P50-P52, P54).....		303	296	208	88	7
		95.8	93.6	65.7	27.8	*
All other causes.....		4,232	2,901	2,015	885	1,331
		1337.6	916.9	636.9	279.7	420.7
2,500 grams or more						
All Causes	3,350,350	7,034	2,462	1,468	994	4,572
		210.0	73.5	43.8	29.7	136.5
Congenital malformations (Q00-Q99).....		1,491	880	606	274	610
		44.5	26.3	18.1	8.2	18.2
Short gestation and low birthweight nec (P07).....		14	11	10	1	3
		*	*	*	*	*
Maternal complications of pregnancy (P01).....		28	28	21	7	-
		0.8	0.8	0.6	*	*
Sudden infant death syndrome (R95).....		1,181	132	18	114	1,048
		35.3	3.9	*	3.4	31.3
Accidents (unintentional injuries) (V01-X59).....		1,054	125	17	107	930
		31.5	3.7	*	3.2	27.8
Complications of placenta, cord, membranes (P02).....		84	80	66	14	3
		2.5	2.4	2.0	*	*
Bacterial sepsis of newborn (P36).....		71	67	41	26	4
		2.1	2.0	1.2	0.8	*
Respiratory distress of newborn (P22).....		4	4	2	2	-
		*	*	*	*	*
Diseases of the circulatory system (I00-I99).....		183	24	11	13	159
		5.5	0.7	*	*	4.8
Neonatal hemorrhage (P50-P52, P54).....		33	33	20	12	-
		1.0	1.0	0.6	*	*
All other causes.....		2,892	1,077	654	423	1,815
		86.3	32.2	19.5	12.6	54.2

*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, 2022 period data

[Rates are per 1,000 live births]

Age at Death	Total	Gestation								Not Stated
		<28 Weeks	28-31 Weeks	32-33 Weeks	34-36 Weeks	37-39 Weeks	40 Weeks	41 Weeks	42 Weeks or more	
Total										
Live births.....	3,667,758	23,369	33,663	44,135	279,381	2,453,495	648,257	173,326	9,461	2,671
Infant deaths.....	20,577	8,515	1,477	929	2,315	5,948	876	300	40	179
Infant Mortality Rate.....	5.61	364.37	43.88	21.05	8.29	2.42	1.35	1.73	4.23	67.02
Early Neonatal										
Live births.....	3,667,758	23,369	33,663	44,135	279,381	2,453,495	648,257	173,326	9,461	2,671
Infant deaths.....	10,304	6,512	816	465	858	1,188	193	100	22	151
Infant Mortality Rate.....	2.81	278.66	24.24	10.54	3.07	0.48	0.30	0.58	2.33	56.53
Late Neonatal										
Live births.....	3,667,758	23,369	33,663	44,135	279,381	2,453,495	648,257	173,326	9,461	2,671
Infant deaths.....	2,854	1,172	236	129	317	830	112	43	7	8
Infant Mortality Rate.....	0.78	50.15	7.01	2.92	1.13	0.34	0.17	0.25	*	*
Postneonatal										
Live births.....	3,667,758	23,369	33,663	44,135	279,381	2,453,495	648,257	173,326	9,461	2,671
Infant deaths.....	7,419	831	424	335	1,140	3,930	572	157	10	20
Infant Mortality Rate.....	2.02	35.56	12.60	7.59	4.08	1.60	0.88	0.91	*	7.49

*/ 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, 2021 Cohort Data.

