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Selected Special Statistics

Stillbirths and Infant Deaths

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Research Summary

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Our Vision – Healthy Kansans Living in Safe and Sustainable Environments

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Executive Summary

Infant mortality is an important indicator of community health. It is associated with a variety of factors such as economic development, general living conditions, social wellbeing where basic needs are met, rates of illness such as diabetes and hypertension, and quality of the environment. This report builds on information in the *Annual Summary of Vital Statistics, 2016* providing a long-term assessment of progress on infant mortality. The report uses five-year rolling average infant mortality to evaluate trends.

In the last century, the Kansas infant mortality rate (IMR) has decreased dramatically, from 73.5 deaths per 1,000 live births in 1912 (2,795 infant deaths) to 5.9 in 2016 (223).

- The Kansas IMR remained the same from 2015 (5.9 deaths per 1,000 live births) to 2016. The Kansas rate met the Healthy People 2020 (HP2020) objective of 6.0 deaths per 1,000 live births. The White non-Hispanic population IMR (5.2) and the Hispanic IMR (5.1) met the HP2020 target while the Black non-Hispanic (15.2) rate did not.

- The Black non-Hispanic infant mortality rate has remained more than twice that of the White non-Hispanic rate for most of the last 20 years.

- During 2012-2016, most Kansas resident infant deaths occurred soon after birth. Over two-thirds (68.2% or 819 deaths) happened in the neonatal time period (less than 28 days).

- During 2012-2016, the leading cause of infant mortality was congenital anomalies (22.4%), followed by prematurity or low birth weight (19.7%), sudden unexpected infant death (SUID) causes (18.1%), and maternal factors and complications (8.9%).

- Perinatal deaths include stillbirths and hebdomadal deaths (less than seven days). Complications of placenta, umbilical cord, and membrane was the leading cause of stillbirths; Prematurity or low birthweight was the leading cause for hebdomadal deaths.

- The 2012-2016 premature infant mortality rate of 43.0 per 1,000 live births was over 17 times higher than the rate for infants born at term (2.5). The IMR for very premature infants was 198.9 deaths per 1,000 live births, 80 times higher than infants born at term.

The *Selected Special Statistics, Stillbirths and Infant Deaths, Kansas, 2016* summarizes vital records data on stillbirths and infant deaths. This report can be found at http://www.kdheks.gov/phi/index.htm. Persons inquiring about additional data needs can call (785) 296-8627.

Introduction

One of the basic indicators of the health of a community or state is infant mortality, the death of an infant before one year of age. The calculated infant mortality rate (IMR), serves as one proxy indicator of population health. It reflects the apparent association between the causes of infant mortality and other factors that are likely to influence the health status of the whole population such as economic development, general living conditions, social wellbeing where basic needs are met, rates of illness such as diabetes and hypertension, and quality of the environment [1].

Nationally, for 2015 the most recent year with final death data, statistics showed the infant mortality rate was 5.9 per 1,000 live births. The leading causes of infant death were congenital malformations; prematurity or low birthweight; sudden infant death syndrome (SIDS); and maternal factors and complications of pregnancy, labor and delivery [2].

The most recent national linked birth/infant death data set (2011-2013 data) included statistics on characteristics collected with the birth certificate in addition to the death certificate. Risk factors for infant death included Black non-Hispanic mothers, prematurity or low birthweight, multiple deliveries, unmarried mothers, mother's age (both younger and older mothers), and no prenatal care [3].

Healthy People 2020 (HP2020), which provides science-based, 10-year national objectives for improving the health of all Americans, includes infant mortality as a leading health indicator. The HP2020 target is 6.0 infant deaths per 1,000 live births [4].

The Kansas Department of Health and Environment's (KDHE) Bureau of Epidemiology and Public Health Informatics (BEPHI) monitors infant mortality and supports programs that promote access to health services for mothers and infants. The Bureau's Division of Public Health Informatics calculates the official state infant mortality rate as part of its ongoing mission to provide data and information to program managers, policy makers, health providers, and the public. This report augments information in the KDHE *Annual Summary of Vital Statistics, 2016* [5] and moves beyond single-year statistics in order to provide more long-term estimates of the true underlying rates.

Methodology

Statistics

Due to small numbers of events, preselected intervals of years are combined to increase data reliability. Five years (2012-2016) are combined for characteristic analysis, and intervals of 20 years and approximately 100 years are used for trend analysis. The long-term (~100 years) infant mortality numbers and rates may be under-reported due to incomplete data collection in the early 1900s.

Additionally, the relative standard error (RSE) is used in this report to evaluate reliability of rates. Values with a relative standard error of 30 percent or less are considered reliable. Values with a relative standard error greater than 30 percent but 50 percent or less

are considered unreliable, and rates with RSE greater than 50 percent have been suppressed in this document. This is consistent with standard National Center for Health Statistics (NCHS) practice [3, 6].

The following statistical tests have been applied where statistically significant differences have been noted in the document. When counts were ≥100, a normal distribution was assumed and the z-test was used to compare two infant mortality rates [3]. When counts were <100, a Poisson probability distribution was assumed and confidence intervals were calculated at the 95% confidence level to compare two infant mortality rates. If the confidence intervals of two values do not overlap it is considered a conservative estimate of a significant difference [10]. Caution should be used in interpreting these differences due to the relatively small number of occurrences and yearly fluctuations. Poisson Joinpoint regression models were used for trend analysis, and the annual percent change (APC) was used to characterize the trend over time [7, 8, 9]. Statistical significance is considered at the 0.05 level.

Five year rolling averages were used to smooth data trends over 20 years since year-to-year variation in infant mortality rates can result in a saw-tooth pattern that obscures underlying trends.

Stillbirths are also included in this report. Stillbirth statistics represent the first full year of events reported under new requirements. In Kansas, a stillbirth is defined as complete expulsion or extraction from its mother of a human child the gestational age of which is not less than 20 completed weeks, resulting in other than a live birth, and which is not an induced termination of pregnancy. [11]. The new definition has resulted in more events being reported. These events may have risk factors similar to those for infant deaths. Rates for 2014, 2015, and 2016 are not comparable to prior years.

All data reported are based on Kansas residence, unless otherwise noted.

Age Period of Death

The first year of life can be categorized by two major periods, the neonatal period (first 27 days of life) and the post-neonatal period (28 to 364 days of life). The infant deaths occurring in the neonatal period are also further sub-divided into the hebdomadal deaths (0-6 days) and post-hebdomadal deaths (7-27 days). Perinatal period III includes stillbirths and hebdomadal deaths.

Cause of Death Data

The cause of death referred to in this report is the primary or underlying cause of death. It is defined as the disease or injury which initiated the chain of events leading directly to death, or the circumstances of the accident or violence which produced the fatal injury. The underlying causes of death are established through a system known as the International Statistical Classification of Diseases and Related Health Problems,10th Revision (ICD-10) [12]. This system promotes uniformity and comparability in the collection and presentation of mortality data.

In this document, Sudden Infant Death Syndrome (SIDS) deaths (ICD-10 code R95) are combined with accidental suffocation and strangulation in bed (ICD-10 code W75) and unknown cause (ICD-10 code R99) in some of the figures/tables. This combination is categorized as Sudden Unexpected Infant Death (SUID).

Analyzing SUID is important since the national campaign to reduce the risk of SIDS has entered a new phase and will now include all sleep-related SUIDs. SIDS, a major component of SUID, decreased by about 50 percent in the 1990s with the greatest decline occurring after the “Safe to Sleep” campaign was initiated in 1994 [13]. Since then, the decline in the SIDS rate has been less dramatic. The decline in SIDS is likely explained by increasing rates of infant deaths classified as “accidental suffocation and strangulation in bed” and “unknown cause“[3].

Population Group Reporting

This method creates a unique matrix of population groups combining race and Hispanic origin for reporting statistics. In the death certificate statistics (unlinked data) of this document, the population groups are classified using the race/ethnicity of the decedent as reported on the death certificate. The funeral director supplies this information, which is provided by an informant such as a family member.

In the linked birth/infant death statistics, the population groups are classified using the race/ethnicity reported on the birth certificate for the mother. For more information on the population groups, see the Technical Notes in the *Annual Summary of Vital Statistics, 2016* [5].

Data Linkage

This report also provides findings based on the linking of birth certificate and infant death certificate data. Where referenced, the linked birth/infant death statistics are based on a death cohort. The death cohort involves linkage of infant deaths with the corresponding live births. These births may have occurred in the same calendar year as the death or in the year prior.

The birth/infant death data analyzed are based on a union of single year linked birth/infant death files created six months after a given event year ended. Linkage of the respective records is performed by the BEPHI Public Health Informatics group using deterministic methodology based on the presence of a birth certificate identification number in the death history file. A manual matching process is used for infant deaths that do not match automatically. Because of the timeframe for creating the annual linked birth/infant death statistical files, infant death reports received later than six months after the end of a given event year are not included in the given event year.

Linked data are an important tool to examine infant mortality comparisons between Kansas and other states including the District of Columbia, or the United States. To obtain statistically reliable state-specific data stratified by race and ethnicity, it is necessary to combine years. The National Center for Health Statistics combines three years; the most recent report includes data from 2011-2013. Infant mortality rates were not calculated for states/District of Columbia when the number of events was less than 20 [3]. For this report, five years (2012-2016) of linked birth/infant deaths were combined to obtain statistically reliable data for stratification on characteristic variables.

For Kansas, between 2012 and 2016, there were 1,201 resident infant deaths reported to KDHE (Table A). Of those, 1,195 (99.5%) were linked to a birth certificate. Thirty of the birth records that were linked occurred in 2011. Unlinked records were due to a number of factors beyond the scope of this summary.

Table A. Linked Birth/Infant Deaths, Percent Linked, Kansas, 2012 - 2016

	Infant Deaths, Total	Infant Deaths, Linked File	
Year	Number	Number	%
2012	254	254	100.0
2013	248	244	98.4
2014	246	246	100.0
2015	230	230	100.0
2016	223	221	99.1
Totals	1201	1195	99.5

This method of linking the infant death and their birth records is valuable for exploring the various relationships of the infant deaths with factors surrounding birth and with mother's risk factors

- The death file contains age at death and underlying cause.
- The birth file contains birthweight, gestational age, and information on the mother such as age, marital status, educational level, and maternal risk factors such as tobacco use.

Results

Trend Analyses

In 2016, the Kansas infant mortality rate was 5.9 per 1,000 live births (223 infant deaths). This rate remained unchanged from 5.9 per 1,000 live births (230 infant deaths) in 2015 (Tables 1, 2).

In the last century, the IMR has decreased dramatically (92.0%) from 73.5 deaths per 1,000 live births in 1912 (2,795 infant deaths) (Figure 1). Stillbirths decreased 77.6 percent from 26.8 stillbirths per 1,000 (live births + stillbirths) in 1912 (1,047 stillbirths) to 6.0 (237 stillbirths) in 2015 (Figure 2). Incomplete reporting of live births, infant deaths, and stillbirths in the early 1900s may have resulted in slightly higher or lower estimated mortality rates for those years.

In the last twenty years, there has been some fluctuation in the IMR from a first low of 6.7 in 2003, then reaching a high of 7.9 in 2007, and an overall low of 5.9 in 2015 and 2016. According to the results of a Joinpoint Poisson regression model, the IMR remained stable at 0.5% per year [95% CI: -0.4, 1.4] during the period 1997-2007. However, the IMR has continued to significantly decrease by 2.7% per year [95% CI: -3.8, -1.6%] since 2007 (Figure 3).

Neonatal/Post-Neonatal Period Deaths

Neonatal death rates showed a decreasing trend during the period from 1997 to 2016 with some fluctuation. Post-neonatal death rates showed a similar trend to the overall IMR trend. Post-neonatal death rates from 1997 to 2007 fluctuated greatly with no significant trend; however, a significant decreasing trend was present from 2007-2016 (Table 2). For neonatal death rates, rolling five year averages showed a slight decrease in most years from 4.6 in 1997-2001 to 4.2 in 2012-2016. For post-neonatal death rates, rolling

five year averages showed an overall decrease from 2.5 in 1997-2001 to a low of 2.0 in 2012-2016, with some fluctuation in the years between (Figure 6).

Perinatal Period III Deaths

In Kansas from 1997-2016, rolling five year averages showed a gradual increase in perinatal death rates, with some fluctuation, increasing from 8.7 deaths per 1,000 live births in 1997-2001 to 8.8 in 2012-2016. The increase in perinatal death rates are largely due to an increase in stillbirth rates since 2014 (Figure 7).

Population Groups

For Kansas in 2016, the White non-Hispanic population group had the highest number of infant deaths (139 infant deaths), while the Black non-Hispanic group had the highest rate (15.2 per 1,000 live births) (Table 3). The disparity in rates between White and Black non-Hispanic infant deaths was evident in all periods of death (Table B).

Table B. Stillbirth, Perinatal Period III* and Infant Mortality Rates by Selected Population Groups, Kansas, 2016

	Total	White non-Hispanic	Black non-Hispanic	Hispanic any race
Infant deaths †	5.9	5.2	15.2	5.1
Neonatal deaths †	3.8	3.3	9.6	3.8
Post neonatal deaths †	2.1	1.9	5.6	1.3
Stillbirths ‡	6.7	5.3	15.4	8.3
Perinatal period III ‡	9.8	8.0	22.9	12.0

* Perinatal period III includes stillbirths and hebdomadal deaths (deaths that occur prior to the 7th day of life)
†Rate per 1,000 live births
‡Rate per 1,000 (live births + stillbirths)

A population group comparison over 20 years based on five year moving averages (Figure 4) revealed that the Black non-Hispanic population has consistently had the highest infant mortality rates. The rate has fluctuated, reaching a high of 17.1 in 2003-2007 and a low of 12.8 in 2011-2015. In the same 20 years, the White non-Hispanic population showed a slight decreasing trend from 6.6 in 1997-2001 to 5.0 in 2012-2016. The IMR in the Hispanic population has fluctuated from 6.5 in 1997-2001 to 7.0 in 2012-2016. The Black non-Hispanic IMR has remained over twice that of the White non-Hispanic population, with an average ratio of 2.5.

