National Vital Statistics Reports

Volume 65, Number 7 October 31, 2016

Cause of Fetal Death: Data From the Fetal Death Report, 2014

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Abstract

Objectives—This report presents, for the first time, data on cause of fetal death by selected characteristics such as maternal age, Hispanic origin and race, fetal sex, period of gestation, and birthweight.

Methods—Descriptive tabulations of data collected on the 2003 U.S. Standard Report of Fetal Death are presented for fetal deaths occurring at 20 weeks of gestation or more in a reporting area of 35 states, New York City, and the District of Columbia. This area represents 66% of fetal deaths in the United States. Causes of death are processed in accordance with the *International Statistical Classification of Diseases and Related Health Problems, Tenth Revision.* Final data for 2014 are reported.

Results—Five selected causes account for about 90% of fetal deaths in the reporting area: Fetal death of unspecified cause; Fetus affected by complications of placenta, cord and membranes; Fetus affected by maternal complications of pregnancy; Congenital malformations, deformations and chromosomal abnormalities; and Fetus affected by maternal conditions that may be unrelated to present pregnancy.

Conclusions—Cause-of-fetal-death data reported on vital records are not subject to tightly controlled study protocols, but they provide data for a larger proportion of the country than other studies. While there was limited variation among the selected causes across the maternal and fetal characteristics examined, many variations observed are consistent with associations that have been documented in research literature.

Keywords: fetal mortality • initiating cause of death • selected cause of death • National Vital Statistics System

Introduction

Fetal deaths, involuntary losses of fetuses during pregnancy, outnumber infant deaths (1). The risk of fetal loss differs by both maternal and fetal characteristics, and cause of fetal death can provide additional insight into why fetuses die. This report on the cause of fetal death is the first ever released from the National Vital Statistics System (NVSS) and accompanies the release of cause-of-fetal-death data.

A cause-of-fetal-death item was included on the fetal death report, the form used to obtain details on fetal deaths since 1939, because this addition was considered critical information. However, the data have never been released on public-use files or published, partly due to resource constraints and quality concerns. For example, there has been uncertainty about whether coding was being done in a standardized fashion and concern with how much of the unknown cause might reflect lack of care in completing the fetal death report rather than appropriate reporting that the cause was unknown.

Internal and external developments have committed resources and made changes to improve quality. For example, the cause-of-death item on the fetal death report was redesigned for the 2003 U.S. Standard Report of Fetal Death (Figure 1) that is produced as a model for the vital statistics jurisdictions (2). The goal of the redesign was to improve the quality and specificity of information reported for cause of death. It was designed to be consistent with data-collection instructions in the World Health Organization's (WHO) *International Statistical Classification of Diseases and Related Health Problems, Tenth Revision* (ICD–10) (3) while providing more guidance on desired information and retaining flexibility to report any cause.

Progress has been made towards having a national file that routinely includes cause of death (e.g., an increasing number of areas collect data using a cause-of-death format consistent with the 2003 U.S. Standard Report of Fetal Death, the data are transmitted to the National Center for Health Statistics [NCHS], coding is done centrally in a consistent fashion, and most of the cause-related items are internally consistent). Although the data are of sufficient quality to report, continued efforts are needed to focus on how to improve the data (e.g., increase number of areas submitting the information, increase reporting of specified information, and improve all the multiple-cause data fields). This report provides background on the new data and examines what is available. Releasing the data will give researchers the

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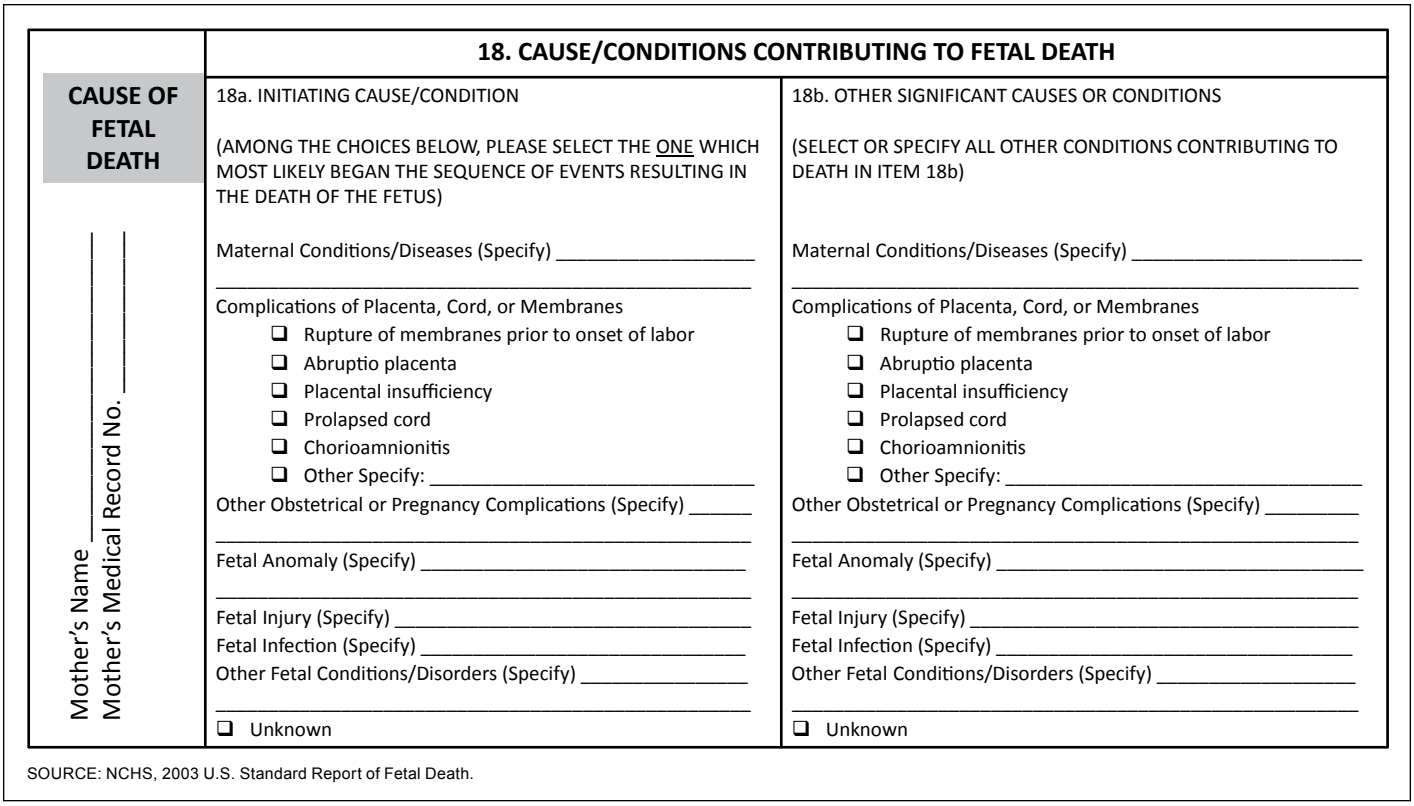


CAUSE OF FETAL DEATH	18. CAUSE/CONDITIONS CONTRIBUTING TO FETAL DEATH	
Mother's Name _____ Mother's Medical Record No. _____	18a. INITIATING CAUSE/CONDITION (AMONG THE CHOICES BELOW, PLEASE SELECT THE ONE WHICH MOST LIKELY BEGAN THE SEQUENCE OF EVENTS RESULTING IN THE DEATH OF THE FETUS) Maternal Conditions/Diseases (Specify) _____ _____ Complications of Placenta, Cord, or Membranes ❑ Rupture of membranes prior to onset of labor ❑ Abruptio placenta ❑ Placental insufficiency ❑ Prolapsed cord ❑ Chorioamnionitis ❑ Other Specify: _____ Other Obstetrical or Pregnancy Complications (Specify) _____ _____ Fetal Anomaly (Specify) _____ _____ Fetal Injury (Specify) _____ Fetal Infection (Specify) _____ Other Fetal Conditions/Disorders (Specify) _____ _____ ❑ Unknown	18b. OTHER SIGNIFICANT CAUSES OR CONDITIONS (SELECT OR SPECIFY ALL OTHER CONDITIONS CONTRIBUTING TO DEATH IN ITEM 18b) Maternal Conditions/Diseases (Specify) _____ _____ Complications of Placenta, Cord, or Membranes ❑ Rupture of membranes prior to onset of labor ❑ Abruptio placenta ❑ Placental insufficiency ❑ Prolapsed cord ❑ Chorioamnionitis ❑ Other Specify: _____ Other Obstetrical or Pregnancy Complications (Specify) _____ _____ Fetal Anomaly (Specify) _____ _____ Fetal Injury (Specify) _____ Fetal Infection (Specify) _____ Other Fetal Conditions/Disorders (Specify) _____ _____ ❑ Unknown

SOURCE: NCHS, 2003 U.S. Standard Report of Fetal Death.

Figure 1. Cause-of-fetal-death section of U.S. Standard Report of Fetal Death

opportunity to use the data as well as explore opportunities to improve the data.

This report examines cause of fetal deaths occurring at 20 weeks of gestation or more. The reporting area included areas where less than 50% of an area's cause data were attributed to Fetal death of unspecified cause (unspecified cause [P95]).

Methods

As of January 1, 2014, 41 states, the District of Columbia, and New York City had implemented the 2003 U.S. Standard Report of Fetal Death and had information on fetal cause of death. This represented 88% of fetal deaths at 20 weeks of gestation or more. However, this report includes 2014 data for 37 areas (35 states: Alabama, Arkansas, Arizona, Delaware, Florida, Hawaii, Idaho, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Maryland, Michigan, Minnesota, Mississippi, Missouri, Montana, Nebraska, Nevada, New Hampshire, New Mexico, Ohio, Oklahoma, Pennsylvania, South Carolina, South Dakota, Tennessee, Texas, Utah, Vermont, Washington, and Wyoming); the District of Columbia; and New York City that implemented the 2003 revision of the U.S. Standard Report of Fetal Death on or before January 1, 2014, and met the reporting requirement of having less than 50% of records assigned to unspecified cause (P95). This reporting area represented 66% of all 2014 U.S. fetal deaths at 20 weeks of gestation or more. Statistics based on a subnational area may not be generalizable to the entire United States, particularly if characteristics differ by geographic area (see Technical Notes). The fetal mortality rate of the reporting area is 2% higher than the rate for the United States.

As with other deaths, the intent is for an attending physician, medical examiner, or coroner to report cause of death (3). The cause-of-fetal-death item requests a medical opinion from this certifier on the conditions and diseases resulting in or contributing to death, but it also asks the medical certifier to report one cause separately (item 18a.) from all other causes (item 18b.) reported on the fetal death report. The certifier may form this medical opinion based on various medical tests and investigations, as is the case with other deaths. However, the term "initiating cause," used to refer to the one cause reported separately, is unique to fetal deaths because of differences in the format of the cause item and how the initiating cause is determined for fetal deaths compared with the "underlying cause" term used with other deaths.