(Residence at birth is of the mother)

State	Live Births		Infant Deaths		Infant Mortality Rate
	Occurrence	Residence	Occurrence	Residence	
United States	3,669,928	3,664,292	19,982	19,965	5.45
Alabama	56,610	58,054	408	422	7.27
Alaska	9,281	9,367	62	65	6.94
Arizona	78,387	77,916	444	441	5.66
Arkansas	35,120	35,965	298	318	8.84
California	421,088	420,608	1709	1698	4.04
Colorado	63,560	62,949	329	311	4.94
Connecticut	36,920	35,670	169	169	4.74
Delaware	10,871	10,482	54	46	4.39
Dist of Columbia	12,035	8,660	77	59	6.81
Florida	216,534	216,260	1313	1309	6.05
Georgia	125,059	124,073	792	794	6.40
Hawaii	15,636	15,620	66	67	4.29
Idaho	22,156	22,427	109	118	5.26
Illinois	128,502	132,189	700	731	5.53
Indiana	80,251	79,946	490	519	6.49
Iowa	36,845	36,835	138	147	3.99
Kansas	36,359	34,705	183	185	5.33
Kentucky	50,201	52,214	311	327	6.26
Louisiana	57,625	57,437	437	440	7.66
Maine	11,681	12,006	56	60	5.00
Maryland	65,098	68,285	389	409	5.92
Massachusetts	70,076	69,137	245	234	2.23
Michigan	103,992	104,980	683	688	6.55
Minnesota	63,497	64,425	319	317	4.92
Mississippi	34,060	35,156	304	323	9.19
Missouri	70,183	69,453	470	413	5.95
Montana	11,245	11,231	45	49	4.36
Nebraska	24,779	24,609	129	129	5.24
Nevada	33,283	33,686	200	207	6.14
New Hampshire	12,670	12,625	54	52	4.12
New Jersey	98,603	101,497	336	369	3.64
New Mexico	19,779	21,391	89	102	4.77
New York	112,279	117,122	469	523	4.47
New York City	99,262	93,620	394	345	3.69
North Carolina	122,683	120,466	813	807	6.70
North Dakota	11,673	10,112	40	30	2.97
Ohio	130,194	129,791	953	925	7.13
Oklahoma	46,699	48,410	330	350	7.23
Oregon	41,623	40,914	167	153	3.74
Pennsylvania	131,545	132,622	734	706	5.32
Rhode Island	11,001	10,464	47	44	4.20

Documentation Table 1. Live births and infant death by state of occurrence of birth and by state of residence at birth: United States, 2021 Cohort Data.

(Residence at birth is of the mother)

State	Live Births		Infant Deaths		Infant Mortality Rate
	Occurrence	Residence	Occurrence	Residence	
South Carolina	53,202	57,185	385	402	7.03
South Dakota	12,210	11,369	78	72	6.33
Tennessee	87,212	81,717	583	506	6.19
Texas	380,216	373,594	1971	1940	5.19
Utah	47,955	46,712	226	213	4.56
Vermont	5,120	5,384	20	22	4.09
Virginia	96,062	95,825	548	562	5.86
Washington	83,493	83,911	362	371	4.42
West Virginia	18,318	17,198	115	115	6.69
Wisconsin	61,547	61,781	315	326	5.28
Wyoming	5,648	6,237	24	35	5.61