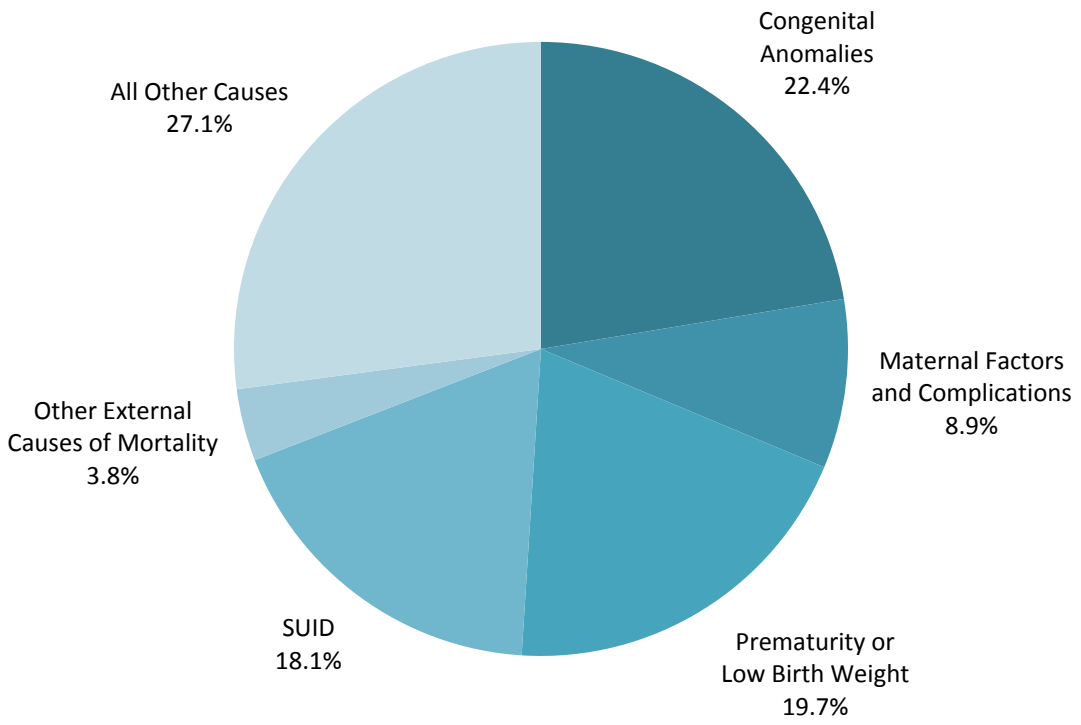
Five Year Characteristic Analysis (2012-2016)

Death Certificate Statistics

Causes of Infant Death

The Kansas infant mortality rate for the period 2012-2016 was 6.1 infant deaths per 1,000 live births. The leading cause of infant mortality was congenital anomalies (Figure A, Table 5). The most frequent congenital anomaly was congenital malformations of the circulatory system (25.3%, ICD-10 codes Q20-Q28), followed by chromosomal abnormalities (20.1%, ICD-10 codes Q90-Q99) and congenital malformations of the nervous system (19.7%, ICD-10 codes Q00-Q07). About 3 in 4 (77.0%, 207 deaths) of congenital anomaly deaths occurred in the neonatal period (under 28 days). The category "other causes" includes conditions such as spinal muscular atrophy, secondary pulmonary hypertension, hypertrophic cardiomyopathy, myocarditis, and disorders of the lungs.

Figure A
Leading Causes of Infant Deaths
Kansas, 2012-2016



Analysis of select population groups for the 2012-2016 cohort revealed the leading cause of infant death for Black non-Hispanic and Hispanic infants was prematurity or low birthweight. The leading cause of death among White non-Hispanic infants was congenital anomalies (Table C).

Analysis of rates by population group showed that Black non-Hispanic and Hispanic infants died at a significantly greater rate than White non-Hispanic infants where the cause of death was prematurity or low birthweight. Black non-Hispanic infants died at a significantly greater rate than White non-Hispanic and Hispanic infants where the cause of death was SUID. Black non-Hispanic infants died at a significantly greater rate than White non-Hispanic and Hispanic infants where the cause of death was maternal factors and complications. Among infants that died of congenital anomalies, the infant death rates were not significantly different among these three population groups (Table C).

Table C. Infant Deaths by Selected Population Groups and Leading Causes of Death, Kansas, 2012-2016

Population Group*	Number of Deaths	Percent	Rate†
Black non-Hispanic (n=171)			
1. Prematurity or Low Birthweight	49	28.7	3.8
2. SUID	30	17.5	2.3
3. Congenital Anomalies	21	12.3	1.6
4. Maternal Factors	20	11.7	1.5
White non-Hispanic (n=697)			
1. Congenital Anomalies	179	25.7	1.3
2. SUID	134	19.2	1.0
3. Prematurity or Low Birthweight	111	15.9	0.8
4. Maternal Factors	62	8.9	0.4
Hispanic any-race (n=218)			
1. Prematurity or Low Birthweight	53	24.3	1.7
2. Congenital Anomalies	46	21.1	1.5
3. SUID	30	13.8	1.0
4. Maternal Factors	15	6.9	0.5

*Non-Hispanic population group includes unknown Hispanic origin
†Rate per 1,000 live births

Neonatal/Post-Neonatal Period Deaths

There were 819 neonatal deaths (4.2 per 1,000 live births, 68.2%) and 382 post-neonatal deaths (2.0 per 1,000 live births) in the 2012-2016 Kansas infant death cohort (Tables 1, 2). Prematurity or low birth weight was the leading cause of neonatal deaths (28.8%), while SUID was the leading cause of post-neonatal deaths (50.0%) (Table 5).

Perinatal Period III Deaths

For the Kansas 2012-2016 cohort, 1,732 infants died in the perinatal period (8.8 per 1,000 live births and stillbirths) comprising 1,061 stillbirths and 671 hebdomadal deaths (Table 1). The leading cause of stillbirths was complications of placenta, umbilical cord and membrane (30.2%, ICD-10 code P02) (Table 7) while prematurity or low birthweight was the leading cause of death for hebdomadal period deaths (34.9%) (Table 5).

County Rates

The counties with the highest number of infant deaths in the 2012-2016 cohort included Sedgwick (267 or 22.2%), Johnson (160 or 13.3%), Wyandotte (105 or 8.7%), and Shawnee (76 or 6.3%). These four counties accounted for half (50.6 percent) of all infant deaths (Table 4).

The counties with the highest reliable (RSE ≤ 30%) infant mortality rates, included Labette (8.7 infant deaths per 1,000 live births), Reno (8.6), Ford (8.5), Franklin (8.2), and Harvey (8.0); while the counties with the lowest (reliable) non-zero rates were Johnson (4.3), Saline (4.3), Leavenworth (4.7), Crawford (4.8), and Douglas (5.2). Among peer groups, the infant death rates were not significantly different among Frontier, Rural, Densely-Settled Rural, Semi-Urban, or Urban populations (Table 4).

Since the number of deaths was too small for analysis in many counties, counties were combined into Public Health Regions (Figure 5). The region with the highest reliable (RSE ≤ 30%) infant mortality rate was the Southwest Surveillance Region at 8.1 per 1,000 live births. The region with the lowest infant mortality rate was the Central Kansas Region at 4.9 per 1,000 live births (Figure 5).

Zip Code Rates

Several zip codes had enough deaths to allow analysis on the 2012-2016 cohort. The zip codes with the highest reliable (RSE ≤ 30%) mortality rates included three zip codes located in Sedgwick County: 67218 (13.7 deaths per 1,000 live births), zip code 67042 (Butler County, 11.7), 67211 (11.7), 67207 (11.4), and zip code 66067 (Franklin County, 11.4). The zip-codes with the lowest reliable (RSE ≤ 30%) rates were 66062 (Johnson County, 3.0), 67401 (Saline County, 4.6), 66441 (Geary County, 4.6), 67203 (Sedgwick, 5.1), 66061 (Johnson County, 5.2).

Linked Birth/Infant Death Statistics

Kansas Statistics

In this section, a variety of maternal and infant characteristics are presented on the linked birth and infant death data file (linked file) from 2012 to 2016. The linked file differs slightly from the mortality file (infant deaths from death certificates in 2012 to 2016), with 6 infant deaths not linked to a birth record. The Kansas linked file for 2012-2016 contains 1,195 (99.5%) of the 1,201 infant deaths contained in the mortality file.

Population group of the infant's mother was known for 1,185 (99.2%) of the 1,195 linked records. The mother's race was reported as White non-Hispanic in 693 live births (58.5%), Black non-Hispanic in 171 live births (14.4%), Native American non-Hispanic in 7 live births (0.6%), Asian or Pacific Islander non-Hispanic in 23 live births (1.9%), Multiracial non-Hispanic in 62 live births (5.2%), other race non-Hispanic in 10 live births (0.8%), and Hispanic (all races) in 217 live births (18.3%).

Cause of Death

The leading cause of death among the 1,195 infants in the 2012-2016 linked file was congenital anomalies (269 deaths, 22.5%). This was followed by prematurity or low birthweight (237 deaths, 19.8%), SUID (ICD-10 codes R95, R99, and W75, with combined 213 deaths, 17.8%), and maternal factors (107 deaths, 9.0%) (Table 8).

Prematurity is an important factor in infant death, even though short gestation and low birthweight may not be the primary cause. Among the infant deaths with primary cause of death as congenital anomalies, slightly over half (52.8%) were born preterm – primarily late preterm (24.7%). Ninety-one percent of the infant deaths due to maternal factors were born prematurely, with 84.9 percent born very premature (Table 8). The cause of death categorized as maternal factors and complications of pregnancy, labor and delivery include complications such as premature rupture of the membrane, placental separation, chorioamnionitis, and incompetent cervix.

Among infants where the cause of death was classified as SUID, 74.5 percent were born early term or later (Table 8).

Birthweight

Of the 1,195 linked records, birthweight of the infant was known for 1,189 (99.5%). Two hundred seventy (22.7%) of the deaths occurred to infants with birthweights of less than 500 grams; 302 (25.4%) of the deaths occurred to infants with birthweights of 500 to 1,499 grams; 194 (16.3%) of deaths occurred to infants with birthweights of 1,500 to 2,499 grams; and 423 (35.6%) of deaths occurred to infants with birthweights of 2,500 grams or more (Table 9).

Among the infant deaths where birthweight was known, 766 infants (64.4%) were low birthweight (less than 2500 grams). In the same time period (2012-2016), only 7.2 percent of all live births had low birthweight (Table 9,10).

Analysis of birthweight by mother's population group reveals 67 (39.2%) of the deaths occurred to Black Non-Hispanic infants with birthweights of less than 500 grams. Two hundred sixty-seven (38.8%) deaths occurred to White Non-Hispanic and 72 (33.2%) Hispanic infants with birthweights 2,500 grams or more (Table 9).

Gestational Age

Gestational age was known for 1,187 (99.3%) of the 1,195 linked records. Five hundred sixty-nine of the infants (47.9%) were very premature (less than 32 weeks), 57 (4.8%) were moderately premature (32 to 33 weeks), 122 (10.3%) were late premature (34 to 36 weeks), 190 (16.0%) were early term (37 and 38 weeks), and 249 (21.0%) were born at term (Table 9).

Among the infant deaths where gestational age was known, 766 (64.4%) of the infant deaths were premature (less than 37 weeks gestation) (Table 9). In the same time period (2012-2016), 8.6% of all live births were premature (Table 10).

Analysis of gestational age by mother's population group reveals that among the Black non-Hispanic population in 2012 through 2016, 71.9 percent of the infant deaths were premature; 60.4 percent of the infant deaths to White non-Hispanic mothers were premature, and among the Hispanic population, 65.7 percent were premature (Table 9). In the same period (2012-2016), 12.8 percent of all live births among Black Non-Hispanic mothers were premature, 8.6 percent of all live births among White Non-Hispanic mothers were premature, and among the Hispanic population, 8.2 percent of all live births were premature (Table 10).

Plurality

Birth plurality (the total number of births resulting from a single pregnancy) was known for 1,193 of the linked deaths. Eighty-six percent (86.3%) of the infants were singletons at birth (1,029), 12.7 percent (152) were part of twin deliveries, and 1.0 percent (12) were triplet or above deliveries. Thirteen percent (13.7%, 164 deaths) of infant deaths in the linked file occurred among multiple births, whereas for all live births in the same time period (2012-2016) only 3.4 percent were part of a multiple birth delivery (Table 9, 10).

Mother's Age Group

Age-group of the mother was known for 1,192 (99.8%) of the infant deaths. The highest percentage of deaths occurred to infants born to women aged 25-29 (31.1%), followed by women aged 20-24 (28.7%), women aged 30-34 (19.7%), and women aged 35-39 (9.6%) (Table 9). The highest percent of all live births in the same time period was to mothers 25-29 years of age (32.9%), followed by 30-34 years of age (27.6%) and 20-24 years of age (22.2%) (Table 10).

Mother's Education

For mothers 25 years of age and older, the education level was known for 730 (61.1%) of the linked deaths. Mothers whose education level was high school or GED had the highest percentage of infant deaths (24.4%), followed by those with some college but no degree (21.9%), and those with a Bachelor's Degree (19.9%). Mothers who have a doctorate degree had the lowest percent (1.4%) of infant deaths (Table 9). When comparing to the distribution of deaths by mothers' education level for the live births in the same time period (2012-2016), there was a higher percentage of mothers with a Bachelor's Degree (29.9%) and a lower percentage of mothers with a high school degree or GED (16.0%) (Table 10).

Marital Status

Marital status at the time of pregnancy was known for 1,187 (99.3%) of the linked deaths (2012-2016). In almost half (49.9%) of the infant deaths, the mother was not married at the time of her pregnancy or delivery (Table 9). This is compared with 36.3 percent of live births (2012-2016) where the mother reported she was not married (Table 10).

Prenatal Care

The month prenatal care began was known for 1,143 (95.6%) of the linked infant deaths. Seventy-two percent (72.8%) of these linked infant deaths started prenatal care in the first trimester. Eighty percent (80.1%) of all live births in the same time period (2012-2016) started prenatal care in the first trimester. Five percent (5.7%) of linked infant deaths had no prenatal care (65 infant deaths); however, only 0.8 percent of births had no prenatal care, resulting in a mortality rate among infants with no prenatal care at 39.7 deaths per 1,000 live births. Infants starting prenatal care in the second trimester also had a statistically significantly higher IMR (6.9) than infants starting prenatal care in the first trimester (5.3) (Tables 9, 10).

Adequacy of Prenatal Care Utilization (APNCU) Index

The APNCU index was known for 1,123 (94.0%) linked records. Of these where APNCU index was known, almost half (59.7%) had Adequate Plus prenatal care, 26.7% had Adequate, 5.7% had Intermediate and 17.9% had Inadequate prenatal care. Inadequate prenatal care was more common for infants in the linked birth/infant death dataset (17.9%) than for live births generally (11.1%). Adequate or better prenatal care was less common for infants in the linked birth/infant death dataset (76.4%) than for live births generally (82.7%), but Adequate Plus prenatal care was much more common for infants in the linked birth/infant death dataset (49.7%) than for live births generally (30.4%) (Tables 9, 10).

Smoking

Smoking status was reported in all 1,195 of the linked infant deaths. Mothers reported smoking at some time during pregnancy in 21.1 percent of the infant deaths compared with 11.9 percent of all live births from 2012 to 2016 (Tables 9, 10).

Pay Source

Delivery payer was known for 1,173 of linked infant deaths. The highest percent of these births were paid for by Medicaid (44.5%), followed by private insurance (42.7%), and self-pay (7.8%) (Table 9). For all live births in the 2012-2016 cohort with payer indicated, only 32.4 percent were paid for by Medicaid, and 54.0 percent were paid for by private insurance (Table 10). The infant mortality rate was 8.3 per 1,000 live births paid by Medicaid and 6.7 per 1,000 live births self-paid, significantly higher than 4.8 per 1,000 live births paid by private insurance.

National Statistics

Nationally, final birth and death data allows for the creation of the linked birth/infant death data set for the United States. From the most recently published report on linked infant death/birth statistics (2013 period), the infant mortality rate for the United States was 6.0 per 1,000 live births, which compares to 6.3 for Kansas residents for the same year [3]. This report combines the years 2011-2013 for analysis of birth characteristics such as race and ethnicity. The national infant mortality rate was 6.0 per 1,000 live births for this three year period; White non-Hispanic infant mortality was 5.1, Black non-Hispanic infant mortality was 11.3, and Hispanic infant mortality was 5.1 [3].The same methodology used for these national statistics was used for Kansas 2011-2013 and the results can be found in *Selected Special Statistics, Stillbirths and Infant Deaths, Kansas, 2013* [14].

Discussion

Kansas Statistics

In a little over a century, the Kansas IMR has decreased dramatically, from 73.5 deaths per 1,000 live births in 1912 to 5.9 in 2016. In the last twenty years, the overall decreasing trend of the IMR was statistically significant even with the fluctuations in this time period.

The IMR in Kansas in 2016 is at a historic low of 5.9, and meets the Healthy People 2020 objective of 6.0 deaths per 1,000 live births. Data analysis by population groups showed the White non-Hispanic population (5.2 per 1,000 live births) and the Hispanic population (7.6) met the HP2020 target, but the Black non-Hispanic population (15.2) did not [4].