NCHS codes cause of fetal death reported by the certifier using the ICD–10 classification (3). Coding is accomplished through a combination of automated and manual processes following the guidelines in "Instructions for the Automated Classification of the Initiating and Multiple Causes of Fetal Deaths" (4). Literal text stated on the fetal death report is assigned ICD–10 codes, and a single cause of death, the initiating cause of death, is selected from the conditions entered by the medical certifier in the cause-of-death section of the fetal death report. One section of the report (18a.) is for the medical certifier to state the single condition that he or she considers the cause that initiated or triggered problems that resulted in the fetus dying at this point in time, so this is anticipated to be the initiating cause of death. If more than one cause or condition is entered by the medical certifier, the initiating cause is determined by the placement of the condition on the report, provisions of the ICD, and associated

selection rule and modifications. A second section of the report (18b.) is for the medical certifier to state any other conditions or causes that he or she believed played a role in causing the fetal death. Since more medical information may be reported on the report than is directly reflected in the initiating cause of death, this additional information is captured in multiple cause-of-fetal-death data.

In this report, causes of death are tabulated by the "List of 124 Selected Causes of Fetal Death" (fetal-cause list) and by five selected causes drawn from a subset of the fetal-cause list (5). The selected causes are listed in descending order according to the number of deaths assigned to causes, including unspecified cause. The number of deaths is used because it most accurately reflects the frequency of cause-specific mortality. The 45 causes from the fetal-cause list, including unspecified, from which the selected causes were drawn, are defined in the fetal-cause list in "ICD–10 Cause-of-death Lists for Tabulating Mortality Statistics" and shown in Table A (5).

This report presents the number and percentage of fetal deaths for the selected causes of death by characteristics such as maternal age, sex, and Hispanic origin and race. Tabulations of fetal-cause-of-death statistics are based solely on the initiating cause of death.

The fetal mortality rate is described for the reporting area. Fetal mortality rates are expressed as the number of fetal deaths per 100,000 total live births and fetal deaths to women in the specified group. Birth data used in this report to calculate rates are based on 100% of the birth certificates registered in the reporting area. The rates provide a measure of the risk of having a fetal death for reported pregnancies (i.e., pregnancies ending in a live birth or fetal death of 20 weeks of gestation or more).

Table A. Rankable causes from the 124 Selected Causes of Fetal Death

Cause of death	
Congenital syphilis	(A50)
Human immunodeficiency virus (HIV) disease	(B20–B24)
Malignant neoplasms	(C00–C97)
In situ neoplasms, benign neoplasms and neoplasms of uncertain or unknown behavior	(D00–D48)
Anemias	(D50–D64)
Short stature, not elsewhere classified	(E34.3)
Cystic fibrosis	(E84)
Meningitis	(G00,G03)
Umbilical hernia	(K42)
Fetus affected by maternal conditions that may be unrelated to present pregnancy	(P00)
Fetus affected by maternal complications of pregnancy	(P01)
Fetus affected by complications of placenta, cord and membranes	(P02)
Fetus affected by other complications of labor and delivery	(P03)
Fetus affected by noxious influences transmitted via placenta	(P04)
Slow fetal growth and fetal malnutrition	(P05)
Disorders related to short gestation and low birth weight, not elsewhere classified	(P07)
Disorders related to long gestation and high birth weight	(P08)
Birth trauma	(P10–P15)
Intrauterine hypoxia and birth asphyxia	(P20–P21)
Congenital pneumonia	(P23)
Aspiration syndromes	(P24)
Interstitial emphysema and related conditions originating in the perinatal period	(P25)
Atelectasis	(P28.0–P28.1)
Congenital rubella syndrome	(P35.0)
Congenital cytomegalovirus infection	(P35.1)
Congenital herpesviral (herpes simplex) infection	(P35.2)
Congenital viral hepatitis	(P35.3)
Bacterial sepsis	(P36)
Congenital tuberculosis	(P37.0)
Congenital toxoplasmosis	(P37.1)
Fetal hemorrhage	(P50–P54)
Hemolytic disease of fetus	(P55–P56)
Perinatal jaundice	(P57–P59)
Hematological disorders	(P60–P61)
Syndrome of infant of a diabetic mother and neonatal diabetes mellitus	(P70.0–P70.2)
Digestive system disorders of fetus	(P76–P78)
Hydrops fetalis not due to hemolytic disease	(P83.2)
Fetal death of unspecified cause	(P95)
Withdrawal symptoms from maternal use of drugs of addiction	(P96.1)
Termination of pregnancy	(P96.4)
Complications of intrauterine procedures, not elsewhere classified	(P96.5)
Congenital malformations, deformations and chromosomal abnormalities	(Q00–Q99)
Accidents (unintentional injuries)	(V01–X59)
Assault (homicide)	(*U01,X85–Y09)
Complications of medical and surgical care	(Y40–Y84)

SOURCE: NCHS, National Vital Statistics System, Mortality.

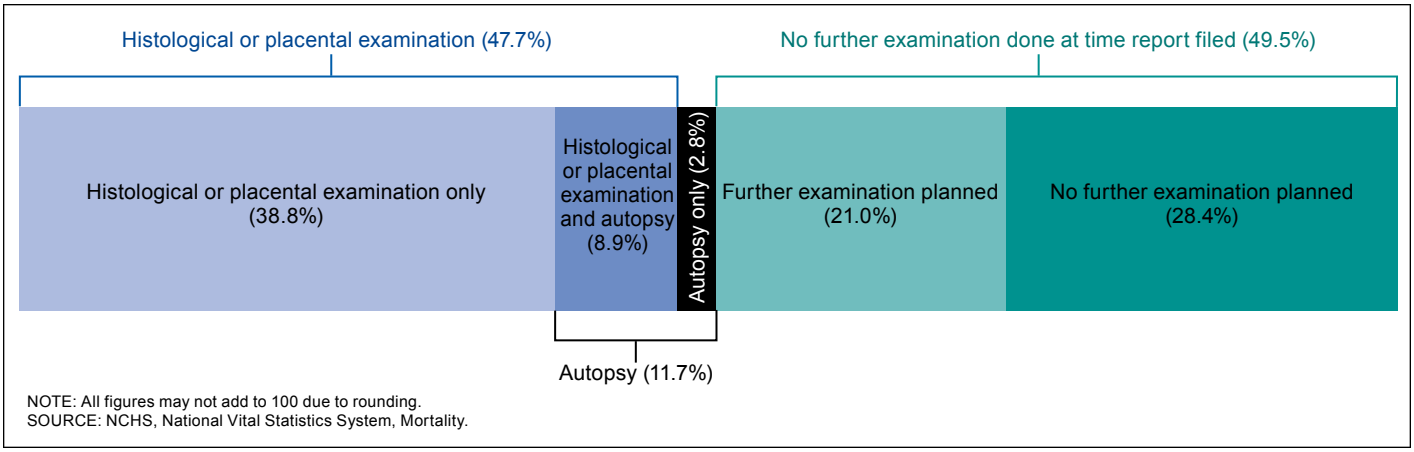


Figure 2. Percent distribution of types of examination conducted on fetal deaths: 37 areas, 2014

The majority of fetal deaths occur early in pregnancy. However, reporting requirements and completeness of reporting for fetal death data vary among areas, and these variations have implications for data quality and completeness. The majority of areas require reporting of fetal deaths at 20 weeks of gestation or more, at a minimum birthweight of 350 grams (roughly equivalent to 20 weeks), or some combination of the two. However, several areas require reporting of fetal deaths at all periods of gestation, and one area requires reporting beginning at 16 weeks of gestation. At the other end of the spectrum, two areas require reporting of fetal deaths with birthweights of 500 grams or more (roughly equivalent to 22 weeks of gestation) (6). Lack of full reporting for these areas leads to a slight underestimate of the fetal mortality rate (1).

There is evidence that not all fetal deaths for which reporting is required are reported (7,8). Underreporting of fetal deaths is most likely to occur in the earlier part of the required reporting period for each area. Consequently, areas that require reporting of all fetal deaths at any gestational age are likely to have more complete reporting of fetal deaths at 20 weeks or more than areas that do not. This report presents data on fetal deaths with a stated or presumed period of gestation of 20 weeks or more (6).

Research studies find that cause of fetal death is often unknown (9–13). Considering the 43 revised areas in 2014, the percentage with unspecified cause (P95) reported to vital statistics offices ranged from 18.3% to 75.4%. When the 37 reporting areas that met the reporting criteria were evaluated, this range was compressed from 18.3% to 47.2%, with an average of 31.0% and median of 30.9.

Results

In 2014, a total of 15,840 fetal deaths of 20 weeks gestation or more occurred in the 37 areas included in this report. There were 8,333 unique combinations of text entries about cause on these records. This was reduced to 3,674 unique combinations of codes after the literal entries were assigned codes. The fetal mortality rate was 611.7 fetal deaths per 100,000 live births and fetal deaths (data not shown).

Fetal deaths were far more commonly reported to have been examined through histological or placenta examinations (47.7%) than an autopsy (11.7%); 8.9% of deaths have both histological or placenta examination and an autopsy, and 41.6% have one but not the other (Figure 2). Another 21.0% had neither but planned to have further examination, while 28.4% were reported to not be examined further.

The stated cause of fetal death reportedly makes use of the further examination results 56.0% of the time when both histological or placenta examination and an autopsy have been done, 37.3% of the time when just an autopsy has been done, and 24.3% of the time when just histological or placenta examination has been done.

Five selected causes of fetal death accounted for 90.4% of fetal deaths (Table B and Figure 3). By order of frequency, these were unspecified cause; Fetus affected by complications of placenta, cord and membranes (placenta, cord, and membrane

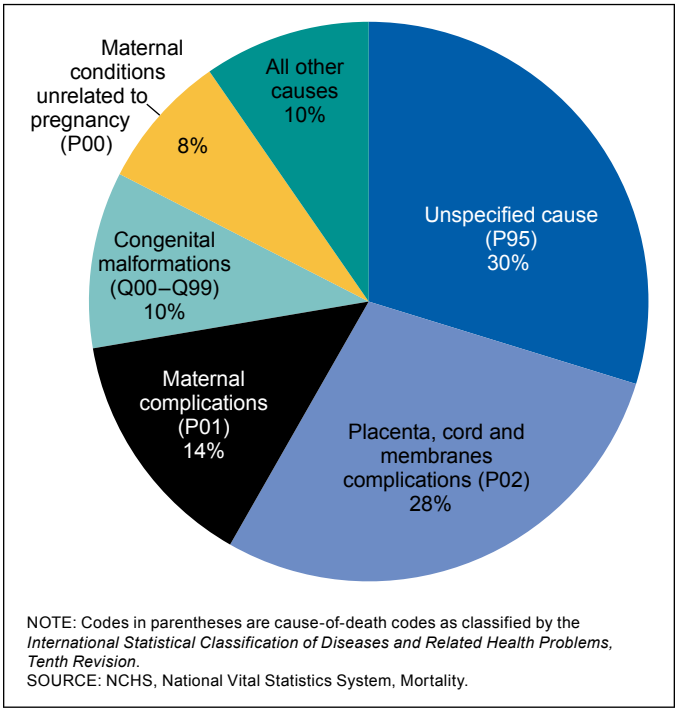


Figure 3. Fetal deaths, by selected causes: 37 areas, 2014

complications); Fetus affected by maternal complications of pregnancy (maternal complications); Congenital malformations, deformations and chromosomal abnormalities (congenital malformations); and Fetus affected by maternal conditions that may be unrelated to present pregnancy (maternal conditions unrelated to pregnancy).