*/ 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, 2021 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.....	3,664,292	5,381	8,701	9,994	11,958	15,541	61,672	199,905	3,349,955	1,185
Infant deaths.....	19,965	4,329	2,889	1,144	709	576	1,466	1,956	6,761	135
Infant Mortality Rate.....	5.45	804.50	332.03	114.47	59.29	37.06	23.77	9.78	2.02	113.92
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.....	10,987	2,193	1,663	710	392	306	747	1,004	3,894	78
Infant Mortality Rate.....	5.86	827.55	383.80	139.46	65.24	39.94	25.09	11.04	2.26	128.50
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.....	8,978	2,136	1,226	434	317	270	719	952	2,867	57
Infant Mortality Rate.....	5.01	782.13	280.68	88.52	53.29	34.26	22.54	8.73	1.77	98.62
American Indian or Alaskan Native, non-Hispanic /1										
Both sexes										
Live births.....	26,124	32	51	75	75	99	454	1,335	23,999	4
Infant deaths.....	193	24	11	10	4	4	13	18	109	-
Infant Mortality Rate.....	7.39	750.00	*	*	*	*	*	*	4.54	*
Male										
Live births.....	13,343	15	22	39	33	49	229	638	12,315	3
Infant deaths.....	109	13	4	7	2	3	7	9	64	-
Infant Mortality Rate.....	8.17	*	*	*	*	*	*	*	5.20	*
Female										
Live births.....	12,781	17	29	36	42	50	225	697	11,684	1
Infant deaths.....	84	11	7	3	2	1	6	9	45	-
Infant Mortality Rate.....	6.57	*	*	*	*	*	*	*	3.85	*
Asian, non-Hispanic										
Both sexes										
Live births.....	213,813	263	389	485	602	825	3,564	13,670	193,983	32
Infant deaths.....	790	218	136	69	35	23	46	66	191	6
Infant Mortality Rate.....	3.69	828.90	349.61	142.27	58.14	27.88	12.91	4.83	0.98	*
Male										
Live births.....	110,083	145	200	269	318	438	1,788	6,354	100,555	16
Infant deaths.....	447	124	77	44	20	13	26	35	105	3
Infant Mortality Rate.....	4.06	855.17	385.00	163.57	62.89	*	14.54	5.51	1.04	*

Documentation Table 2. Live births, infant deaths and infant mortality rates by race of mother, sex and birthweight of child: United States, 2021 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.....	103,730	118	189	216	284	387	1,776	7,316	93,428	16
Infant deaths.....	343	94	59	25	15	10	20	31	86	3
Infant Mortality Rate.....	3.31	796.61	312.17	115.74	*	*	11.26	4.24	0.92	*
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.....	5,520	1,508	863	293	185	157	353	504	1,608	49
Infant Mortality Rate.....	10.66	788.29	292.54	95.56	54.83	38.53	23.41	11.02	3.64	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.....	3,050	779	495	176	101	87	186	253	946	27
Infant Mortality Rate.....	21.01	1584.03	596.41	195.33	111.45	80.89	50.06	24.78	7.06	731.34
Female										
Live births.....	255,210	961	1,503	1,566	1,714	2,134	8,030	25,403	213,840	59
Infant deaths.....	2,470	729	368	117	84	70	167	251	662	22
Infant Mortality Rate.....	9.68	758.58	244.84	74.71	49.01	32.80	20.80	9.88	3.10	372.88
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.....	80	11	15	2	-	3	10	4	34	1
Infant Mortality Rate.....	8.39	*	*	*	*	*	*	*	3.94	*
Male										
Live births.....	4,872	8	19	19	16	24	87	268	4430	1
Infant deaths.....	47	6	9	1	-	2	5	1	22	1
Infant Mortality Rate.....	9.65	*	*	*	*	*	*	*	4.97	*
Female										
Live births.....	4,659	6	16	14	21	21	81	289	4210	1
Infant deaths.....	33	5	6	1	-	1	5	3	12	-
Infant Mortality Rate.....	7.08	*	*	*	*	*	*	*	*	*
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.....	8,228	1,389	1,043	465	289	243	675	847	3,241	36
Infant Mortality Rate.....	4.36	818.02	355.85	124.93	61.42	37.76	25.35	9.75	1.85	123.71