Overall, in Kansas 2012-2016, 22.4 percent of infant deaths were attributed to congenital anomalies, 19.7 percent were attributed to prematurity or low birthweight, and 18.1 percent were attributed to SUID (Figure A). Black non-Hispanics and Hispanics were at an increased risk of infant death from prematurity. Black non-Hispanics were at an increased risk of infant death from SUID and maternal factors compared to White non-Hispanics and Hispanics (Table C).

Most infant deaths in Kansas in 2012 to 2016 occurred soon after birth. Two-thirds happened in the neonatal time period (less than 28 days of age), and over half occurred in the first week (Table 5).

Risk Factors

Analysis of the linked file revealed that low birthweight or prematurity were primary risk factors for infant death even when the underlying or primary cause of death was not prematurity or low birthweight.

Gestational age-specific analysis (linked file) showed an infant mortality rate of 43.0 per 1,000 live births for infants born prematurely, over 17 times that for infants born at term (2.5 deaths per 1,000 live births). Similarly, the infant mortality rate for very premature infants (less than 32 weeks, 198.9 per 1,000 live births) was 80 times higher than the rate for infants born at term.

Additional notable risk factors for infant deaths (linked file) included no prenatal care (5.7% of linked deaths) or second trimester prenatal care (18.7%), multiple births (13.7%), mothers who smoked during pregnancy (20.6% of infant deaths), and out-of-wedlock births (49.5%).

National Statistics

Comparing Kansas, other states, and national statistics on infant mortality is complicated by the fact that national statistics are published much later than state statistics. The most recent available final national birth and death data are for 2015 [2, 15]. Final results indicate a national infant mortality rate of 5.9 per 1,000 live births, compared to 5.9 for Kansas residents in 2015. The difference between these two rates is not statistically significant.

The most recently published national report that analyzed linked infant mortality used 2011-2013 data. Nationally, the infant mortality rate was 6.0 per 1,000 live births for this period [3]. This report also presents the national and state infant mortality rates by race and Hispanic origin. The Kansas rates remain higher than the national rates for Black Non-Hispanic and Hispanic population subgroups [3].

Limitations

This report's findings are subject to several limitations. An important concern is the issue of receiving vital events from other states within the KDHE reporting deadline. Vital statistics are gathered on an occurrence basis but are traditionally reported on a residence basis. For complete residence statistics, reports must be received from other states for events occurring to Kansas residents. Because of delays or other late reporting, some out-of-state vital event reports have not been received by KDHE by the cutoff date of June 30 of the year following the event year. Past evaluations indicate that over 99 percent of all vital events to Kansas residents are received before the cutoff date.

Evaluation of the linked birth/infant death cohort is subject to limitations due to the inability to link all deaths to a corresponding birth report. This inability may be due to a number of reasons related to receipt of the corresponding record from another state, name differences between the two reports, both events not occurring in Kansas, or residency changes.

Additionally, comparison of Kansas linked data to other state or national data has limitations due to the timeliness of the national reports as well as differences in methodology. As mentioned earlier, out-of-state births may not be available to match infant deaths at the state level, but are available for matching at the national level.

The ICD-10 death classification system limits the bias of human coding of mortality information. The system also attempts to reduce the effect of spelling errors or placement of literal information in the cause of death fields. One limitation is the system's inability to take into account differences in knowledge and attitudes among physicians who complete the cause of death information. Individual biases, unfamiliarity with the patient, or inability to perform an autopsy may affect the information available to the physician when certifying the cause of death. While many death certificates contain four full lines of detailed information on the events or illnesses leading up to the death, some death certificates contain only limited information.

The causes of stillbirths are not as well documented as those of infant deaths. The American Congress of Obstetricians and Gynecologists recommends an increase in the percentage of stillbirths for which placental evaluation is performed and autopsy is offered [16]. Additionally, since KSA 65-2401 [11] was revised in mid-2014 to change the stillbirth reporting requirements from weight of the fetus (>350 grams) to length of gestation (≥ 20 weeks), vital records data for this year may not represent a consistent picture of all fetal deaths.

Smoking status and other potential risk factors may be under-reported on birth certificates.

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Table 1
Births, Stillbirths, and Infant Deaths by Year by Period of Death
Kansas, 1997-2016

Year	Total * Deliveries	Live Births	Stillbirth	Hebdomadal † Deaths	Perinatal ‡ Deaths	Neonatal § Deaths	Postneonatal ¶ Deaths	Infant # Deaths
1997	37,393	37,191	202	147	349	173	101	274
1998	38,571	38,372	199	132	331	172	91	263
1999	38,923	38,748	175	159	334	189	92	281
2000	39,831	39,654	177	146	323	174	92	266
2001	39,041	38,832	209	148	357	178	107	285
2002	39,484	39,338	146	155	301	192	90	282
2003	39,559	39,353	206	138	344	177	85	262
2004	39,739	39,553	186	144	330	176	108	284
2005	39,895	39,701	194	153	347	196	101	297
2006	41,088	40,896	192	137	329	176	117	293
2007	42,137	41,951	186	163	349	211	122	333
2008	41,997	41,815	182	160	342	193	110	303
2009	41,601	41,388	213	144	357	176	114	290
2010	40,607	40,439	168	143	311	170	83	253
2011	39,816	39,628	188	121	309	157	90	247
2012	40,499	40,304	195	142	337	173	81	254
2013	38,978	38,805	173	140	313	166	82	248
2014	39,394	39,193	201	138	339	175	71	246
2015	39,363	39,126	237	132	369	160	70	230
2016	38,303	38,048	255	119	374	145	78	223

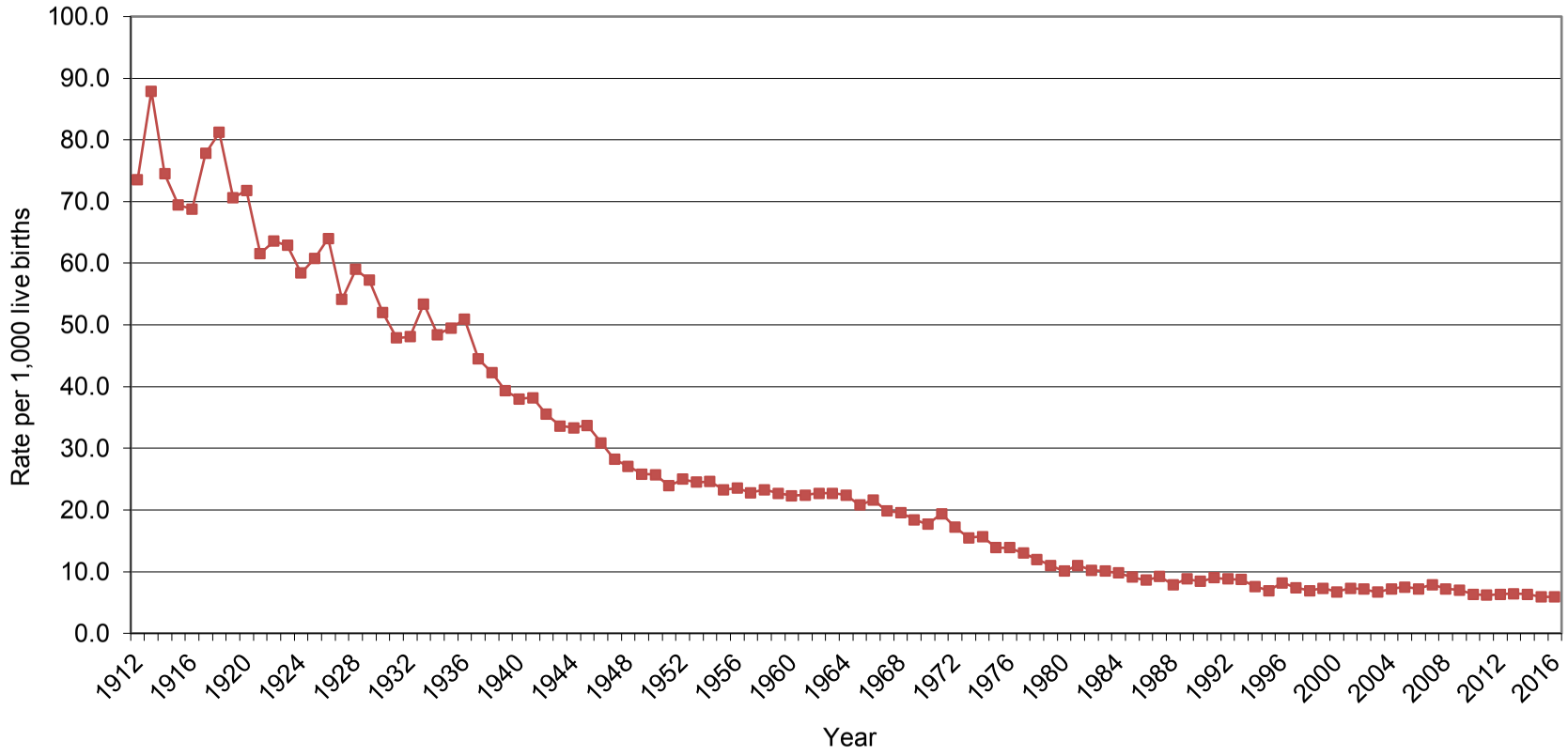
*Total Deliveries = Live Births + Stillbirths.
†Hebdomadal Deaths = Deaths at less than 7 days of age.
‡Perinatal Deaths = Stillbirths + Hebdomadal Deaths.
§Neonatal Deaths = Deaths at less than 28 days of age.
¶Postneonatal Deaths = Deaths between 28 days and 1 year of age.
#Infant Deaths = Deaths under 1 year of age.
Residence data
Source: Bureau of Epidemiology and Public Health Informatics
Kansas Department of Health and Environment

Table 2
Perinatal/Infant Mortality Rates by Period of Death
Kansas, 1997-2016

Year	Stillbirth*	Hebdomadal Deaths†	Perinatal Deaths*	Neonatal Deaths †		Postneonatal Deaths†	Infant Deaths†	
				KS	US		KS	US
1997	5.4	4.0	9.3	4.7	4.8	2.7	7.4	7.2
1998	5.2	3.4	8.6	4.5	4.8	2.4	6.9	7.2
1999	4.5	4.1	8.6	4.9	4.7	2.4	7.3	7.1
2000	4.4	3.7	8.1	4.4	4.6	2.3	6.7	6.9
2001	5.4	3.8	9.1	4.6	4.5	2.8	7.3	6.9
2002	3.7	3.9	7.6	4.9	4.7	2.3	7.2	7.0
2003	5.2	3.5	8.7	4.5	4.6	2.2	6.7	6.9
2004	4.7	0.1	8.3	4.4	4.5	2.7	7.2	6.8
2005	4.9	3.9	8.7	4.9	4.5	2.5	7.5	6.9
2006	4.7	3.3	8.0	4.3	4.5	2.9	7.2	6.7
2007	4.4	3.9	8.3	5.0	4.4	2.9	7.9	6.8
2008	4.3	3.8	8.1	4.6	4.3	2.6	7.2	6.6
2009	5.1	3.5	8.6	4.3	4.2	2.8	7.0	6.4
2010	4.1	3.5	7.7	4.2	4.1	2.1	6.3	6.2
2011	4.7	3.1	7.8	4.0	4.1	2.3	6.2	6.1
2012	4.8	3.5	8.3	4.3	4.0	2.0	6.3	6.0
2013	4.4	3.6	8.0	4.3	4.0	2.1	6.4	6.0
2014	5.1	3.5	8.6	4.5	3.9	1.8	6.3	5.8
2015	6.0	3.4	9.4	4.1	3.9	1.8	5.9	5.9
2016	6.7	3.1	9.8	3.8	n.a.	2.1	5.9	n.a.

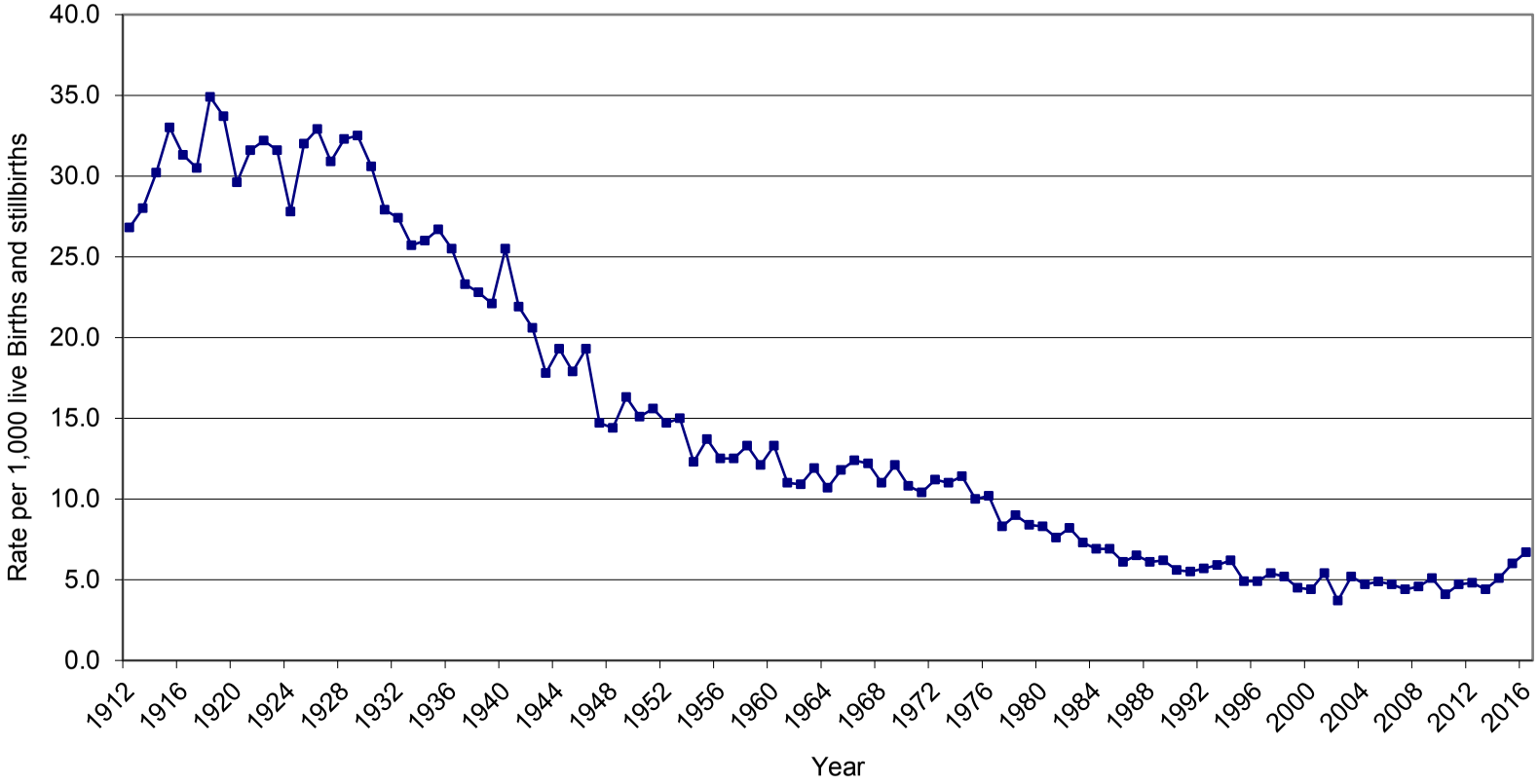
*Per 1,000 (live births + stillbirths).
†Per 1,000 live births.
n.a. = US final death data for 2016 are not yet available
Residence data
Source: Bureau of Epidemiology and Public Health Informatics
Kansas Department of Health and Environment