These same five selected causes were generally the most common when examining fetal causes with respect to various maternal and fetal characteristics, although the relative rank sometimes differed (Table C), and the percentage of all deaths a particular selected cause accounted for might vary notably.

Table B. Fetal deaths and percentage of total deaths for the five selected causes: 37 areas, 2014

Rank	Cause of death	Number of deaths	Percent
…	All causes	15,840	100.0
1	Fetal death of unspecified cause (P95)	4,705	29.7
2	Fetus affected by complications of placenta, cord and membranes (P02)	4,504	28.4
3	Fetus affected by maternal complications of pregnancy (P01)	2,255	14.2
4	Congenital malformations, deformations and chromosomal abnormalities (Q00–Q99)	1,614	10.2
5	Fetus affected by maternal conditions that may be unrelated to present pregnancy (P00)	1,239	7.8
…	All other causes (residual)	1,523	9.6

… Category not applicable.
SOURCE: NCHS, National Vital Statistics System, Mortality.

Table C. Rank of selected causes of fetal deaths, by selected characteristics: 37 areas, 2014

Characteristic	Selected rankable causes of death				
	Fetal death of unspecified cause (P95)	Fetus affected by complications of placenta, cord and membranes (P02)	Fetus affected by maternal complications of pregnancy (P01)	Congenital malformations, deformations and chromosomal abnormalities (Q00–Q99)	Fetus affected by maternal conditions that may be unrelated to present pregnancy (P00)
	Rank[1]				
All fetal deaths	1	2	3	4	5
Race and Hispanic origin					
Non-Hispanic white	1	2	4	3	5
Non-Hispanic black	1	2	3	5	4
Hispanic	2	1	3	4	5
Maternal age (years)					
Under 20	1	2	3	4	5
20–39	1	2	3	4	5
40 and over	1	2	3	3	5
Sex					
Male	1	2	3	4	5
Female	1	2	3	4	5
Birthweight (grams)					
Less than 1,500	1	2	3	4	5
1,500–2,499	2	1	5	3	4
2,500–3,999	2	1	6	5	3
4,000 or more	1	3	6	5	4
Period of gestation (weeks)					
20–22	2	3	1	4	5
23–25	1	2	3	4	5
26–28	1	2	5	3	4
29–37	2	1	5	3	4
38–40	2	1	6	3	4
41 or more	1	2	5	3	4
Plurality					
Single	1	2	3	4	5
Multiple	3	2	1	5	4

[1]Ranks above five are provided for informational purposes, when a cause is among the top five for at least one of the groups being compared.
SOURCE: NCHS, National Vital Statistics System, Mortality.

Race and Hispanic origin

The five most commonly selected causes of fetal death are the same by race and Hispanic origin, but their ranking differs (Tables C and 2). Unspecified cause was the most common cause selected for non-Hispanic white and non-Hispanic black fetal deaths, whereas placenta, cord, and membrane complications was the most common cause selected for Hispanic fetal deaths.

Maternal age

The most frequently selected causes and rankings were the same for women in age groups under 20 and 20–39. In descending order, these were unspecified cause; placenta, cord, and membrane complications; maternal complications; congenital malformations; and maternal conditions unrelated to pregnancy (Tables C and 3). For women aged 40 and over, the pattern was the same except that congenital malformations were tied with maternal complications as third most frequent.

Sex of fetus

Certain subcategories of cause of fetal death were specific to males or females, such as congenital malformations of specific genital organs and Turner syndrome, which is a congenital malformation seen in females (14). However, when aggregated into the causes eligible for ranking, including unspecified cause, the five most commonly selected causes and their rankings were the same for male and female fetal deaths (Tables C and 4).

Birthweight

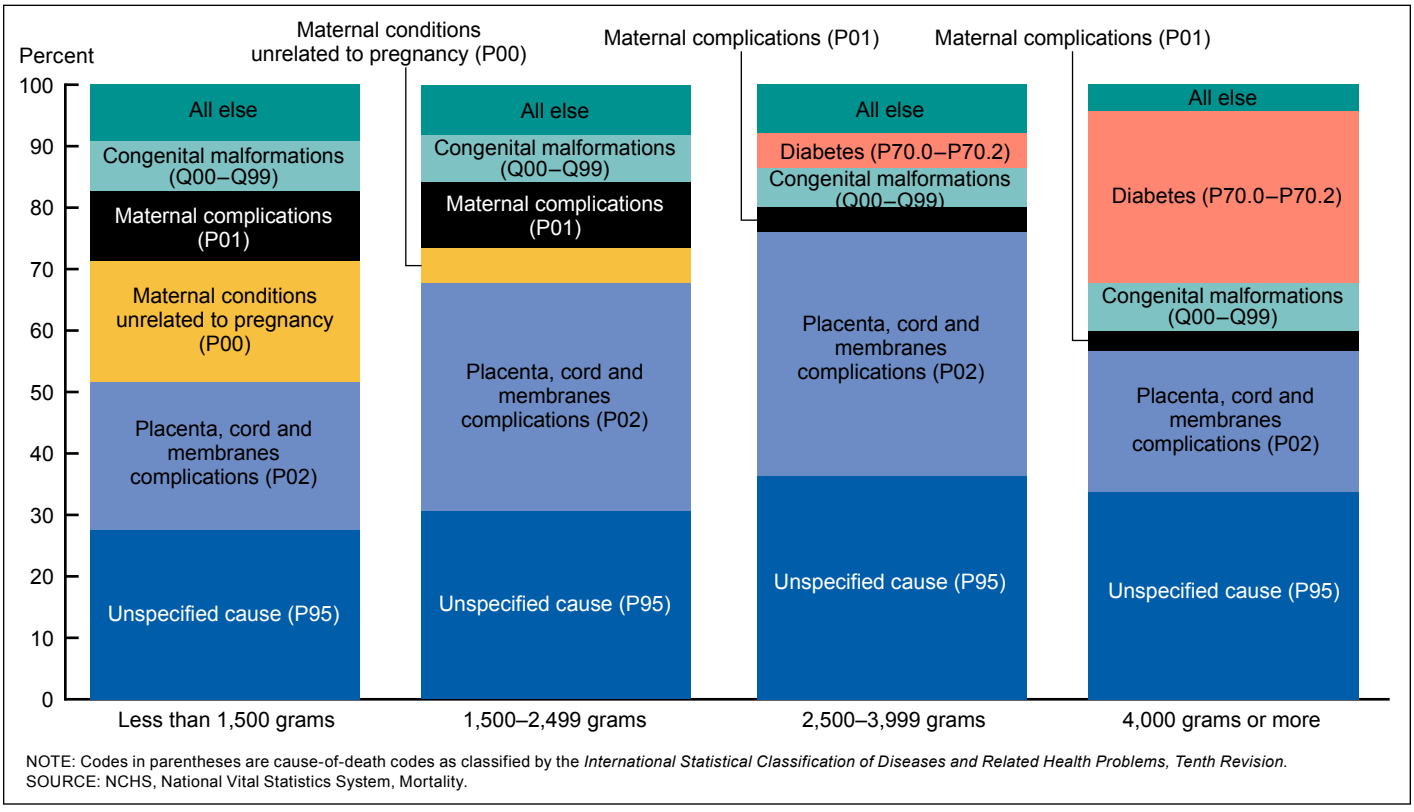
The most commonly selected causes of fetal death varied by birthweight (Table 5 and Figure 4). Maternal complications was more of a problem relatively for fetuses with birthweight less than 1,500 grams and 1,500–2,499 grams, while Syndrome of infant of a diabetic mother and neonatal diabetes mellitus (diabetes mellitus) was more common for fetuses with birthweight of 2,500–3,999 grams, and, especially for those weighing 4,000 grams or more, for which it was the second most frequently selected cause of death. With respect to percentage, diabetes accounted for 5.8% of fetal deaths with birthweight of 2,500–3,999 grams and for 27.9% of fetal deaths weighing 4,000 grams or more.

Period of gestation

Four of the same causes were among the top five selected causes for the gestational age groups shown in Tables D and 6. Maternal complications was the most commonly selected cause at 20–22 weeks of gestation but accounted for a smaller percentage of total deaths, dropping in rank as gestational age increased. For example, at 29–37 weeks of gestation, this selected cause accounted for 5.7% of total deaths and was the fifth most frequently selected cause. Diabetes was not among the five selected causes until the gestational period of 38–40 weeks.

Plurality

Certain causes of fetal death are specific to multiple deliveries and, accordingly, the order of the most commonly



NOTE: Codes in parentheses are cause-of-death codes as classified by the *International Statistical Classification of Diseases and Related Health Problems, Tenth Revision.*
SOURCE: NCHS, National Vital Statistics System, Mortality.

Figure 4. Comparison of distribution of five selected causes, by birthweight: 37 areas, 2014

selected causes of death differed by plurality (Tables C and 7 and Figure 5). Maternal complications accounted for 40.4% of deaths in multiple deliveries compared with 11.7% among single deliveries; this reflects that Fetus and newborn affected by multiple pregnancy (P01.5), which is often reported as a cause for multiple deliveries, is a subcategory of maternal complications.