Documentation Table 2. Live births, infant deaths and infant mortality rates by race of mother, sex and birthweight of child: United States, 2021 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.....	968,370	791	1,483	1,883	2,369	3,145	12,781	39,274	906,494	150
Infant deaths.....	4,524	666	614	291	162	125	337	434	1,878	17
Infant Mortality Rate.....	4.67	841.97	414.03	154.54	68.38	39.75	26.37	11.05	2.07	*
Female										
Live births.....	919,286	907	1,448	1,839	2,336	3,291	13,851	47,597	847,876	141
Infant deaths.....	3,704	723	429	174	127	118	338	413	1,363	19
Infant Mortality Rate.....	4.03	797.13	296.27	94.62	54.37	35.86	24.40	8.68	1.61	*
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.....	4,250	951	681	251	168	130	311	428	1,309	21
Infant Mortality Rate.....	4.80	801.85	344.11	111.80	62.69	37.38	23.06	9.63	1.60	118.64
Male										
Live births.....	450,807	595	985	1,191	1,385	1,761	6,728	20,706	417,351	105
Infant deaths.....	2,318	484	383	161	92	67	155	223	736	17
Infant Mortality Rate.....	5.14	813.45	388.83	135.18	66.43	38.05	23.04	10.77	1.76	*
Female										
Live births.....	435,109	591	994	1,054	1,295	1,717	6,761	23,748	398,877	72
Infant deaths.....	1,932	467	298	90	76	63	156	205	573	4
Infant Mortality Rate.....	4.44	790.19	299.80	85.39	58.69	36.69	23.07	8.63	1.44	*

* 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 race of mother and gestational age: United States, 2021 cohort data

[Rates are per 1,000 live births]

	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.....	3,664,292	23,527	34,731	44,746	280,975	2,458,106	641,615	168,621	8,979	2,992
Infant deaths.....	19,965	8,245	1,450	866	2,314	5,709	905	260	30	186
Infant Mortality Rate.....	5.45	350.45	41.75	19.35	8.24	2.32	1.41	1.54	3.34	62.17
American Indian or Alaskan Native, non-Hispanic /1										
Live births.....	26,124	162	249	391	2,394	17,641	4,170	1,002	65	50
Infant deaths.....	193	44	10	9	35	75	13	5	1	1
Infant Mortality Rate.....	7.39	271.60	*	*	14.62	4.25	*	*	*	*
Asian, non-Hispanic										
Live births.....	213,813	1,063	1,724	2,194	14,738	150,707	36,020	7,127	174	66
Infant deaths.....	790	409	59	31	70	172	33	6	2	8
Infant Mortality Rate.....	3.69	384.76	34.22	14.13	4.75	1.14	0.92	*	*	*
Black, non-Hispanic										
Live births.....	517,889	7,445	8,640	9,556	50,693	345,079	76,943	18,057	1,085	391
Infant deaths.....	5,520	2,603	390	211	556	1,433	208	52	4	63
Infant Mortality Rate.....	10.66	349.63	45.14	22.08	10.97	4.15	2.70	2.88	*	161.13
Native Hawaiian or Other Pacific Islander, non-Hispanic										
Live births.....	9,531	79	111	148	869	6,264	1,594	417	28	21
Infant deaths.....	80	27	6	6	6	25	6	1	-	3
Infant Mortality Rate.....	8.39	341.77	*	*	*	3.99	*	*	*	*
White, non-Hispanic										
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.....	8,228	2,859	621	384	1,081	2,661	418	129	16	59
Infant Mortality Rate.....	4.36	347.68	42.53	18.42	7.98	2.12	1.21	1.31	*	48.56
Hispanic										
Live births.....	885,916	5,534	8,021	10,065	66,993	601,990	154,608	36,911	1,298	496
Infant deaths.....	4,250	1,877	319	187	478	1,114	193	54	3	25
Infant Mortality Rate.....	4.80	339.18	39.77	18.58	7.14	1.85	1.25	1.46	*	50.40