Figure 1
Infant Mortality Rates
Kansas, 1912-2016



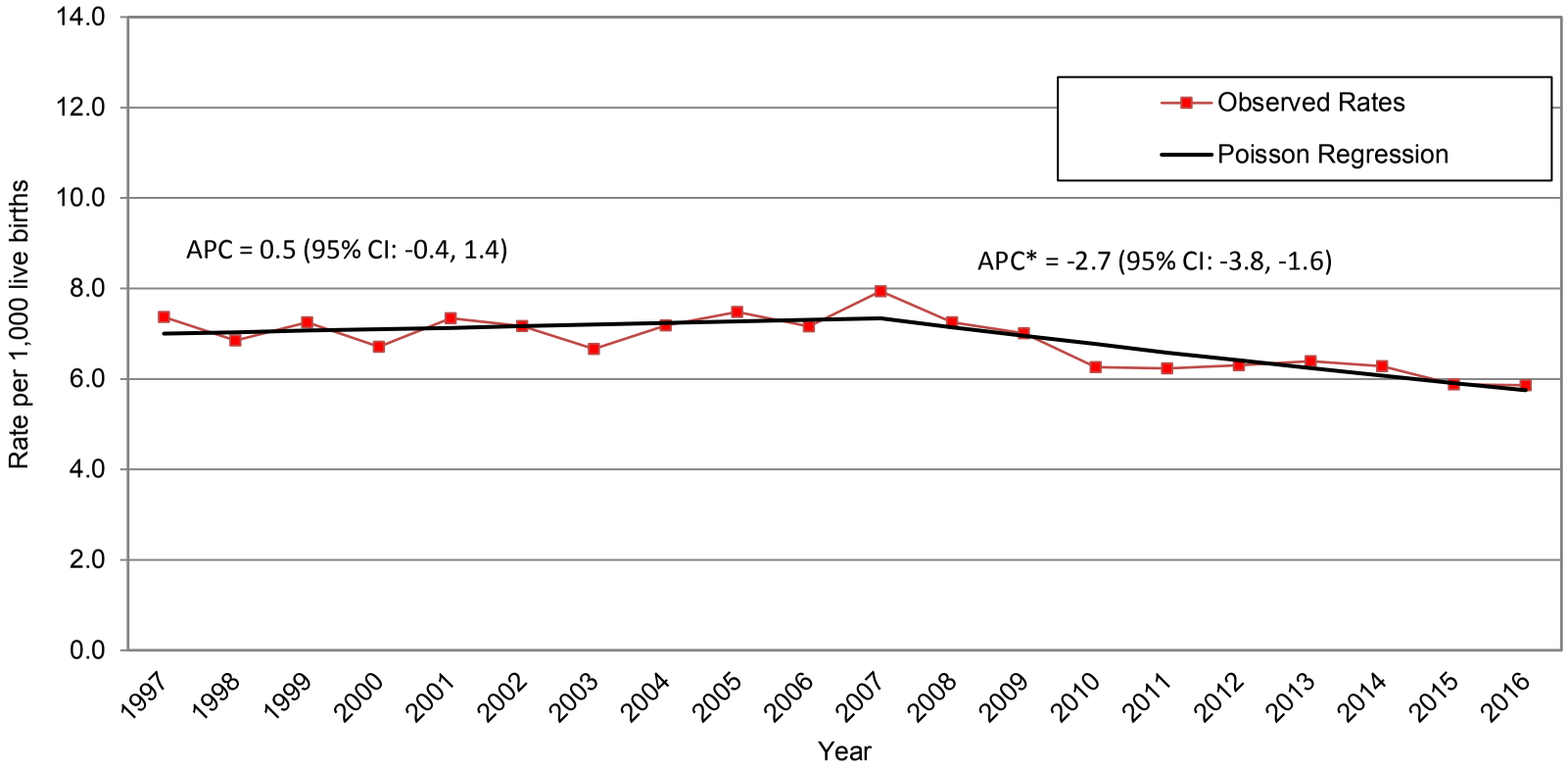
Residence data
Source: Bureau of Epidemiology and Public Health Informatics
Kansas Department of Health and Environment

Figure 2
Stillbirth Mortality Rates*
Kansas, 1912-2016



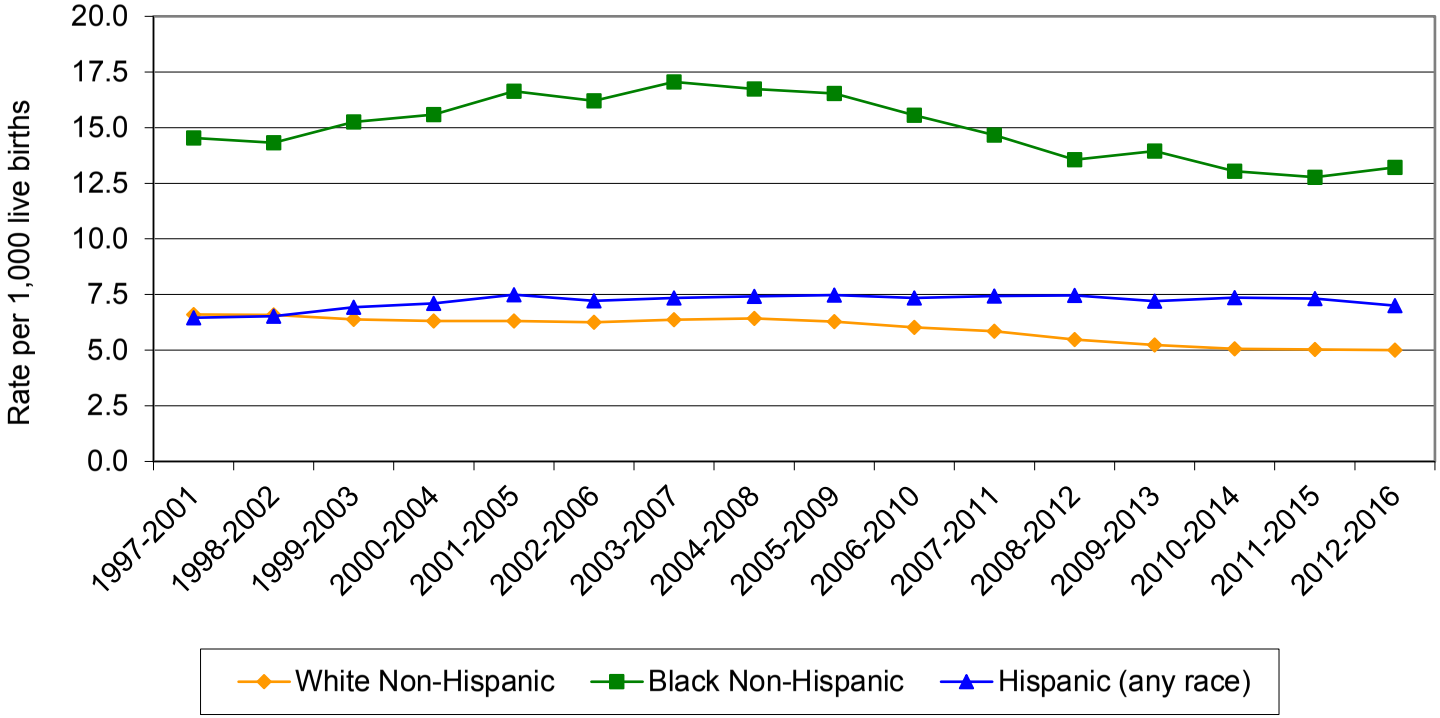
*Stillbirth definition changed in July 2014. See page 13.
Residence data
Source: Bureau of Epidemiology and Public Health Informatics
Kansas Department of Health and Environment

Figure 3
Trend in Infant Mortality Rates
Kansas, 1997-2016



*The Annual Percent Change (APC) shows a statistically significant trend, alpha < 0.05.
Residence data
Source: Bureau of Epidemiology and Public Health Informatics
Kansas Department of Health and Environment

Figure 4
Five Year Average Infant Mortality Rates
by Population Group of Mother
Kansas, 1997-2016



Residence data
Source: Bureau of Epidemiology and Public Health Informatics
Kansas Department of Health and Environment

Table 3
Infant Deaths and Mortality Rates*
By Selected Population Group of Mother§
Kansas, 1997-2016

Year	White Non-Hispanic†			Black Non-Hispanic†			Black NH‡ to White NH‡ Ratio of Rates	Hispanic Any Race			Total Infant Mortality Rate
	Live Births	Infant Deaths	Rate	Live Births	Infant Deaths	Rate		Live Births	Infant Deaths	Rate	
1997	29,659	189	6.4	2,766	46	16.6	2.6	3,525	29	8.2	7.4
1998	30,389	209	6.9	2,746	27	9.8	1.4	3,873	25	6.5	6.9
1999	30,362	215	7.1	2,815	42	14.9	2.1	4,204	15	3.6	7.3
2000	30,538	192	6.3	2,822	33	11.7	1.9	4,742	32	6.7	6.7
2001	29,703	190	6.4	2,745	54	19.7	3.1	4,875	36	7.4	7.3
2002	29,811	187	6.3	2,845	44	15.5	2.5	5,006	40	8.0	7.2
2003	29,482	172	5.8	2,730	40	14.7	2.5	5,417	45	8.3	6.7
2004	29,624	200	6.8	2,782	46	16.5	2.4	5,458	28	5.1	7.2
2005	28,903	181	6.3	2,670	45	16.9	2.7	6,073	52	8.6	7.5
2006	29,392	181	6.2	2,801	49	17.5	2.8	6,568	41	6.2	7.2
2007	30,170	205	6.8	2,856	56	19.6	2.9	6,676	56	8.4	7.9
2008	29,863	184	6.2	2,936	39	13.3	2.2	6,781	57	8.4	7.2
2009	29,471	178	6.0	2,830	44	15.5	2.6	6,790	40	5.9	7.0
2010	29,000	142	4.9	2,780	33	11.9	2.4	6,407	50	7.8	6.3
2011	28,382	150	5.3	2,708	35	12.9	2.4	6,293	42	6.7	6.2
2012	28,995	145	5.0	2,682	38	14.2	2.8	6,286	54	8.6	6.3
2013	27,821	137	4.9	2,549	39	15.3	3.1	6,139	44	7.2	6.4
2014	28,009	146	5.2	2,629	29	11.0	2.1	6,129	40	6.5	6.3
2015	27,717	130	4.7	2,585	27	10.4	2.2	6,290	48	7.6	5.9
2016	26,786	139	5.2	2,494	38	15.2	2.9	6,300	32	5.1	5.9

* Rate per 1,000 live births.

† Due to changes in the collection of the race item on certificates, use caution when comparing 2005-2015 data to prior years. See Technical Notes.

‡ NH = non-Hispanic, population group includes unknown Hispanic origin.

§ Other non-Hispanic data is not included in this table due to small numbers but is available upon request.

Residence data

Source: Bureau of Epidemiology and Public Health Informatics
Kansas Department of Health and Environment

Table 4
Infant Deaths and Mortality Rates by County of Residence
And Peer Group*
Kansas, 2012-2016

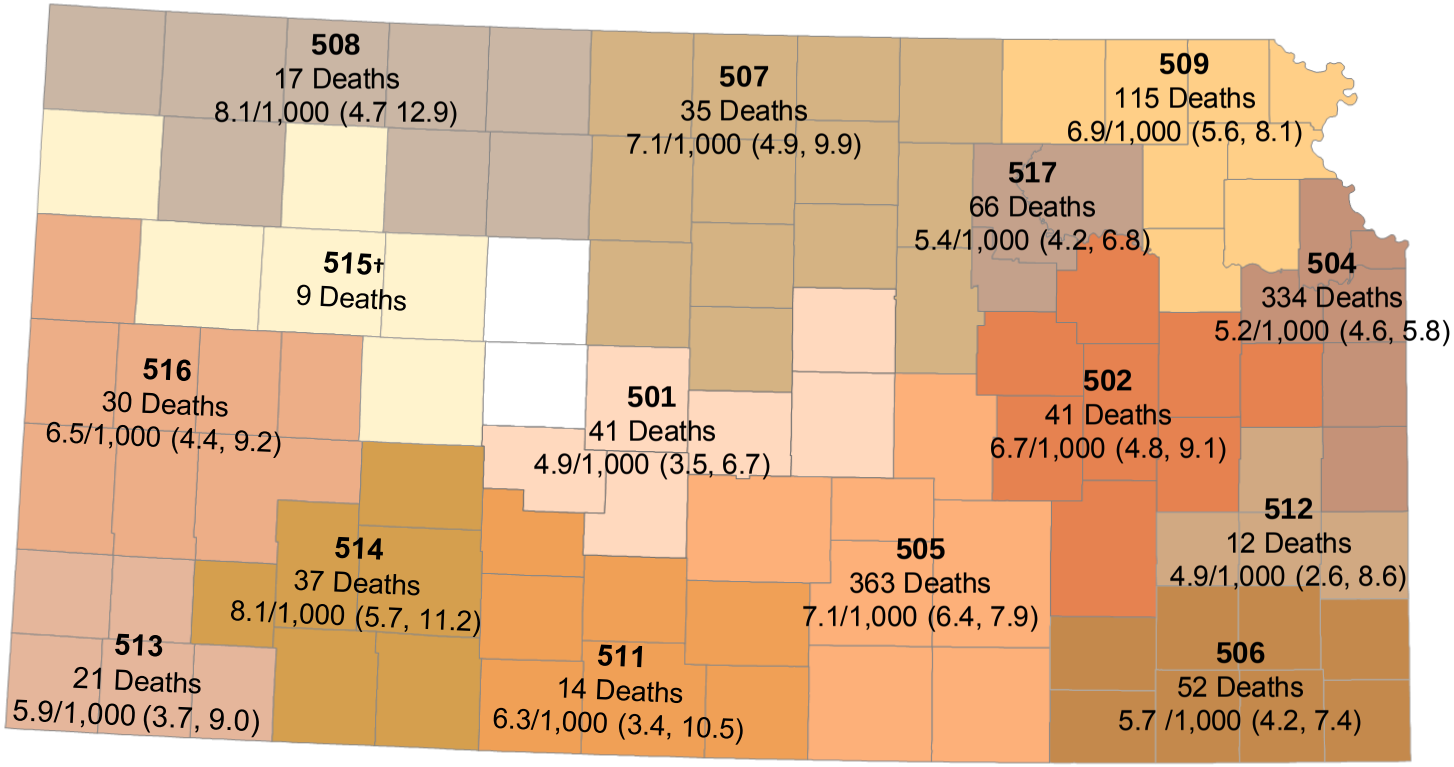
County of Residence	Year					Total Infant Deaths	Total Live Births	Infant Mortality Rate†	95% Confidence Intervals	
	2012	2013	2014	2015	2016	2012-2016	2012-2016	2012-2016	Lower	Upper
Kansas	254	248	246	230	223	1,201	195,476	6.1	5.8	6.5
Allen	1	0	1	1	0	3	735	na	na	na
Anderson	0	2	1	1	0	4	478	8.4 ‡	2.3	21.4
Atchison	2	1	0	2	1	6	1,011	5.9 ‡	2.2	12.9
Barber	0	0	0	0	0	0	304	0.0	0.0	0.0
Barton	2	1	3	3	0	9	1,784	5.0 ‡	2.3	9.6
Bourbon	2	0	0	2	1	5	1,054	4.7 ‡	1.5	11.1
Brown	1	1	1	0	1	4	639	6.3 ‡	1.7	16.0
Butler	3	6	9	8	3	29	3,802	7.6	5.1	11.0
Chase	0	0	0	0	0	0	138	0.0	0.0	0.0
Chautauqua	0	0	0	0	0	0	176	0.0	0.0	0.0
Cherokee	0	0	0	0	0	0	1,154	0.0	0.0	0.0
Cheyenne	1	0	0	0	0	1	161	na ‡	na	na
Clark	0	0	1	0	0	1	117	na ‡	na	na
Clay	1	1	0	3	2	7	524	13.4 ‡	5.4	27.5
Cloud	1	0	0	0	1	2	558	na	na	na
Coffey	0	0	0	0	0	0	434	0.0	0.0	0.0
Comanche	0	0	0	1	1	2	102	na	na	na
Cowley	1	4	2	2	0	9	2,213	4.1 ‡	1.9	7.7
Crawford	3	3	1	1	4	12	2,499	4.8	2.5	8.4
Decatur	1	0	0	0	0	1	171	na	na	na
Dickinson	4	2	2	1	2	11	1,106	9.9 ‡	5.0	17.8
Doniphan	0	0	0	1	0	1	400	na	na	na
Douglas	6	5	7	6	8	32	6,201	5.2	3.5	7.3
Edwards	2	0	0	0	0	2	170	na	na	na
Elk	0	1	0	0	2	3	143	na	na	na
Ellis	2	1	3	4	3	13	1,823	7.1	3.8	12.2
Ellsworth	1	0	0	0	0	1	302	na	na	na
Finney	7	6	3	7	2	25	3,429	7.3	4.7	10.8
Ford	7	5	4	9	3	28	3,312	8.5	5.6	12.2
Franklin	3	1	5	2	2	13	1,587	8.2	4.4	14.0
Geary	4	6	7	8	3	28	5,226	5.4	3.6	7.7
Gove	1	0	0	0	1	2	179	na	na	na
Graham	1	0	1	0	0	2	118	na	na	na
Grant	2	0	0	1	0	3	611	na	na	na
Gray	0	2	0	1	0	3	438	na	na	na
Greeley	0	0	0	0	0	0	94	0.0	0.0	0.0
Greenwood	1	1	0	1	0	3	323	na	na	na
Hamilton	0	0	0	0	1	1	192	na	na	na
Harper	0	2	3	0	0	5	380	13.2 ‡	4.3	30.7
Harvey	3	4	3	3	4	17	2,112	8.0	4.7	12.9
Haskell	1	0	0	0	1	2	270	na	na	na
Hodgeman	0	0	0	1	1	2	111	na	na	na
Jackson	2	0	1	3	3	9	844	10.7 ‡	4.9	20.2
Jefferson	2	2	1	3	0	8	954	8.4 ‡	3.6	16.5
Jewell	0	0	0	0	1	1	158	na	na	na
Johnson	31	34	34	35	26	160	37,029	4.3	3.6	5.0
Kearny	0	0	0	1	0	1	304	na	na	na
Kingman	0	0	0	0	0	0	415	0.0	0.0	0.0
Kiowa	0	0	0	0	0	0	173	0.0	0.0	0.0
Labette	2	2	2	2	4	12	1,381	8.7	4.5	15.2
Lane	0	0	0	0	0	0	93	0.0	0.0	0.0
Leavenworth	2	5	5	5	6	23	4,920	4.7	3.0	7.0
Lincoln	0	0	0	1	0	1	157	na	na	na
Linn	2	0	1	2	1	6	503	11.9 ‡	4.4	26.0
Logan	0	0	0	0	0	0	197	0.0	0.0	0.0