Autopsy or histological or placenta examination of fetal death

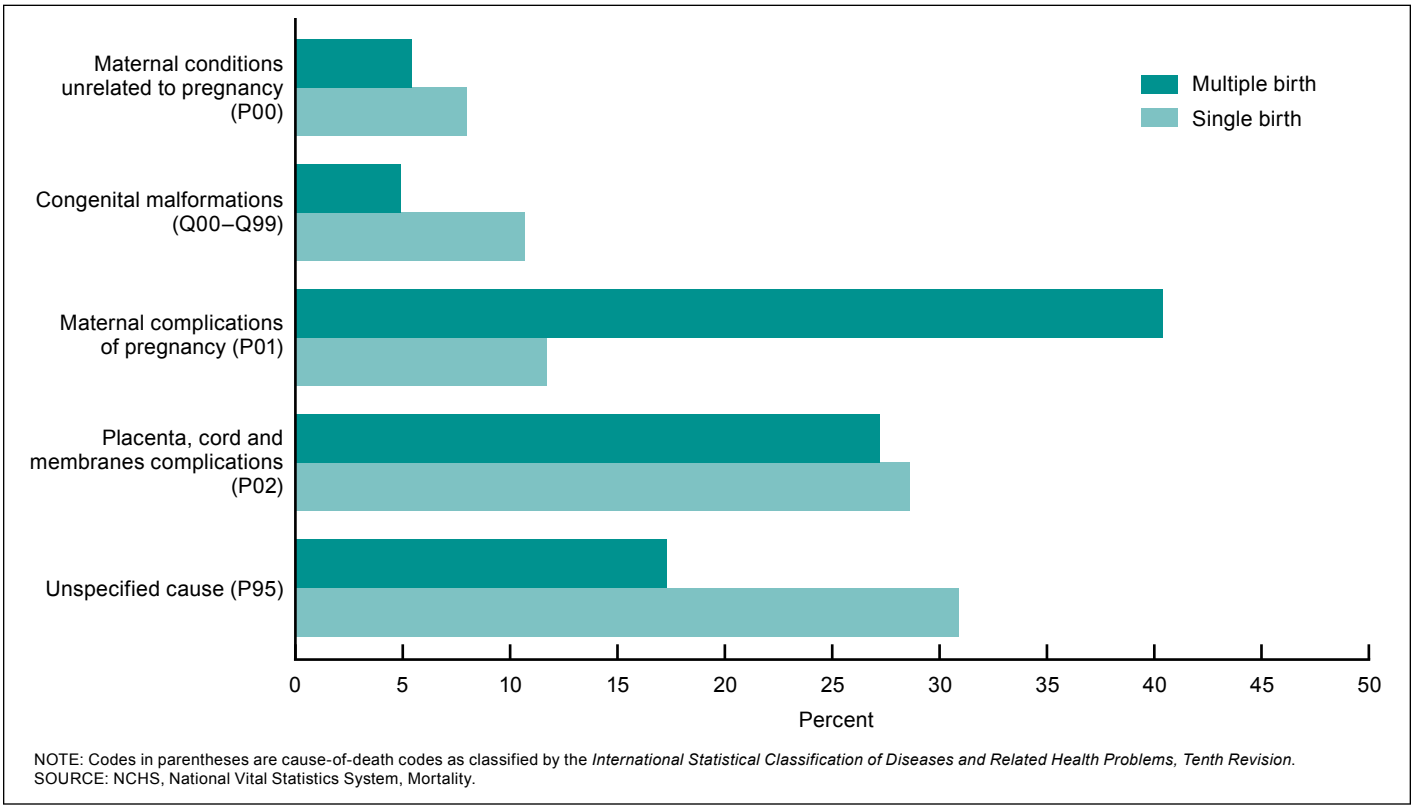
As discussed above, fetal deaths may be investigated further, and the results of the investigations may be used in reporting cause or no further examination may be done. Comparing these investigative extremes, those fetal deaths that received a histological or placenta examination, an autopsy, and used the results of those investigations in reporting cause differed most from the fetal deaths that had no further examination done (Tables E and 8) for maternal conditions unrelated to pregnancy (9.3% compared with 5.3%), maternal complications (7.7% compared with 15.7%), and congenital malformations (6.8% compared with 12.6%). The biggest difference in the ranking of the selected causes between these investigative extremes was for maternal conditions unrelated to pregnancy (third in investigated cases and fifth in cases with no investigation).

Discussion

The fetal mortality rate was 611.7 fetal deaths per 100,000 live births and fetal deaths in 2014 for the 37 areas examined in this report. This rate is 2% greater than the U.S. rate of 597.5 for fetal deaths of 20 weeks or more. So, the 37 areas only account for about two-thirds of the fetal deaths that occur in the United States, but the fetal mortality rate is slightly greater. Hispanic women were underrepresented, and non-Hispanic white women were overrepresented in the reporting area, while the distribution for non-Hispanic black women was similar when compared with the total United States. Additionally, women in the reporting area were more likely to be aged 20–24 and less likely to be aged 35–39 when compared with the total United States. The distributions for all other age groups were similar.

Five selected causes account for about 90% of all fetal deaths. With so many deaths concentrated in a few broad causes including unspecified, these same five causes were among the selected causes for many of the characteristics examined (i.e., maternal age, sex of fetus, and plurality). Some differences were seen in the ranking and percentage of deaths accounted for by the specific selected cause. The variables for which the five causes differed most were birthweight and gestational age. Diabetes mellitus, which combines types of diabetes, including preexisting and gestational diabetes, emerged as a selected cause, and maternal complications dropped below the top five selected causes for fetuses with longer gestations and heavier delivery weights.

Even without large variation among the most commonly selected causes, the variations observed are consistent with known medical relationships. For instance, diabetes during pregnancy is associated with fetal death and large fetuses (11,15), so observing diabetes rise in relative frequency as fetal birthweight increases is consistent with this finding. The larger proportion of congenital malformations from Edwards and



NOTE: Codes in parentheses are cause-of-death codes as classified by the *International Statistical Classification of Diseases and Related Health Problems, Tenth Revision.*
SOURCE: NCHS, National Vital Statistics System, Mortality.

Figure 5. Distribution of fetal deaths for five selected causes, by plurality: 37 areas, 2014

Table D. Fetal deaths, rank, and percentage of total deaths for selected causes, by gestation: 37 areas, 2014

Cause of death	Period of gestation (weeks)																	
	20–22			23–25			26–28			29–37			38–40			41 or more		
	Rank[1]	Number of deaths	Percent	Rank[1]	Number of deaths	Percent	Rank[1]	Number of deaths	Percent	Rank[1]	Number of deaths	Percent	Rank[1]	Number of deaths	Percent	Rank[1]	Number of deaths	Percent
All causes	…	5,018	100.0	…	2,293	100.0	…	1,560	100.0	…	4,976	100.0	…	1,765	100.0	…	145	100.0
Fetal death of unspecified cause (P95)	2	1,211	24.1	1	694	30.3	1	502	32.2	2	1,542	31.0	2	663	37.6	1	59	40.7
Fetus affected by complications of placenta, cord and membranes (P02)	3	1,047	20.9	2	518	22.6	2	456	29.2	1	1,752	35.2	1	667	37.8	2	47	32.4
Fetus affected by maternal complications of pregnancy (P01)	1	1,473	29.4	3	313	13.7	5	115	7.4	5	285	5.7	6	47	2.7	5	4	2.8
Congenital malformations, deformations and chromosomal abnormalities (Q00–Q99)	4	502	10.0	4	302	13.2	3	182	11.7	3	500	10.0	3	101	5.7	3	21	14.5
Fetus affected by maternal conditions that may be unrelated to present pregnancy (P00)	5	294	5.9	5	244	10.6	4	169	10.8	4	421	8.5	4	100	5.7	4	6	4.1
Syndrome of infant of a diabetic mother and neonatal diabetes mellitus (P70.0–P70.2)	9	43	0.9	11	17	0.7	6	33	2.1	6	219	4.4	5	89	5.0	6	3	2.1

… Category not applicable.

[1]Ranks above five are provided for informational purposes, when a cause is among the top five for at least one of the groups being compared.

SOURCE: NCHS, National Vital Statistics System, Mortality.

Table E. Fetal deaths and percentage of total deaths for the five selected causes, by examinations done and if used for cause: 37 areas, 2014

Cause of death	Total			Histological or placenta examination and autopsy, results used			Histological or placenta examination only, results used			Autopsy only, results used			No further examination done, no results to use			All other scenarios where results not used		
	Rank	Number of deaths	Percent	Rank	Number of deaths	Percent	Rank	Number of deaths	Percent	Rank	Number of deaths	Percent	Rank	Number of deaths	Percent	Rank	Number of deaths	Percent
All causes	…	15,840	100.0	…	793	100.0	…	1,494	100.0	…	166	100.0	…	4,506	100.0	…	8,881	100.0
Fetal death of unspecified cause (P95)	1	4,705	29.7	1	274	34.6	2	305	20.4	1	56	33.7	1	1,446	32.1	1	2,624	29.5
Fetus affected by complications of placenta, cord and membranes (P02)	2	4,504	28.4	2	252	31.8	1	638	42.7	2	48	28.9	2	1,126	25.0	2	2,440	27.5
Fetus affected by maternal complications of pregnancy (P01)	3	2,255	14.2	4	61	7.7	3	226	15.1	5	10	6.0	3	708	15.7	3	1,250	14.1
Congenital malformations, deformations and chromosomal abnormalities (Q00–Q99)	4	1,614	10.2	5	54	6.8	5	70	4.7	3	23	13.9	4	566	12.6	4	901	10.1
Fetus affected by maternal conditions that may be unrelated to present pregnancy (P00)	5	1,239	7.8	3	74	9.3	4	134	9.0	4	17	10.2	5	238	5.3	5	776	8.7

… Category not applicable.

SOURCE: NCHS, National Vital Statistics System, Mortality.

Down syndrome among women aged 40 and over is consistent with increasing risk with age (16,17). Edwards syndrome is a chromosomal abnormality that usually results in death prior to birth, and this is reflected in the fetal data and rarely in the deaths data among those surviving past birth (16).

Attention on reproductive loss historically has largely concentrated on infant mortality, in part due to less robust knowledge of the incidence, etiology, and prevention strategies for fetal mortality. There have been longstanding concerns about data quality and completeness (10,11) and fewer resources and less priority committed to fetal death data collection and research (18). Methodological and other differences make it difficult to compare vital statistics causes of fetal death data with other sources and classifications. However, a substantial percentage of deaths with unknown cause is typical (9–13). For example, the percentage of unknown cause in the 37 areas included in this report was 29.7% compared with 23.4%–39.1% in the Stillbirth Collaborative Research Network (SCRN) data. The range depends on whether SCRN was considering the more-stringent probable- or less-stringent, possible-cause criteria (10).

A study in New York City (19) identified level of physician engagement as a factor in whether ill-defined cause of fetal death is reported in vital statistics. This research more broadly identified feelings of importance and reporting or work burden as factors affecting the quality of information entered in fetal death vital records. Another study concluded that a broad educational effort is needed to improve the quality of vital statistics cause-of-fetal-death data collected (20).

The ability to identify cause is also enhanced when additional examination is performed. Miller *et al*. (12) found that a cause of death could be identified based on clinical and laboratory information alone in 24% of cases, 61% if the examination also includes placental pathologic examination, and 74% if an autopsy was done in addition to the other types of assessment. The Miller study demonstrated the benefit of these different types of examinations in establishing cause of death. The data presented in this report do not clearly reflect this benefit. Another study found a reduction in the level of unknown cause over time, reflecting some improvement in diagnostic capability to identify cause (21). However, cause remains unknown for a substantial percentage of fetal deaths.