* 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, 2021 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
All birthweights						
All Causes	3,664,292	19,965	12,620	9,920	2,700	7,345
		544.9	344.4	270.7	73.7	200.5
Congenital malformations (Q00-Q99).....		4,001	2,796	2,229	567	1,205
		109.2	76.3	60.8	15.5	32.9
Short gestation and low birthweight nec (P07).....		2,918	2,849	2,744	105	69
		79.6	77.8	74.9	2.9	1.9
Maternal complications of pregnancy (P01).....		1,099	1,088	1,073	15	11
		30.0	29.7	29.3	*	*
Sudden infant death syndrome (R95).....		1,495	156	23	133	1,339
		40.8	4.3	0.6	3.6	36.5
Accidents (unintentional injuries) (V01-X59).....		1,310	121	28	93	1,189
		35.8	3.3	0.8	2.5	32.5
Complications of placenta, cord, membranes (P02).....		653	636	594	42	17
		17.8	17.4	16.2	1.2	*
Bacterial sepsis of newborn (P36).....		563	539	239	300	24
		15.4	14.7	6.5	8.2	0.7
Respiratory distress of newborn (P22).....		410	396	307	89	14
		11.2	10.8	8.4	2.4	*
Diseases of the circulatory system (I00-I99).....		409	84	46	38	325
		11.2	2.3	1.3	1.0	8.9
Neonatal hemorrhage (P50-P52, P54).....		339	334	260	74	5
		9.3	9.1	7.1	2.0	*
All other causes.....		6,768	3,621	2,377	1,244	3,147
		184.7	98.8	64.9	34.0	85.9
Less than 2,500 grams						
All Causes	313,152	13,069	10,233	8,440	1,793	2,836
		4173.4	3267.7	2695.2	572.6	905.6
Congenital malformations (Q00-Q99).....		2,590	1,978	1,643	335	612
		827.1	631.6	524.7	107.0	195.4
Short gestation and low birthweight nec (P07).....		2,851	2,786	2,683	103	65
		910.4	889.7	856.8	32.9	20.8
Maternal complications of pregnancy (P01).....		1,057	1,046	1,031	15	11
		337.5	334.0	329.2	*	*
Sudden infant death syndrome (R95).....		363	33	4	29	330
		115.9	10.5	*	9.3	105.4
Accidents (unintentional injuries) (V01-X59).....		292	29	10	19	263
		93.3	9.3	*	*	84.0

Documentation Table 4. Infant deaths and infant mortality rates by age of death and birthweight for 10 major causes of infant death: United States, 2021 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).....		543	533	505	28	10
		173.4	170.2	161.3	8.9	*
Bacterial sepsis of newborn (P36).....		505	483	206	277	22
		161.3	154.2	65.8	88.5	7.0
Respiratory distress of newborn (P22).....		404	390	302	88	14
		129.0	124.5	96.4	28.1	*
Diseases of the circulatory system (I00-I99).....		209	49	29	20	160
		66.7	15.7	9.3	6.4	51.1
Neonatal hemorrhage (P50-P52, P54).....		303	300	236	64	3
		96.8	95.8	75.4	20.4	*
All other causes.....		3,952	2,606	1,791	815	1,346
		1262.0	832.2	571.9	260.3	429.8
2,500 grams or more						
All Causes	3,349,955	6,761	2,262	1,356	906	4,499
		201.8	67.5	40.5	27.1	134.3
Congenital malformations (Q00-Q99).....		1,405	813	581	232	592
		41.9	24.3	17.3	6.9	17.7
Short gestation and low birthweight nec (P07).....		9	5	3	2	4
		*	*	*	*	*
Maternal complications of pregnancy (P01).....		17	17	17	-	-
		*	*	*	*	*
Sudden infant death syndrome (R95).....		1,131	123	19	104	1,008
		33.8	3.7	*	3.1	30.1
Accidents (unintentional injuries) (V01-X59).....		1,016	92	18	74	924
		30.3	2.8	*	2.2	27.6
Complications of placenta, cord, membranes (P02).....		93	86	72	14	7
		2.8	2.6	2.2	*	*
Bacterial sepsis of newborn (P36).....		57	55	33	22	2
		1.7	1.6	1.0	0.7	*
Respiratory distress of newborn (P22).....		6	6	5	1	-
		*	*	*	*	*
Diseases of the circulatory system (I00-I99).....		200	35	17	18	165
		6.0	1.0	*	*	4.9
Neonatal hemorrhage (P50-P52, P54).....		36	34	24	10	2
		1.1	1.0	0.7	*	*
All other causes.....		2,791	996	567	429	1,795
		83.3	29.7	16.9	12.8	53.6

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

-/ Quantity zero