Table 4
Infant Deaths and Mortality Rates by County of Residence
And Peer Group*
Kansas, 2012-2016

County of Residence	Year					Total Infant Deaths	Total Live Births	Infant Mortality Rate†	95% Confidence Intervals	
	2012	2013	2014	2015	2016	2012-2016	2012-2016	2012-2016	Lower	Upper
Lyon	5	3	3	2	2	15	2,079	7.2	4.0	14.2
McPherson	2	1	2	2	1	8	1,673	4.8 ‡	2.1	11.7
Marion	0	0	0	1	1	2	578	na	na	na
Marshall	0	0	1	0	1	2	622	na	na	21.9
Meade	0	0	0	0	1	1	292	na	na	na
Miami	2	0	4	0	2	8	1,770	4.5 ‡	2.0	10.7
Mitchell	0	0	1	0	0	1	399	na	na	na
Montgomery	4	0	3	4	4	15	2,214	6.8	3.8	8.1
Morris	0	0	2	0	0	2	311	na	na	na
Morton	0	0	0	0	0	0	178	0.0	0.0	0.0
Nemaha	3	2	2	1	1	9	723	12.4 ‡	5.7	22.7
Neosho	3	1	3	0	0	7	1,058	6.6 ‡	2.7	16.8
Ness	1	1	0	0	0	2	182	na	na	na
Norton	1	2	0	0	1	4	288	13.9 ‡	3.8	na
Osage	1	2	2	1	2	8	822	9.7 ‡	4.2	15.4
Osborne	1	1	1	0	0	3	222	na	na	na
Ottawa	0	0	0	0	0	0	297	0.0	0.0	na
Pawnee	2	0	0	2	0	4	326	12.3 ‡	3.3	na
Phillips	1	1	1	0	0	3	330	na	na	na
Pottawatomie	1	2	2	1	1	7	1,824	3.8 ‡	1.5	8.7
Pratt	0	1	4	0	0	5	686	7.3 ‡	2.4	20.8
Rawlins	0	0	0	0	0	0	149	0.0	0.0	na
Reno	3	14	6	4	4	31	3,588	8.6	5.9	13.6
Republic	0	1	1	0	1	3	241	na	na	na
Rice	0	0	4	0	0	4	614	6.5 ‡	1.8	21.1
Riley	9	7	7	3	5	31	5,242	5.9	4.0	7.6
Rooks	0	0	1	0	0	1	307	na	na	na
Rush	0	0	0	0	1	1	159	na	na	na
Russell	0	0	1	0	0	1	416	na	na	26.6
Saline	3	7	1	1	4	16	3,681	4.3	2.5	8.3
Scott	1	0	0	0	0	1	310	na	na	na
Sedgwick	61	62	43	41	60	267	37,327	7.2	6.3	8.0
Seward	4	3	5	3	2	17	2,204	7.7	4.5	10.4
Shawnee	10	15	12	18	21	76	11,581	6.6	5.2	7.3
Sheridan	1	1	0	0	0	2	142	na	na	na
Sherman	1	0	1	0	0	2	401	na	na	na
Smith	1	0	0	0	0	1	186	na	na	na
Stafford	0	0	0	0	0	0	251	0.0	0.0	0.0
Stanton	0	0	0	0	0	0	157	0.0	0.0	0.0
Stevens	1	0	0	0	0	1	406	na	na	na
Sumner	2	2	2	2	0	8	1,348	5.9 ‡	2.6	13.3
Thomas	0	0	2	1	2	5	580	8.6 ‡	2.8	na
Trego	0	0	1	0	0	1	167	na	na	na
Wabaunsee	0	0	0	0	0	0	432	0.0	0.0	na
Wallace	0	0	1	0	0	1	102	na	na	na
Washington	0	1	0	1	1	3	366	na	na	na
Wichita	1	0	0	0	0	1	125	na	na	na
Wilson	0	2	1	0	0	3	553	na	na	22.4
Woodson	0	0	0	0	0	0	161	0.0	0.0	na
Wyandotte	24	18	25	21	17	105	13,690	7.7	6.2	9.5
n.s.	0	0	0	0	0	0	7	0.0	0.0	0.0
Peer Group										
Frontier	13	5	7	5	9	39	6,601	5.9	4.2	8.1
Rural	18	18	26	14	14	90	14,191	6.3	5.1	7.8
Densely -Settled Rural	52	38	41	51	27	209	32,208	6.5	5.6	7.4
Semi-Urban	37	48	46	34	35	200	31,721	6.3	5.4	7.2
Urban	134	139	126	126	138	663	110,748	6.0	5.5	6.4

*See Technical Notes for Peer Group definitions.
†Rate per 1,000 live births.
‡Rate has a relative standard error greater than 30%, should be used with caution since it doesn't meet the standard of reliability.
n/a = Rates with an relative standard error greater than 50% have been suppressed.
Residence data
Source: Bureau of Epidemiology and Public Health Informatics
Kansas Department of Health and Environment

Figure 5
Infant Deaths and Mortality (IM) Rates* with 95% Confidence Intervals
by Public Health Regions, 2012-2016



Kansas 5 Yr. IM Rate, 6.1/1,000 (5.8, 6.5)

Kansas Public Health Regions

501 - Central Kansas
502 - EC Coalition
504 - KC Metro
505 - KS SC Metro
506 - Lower 8 of SE KS
507 - NC KS Pub Health Initiative
508 - Northwest BT Region
509 - Northeast Corner
511 - SC Coalition
512 – SEK
513 - SW KS Health Initiative
514 - SW Surveillance
515 - WC Pub Health Initiative
516 - Western Pyramid
517 – Wildcat

*Rate per 1,000 live births
†Numbers too small to calculate rates (Relative Standard Error > 30), see methodology section
Residence data
Source: Bureau of Epidemiology and Public Health Informatics, Kansas Department of Health and Environment

Table 5
Infant Deaths by Cause of Death by Period of Death
Kansas, 2012-2016

Cause of Death (ICD-10 Code)	Age-Group of Infant						
	Under 1 Day	1-6 Days	Hebdomadal Deaths (under 7 days)	7-27 Days	Neonatal Deaths (under 28 days)	Post-Neonatal Deaths (28-364 days)	Under 1 Year
All Causes	526	145	671	148	819	382	1,201
Infectious and Parasitic Diseases (A00-B99)	0	0	0	1	1	13	14
Other Diseases and Disorders (C00-O99)	10	5	15	11	26	66	92
Certain Conditions Originating in the Perinatal Period (P00-P96)	390	87	477	76	553	8	561
Maternal Factors & Complications of Pregnancy, Labor and Delivery (P00-P04)	98	8	106	1	107	0	107
Disorders rel. to Short Gestation & Low Birth Weight (P07)	226	8	234	2	236	1	237
Birth Trauma (P10-P15)	0	0	0	0	0	0	0
Hypoxia and Birth Asphyxia (P20-P21)	9	4	13	2	15	0	15
Respiratory Distress of Newborn (P22)	7	7	14	3	17	0	17
Congenital Pneumonia (P23)	0	0	0	5	5	0	5
Other Respiratory Conditions of Newborn (P24-P28)	15	12	27	10	37	1	38
Bacterial Sepsis of Newborn (P36)	5	10	15	11	26	0	26
Omphalitis of Newborn w/wo Mild Hemorrhage (P38)	0	0	0	0	0	0	0
Fetal and Neonatal Hemorrhage (P50-P61)	5	19	24	11	35	2	37
Other Perinatal Conditions (P05 - P059, P08 -P089, P29 -P299, P35 -P359, P37 -P379, P39 -P399, P70 - P969)	25	19	44	31	75	4	79
Congenital Anomalies (Q00-Q99)	122	46	168	39	207	62	269
Symptoms and Abnormal Findings (R00-R99)	3	6	9	13	22	164	186
Sudden Infant Death Syndrome (R95)	0	2	2	5	7	107	114
Other Symptoms and Abnormal Findings (R00-R94, R96-R98)	0	0	0	0	0	2	2
Other Ill-defined and Unspecified Causes of Mortality (R99)	3	4	7	8	15	55	70
Accidental Suffocation and Strangulation in Bed (W75)	0	1	1	3	4	29	33
External Causes of Mortality (V01-W74,W76-Y89) excluding Suffocation in Bed (W75)	1	0	1	5	6	40	46
Sudden Unexpected Infant Deaths (SUID) (R95, R99, W75)	3	7	10	16	26	191	217

Residence data

Source: Bureau of Epidemiology and Public Health Informatics
Kansas Department of Health and Environment

Table 6
Infant Deaths by County of Residence
by Period of Death, Kansas, 2012-2016

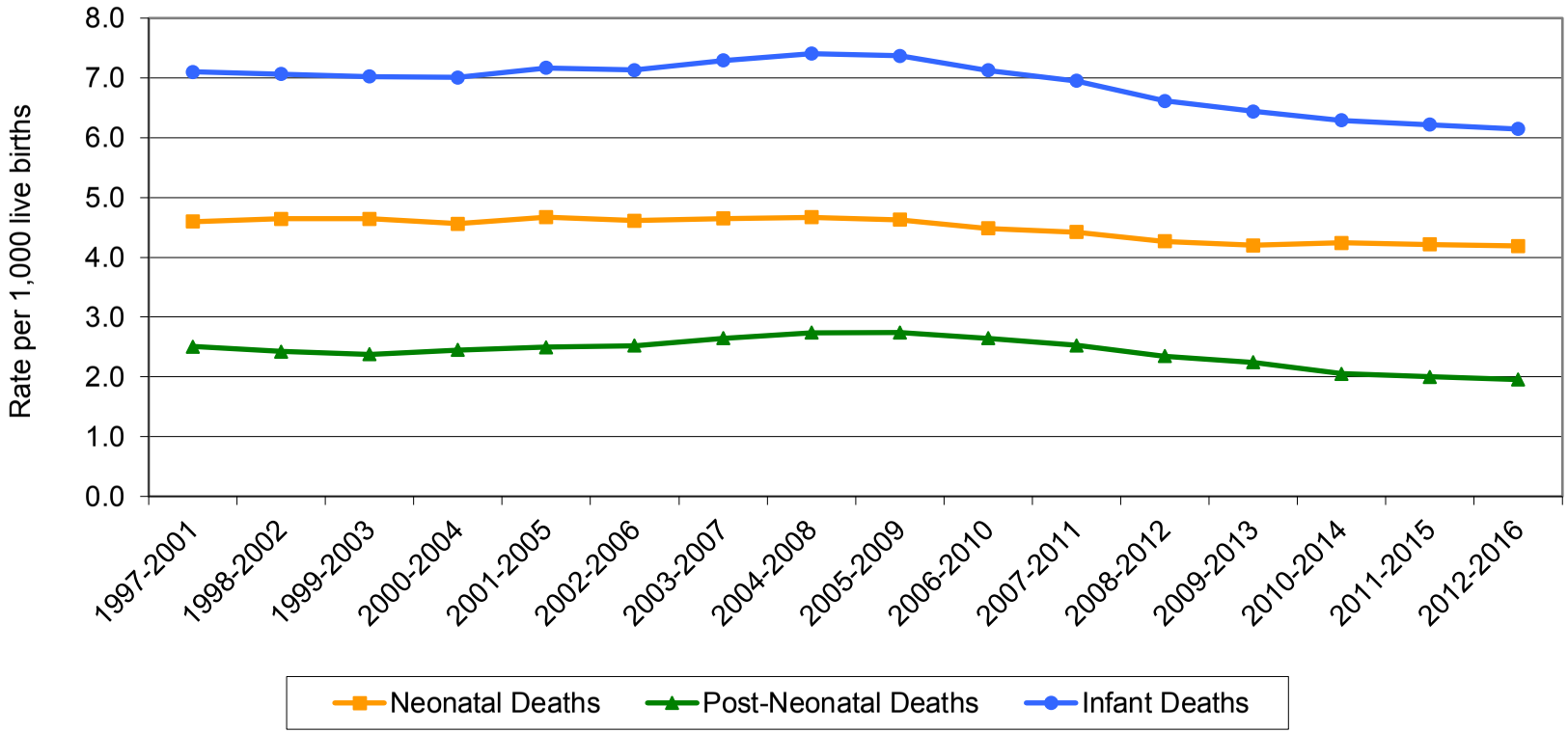
County of Residence	Hebdomadal Deaths (under 7 days)	Neonatal Deaths (Under 28 days)	Post-Neonatal Deaths (28-364 days)	Total Infant Deaths (under 1 year)
Kansas	671	819	382	1,201
Allen	1	1	2	3
Anderson	4	4	0	4
Atchison	2	3	3	6
Barber	0	0	0	0
Barton	6	7	2	9
Bourbon	2	4	1	5
Brown	3	3	1	4
Butler	13	19	10	29
Chase	0	0	0	0
Chautauqua	0	0	0	0
Cherokee	0	0	0	0
Cheyenne	1	1	0	1
Clark	1	1	0	1
Clay	4	4	3	7
Cloud	1	1	1	2
Coffey	0	0	0	0
Comanche	0	0	2	2
Cowley	6	7	2	9
Crawford	5	6	6	12
Decatur	0	1	0	1
Dickinson	5	6	5	11
Doniphan	1	1	0	1
Douglas	22	24	8	32
Edwards	2	2	0	2
Elk	1	1	2	3
Ellis	9	11	2	13
Ellsworth	1	1	0	1
Finney	13	16	9	25
Ford	16	19	9	28
Franklin	6	9	4	13
Geary	17	21	7	28
Gove	1	1	1	2
Graham	0	1	1	2
Grant	2	2	1	3
Gray	1	1	2	3
Greeley	0	0	0	0
Greenwood	1	1	2	3
Hamilton	1	1	0	1
Harper	4	5	0	5
Harvey	6	8	9	17
Haskell	1	2	0	2
Hodgeman	1	1	1	2
Jackson	4	5	4	9
Jefferson	3	5	3	8
Jewell	1	1	0	1
Johnson	111	127	33	160
Kearny	1	1	0	1
Kingman	0	0	0	0
Kiowa	0	0	0	0
Labette	8	10	2	12
Lane	0	0	0	0
Leavenworth	10	14	9	23
Lincoln	1	1	0	1
Linn	3	3	3	6
Logan	0	0	0	0