A comprehensive examination protocol is followed in the SCRN study (10,22), for which cause is determined using a particular procedure that is different from that used with vital statistics. To compare vital statistics information in this report with SCRN's other possible causes, multiple-cause data were used to roughly group vital statistics data into the SCRN categories. This is only approximate, but this exercise suggests that vital statistics identifies a similar proportion as placental (23.6% and 20.8%, respectively), fetal genetic (13.7% and 13.5%), and obstetric complications (29.3% and 27.6%). The differential appears a bit larger for hypertensive (9.2% and 6.4%) and infection (12.9% and 6.3%) as causes. Vital statistics identifies a smaller proportion of causes as medical complications (7.8% and 10.2%) or cord problems (10.4% and 18.0%).

While specialized studies on cause of fetal death are able to define comprehensive, standardized examination protocols to maximize the information available (10,22), vital statistics encompasses events from more variable situations and various levels of examination, reflecting family wishes, cost, and available resources, among other factors (12).

The redesign of the cause-of-death section on the 2003 U.S. Standard Report of Fetal Death reflects the efforts of a group of stakeholders to improve fetal cause-of-death data. Some research notes decreases in reporting of ill-defined causes with the new form (23). Another study recommended reducing the amount of information collected (19). Indeed, a workgroup from the National Association for Public Health Statistics and Information Systems and NCHS recommended that 39 data items be dropped from the national fetal death file in the hopes of reducing reporting burden and improving the quality of the remaining items, including cause of death (24). The need for more education and awareness targeted towards clinicians and health information management staff reporting information on fetal deaths is a common call to action (19,20,23). Variability between facilities and discrepancies between medical records and fetal death reports points to areas where reporting could be improved (25). NCHS has developed a web-based training for reporting medical and health information on birth certificates and fetal death reports that includes a special section on reporting fetal cause of death (available from: http://www.cdc.gov/nchs/training/BirthCertificateElearning/). Specific areas addressed in this training expand visibility for, reinforce importance of, and target some reporting issues about fetal cause.

NCHS also revised instructions on coding cause of fetal death in 2012, developed a system for processing cause, and centralized coding for cause of death within NCHS in 2010. In addition, a new system has been introduced for use beginning with 2015 data to improve how cause data flows through NCHS' system as coding is occurring, including reducing manual interventions.

Interest in fetal mortality is increasing. Several additional initiatives are examining the etiology and prevention of fetal death, such as SCRN's and the Centers for Disease Control and Prevention's active fetal death surveillance program (7). Causes of fetal death vary in studies because of limitations with cause-of-death information, variations in methodology, and use of multiple classifications. Yet cause-of-death analyses are important for identifying preventable risks. Management, obstetric care, and diagnostic methods have contributed to shifting patterns over time (21). Further improvements in diagnostic methods provide the opportunity to better identify cause, and the resulting knowledge can potentially influence clinical management and development of new prevention strategies (10–12,21).

As research continues using smaller studies with more tightly controlled study protocols, the sustained surveillance of fetal mortality levels and trends through NVSS will remain critical. NVSS has a unique advantage in measuring the national scale of fetal mortality. The addition of cause of death in public-use data is an important enhancement to these data. Beginning with the 2014 data year, NCHS will begin to release fetal death data on initiating cause and related data. The number of areas with the revised format for cause continues to increase, as does the number of areas with less than 50% of records assigned to

unspecified cause. Increasing access to the data should increase the utility and visibility of these data. New efforts to improve data quality should further enhance the usefulness of these data.

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List of Detailed Tables

Table 1. Deaths and percentage of fetal deaths according to 124 selected causes of fetal death: 37 areas, 2014

Cause of death	Number of deaths	Percent
All causes	15,840	100.0
Certain infectious and parasitic diseases (A00–B99)	2	†
Congenital syphilis (A50)	–	†
Human immunodeficiency virus (HIV) disease (B20–B24)	2	†
Other viral diseases (A80–B19,B25–B34)	–	†
Other and unspecified infectious and parasitic diseases (A00–A49,A51–A79,B35–B99)	–	†
Malignant neoplasms (C00–C97)	–	†
In situ neoplasms, benign neoplasms and neoplasms of uncertain or unknown behavior (D00–D48)	86	0.5
Anemias (D50–D64)	2	†
Endocrine, nutritional and metabolic diseases (E00–E88)	3	†
Short stature, not elsewhere classified (E34.3)	1	†
Cystic fibrosis (E84)	–	†
Other endocrine, nutritional and metabolic diseases (E00–E32,E34.0–E34.2,E34.4–E34.9,E40–E83,E85–E88)	2	†
Meningitis (G00,G03)	–	†
Other diseases of nervous system and sense organs (G04–H93)	4	†
Umbilical hernia (K42)	–	†
Other hernia (K40–K41,K43–K46)	–	†
Other and unspecified diseases of digestive system (K00–K38,K50–K92)	2	†
All other diseases, excluding perinatal conditions, congenital anomalies, and symptoms, signs and ill-defined conditions (D65–D89,I00–J98,L00–N98,U04)	11	†
Certain conditions originating in the perinatal period (P00–P96)	14,103	89.0
Fetus affected by maternal conditions that may be unrelated to present pregnancy (P00)	1,239	7.8
Fetus affected by maternal hypertensive disorders (P00.0)	683	4.3
Fetus affected by maternal renal and urinary tract diseases (P00.1)	21	0.1
Fetus affected by maternal infectious and parasitic diseases (P00.2)	83	0.5
Fetus affected by other maternal circulatory and respiratory diseases (P00.3)	64	0.4
Fetus affected by maternal nutritional disorders (P00.4)	3	†
Fetus affected by maternal injury (P00.5)	45	0.3
Fetus affected by surgical procedure on mother (P00.6)	2	†
Fetus affected by other medical procedures and maternal conditions (P00.7–P00.8)	338	2.1
Fetus affected by unspecified maternal condition (P00.9)	–	†
Fetus affected by maternal complications of pregnancy (P01)	2,255	14.2
Fetus affected by incompetent cervix (P01.0)	369	2.3
Fetus affected by premature rupture of membranes (P01.1)	1,334	8.4
Fetus affected by oligohydramnios (P01.2)	78	0.5
Fetus affected by polyhydramnios (P01.3)	34	0.2
Fetus affected by ectopic pregnancy (P01.4)	2	†
Fetus affected by multiple pregnancy (P01.5)	321	2.0
Fetus affected by maternal death (P01.6)	14	†
Fetus affected by malpresentation before labor (P01.7)	4	†
Fetus affected by other and unspecified maternal complications of pregnancy (P01.8–P01.9)	99	0.6
Fetus affected by complications of placenta, cord and membranes (P02)	4,504	28.4
Fetus affected by placenta previa (P02.0)	20	0.1
Fetus affected by other forms of placental separation and hemorrhage (P02.1)	1,311	8.3
Fetus affected by other and unspecified morphological and functional abnormalities of placenta (P02.2)	1,063	6.7
Fetus affected by placental transfusion syndromes (P02.3)	108	0.7
Fetus affected by prolapsed cord (P02.4)	110	0.7
Fetus affected by other compression of umbilical cord (P02.5)	931	5.9
Fetus affected by other and unspecified conditions of umbilical cord (P02.6)	418	2.6
Fetus affected by chorioamnionitis (P02.7)	531	3.4
Fetus affected by other and unspecified abnormalities of membranes (P02.8–P02.9)	12	†
Fetus affected by other complications of labor and delivery (P03)	155	1.0
Fetus affected by breech delivery and extraction (P03.0)	10	†
Fetus affected by other malpresentation, malposition and disproportion during labor and delivery (P03.1)	4	†
Fetus affected by forceps delivery (P03.2)	–	†
Fetus affected by delivery by vacuum extractor (ventouse) (P03.3)	–	†
Fetus affected by cesarean delivery (P03.4)	–	†
Fetus affected by precipitate delivery (P03.5)	2	†
Fetus affected by abnormal uterine contractions (P03.6)	2	†
Fetus affected by other and unspecified complications of labor and delivery (P03.8–P03.9)	137	0.9
Fetus affected by noxious influences transmitted via placenta (P04)	97	0.6
Slow fetal growth and fetal malnutrition (P05)	102	0.6
Disorders related to short gestation and low birth weight, not elsewhere classified (P07)	347	2.2
Extremely low birth weight or extreme immaturity (P07.0,P07.2)	181	1.1
Other low birth weight and preterm (P07.1,P07.3)	166	1.0

See footnotes at end of table.

Table 1. Deaths and percentage of fetal deaths according to 124 selected causes of fetal death: 37 areas, 2014—Con.

Cause of death	Number of deaths	Percent
Disorders related to long gestation and high birth weight (P08)	2	†
Exceptionally large size and other heavy for gestational age fetus (P08.0–P08.1)	–	†
Post-term, not heavy for gestational age fetus (P08.2)	2	†
Birth trauma (P10–P15)	2	†
Intracranial laceration and hemorrhage due to birth injury and other injuries to central nervous system (P10–P11)	–	†
Other birth trauma (P12–P15)	2	†
Intrauterine hypoxia and birth asphyxia (P20–P21)	22	0.1
Intrauterine hypoxia first noted before onset of labor (P20.0)	–	†
Intrauterine hypoxia first noted during labor and delivery (P20.1)	–	†
Intrauterine hypoxia, unspecified (P20.9)	22	0.1
Birth asphyxia (P21)	–	†
Other respiratory conditions originating in the perinatal period (P22.8–P22.9,P23–P28)	8	†
Congenital pneumonia (P23)	2	†
Aspiration syndromes (P24)	2	†
Interstitial emphysema and related conditions originating in the perinatal period (P25)	–	†
Atelectasis (P28.0–P28.1)	–	†
Other respiratory system disorders (P22.8–P22.9,P26–P27,P28.2–P28.9)	4	†
Infections specific to the perinatal period (P35–P39)	12	†
Congenital rubella syndrome (P35.0)	–	†
Congenital cytomegalovirus infection (P35.1)	5	†
Congenital herpesviral (herpes simplex) infection (P35.2)	–	†
Congenital viral hepatitis (P35.3)	1	†
Bacterial sepsis (P36)	–	†
Congenital tuberculosis (P37.0)	–	†
Congenital toxoplasmosis (P37.1)	–	†
Other infections specific to the perinatal period (P35.8–P35.9,P37.2–P37.9,P38–P39)	6	†
Fetal hemorrhage (P50–P54)	23	0.1
Hemolytic disease of fetus (P55–P56)	13	†
Rh isoimmunization of fetus (P55.0)	11	†
ABO isoimmunization of fetus (P55.1)	1	†
Other hemolytic disease of fetus (P55.8–P55.9)	1	†
Hydrops fetalis due to hemolytic disease (P56)	–	†
Perinatal jaundice (P57–P59)	–	†
Hematological disorders (P60–P61)	2	†
Transitory endocrine and metabolic disorders specific to fetus (P70–P74)	407	2.6
Syndrome of infant of a diabetic mother and neonatal diabetes mellitus (P70.0–P70.2)	406	2.6
Other transitory endocrine and metabolic disorders specific to fetus (P70.3–P70.9,P71–P74)	1	†
Digestive system disorders of fetus (P76–P78)	1	†
Other conditions originating in the perinatal period (P29,P80–P96)	4,911	31.0
Hydrops fetalis not due to hemolytic disease (P83.2)	174	1.1
Fetal death of unspecified cause (P95)	4,705	29.7
Withdrawal symptoms from maternal use of drugs of addiction (P96.1)	–	†
Termination of pregnancy (P96.4)	2	†
Complications of intrauterine procedures, not elsewhere classified (P96.5)	–	†
All other specified conditions originating in the perinatal period (P29,P83.0–P83.1,P83.3–P83.9,P91, P94,P96.0,P96.3,P96.8)	30	0.2
Condition originating in the perinatal period, unspecified (P96.9)	–	†
Congenital malformations, deformations and chromosomal abnormalities (Q00–Q99)	1,614	10.2
Congenital malformations of nervous system (Q00–Q07)	312	2.0
Anencephaly and similar malformations (Q00)	134	0.8
Encephalocele (Q01)	13	†
Microcephaly (Q02)	3	†
Congenital hydrocephalus (Q03)	72	0.5
Reduction deformities of brain (Q04.0–Q04.3)	29	0.2
Other congenital malformations of brain (Q04.4–Q04.9)	20	0.1
Spina bifida (Q05)	17	†
Other congenital malformations of spinal cord and nervous system (Q06–Q07)	24	0.2
Congenital malformations of eye, ear, face and neck (Q10–Q18)	9	†
Congenital malformations of heart (Q20–Q24)	176	1.1
Other congenital malformations of circulatory system (Q25–Q28)	51	0.3
Congenital malformations of lung (Q33)	7	†
Other congenital malformations of respiratory system (Q30–Q32,Q34)	6	†
Congenital malformations of digestive system (Q35–Q45)	14	†
Congenital malformations of genital organs (Q50–Q56)	6	†