Table 6
Infant Deaths by County of Residence
by Period of Death, Kansas, 2012-2016

County of Residence	Hebdomadal Deaths (under 7 days)	Neonatal Deaths (Under 28 days)	Post-Neonatal Deaths (28-364 days)	Total Infant Deaths (under 1 year)
Lyon	9	10	5	15
McPherson	5	7	1	8
Marion	0	0	2	2
Marshall	2	2	0	2
Meade	1	1	0	1
Miami	4	6	2	8
Mitchell	1	1	0	1
Montgomery	8	10	5	15
Morris	2	2	0	2
Morton	0	0	0	0
Nemaha	8	9	0	9
Neosho	1	3	4	7
Ness	1	1	1	2
Norton	3	3	1	4
Osage	3	3	5	8
Osborne	2	3	0	3
Ottawa	0	0	0	0
Pawnee	2	2	2	4
Phillips	2	3	0	3
Pottawatomie	3	4	3	7
Pratt	2	4	1	5
Rawlins	0	0	0	0
Reno	15	19	12	31
Republic	1	1	2	3
Rice	1	2	2	4
Riley	16	20	11	31
Rooks	0	0	1	1
Rush	1	1	0	1
Russell	0	0	1	1
Saline	8	8	8	16
Scott	1	1	0	1
Sedgwick	148	183	84	267
Seward	12	14	3	17
Shawnee	40	47	29	76
Sheridan	2	2	0	2
Sherman	2	2	0	2
Smith	1	1	0	1
Stafford	0	0	0	0
Stanton	0	0	0	0
Stevens	0	0	1	1
Sumner	3	5	3	8
Thomas	3	3	2	5
Trego	0	0	1	1
Wabaunsee	0	0	0	0
Wallace	1	1	0	1
Washington	1	2	1	3
Wichita	1	1	0	1
Wilson	1	1	2	3
Woodson.	0	0	0	0
Wyandotte	52	68	37	105

Residence data
Source: Bureau of Epidemiology and Public Health Informatics
Kansas Department of Health and Environment

Figure 6
Five Year Average Infant Mortality Rates
by Period of Death
Kansas, 1997-2016



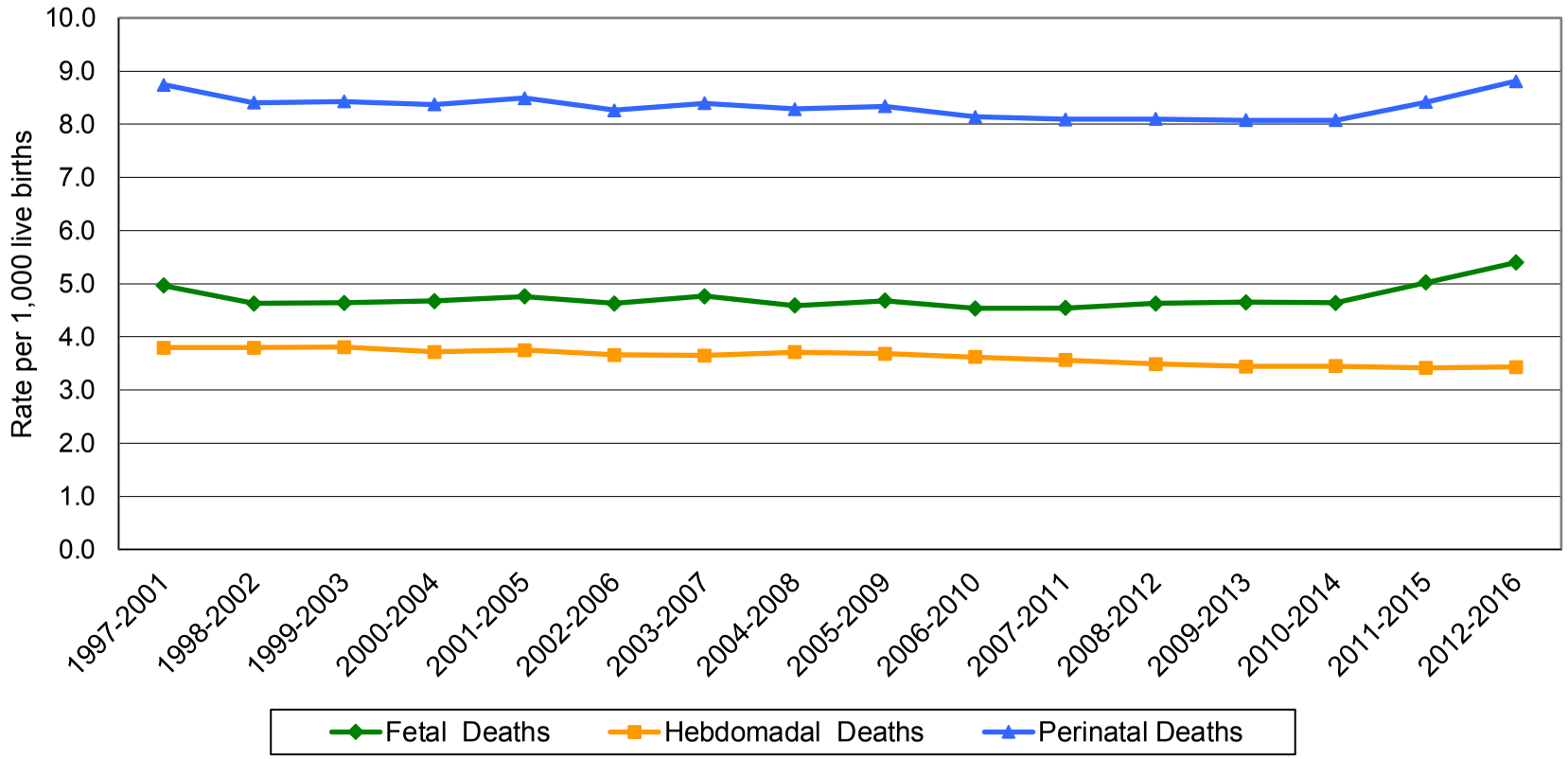
Residence data
Source: Bureau of Epidemiology and Public Health Informatics
Kansas Department of Health and Environment

Table 7
Stillbirths by Cause of Death by Weeks Gestation
Kansas, 2012-2016

Cause of Death (ICD-10 Code)	Total Stillbirths	Weeks Gestation				
		Under 20	20-31	32-41	42 & Over	ns *
All Causes	1061	11	602	440	3	5
Certain Conditions Originating in the Perinatal Period (P00-P96)	507	2	297	204	1	3
Fetus Affected by Maternal Conditions (P00)	65	0	39	26	0	0
Fetus Affected by Maternal Complications of Pregnancy (P01)	78	0	61	17	0	0
Fetus Affected by Complications of Placenta, Cord & Membrane (P02)	258	2	138	117	0	1
Fetus Affected by Complications of Labor and Delivery (P03)	8	0	5	2	0	1
Fetus Affected by Maternal Use of Tobacco, Alcohol, and Drugs of Abuse (P04)	5	0	3	2	0	0
Other Perinatal Conditions (P04 - P05, P08-P15, P22-P28,P35 -P39, P55, P57 -P94, P96)	62	0	23	38	1	0
Disorders Related to Short Gestation & Low Birth Weight (P07)	29	0	27	1	0	1
Hypoxia and Birth Asphyxia (P20-P21)	1	0	1	0	0	0
Cardiovascular Disorders (P24-P28)	1	0	0	1	0	0
Unspecified Cause (P95)	270	5	152	113	0	0
Congenital Anomalies (Q00-Q99)	92	1	44	46	1	0
All Other Causes	192	3	109	77	1	2

*ns = Not Stated.
Residence Data
Source: Bureau of Epidemiology and Public Health Informatics
Kansas Department of Health and Environment

Figure 7
Five Year Average Perinatal Period III Mortality Rates
by Period of Death
Kansas, 1997-2016



Residence data
Source: Bureau of Epidemiology and Public Health Informatics
Kansas Department of Health and Environment

Table 8
Linked Infant Deaths
by Cause of Death by Gestational Age
Kansas, 2012-2016

Cause of Death	Total Deaths	Very Premature <32 weeks		Moderate Premature 32-33 weeks		Late Preterm 34-36 weeks		Total Preterm <37 weeks		Early Term 37-38 weeks		Term >=39 weeks		ns*
		N	%	N	%	N	%	N	%	N	%	N	%	
Kansas	1,195	569	47.9	57	4.8	122	10.3	748	63.0	190	16.0	249	21.0	8
Infectious and Parasitic Diseases (A00-B99)	14	4	28.6	0	0.0	3	21.4	7	50.0	1	7.1	6	42.9	0
Other Diseases and Disorders (C00-O99)	92	30	32.6	4	4.3	7	7.6	41	44.6	21	22.8	30	32.6	0
Maternal Factors & Compl of Pregnancy, Labor and Delivery (P00-P04)	107	90	84.9	1	0.9	4	3.8	95	89.6	7	6.6	4	3.8	1
Disorders rel. to Short Gestation & Low Birth Weight (P07)	237	235	99.6	0	0.0	0	0.0	235	99.6	1	0.4	0	0.0	1
Hypoxia and Birth Asphyxia (P20-P21)	15	8	53.3	2	13.3	2	13.3	12	80.0	2	13.3	1	6.7	0
Respiratory Distress of Newborn (P22)	17	15	88.2	2	11.8	0	0.0	17	100.0	0	0.0	0	0.0	0
Congenital Pneumonia (P23)	5	2	40.0	1	20.0	1	20.0	4	80.0	0	0.0	1	20.0	0
Other Respiratory Conditions of Newborn (P24-P28)	37	28	75.7	1	2.7	2	5.4	31	83.8	3	8.1	3	8.1	0
Bacterial Sepsis of Newborn (P36)	26	19	73.1	1	3.8	1	3.8	21	80.8	2	7.7	3	11.5	0
Hemorrhagic and Hematolog Disorders of Fetus and Newborn (P50-P61)	37	26	72.2	2	5.6	0	0.0	28	77.8	3	8.3	5	13.9	1
Other Perinatal Conditions (P05, P08, P29, P35, P37, P39, P70-P96)	79	52	65.8	5	6.3	4	5.1	61	77.2	5	6.3	13	16.5	0
Congenital Anomalies (Q00-Q99)	269	45	16.9	30	11.2	66	24.7	141	52.8	63	23.6	63	23.6	2
Other Symptoms and Abnormal Findings (R00-R94, R96-R98)	2	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	2	100.0	0
Sudden Infant Death Syndrome (R95)	112	5	4.5	2	1.8	17	15.2	24	21.4	34	30.4	54	48.2	0
Other Ill-Defined and Unspecified Causes of Mortality (R99)	68	6	9.0	1	1.5	8	11.9	15	22.4	29	43.3	23	34.3	1
Accidental Suffocation in Bed (W75)	33	0	0.0	3	9.4	5	15.6	8	25.0	8	25.0	16	50.0	1
External Causes of Mortality (V01-Y89), excluding sleep related deaths (W75)	45	4	9.1	2	4.5	2	4.5	8	18.2	11	25.0	25	56.8	1

*ns = Not stated.

Unknowns are excluded in calculating percents.

Residence data

Source: Bureau of Epidemiology and Public Health Informatics
Kansas Department of Health and Environment

Table 9
Linked Infant Deaths by Birth Characteristics
by Selected Population Groups of the Mother
Kansas, 2012-2016

Characteristics	All races and origins	White NH	Black NH	American Indian or Alaska Native NH	Asian or Pacific Islander	Hispanic	Multi Race	Other NH	Unknown
Total	1,195	693	171	7	25	217	62	10	10
Sex									
Female	529	309	82	2	12	88	29	4	3
Male	666	384	89	5	13	129	33	6	7
Plurality									
Single	1,029	588	143	6	23	196	56	9	8
Twin	152	95	25	1	2	20	6	1	2
Triplets or more	12	8	3	-	-	1	-	-	-
Plural	164	103	28	1	2	21	6	1	2
n.s.	2	2	-	-	-	-	-	-	-
Birth Order									
1	470	277	64	3	14	80	24	4	4
2	319	190	41	3	7	55	18	2	3
3	201	124	25	-	2	38	11	1	-
4	105	58	16	1	2	20	4	2	2
5 or more	98	42	25	-	-	24	5	1	1
n.s.	2	2	-	-	-	-	-	-	-
Birthweight									
Less than 2,500 grams	766	422	126	4	18	145	36	8	7
Less than 500 grams	270	126	67	1	7	52	10	3	4
500-1499 grams	302	182	34	2	6	60	14	1	3
1,500-2,499 grams	194	114	25	1	5	33	12	4	-
2,500 grams or more	423	267	45	2	6	72	26	2	3
n.s.	6	4	-	1	1	-	-	-	-
Gestational Age									
Premature (< 37 weeks)	748	415	123	4	17	142	32	7	8
Very Premature (< 32 wks)	569	300	105	4	14	111	23	5	7
Moderate Premature (32-33 wks)	57	39	6	-	1	9	1	1	-
Late Premature (34-36 wks)	122	76	12	-	2	22	8	1	1
Early Term (37-38 weeks)	190	120	20	2	3	31	12	1	1
Term (39-45 weeks)	249	152	28	1	4	43	18	2	1
n.s.	8	6	-	-	1	1	-	-	-
Mother's Age									
Under 20 years	104	54	12	1	3	26	5	2	1
20-24 years	342	179	57	2	5	68	26	2	3
25-29 years	371	224	56	1	7	62	17	2	2
30-34 years	235	155	26	3	7	30	10	2	2
35-39 years	114	66	16	-	3	23	3	2	1
40-60 years	26	12	4	-	-	8	1	-	1
n.s.	3	-	-	-	-	-	-	-	3
Marital Status									
Married	592	405	31	1	16	106	23	6	4
Unmarried	595	284	139	6	8	110	39	4	5
n.s.	8	4	1	-	1	1	-	-	1

Table 9
Linked Infant Deaths by Birth Characteristics
by Selected Population Groups of the Mother
Kansas, 2012-2016