See footnotes at end of table.

Table 1. Deaths and percentage of fetal deaths according to 124 selected causes of fetal death: 37 areas, 2014—Con.

Cause of death	Number of deaths	Percent
Congenital malformations of urinary system (Q60–Q64)	108	0.7
Renal agenesis and other reduction defects of kidney (Q60)	59	0.4
Cystic kidney disease (Q61)	26	0.2
Other congenital malformations of urinary system (Q62–Q64)	23	0.1
Congenital malformations and deformations of musculoskeletal system, limbs and integument (Q65–Q85)	194	1.2
Other congenital malformations (Q86–Q89)	144	0.9
Conjoined twins (Q89.4)	4	†
Multiple congenital malformations, not elsewhere classified (Q89.7)	63	0.4
All other congenital malformations (Q86–Q87,Q89.0–Q89.3,Q89.8–Q89.9)	77	0.5
Chromosomal abnormalities, not elsewhere classified (Q90–Q99)	587	3.7
Down's syndrome (Q90)	98	0.6
Edwards' syndrome (Q91.0–Q91.3)	227	1.4
Patau's syndrome (Q91.4–Q91.7)	66	0.4
Other chromosomal abnormalities, not elsewhere classified (Q92–Q99)	196	1.2
Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified (R00–R99)	12	†
External causes of mortality (*U01,V01–Y84)	1	†
Accidents (unintentional injuries) (V01–X59)	1	†
Assault (homicide) (*U01,X85–Y09)	–	†
Complications of medical and surgical care (Y40–Y84)	–	†
Other external causes (Y10–Y36)	–	†

– Quantity zero.
† Percent not shown in this table when the number of deaths is less than 20.

SOURCE: NCHS, National Vital Statistics System, Mortality.

Table 2. Fetal deaths and percentage of total deaths for the five selected causes, by race and ethnicity: 37 areas, 2014

Rank	Cause of death	Number of deaths	Percent
	All races and ethnicities[1]		
…	All causes	15,840	100.0
1	Fetal death of unspecified cause (P95)	4,705	29.7
2	Fetus affected by complications of placenta, cord and membranes (P02)	4,504	28.4
3	Fetus affected by maternal complications of pregnancy (P01)	2,255	14.2
4	Congenital malformations, deformations and chromosomal abnormalities (Q00–Q99)	1,614	10.2
5	Fetus affected by maternal conditions that may be unrelated to present pregnancy (P00)	1,239	7.8
…	All other causes (residual)	1,523	9.6
	Non-Hispanic white		
…	All causes	7,333	100.0
1	Fetal death of unspecified cause (P95)	2,198	30.0
2	Fetus affected by complications of placenta, cord and membranes (P02)	2,125	29.0
3	Congenital malformations, deformations and chromosomal abnormalities (Q00–Q99)	919	12.5
4	Fetus affected by maternal complications of pregnancy (P01)	852	11.6
5	Fetus affected by maternal conditions that may be unrelated to present pregnancy (P00)	527	7.2
…	All other causes (residual)	712	9.7
	Non-Hispanic black		
…	All causes	4,281	100.0
1	Fetal death of unspecified cause (P95)	1,262	29.5
2	Fetus affected by complications of placenta, cord and membranes (P02)	1,195	27.9
3	Fetus affected by maternal complications of pregnancy (P01)	753	17.6
4	Fetus affected by maternal conditions that may be unrelated to present pregnancy (P00)	421	9.8
5	Congenital malformations, deformations and chromosomal abnormalities (Q00–Q99)	252	5.9
…	All other causes (residual)	398	9.3
	Hispanic		
…	All causes	2,739	100.0
1	Fetus affected by complications of placenta, cord and membranes (P02)	788	28.8
2	Fetal death of unspecified cause (P95)	740	27.0
3	Fetus affected by maternal complications of pregnancy (P01)	446	16.3
4	Congenital malformations, deformations and chromosomal abnormalities (Q00–Q99)	290	10.6
5	Fetus affected by maternal conditions that may be unrelated to present pregnancy (P00)	189	6.9
…	All other causes (residual)	286	10.4

… Category not applicable.

[1]Includes other races not shown and origin not stated.

SOURCE: NCHS, National Vital Statistics System, Mortality.

Table 3. Fetal deaths and percentage of total deaths for the five selected causes, by maternal age: 37 areas, 2014

Rank	Cause of death	Number of deaths	Percent
	All ages (years)		
…	All causes	15,840	100.0
1	Fetal death of unspecified cause (P95)	4,705	29.7
2	Fetus affected by complications of placenta, cord and membranes (P02)	4,504	28.4
3	Fetus affected by maternal complications of pregnancy (P01)	2,255	14.2
4	Congenital malformations, deformations and chromosomal abnormalities (Q00–Q99)	1,614	10.2
5	Fetus affected by maternal conditions that may be unrelated to present pregnancy (P00)	1,239	7.8
…	All other causes (residual)	1,523	9.6
	Under 20		
…	All causes	1,264	100.0
1	Fetal death of unspecified cause (P95)	421	33.3
2	Fetus affected by complications of placenta, cord and membranes (P02)	329	26.0
3	Fetus affected by maternal complications of pregnancy (P01)	203	16.1
4	Congenital malformations, deformations and chromosomal abnormalities (Q00–Q99)	122	9.7
5	Fetus affected by maternal conditions that may be unrelated to present pregnancy (P00)	79	6.3
…	All other causes (residual)	110	8.7
	20–39		
…	All causes	13,851	100.0
1	Fetal death of unspecified cause (P95)	4,091	29.5
2	Fetus affected by complications of placenta, cord and membranes (P02)	3,998	28.9
3	Fetus affected by maternal complications of pregnancy (P01)	1,943	14.0
4	Congenital malformations, deformations and chromosomal abnormalities (Q00–Q99)	1,383	10.0
5	Fetus affected by maternal conditions that may be unrelated to present pregnancy (P00)	1,102	8.0
…	All other causes (residual)	1,334	9.6
	40 and over		
…	All causes	725	100.0
1	Fetal death of unspecified cause (P95)	193	26.6
2	Fetus affected by complications of placenta, cord and membranes (P02)	177	24.4
3	Fetus affected by maternal complications of pregnancy (P01)	109	15.0
3	Congenital malformations, deformations and chromosomal abnormalities (Q00–Q99)	109	15.0
5	Fetus affected by maternal conditions that may be unrelated to present pregnancy (P00)	58	8.0
…	All other causes (residual)	79	10.9

… Category not applicable.

SOURCE: NCHS, National Vital Statistics System, Mortality.

Table 4. Fetal deaths and percentage of total deaths for the five selected causes, by sex: 37 areas, 2014

Rank	Cause of death	Number of deaths	Percent
	Both sexes		
…	All causes	15,840	100.0
1	Fetal death of unspecified cause (P95)	4,705	29.7
2	Fetus affected by complications of placenta, cord and membranes (P02)	4,504	28.4
3	Fetus affected by maternal complications of pregnancy (P01)	2,255	14.2
4	Congenital malformations, deformations and chromosomal abnormalities (Q00–Q99)	1,614	10.2
5	Fetus affected by maternal conditions that may be unrelated to present pregnancy (P00)	1,239	7.8
…	All other causes (residual)	1,523	9.6
	Male		
…	All causes	8,377	100.0
1	Fetal death of unspecified cause (P95)	2,550	30.4
2	Fetus affected by complications of placenta, cord and membranes (P02)	2,386	28.5
3	Fetus affected by maternal complications of pregnancy (P01)	1,240	14.8
4	Congenital malformations, deformations and chromosomal abnormalities (Q00–Q99)	738	8.8
5	Fetus affected by maternal conditions that may be unrelated to present pregnancy (P00)	640	7.6
…	All other causes (residual)	823	9.8
	Female		
…	All causes	7,463	100.0
1	Fetal death of unspecified cause (P95)	2,155	28.9
2	Fetus affected by complications of placenta, cord and membranes (P02)	2,118	28.4
3	Fetus affected by maternal complications of pregnancy (P01)	1,015	13.6
4	Congenital malformations, deformations and chromosomal abnormalities (Q00–Q99)	876	11.7
5	Fetus affected by maternal conditions that may be unrelated to present pregnancy (P00)	599	8.0
…	All other causes (residual)	700	9.4

… Category not applicable.

SOURCE: NCHS, National Vital Statistics System, Mortality.

Table 5. Fetal deaths and percentage of total deaths for the five selected causes, by birthweight: 37 areas, 2014

Rank	Cause of death	Number of deaths	Percent
	All birthweights[1]		
…	All causes	15,840	100.0
1	Fetal death of unspecified cause (P95)	4,705	29.7
2	Fetus affected by complications of placenta, cord and membranes (P02)	4,504	28.4
3	Fetus affected by maternal complications of pregnancy (P01)	2,255	14.2
4	Congenital malformations, deformations and chromosomal abnormalities (Q00–Q99)	1,614	10.2
5	Fetus affected by maternal conditions that may be unrelated to present pregnancy (P00)	1,239	7.8
…	All other causes (residual)	1,523	9.6
	Less than 1,500 grams		
…	All causes	9,631	100.0
1	Fetal death of unspecified cause (P95)	2,659	27.6
2	Fetus affected by complications of placenta, cord and membranes (P02)	2,322	24.1
3	Fetus affected by maternal complications of pregnancy (P01)	1,894	19.7
4	Congenital malformations, deformations and chromosomal abnormalities (Q00–Q99)	1,085	11.3
5	Fetus affected by maternal conditions that may be unrelated to present pregnancy (P00)	791	8.2
…	All other causes (residual)	880	9.1
	1,500–2,499 grams		
…	All causes	2,449	100.0
1	Fetus affected by complications of placenta, cord and membranes (P02)	912	37.2
2	Fetal death of unspecified cause (P95)	748	30.5
3	Congenital malformations, deformations and chromosomal abnormalities (Q00–Q99)	261	10.7
4	Fetus affected by maternal conditions that may be unrelated to present pregnancy (P00)	191	7.8
5	Fetus affected by maternal complications of pregnancy (P01)	140	5.7
…	All other causes (residual)	197	8.0
	2,500–3,999 grams		
…	All causes	2,380	100.0
1	Fetus affected by complications of placenta, cord and membranes (P02)	944	39.7
2	Fetal death of unspecified cause (P95)	865	36.3
3	Fetus affected by maternal conditions that may be unrelated to present pregnancy (P00)	154	6.5
4	Syndrome of infant of a diabetic mother and neonatal diabetes mellitus (P70.0–P70.2)	136	5.7
5	Congenital malformations, deformations and chromosomal abnormalities (Q00–Q99)	95	4.0
…	All other causes (residual)	186	7.8
	4,000 grams or more		
…	All causes	305	100.0
1	Fetal death of unspecified cause (P95)	103	33.8
2	Syndrome of infant of a diabetic mother and neonatal diabetes mellitus (P70.0–P70.2)	85	27.9
3	Fetus affected by complications of placenta, cord and membranes (P02)	70	23.0
4	Fetus affected by maternal conditions that may be unrelated to present pregnancy (P00)	24	7.9
5	Congenital malformations, deformations and chromosomal abnormalities (Q00–Q99)	10	3.3
…	All other causes (residual)	13	4.3

… Category not applicable.
[1]Includes not stated birthweight.

SOURCE: NCHS, National Vital Statistics System, Mortality.

Table 6. Fetal deaths and percentage of total deaths for the five selected causes, by gestational age: 37 areas, 2014

Rank	Cause of death	Number of deaths	Percent
	Total, 20 weeks or more[1]		
…	All causes	15,840	100.0
1	Fetal death of unspecified cause (P95)	4,705	29.7
2	Fetus affected by complications of placenta, cord and membranes (P02)	4,504	28.4
3	Fetus affected by maternal complications of pregnancy (P01)	2,255	14.2
4	Congenital malformations, deformations and chromosomal abnormalities (Q00–Q99)	1,614	10.2
5	Fetus affected by maternal conditions that may be unrelated to present pregnancy (P00)	1,239	7.8
…	All other causes (residual)	1,523	9.6
	20–22 weeks		
…	All causes	5,018	100.0
1	Fetus affected by maternal complications of pregnancy (P01)	1,473	29.4
2	Fetal death of unspecified cause (P95)	1,211	24.1
3	Fetus affected by complications of placenta, cord and membranes (P02)	1,047	20.9
4	Congenital malformations, deformations and chromosomal abnormalities (Q00–Q99)	502	10.0
5	Fetus affected by maternal conditions that may be unrelated to present pregnancy (P00)	294	5.9
…	All other causes (residual)	491	9.8
	23–25 weeks		
…	All causes	2,293	100.0
1	Fetal death of unspecified cause (P95)	694	30.3
2	Fetus affected by complications of placenta, cord and membranes (P02)	518	22.6
3	Fetus affected by maternal complications of pregnancy (P01)	313	13.7
4	Congenital malformations, deformations and chromosomal abnormalities (Q00–Q99)	302	13.2
5	Fetus affected by maternal conditions that may be unrelated to present pregnancy (P00)	244	10.6
…	All other causes (residual)	222	9.7
	26–28 weeks		
…	All causes	1,560	100.0
1	Fetal death of unspecified cause (P95)	502	32.2
2	Fetus affected by complications of placenta, cord and membranes (P02)	456	29.2
3	Congenital malformations, deformations and chromosomal abnormalities (Q00–Q99)	182	11.7
4	Fetus affected by maternal conditions that may be unrelated to present pregnancy (P00)	169	10.8
5	Fetus affected by maternal complications of pregnancy (P01)	115	7.4
…	All other causes (residual)	136	8.7
	29–37 weeks		
…	All causes	4,976	100.0
1	Fetus affected by complications of placenta, cord and membranes (P02)	1,752	35.2
2	Fetal death of unspecified cause (P95)	1,542	31.0
3	Congenital malformations, deformations and chromosomal abnormalities (Q00–Q99)	500	10.0
4	Fetus affected by maternal conditions that may be unrelated to present pregnancy (P00)	421	8.5
5	Fetus affected by maternal complications of pregnancy (P01)	285	5.7
…	All other causes (residual)	476	9.6
	38–40 weeks		
…	All causes	1,765	100.0
1	Fetus affected by complications of placenta, cord and membranes (P02)	667	37.8
2	Fetal death of unspecified cause (P95)	663	37.6
3	Congenital malformations, deformations and chromosomal abnormalities (Q00–Q99)	101	5.7
4	Fetus affected by maternal conditions that may be unrelated to present pregnancy (P00)	100	5.7
5	Syndrome of infant of a diabetic mother and neonatal diabetes mellitus (P70.0–P70.2)	89	5.0
…	All other causes (residual)	145	8.2
	41 weeks or more		
…	All causes	145	100.0
1	Fetal death of unspecified cause (P95)	59	40.7
2	Fetus affected by complications of placenta, cord and membranes (P02)	47	32.4
3	Congenital malformations, deformations and chromosomal abnormalities (Q00–Q99)	21	14.5
4	Fetus affected by maternal conditions that may be unrelated to present pregnancy (P00)	6	4.1
5	Fetus affected by maternal complications of pregnancy (P01)	4	2.8
…	All other causes (residual)	8	5.5

… Category not applicable.

[1]Includes gestation not stated.

SOURCE: NCHS, National Vital Statistics System, Mortality.

Table 7. Fetal deaths and percentage of total deaths for the five selected causes, by plurality: 37 areas, 2014

Rank	Cause of death	Number of deaths	Percent
	All pluralities[1]		
…	All causes	15,840	100.0
1	Fetal death of unspecified cause (P95)	4,705	29.7
2	Fetus affected by complications of placenta, cord and membranes (P02)	4,504	28.4
3	Fetus affected by maternal complications of pregnancy (P01)	2,255	14.2
4	Congenital malformations, deformations and chromosomal abnormalities (Q00–Q99)	1,614	10.2
5	Fetus affected by maternal conditions that may be unrelated to present pregnancy (P00)	1,239	7.8
…	All other causes (residual)	1,523	9.6
	Single birth		
…	All causes	14,460	100.0
1	Fetal death of unspecified cause (P95)	4,466	30.9
2	Fetus affected by complications of placenta, cord and membranes (P02)	4,129	28.6
3	Fetus affected by maternal complications of pregnancy (P01)	1,698	11.7
4	Congenital malformations, deformations and chromosomal abnormalities (Q00–Q99)	1,546	10.7
5	Fetus affected by maternal conditions that may be unrelated to present pregnancy (P00)	1,164	8.0
…	All other causes (residual)	1,457	10.1
	Multiple birth		
…	All causes	1,380	100.0
1	Fetus affected by maternal complications of pregnancy (P01)	557	40.4
2	Fetus affected by complications of placenta, cord and membranes (P02)	375	27.2
3	Fetal death of unspecified cause (P95)	239	17.3
4	Fetus affected by maternal conditions that may be unrelated to present pregnancy (P00)	75	5.4
5	Congenital malformations, deformations and chromosomal abnormalities (Q00–Q99)	68	4.9
…	All other causes (residual)	66	4.8

… Category not applicable.
[1]Includes plurality not stated.

SOURCE: NCHS, National Vital Statistics System, Mortality.

Table 8. Fetal deaths and percentage of total deaths for the five selected causes, by examinations done and if used for determining cause: 37 areas, 2014

Rank	Cause of death	Number of deaths	Percent
	All fetal deaths		
…	All causes	15,840	100.0
1	Fetal death of unspecified cause (P95)	4,705	29.7
2	Fetus affected by complications of placenta, cord and membranes (P02)	4,504	28.4
3	Fetus affected by maternal complications of pregnancy (P01)	2,255	14.2
4	Congenital malformations, deformations and chromosomal abnormalities (Q00–Q99)	1,614	10.2
5	Fetus affected by maternal conditions that may be unrelated to present pregnancy (P00)	1,239	7.8
…	All other causes (residual)	1,523	9.6
	Histological or placenta examination and autopsy, total[1]		
…	All causes	1,416	100.0
1	Fetal death of unspecified cause (P95)	500	35.3
2	Fetus affected by complications of placenta, cord and membranes (P02)	386	27.3
3	Fetus affected by maternal conditions that may be unrelated to present pregnancy (P00)	148	10.5
4	Congenital malformations, deformations and chromosomal abnormalities (Q00–Q99)	122	8.6
5	Fetus affected by maternal complications of pregnancy (P01)	111	7.8
…	All other causes (residual)	149	10.5
	Results used		
…	All causes	793	100.0
1	Fetal death of unspecified cause (P95)	274	34.6
2	Fetus affected by complications of placenta, cord and membranes (P02)	252	31.8
3	Fetus affected by maternal conditions that may be unrelated to present pregnancy (P00)	74	9.3
4	Fetus affected by maternal complications of pregnancy (P01)	61	7.7
5	Congenital malformations, deformations and chromosomal abnormalities (Q00–Q99)	54	6.8
…	All other causes (residual)	78	9.8
	Results not used		
…	All causes	623	100.0
1	Fetal death of unspecified cause (P95)	226	36.3
2	Fetus affected by complications of placenta, cord and membranes (P02)	134	21.5
3	Fetus affected by maternal conditions that may be unrelated to present pregnancy (P00)	74	11.9
4	Congenital malformations, deformations and chromosomal abnormalities (Q00–Q99)	68	10.9
5	Fetus affected by maternal complications of pregnancy (P01)	50	8.0
…	All other causes (residual)	71	11.4
	Histological or placenta examination only, total[2]		
…	All causes	6,143	100.0
1	Fetus affected by complications of placenta, cord and membranes (P02)	2,060	33.5
2	Fetal death of unspecified cause (P95)	1,484	24.2
3	Fetus affected by maternal complications of pregnancy (P01)	960	15.6
4	Fetus affected by maternal conditions that may be unrelated to present pregnancy (P00)	544	8.9
5	Congenital malformations, deformations and chromosomal abnormalities (Q00–Q99)	524	8.5
…	All other causes (residual)	571	9.3
	Results used		
…	All causes	1,494	100.0
1	Fetus affected by complications of placenta, cord and membranes (P02)	638	42.7
2	Fetal death of unspecified cause (P95)	305	20.4
3	Fetus affected by maternal complications of pregnancy (P01)	226	15.1
4	Fetus affected by maternal conditions that may be unrelated to present pregnancy (P00)	134	9.0
5	Congenital malformations, deformations and chromosomal abnormalities (Q00–Q99)	70	4.7
…	All other causes (residual)	121	8.1
	Results not used		
…	All causes	4,649	100.0
1	Fetus affected by complications of placenta, cord and membranes (P02)	1,422	30.6
2	Fetal death of unspecified cause (P95)	1,179	25.4
3	Fetus affected by maternal complications of pregnancy (P01)	734	15.8
4	Congenital malformations, deformations and chromosomal abnormalities (Q00–Q99)	454	9.8
5	Fetus affected by maternal conditions that may be unrelated to present pregnancy (P00)	410	8.8
…	All other causes (residual)	450	9.7

See footnotes at end of table.