Characteristics	All races and origins	White NH	Black NH	American Indian or Alaska Native NH	Asian or Pacific Islander	Hispanic	Multi Race	Other NH	Unknown
Payor									
Medicaid	522	275	107	2	6	89	31	5	7
Private Insurance	501	346	45	2	14	68	20	4	2
Self Pay	92	31	7	1	3	42	7	1	-
Indian Health Service	-	-	-	-	-	-	-	-	-
Tricare	44	22	7	1	1	9	4	-	-
Other Government	7	4	1	-	-	2	-	-	-
Other	7	3	2	-	-	2	-	-	-
n.s.	22	12	2	1	1	5	-	-	1
Mother's Education*									
8th Grade or Less	28	5	3	-	-	17	1	1	1
9-12 Grade, No Diploma	71	23	11	1	3	31	1	1	-
H.S. or GED	178	88	39	2	3	35	7	1	3
Some College, No Degree	160	107	25	1	1	14	11	1	-
Associate Degree	79	53	14	-	1	8	3	-	-
Bachelor's Degree	145	118	6	-	4	14	-	2	1
Master's Degree	59	46	1	-	3	1	7	-	1
Doctorate	10	8	-	-	2	-	-	-	-
n.s.	16	9	3	-	-	3	1	-	-
*Mothers Over 24 years	730	448	99	4	17	120	30	6	6
Prenatal Care									
None	65	30	14	1	2	13	4	-	1
Month 1	44	25	10	1	-	6	1	-	1
Month 2	413	247	60	2	8	70	23	1	2
Month 3	375	241	48	1	7	57	15	2	4
First Trimester	832	513	118	4	15	133	39	3	7
Month 4	115	53	21	-	3	27	8	3	-
Month 5	72	35	7	-	4	18	5	1	2
Month 6	27	17	1	1	-	3	3	2	-
Second Trimester	214	105	29	1	7	48	16	6	2
Month 7	18	8	2	-	-	7	1	-	-
Month 8	9	4	2	-	-	3	-	-	-
Month 9	5	1	-	-	-	3	1	-	-
Third Trimester	32	13	4	-	-	13	2	-	-
n.s.	52	32	6	1	1	10	1	1	-
Adequecy of Prenatal Care									
Adequate Plus	558	342	84	2	12	88	23	4	3
Adequate	300	170	38	2	6	58	20	2	4
Intermediate	64	40	12	-	-	11	1	-	-
Inadequate	201	99	26	2	6	48	14	3	3
n.s.	72	42	11	1	1	12	4	1	-
Smoking During Pregnancy									
Ever Smoked During Pregnancy	252	178	33	2	-	18	19	1	1
Smoking Status Known	1,195	693	171	7	25	217	62	10	10

Residence data
n.s. = not stated
Source: Bureau of Epidemiology and Public Health Informatics
Kansas Department of Health and Environment

Table 10
Live Births by Birth Characteristics
by Selected Population Groups of the Mother
Kansas, 2012-2016

Characteristics	All races and origins	White NH	Black NH	American Indian or Alaska Native NH	Asian or Pacific Islander	Hispanic	Multi Race	Other NH	Unknown
Total	195,476	139,328	12,939	971	6,001	31,144	3,581	1,405	107
Sex									
Female	95,540	67,935	6,319	484	2,992	15,310	1,750	694	56
Male	99,935	71,393	6,620	487	3,009	15,833	1,831	711	51
Plurality									
Single	189,112	134,523	12,434	945	5,819	30,426	3,493	1,376	96
Twin	6,123	4,611	495	26	173	700	85	26	7
Triplets or more	237	194	10	-	9	18	3	3	-
Plural	6,360	4,805	505	26	182	718	88	29	7
n.s.	4	-	-	-	-	-	-	-	4
Birth Order									
1	70,497	51,790	4,468	288	2,550	9,317	1,550	494	40
2	61,686	45,417	3,618	285	2,200	8,644	1,013	485	24
3	36,085	25,128	2,476	211	809	6,630	556	258	17
4	16,305	10,504	1,257	95	267	3,803	267	101	11
5 or more	10,903	6,489	1,120	92	175	2,750	195	67	15
n.s.	-	-	-	-	-	-	-	-	-
Birthweight									
Less than 2,500 grams	13,721	9,105	1,695	56	502	1,963	271	119	10
Less than 500 grams	301	160	74	2	6	51	6	2	-
500-1499 grams	2,163	1,399	323	8	63	310	47	9	4
1,500-2,499 grams	11,257	7,546	1,298	46	433	1,602	218	108	6
2,500 grams or more	181,740	130,218	11,244	915	5,499	29,180	3,310	1,286	88
n.s.	11	5	-	-	-	1	-	-	9
Gestational Age									
Premature (< 37 weeks)	17,379	12,013	1,662	112	532	2,558	373	120	9
Very Premature (< 32 wks)	2,861	1,844	436	11	80	420	52	14	4
Moderate Premature (32-33 wks)	2,133	1,516	198	7	58	302	41	11	-
Late Premature (34-36 wks)	12,385	8,653	1,028	94	394	1,836	280	95	5
Early Term (37-38 weeks)	47,022	32,472	3,482	243	1,627	7,930	904	339	25
Term (39-45 weeks)	130,987	94,790	7,791	616	3,840	20,640	2,302	945	63
n.s.	88	53	4	-	2	16	2	1	10
Mother's Age									
Under 20 years	13,562	7,565	1,392	93	142	3,809	501	56	4
20-24 years	47,098	30,955	4,465	300	653	9,146	1,288	273	18
25-29 years	61,407	45,867	3,552	285	1,885	8,322	977	493	26
30-34 years	50,159	38,519	2,303	194	2,138	6,039	564	373	29
35-39 years	19,430	13,889	1,017	79	970	3,078	208	169	20
40-60 years	3,811	2,531	209	20	213	749	43	41	5
n.s.	9	2	1	-	-	1	-	-	5
Marital Status									
Married	124,452	97,276	3,874	359	5,154	14,984	1,527	1,210	68
Unmarried	70,956	42,018	9,061	612	844	16,145	2,052	195	29
n.s.	68	34	4	-	3	15	2	-	10

Table 10
Live Births by Birth Characteristics
by Selected Population Groups of the Mother
Kansas, 2012-2016

Characteristics	All races and origins	White NH	Black NH	American Indian or Alaska Native NH	Asian or Pacific Islander	Hispanic	Multi Race	Other NH	Unknown
Payor									
Medicaid	63,015	38,714	8,130	529	1,054	12,273	1,828	461	26
Private Insurance	104,999	86,775	3,111	279	4,110	8,888	1,232	563	41
Self Pay	13,660	4,663	552	27	438	7,572	112	276	20
Indian Health Service	117	30	-	65	-	10	11	1	-
Tricare	10,607	7,497	1,008	44	343	1,307	336	66	6
Other Government	1,274	753	60	18	28	373	31	11	-
Other	905	531	49	7	16	270	17	15	-
n.s.	899	365	29	2	12	451	14	12	14
Mother's Education*									
8th Grade or Less	4,437	791	133	6	165	3,127	14	200	1
9-12 Grade, No Diploma	8,113	3,054	659	67	213	3,919	124	76	1
H.S. or GED	21,507	13,524	1,939	151	713	4,651	348	172	9
Some College, No Degree	26,384	19,896	2,179	156	605	2,881	535	124	8
Associate Degree	13,856	11,359	726	71	313	1,126	200	57	4
Bachelor's Degree	40,242	35,205	908	95	1,652	1,718	376	268	20
Master's Degree	15,624	13,266	410	30	1,108	534	149	123	4
Doctorate	4,269	3,527	100	-	420	130	42	45	5
n.s.	375	184	27	2	17	102	4	11	28
*Mothers Over 24 years									
Prenatal Care									
None	1,636	789	255	22	46	476	22	18	8
Month 1	5,304	3,746	347	26	167	875	94	41	8
Month 2	71,572	54,102	4,063	271	2,372	9,218	1,092	436	18
Month 3	78,649	58,227	4,676	375	2,209	11,153	1,497	472	40
First Trimester	155,525	116,075	9,086	672	4,748	21,246	2,683	949	66
Month 4	18,150	11,282	1,565	123	531	4,069	370	199	11
Month 5	8,307	4,728	824	65	279	2,135	185	88	3
Month 6	4,502	2,426	455	33	162	1,233	136	54	3
Second Trimester	30,959	18,436	2,844	221	972	7,437	691	341	17
Month 7	2,940	1,575	308	19	88	817	85	44	4
Month 8	1,996	1,043	211	19	77	579	44	23	-
Month 9	1,014	524	103	11	30	311	25	8	2
Third Trimester	5,950	3,142	622	49	195	1,707	154	75	6
n.s.	1,406	886	132	7	40	278	31	22	10
Adequecy of Prenatal Care									
Adequate Plus	58,896	44,611	3,434	290	1,723	7,433	1,127	252	26
Adequate	101,303	75,273	5,873	411	3,185	14,241	1,685	594	41
Intermediate	11,901	6,573	1,184	73	333	3,241	201	286	10
Inadequate	21,490	11,661	2,283	185	710	5,866	520	245	20
n.s.	1,886	1,210	165	12	50	363	48	28	10
Smoking During Pregnancy									
Ever Smoked During Pregnancy	23,170	18,983	1,751	241	118	1,283	767	21	6
Smoking Status Known	195,476	139,328	12,939	971	6,001	31,144	3,581	1,405	107

Residence data
n.s. = not stated
Source: Bureau of Epidemiology and Public Health Informatics
Kansas Department of Health and Environment

Technical Notes

Data for 2005 and years following are based on Kansas implementation of the 2003 revision of the U.S. Standard Certificates of Live Birth, Death, and Stillbirth. Data for prior years is based on the 1989 revision of the U.S. Standard Certificate of Live Birth, Death, and Stillbirth.

Data analysis involving the 2005 Kansas Certificate of Live Birth is affected in several ways:

- Changes in both question wording and sources for the information collected make it inappropriate to evaluate trends across 2004 and 2005 in some variables such as month prenatal care began and education level

- Calculating Month Prenatal Care Began – prior to 2005 – the mother was asked for the month prenatal care began. Starting in 2005, the dates used to calculate the month prenatal care began included the first day of the last menses before pregnancy and the date of the first prenatal visit. This change makes rates calculated after 2004 incompatible with earlier years. Such comparisons are inappropriate.

- KDHE publishes data on resident births and deaths. If the event occurs out of state and the state is not using the 2003 revision of the birth certificate, missing data may result. This is an important factor in border counties.

- KDHE excludes unknowns from the denominator for all calculations that result in percentage rates involving birth data. Other states may choose to include unknowns in the denominator. The Kansas method provides a more accurate representation of the rates.

- The 2003 revision process resulted in recommendations that the prenatal care information be gathered from the prenatal care or medical records, whereas the 1989 revision did not recommend a source for these data. In the case of premature births, sometimes these records aren't available when the infant is delivered.

- Infant mortality rates reported by NCHS may vary slightly from rates reported by KDHE. NCHS rates are based on data reported to it by all states. Some of those out-of-state occurrence infant deaths may not be reported to KDHE in time for inclusion in the respective year's *Annual Summary of Vital Statistics* or subsequent reports.

- Percentages may not add to 100 percent due to rounding.

Beginning in July 2014, requirements for reporting stillbirths or fetal deaths to the Kansas Department of Health and Environment changed. All stillbirths in which the unborn child is 20 weeks gestation and greater must now be reported. The old law required stillbirths to be reported when fetal weight was greater than 350 grams. The change may result in slightly different counts because of the different definitions of stillbirth and implementation occurring mid-year. The reporting certificate did not change.

Population Groups

This report uses the concept of reporting race and Hispanic origin combined into distinct categories of population groups. This was done to preserve the self-reported information on race and origin reported in the expanded categories. The use of population groups assures a better uniformity of the numerators and denominators in rate calculations.

Because of different tabulation methods, totals for population groups may not equal those tabulated by either race or Hispanic origin individually. Rates calculated exclusively on Hispanic origin treat unknowns differently.

The aggregation grid for population groups is listed on page 172 of the *Annual Summary of Vital Statistics, 2014*. Application of this grid assures that every combination of race and origin is assigned to a population group. In instances where the Hispanic origin of an individual is unknown, the person is assigned to a population group solely on the basis of race and is considered non-Hispanic.

Peer Groups

For various demographic studies, it is useful to consider groups of counties with similar characteristics. “Peer Groups” of counties, as used in this summary, are defined as those with similar population density based on a method derived by the KDHE Bureau of Community Health Systems. (See Appendix 1 for county tables indicating population density peer group membership before and after the 2010 U.S. Census.)

Frontier counties are defined as those with less than 6.0 persons per square mile, Rural counties as those with 6.0 - 19.9 persons per square mile, Densely-Settled Rural counties as those with 20.0 - 39.9 persons per square mile, Semi-Urban counties as those with 40.0 - 149.9 persons per square mile, and Urban counties as those with 150.0 or more persons per square mile. These designations should *not* be confused with the USCB definitions of urban and rural areas.

The KDHE Bureau of Epidemiology and Public Health Informatics applies these definitions, updating the groups with every decennial census. Based on the 2010 U.S. Census, eight Kansas counties changed peer groups. In order to facilitate a time series comparison, Peer-Group statistics for prior years are based on the Peer-Group in effect during that decade [2]. Sources for calculation of population densities are population figures from the 2010 U.S. Census and land areas from the 2010 U.S. Census.

APPENDIX 1
Kansas County Codes and Groupings

County Name	FIPS Code	Abbreviation	Population Density Peer Group (2010)	Population Density Peer Group (2000)
Allen	001	AL	Densely-Settled Rural	Densely-Settled Rural
Anderson	003	AN	Rural	Rural
Atchison	005	AT	Densely-Settled Rural	Densely-Settled Rural
Barber	007	BA	Frontier	Frontier
Barton	009	BT	Densely-Settled Rural	Densely-Settled Rural
Bourbon	011	BB	Densely-Settled Rural	Densely-Settled Rural
Brown	013	BR	Rural	Rural
Butler	015	BU	Semi-Urban	Semi-Urban
Chase	017	CS	Frontier	Frontier
Chautauqua	019	CQ	Frontier	Rural
Cherokee	021	CK	Densely-Settled Rural	Densely-Settled Rural
Cheyenne	023	CN	Frontier	Frontier
Clark	025	CA	Frontier	Frontier
Clay	027	CY	Rural	Rural
Cloud	029	CD	Rural	Rural
Coffey	031	CF	Rural	Rural
Comanche	033	CM	Frontier	Frontier
Cowley	035	CL	Densely-Settled Rural	Densely-Settled Rural
Crawford	037	CR	Semi-Urban	Semi-Urban
Decatur	039	DC	Frontier	Frontier
Dickinson	041	DK	Densely-Settled Rural	Densely-Settled Rural
Doniphan	043	DP	Densely-Settled Rural	Densely-Settled Rural
Douglas	045	DG	Urban	Urban
Edwards	047	ED	Frontier	Frontier
Elk	049	EK	Frontier	Frontier
Ellis	051	EL	Densely-Settled Rural	Densely-Settled Rural
Ellsworth	053	EW	Rural	Rural
Finney	055	FI	Densely-Settled Rural	Densely-Settled Rural
Ford	057	FO	Densely-Settled Rural	Densely-Settled Rural
Franklin	059	FR	Semi-Urban	Semi-Urban
Geary	061	GE	Semi-Urban	Semi-Urban
Gove	063	GO	Frontier	Frontier
Graham	065	GH	Frontier	Frontier
Grant	067	GT	Rural	Rural
Gray	069	GY	Rural	Rural
Greeley	071	GL	Frontier	Frontier
Greenwood	073	GW	Frontier	Rural
Hamilton	075	HM	Frontier	Frontier
Harper	077	HP	Rural	Rural
Harvey	079	HV	Semi-Urban	Semi-Urban
Haskell	081	HS	Rural	Rural
Hodgeman	083	HG	Frontier	Frontier
Jackson	085	JA	Densely-Settled Rural	Rural
Jefferson	087	JF	Densely-Settled Rural	Densely-Settled Rural
Jewell	089	JW	Frontier	Frontier
Johnson	091	JO	Urban	Urban
Kearny	093	KE	Frontier	Frontier
Kingman	095	KM	Rural	Rural
Kiowa	097	KW	Frontier	Frontier
Labette	099	LB	Densely-Settled Rural	Densely-Settled Rural
Lane	101	LE	Frontier	Frontier
Leavenworth	103	LV	Urban	Semi-Urban
Lincoln	105	LC	Frontier	Frontier
Linn	107	LN	Rural	Rural