Table 8. Fetal deaths and percentage of total deaths for the five selected causes, by examinations done and if used for determining cause: 37 areas, 2014—Con.

Rank	Cause of death	Number of deaths	Percent
	Autopsy only, total[3]		
…	All causes	445	100.0
1	Fetal death of unspecified cause. (P95)	161	36.2
2	Fetus affected by complications of placenta, cord and membranes (P02)	102	22.9
3	Congenital malformations, deformations and chromosomal abnormalities (Q00–Q99)	52	11.7
4	Fetus affected by maternal conditions that may be unrelated to present pregnancy (P00)	38	8.5
5	Fetus affected by maternal complications of pregnancy (P01)	34	7.6
…	All other causes (residual)	58	13.0
	Results used		
…	All causes	166	100.0
1	Fetal death of unspecified cause. (P95)	56	33.7
2	Fetus affected by complications of placenta, cord and membranes (P02)	48	28.9
3	Congenital malformations, deformations and chromosomal abnormalities (Q00–Q99)	23	13.9
4	Fetus affected by maternal conditions that may be unrelated to present pregnancy (P00)	17	10.2
5	Fetus affected by maternal complications of pregnancy (P01)	10	6.0
…	All other causes (residual)	12	7.2
	Results not used		
…	All causes	279	100.0
1	Fetal death of unspecified cause. (P95)	105	37.6
2	Fetus affected by complications of placenta, cord and membranes (P02)	54	19.4
3	Congenital malformations, deformations and chromosomal abnormalities (Q00–Q99)	29	10.4
4	Fetus affected by maternal complications of pregnancy (P01)	24	8.6
5	Fetus affected by maternal conditions that may be unrelated to present pregnancy (P00)	21	7.5
…	All other causes (residual)	46	16.5
	No examination done or just planned when report complete, so no results to use[4]		
…	All causes	7,836	100.0
1	Fetal death of unspecified cause. (P95)	2,560	32.7
2	Fetus affected by complications of placenta, cord and membranes (P02)	1,956	25.0
3	Fetus affected by maternal complications of pregnancy (P01)	1,150	14.7
4	Congenital malformations, deformations and chromosomal abnormalities (Q00–Q99)	916	11.7
5	Fetus affected by maternal conditions that may be unrelated to present pregnancy (P00)	509	6.5
…	All other causes (residual)	745	9.5
	Histological examination only planned[5]		
…	All causes	2,102	100.0
1	Fetal death of unspecified cause. (P95)	596	28.4
2	Fetus affected by complications of placenta, cord and membranes (P02)	575	27.4
3	Fetus affected by maternal complications of pregnancy (P01)	337	16.0
4	Congenital malformations, deformations and chromosomal abnormalities (Q00–Q99)	222	10.6
5	Fetus affected by maternal conditions that may be unrelated to present pregnancy (P00)	168	8.0
…	All other causes (residual)	204	9.7
	Autopsy only planned[6]		
…	All causes	104	100.0
1	Fetal death of unspecified cause. (P95)	46	44.2
2	Fetus affected by complications of placenta, cord and membranes (P02)	23	22.1
3	Fetus affected by maternal complications of pregnancy (P01)	12	11.5
4	Congenital malformations, deformations and chromosomal abnormalities (Q00–Q99)	11	10.6
5	Fetus affected by maternal conditions that may be unrelated to present pregnancy (P00)	4	3.8
…	All other causes (residual)	8	7.7
	Both planned[7]		
…	All causes	1,124	100.0
1	Fetal death of unspecified cause. (P95)	472	42.0
2	Fetus affected by complications of placenta, cord and membranes (P02)	232	20.6
3	Congenital malformations, deformations and chromosomal abnormalities (Q00–Q99)	117	10.4
4	Fetus affected by maternal conditions that may be unrelated to present pregnancy (P00)	99	8.8
5	Fetus affected by maternal complications of pregnancy (P01)	93	8.3
…	All other causes (residual)	111	9.9

See footnotes at end of table.

Table 8. Fetal deaths and percentage of total deaths for the five selected causes, by examinations done and if used for determining cause: 37 areas, 2014—Con.

Rank	Cause of death	Number of deaths	Percent
	Had neither[8]		
…	All causes	4,506	100.0
1	Fetal death of unspecified cause (P95)	1,446	32.1
2	Fetus affected by complications of placenta, cord and membranes (P02)	1,126	25.0
3	Fetus affected by maternal complications of pregnancy (P01)	708	15.7
4	Congenital malformations, deformations and chromosomal abnormalities (Q00–Q99)	566	12.6
5	Fetus affected by maternal conditions that may be unrelated to present pregnancy (P00)	238	5.3
…	All other causes (residual)	422	9.4

… Category not applicable.
[1]Includes any record where a histological or placenta examination and autopsy had both been conducted.
[2]Includes any record where a histological or placenta examination had been conducted and autopsy was not done or just planned.
[3]Includes any record where an autopsy had been conducted and a histological or placenta examination was not done or just planned.
[4]Excludes any record where either a histological or placenta examination or an autopsy had been conducted.
[5]Includes any record where a histological or placenta examination was planned but an autopsy was not done or planned.
[6]Includes any record where an autopsy was planned but a histological or placenta examination was not done or planned.
[7]Includes any record where both an autopsy and histological or placenta examination were planned.
[8]Includes any record where neither histological nor placenta examination nor autopsy was done or planned

SOURCE: NCHS, National Vital Statistics System, Mortality.

Technical Notes

The National Vital Statistics System encompasses several databases of statistical information on vital events such as fetal deaths, births, and deaths. These data sources allow the federal government, the research community, and the public to be aware of and to monitor basic trends occurring within the U.S. population. Data in this report are drawn from two different National Center for Health Statistics (NCHS) vital statistics data files: the 2014 fetal death data set and the 2014 birth data set. More than 99% of births occurring in the United States are registered (26). However, this report is based on an extract of the fetal data.

NCHS adopted the World Health Organization (WHO) definition of "fetal death" as the recommended standard for use in the early 1950s. The following inclusive definition was developed by WHO in 1950 in order to end confusion arising from the use of such terms as "stillbirth," "spontaneous abortion," and "miscarriage," which tend to refer to part of, rather than at any time during, pregnancy:

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

The use of the term stillbirth has increased in recent years in research literature. In part, this responds to sensitivity concerns among people who have experienced the event.

The states use a consistent definition of fetal death, but the registration of a fetal death in most states is required only for those fetal deaths occurring at 20 weeks of gestation or more. National fetal death statistics are compiled from state fetal death reports received by NCHS every year, and typically are tabulated for those deaths of 20 weeks of gestation or more. Statistics on induced terminations of pregnancies for live fetuses (abortions) are excluded in national fetal-death statistics and are not included in this report.

Gestational age is measured by obstetric estimate of gestation at delivery. There are several conventional groupings often used for gestational age. However, in this report, the categories are generally collapsed into 3-week periods. Records with not-stated gestational age are excluded from the report.

Race and Hispanic origin are captured with two separate items. As of 2003, jurisdictions began collecting multiple-race data. This report presents data for single-race, non-Hispanic white; single-race, non-Hispanic black; and Hispanic births. Other races, multiple race, and origin not stated are not shown in the table on race and Hispanic origin.

The number of fetal deaths and live births reported for an area represent complete counts of such events. As such, they are not subject to sampling error, although they are subject to nonsampling error in the registration process.

Because fetal deaths in the reporting area are not a random sample of all fetal deaths, the findings are not generalizable to the entire United States. Note that the race and Hispanic-origin and maternal-age distributions of fetal deaths occurring in the 35-state, District of Columbia, and New York City reporting areas are somewhat different from those for the entire United States (Table I). In the reporting areas included in this report, Hispanic women were underrepresented and non-Hispanic white women were overrepresented, while the distribution for non-Hispanic black women was similar when compared with the total United States. Additionally, women in the reporting area were more likely to be aged 20–24 and less likely to be aged 35–39 when compared with the total United States. The distributions for all other age groups were similar.

For additional information on measurement of data items shown in this report and statistical methods, see the 2014 fetal death data files and user's guide (6).

Table I. Characteristics of the 37 reporting areas and of all fetal deaths, by selected demographic characteristics: United States, 2014

Characteristic of mother	37 reporting areas		Total United States	
	Number of deaths	Percent	Number of dealths	Percent
Race and Hispanic origin				
All races and origins[1]	15,840	100.0	24,032	100.0
Non-Hispanic				
White[2]	7,439	*48.5	10,643	45.9
Black[2]	4,343	28.3	6,367	27.5
Hispanic[3]	2,739	*17.9	4,745	20.5
Age (years)				
Under 20	1,264	8.0	1,820	7.6
20–24	3,649	*23.0	5,315	22.1
25–29	4,217	26.6	6,294	26.2
30–34	3,822	24.1	5,950	24.8
35–39	2,163	*13.7	3,468	14.4
40 and over	725	4.6	1,185	4.9

* Difference significant at $p = 0.05$.

[1]Includes other races not shown and origin not stated.

[2]Race and Hispanic origin are reported separately on the report of fetal death. Race categories are consistent with 1977 Office of Management and Budget standards. Forty-one states, the District of Columbia, and New York City reported multiple-race data for 2014 that were bridged to single-race categories for comparability with other states; see 2006 fetal death data files and user's guide (available from: http://www.cdc.gov/nchs/data_access/Vitalstatsonline.htm). Data by race are for non-Hispanic persons.

[3]Includes all persons of Hispanic origin of any race.

SOURCE: NCHS, National Vital Statistics System.

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For more NCHS NVSRs, visit:
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National Vital Statistics Reports, Vol. 65, No. 7, October 31, 2016

Contents

Suggested citation

Hoyert DL, Gregory ECW. Cause of fetal death: Data from the Fetal Death Report, 2014. National vital statistics reports; vol 65 no 7. Hyattsville, MD: National Center for Health Statistics. 2016.

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DHHS Publication No. 2017–1120 • CS269827