County Name	FIPS Code	Abbreviation	Population Density Peer Group (2010)	Population Density Peer Group (2000)
Logan	109	LG	Frontier	Frontier
Lyon	111	LY	Densely-Settled Rural	Semi-Urban
McPherson	113	MP	Densely-Settled Rural	Densely-Settled Rural
Marion	115	MN	Rural	Rural
Marshall	117	MS	Rural	Rural
Meade	119	ME	Frontier	Frontier
Miami	121	MI	Semi-Urban	Semi-Urban
Mitchell	123	MC	Rural	Rural
Montgomery	125	MG	Semi-Urban	Semi-Urban
Morris	127	MR	Rural	Rural
Morton	129	MT	Frontier	Frontier
Nemaha	131	NM	Rural	Rural
Neosho	133	NO	Densely-Settled Rural	Densely-Settled Rural
Ness	135	NS	Frontier	Frontier
Norton	137	NT	Rural	Rural
Osage	139	OS	Densely-Settled Rural	Densely-Settled Rural
Osborne	141	OB	Frontier	Frontier
Ottawa	143	OT	Rural	Rural
Pawnee	145	PN	Rural	Rural
Phillips	147	PL	Rural	Rural
Pottawatomie	149	PT	Densely-Settled Rural	Densely-Settled Rural
Pratt	151	PR	Rural	Rural
Rawlins	153	RA	Frontier	Frontier
Reno	155	RN	Semi-Urban	Semi-Urban
Republic	157	RP	Rural	Rural
Rice	159	RC	Rural	Rural
Riley	161	RL	Semi-Urban	Semi-Urban
Rooks	163	RO	Frontier	Rural
Rush	165	RH	Frontier	Frontier
Russell	167	RS	Rural	Rural
Saline	169	SA	Semi-Urban	Semi-Urban
Scott	171	SC	Rural	Rural
Sedgwick	173	SG	Urban	Urban
Seward	175	SW	Densely-Settled Rural	Densely-Settled Rural
Shawnee	177	SN	Urban	Urban
Sheridan	179	SD	Frontier	Frontier
Sherman	181	SH	Frontier	Rural
Smith	183	SM	Frontier	Frontier
Stafford	185	SF	Frontier	Rural
Stanton	187	ST	Frontier	Frontier
Stevens	189	SV	Rural	Rural
Sumner	191	SU	Densely-Settled Rural	Densely-Settled Rural
Thomas	193	TH	Rural	Rural
Trego	195	TR	Frontier	Frontier
Wabaunsee	197	WB	Rural	Rural
Wallace	199	WA	Frontier	Frontier
Washington	201	WS	Rural	Rural
Wichita	203	WH	Frontier	Frontier
Wilson	205	WL	Rural	Rural
Woodson	207	WO	Rural	Rural
Wyandotte	209	WY	Urban	Urban

Kansas Department of Health and Environment
Office of Vital Statistics

CERTIFICATE OF LIVE BIRTH

115-

State File Number

1. CHILD'S NAME (First, Middle, Last, Suffix)		2. DATE OF BIRTH (Month, Day, Year)	3. TIME OF BIRTH M
4. SEX	5. BIRTH WEIGHT (Grams)	6. CITY, TOWN, OR LOCATION OF BIRTH	7. COUNTY OF BIRTH

8. PLACE OF BIRTH
☐ Hospital ☐ Freestanding Birthing Center ☐ Home Birth
☐ Clinic/Doctor's Office ☐ Other (Specify) _____

9. FACILITY NAME (If not institution, give street and number)

10. I CERTIFY THAT THE STATED INFORMATION CONCERNING THIS CHILD IS TRUE TO THE BEST OF MY KNOWLEDGE AND BELIEF.
Certifier's Signature ➢ _____

11. DATE SIGNED (Month, Day, Year)

12. ATTENDANT'S NAME AND TITLE (Type)
Name _____
☐ M.D. ☐ D.O. ☐ C.N.M. ☐ Other Midwife
☐ Other (Specify) _____

13. Certifier's Name and Title (Type)
Name _____
☐ M.D. ☐ D.O. ☐ Hosp Adm. ☐ C.N.M. ☐ Other Midwife
☐ Other (Specify) _____

14. ATTENDANT'S MAILING ADDRESS (Street and Number or Rural Route, City, or Town, State, Zip Code)

15. MOTHER'S CURRENT LEGAL NAME (First, Middle, Last, Suffix)		16. MOTHER'S LAST NAME PRIOR TO FIRST MARRIAGE
17. DATE OF BIRTH (Month, Day, Year)	18. BIRTHPLACE (State, Territory, or Foreign Country)	19. PRESENT RESIDENCE-STATE
20. COUNTY	21. CITY, TOWN, OR LOCATION	22. STREET AND NUMBER OF PRESENT RESIDENCE
23. ZIP CODE	24. INSIDE CITY LIMITS? ☐ YES ☐ NO	25. MOTHER'S MAILING ADDRESS (If same as residence, leave blank)
26. FATHER'S CURRENT LEGAL NAME (First, Middle, Last, Suffix)	27. DATE OF BIRTH (Month, Day, Year)	28. BIRTHPLACE (State, Territory, or Foreign Country)

29. PARENTS REQUEST SOCIAL SECURITY NUMBER ISSUANCE?
☐ YES ☐ NO

30. IMMUNIZATION REGISTRY
I wish to enroll my child in the Immunization Registry ☐ YES ☐ NO

31. I CERTIFY THAT THE PERSONAL INFORMATION PROVIDED ON THE CERTIFICATE IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.
Signature of Parent (or Other Informant) ➢ _____

32. DATE SIGNED (Month, Day, Year)

33 DATE FILED BY STATE REGISTRAR (Month, Day, Year) (Vital Statistics only)

SAMPLE

Form VS240 Rev. 05/01/2010

34. IF HOME BIRTH, WAS DELIVERY PLANNED AT HOME? ☐ Yes ☐ No ☐ Unknown

35. MOTHER'S SOCIAL SECURITY NUMBER

36. FATHER'S SOCIAL SECURITY NUMBER

37a. WAS MOTHER EVER MARRIED? ☐ Yes ☐ No ☐ Unknown

37b. MOTHER MARRIED? (At birth, conception or any time between) ☐ Yes ☐ No ☐ Unknown

37c. IF NO, HAS PATERNITY ACKNOWLEDGMENT BEEN SIGNED? ☐ Yes ☐ No

37d. MOTHER REFUSES TO GIVE HUSBAND'S INFORMATION ☐ Yes ☐ No

38. WHAT IS THE PRIMARY LANGUAGE SPOKEN IN THE HOME? ☐ English ☐ Spanish ☐ Vietnamese ☐ German ☐ French ☐ Russian ☐ Ukrainian ☐ Mandarin ☐ Cantonese ☐ Sign Language ☐ Other *(Specify)* _____

39. PARENT'S HISPANIC ORIGIN (Check the box or boxes that best describes whether the parent is Spanish, Hispanic, or Latino. Check the "No" box if the parent is not Spanish, Hispanic, or Latino.)

39a. MOTHER
- ☐ No, not Spanish/ Hispanic/Latina
- ☐ Yes, Mexican/Mexican American/Chicana
- ☐ Yes, Puerto Rican
- ☐ Yes, Cuban
- ☐ Yes, Central American
- ☐ Yes, South American
- ☐ Yes, other Spanish/ Hispanic/Latina

(Specify)_____
- ☐ Unknown

39b. FATHER
- ☐ No, not Spanish/ Hispanic/Latino
- ☐ Yes, Mexican/Mexican American/Chicano
- ☐ Yes, Puerto Rican
- ☐ Yes, Cuban
- ☐ Yes, Central American
- ☐ Yes, South American
- ☐ Yes, other Spanish/ Hispanic/Latino

(Specify)_____
- ☐ Unknown

40. PARENT'S RACE (Check one or more races to indicate what you consider yourself to be.)

40a. MOTHER
- ☐ White
- ☐ Black or African American
- ☐ American Indian or Alaska Native (Name of the enrolled or principal tribes) _____
- ☐ Asian Indian
- ☐ Chinese
- ☐ Filipino
- ☐ Japanese
- ☐ Korean
- ☐ Vietnamese
- ☐ Other Asian (Specify) _____
- ☐ Native Hawaiian
- ☐ Guamanian or Chamorro
- ☐ Samoan
- ☐ Other Pacific Islander (Specify) _____
- ☐ Other (Specify) _____
- ☐ Unknown

40b. FATHER
- ☐ White
- ☐ Black or African American
- ☐ American Indian or Alaska Native (Name of the enrolled or principal tribes) _____
- ☐ Asian Indian
- ☐ Chinese
- ☐ Filipino
- ☐ Japanese
- ☐ Korean
- ☐ Vietnamese
- ☐ Other Asian (Specify) _____
- ☐ Native Hawaiian
- ☐ Guamanian or Chamorro
- ☐ Samoan
- ☐ Other Pacific Islander (Specify) _____
- ☐ Other (Specify) _____
- ☐ Unknown

41. ANCESTRY - What is the parents' ancestry or ethnic origin?- Italian, German, Dominican, Vietnamese, Hmong, French Canadian, etc. (Specify below)

41a. MOTHER

41b. FATHER

42. OCCUPATION AND BUSINESS/INDUSTRY

	Occupation	Business/Industry (Do not give name of company.)
41a. MOTHER	42a. MOTHER (Most recent)	42c. MOTHER
41b. FATHER	42b. FATHER (Usual)	42d. FATHER

43. EDUCATION (Check the box that best describes the highest degree or level of school completed at the time of delivery.)

43a. MOTHER'S EDUCATION
- ☐ 8th grade or less
- ☐ 9th - 12th grade; no diploma
- ☐ High school graduate or GED
- ☐ Some College credit, but no degree
- ☐ Associate degree (e.g., AA,AS)
- ☐ Bachelor's degree (e.g., BA, AB, BS)
- ☐ Unknown
- ☐ Master's degree (e.g., MA, MS, MEng, MEd, MSW, MBA)
- ☐ Doctorate (e.g., PhD, EdD) or Professional degree (e.g., MD, DDS, DVM, LLB, JD)

43b. FATHER'S EDUCATION
- ☐ 8th grade or less
- ☐ 9th - 12th grade; no diploma
- ☐ High school graduate or GED
- ☐ Some College credit, but no degree
- ☐ Associate degree (e.g., AA,AS)
- ☐ Bachelor's degree (e.g., BA, AB, BS)
- ☐ Unknown
- ☐ Master's degree (e.g., MA, MS, MEng, MEd, MSW, MBA)
- ☐ Doctorate (e.g., PhD, EdD) or Professional degree (e.g., MD, DDS, DVM, LLB, JD)

44. PREVIOUS LIVE BIRTHS (Do not include this child.)

45. NUMBER OF OTHER OUTCOMES (Spontaneous or induced losses or ectopic or stillbirth pregnancies)

46. PRENATAL CARE? ☐ Yes ☐ No

49. PRENATAL VISITS-Total Number (If none, enter "0")

44a. Now living Number _____ ☐ None

44b. Now dead Number _____ ☐ None

45a. Before 20 weeks Number _____ ☐ None

45b. 20 weeks & over Number _____ ☐ None

47. DATE OF FIRST PRENATAL CARE VISIT (Month, Day, Year)

50. DATE LAST NORMAL MENSES BEGAN (Month, Day, Year)

44c. DATE OF LAST LIVE BIRTH (Month, Year)

45c. DATE OF LAST OTHER PREGNANCY OUTCOME (Month, Year)

48. DATE OF LAST PRENATAL CARE VISIT (Month, Day, Year)

51. OBSTETRIC ESTIMATE OF GESTATION (Completed Weeks)

52. PLURALITY-Single, Twin, Triplet, etc. (Specify)

53. IF NOT A SINGLE BIRTH – Born First, Second, Third, etc. (Specify)

54. TOTAL LIVE BIRTHS AT THIS DELIVERY

55. IS INFANT ALIVE AT THE TIME OF THIS REPORT? ☐ Yes ☐ No ☐ Unknown

56. IS INFANT BEING BREAST-FED AT DISCHARGE? ☐ Yes ☐ No ☐ Unknown

57. CIGARETTE SMOKING BEFORE & DURING PREGNANCY: Did mother smoke 3 mos. before or during pregnancy? ☐ Yes ☐ No ☐ Unknown

For each time period, enter either the number of cigarettes or the number of packs of cigarettes smoked **per day** during each time period. If none, enter "0".

Average number of cigarettes or packs of cigarettes **smoked per day** for each period:

	No.	No.
Three months before pregnancy:	_____ cigarettes or	_____ packs
First three months of pregnancy:	_____ cigarettes or	_____ packs
Second three months of pregnancy:	_____ cigarettes or	_____ packs
Third Trimester of pregnancy:	_____ cigarettes or	_____ packs

58. PRINCIPAL SOURCE OF PAYMENT FOR THIS DELIVERY
- ☐ Medicaid
- ☐ Private/Employer Ins.
- ☐ Self-pay
- ☐ Indian Health Service government
- ☐ CHAMPUS/TRICARE
- ☐ Other
- ☐ Other (Specify) _____
- ☐ Unknown

59. MOTHER'S MEDICAL RECORD NO.

60. NEWBORN'S MEDICAL RECORD NO.

61. MOTHER TRANSFERRED IN FOR DELIVERY DUE TO MATERNAL, MEDICAL, OR FETAL INDICATIONS? ☐ Yes ☐ No (If yes, enter facility name)

FACILITY TRANSFERRED FROM:

62. INFANT TRANSFERRED (Within 24 hours of delivery) ☐ Yes ☐ No (If yes, enter facility name)

FACILITY TRANSFERRED TO:

SAMPLE

CHILD'S NAME _____ MOTHER'S NAME _____

PRENATAL (Birth)

63. NUTRITION OF MOTHER

1. Height _____
2. Prepregnancy Weight _____
3. Weight at delivery _____
4. Did mother get WIC food for herself?
   Yes _____ No _____
   Unknown _____

64. MEDICAL RISK FACTORS (Check all that apply.)

1. ☐ Diabetes, prepregnancy
2. ☐ Diabetes, gestational
3. Hypertension
   - ☐ Prepregnancy (Chronic)
   - ☐ Gestational (PIH, preeclampsia)
   - ☐ Eclampsia
4. ☐ Previous preterm birth
5. ☐ Other previous poor pregnancy outcome (SGA, perinatal death, etc.)
6. ☐ Vaginal bleeding during this pregnancy prior to labor
7. ☐ Pregnancy resulted from infertility treatment (If yes, check all that apply.)
   - ☐ Fertility-enhancing drugs, Artificial insemination or Intrauterine insemination
   - ☐ Assisted reproductive technology (e.g. in vitro fertilization (IVF), gamete intrafallopian transfer (GIFT))
8. ☐ Mother had a previous cesarean delivery, if yes, how many? Number: _____
9. ☐ Alcohol use No. of drinks per week: _____
10. ☐ None of the above

65. METHOD OF DELIVERY

1. Forceps attempted? Yes ____ No____
   Successful Yes _____ No_____
2. Vacuum extraction attempted?
   Yes _____ No_____
   Successful Yes _____ No _____
3. Fetal presentation at delivery
   - ☐ Cephalic
   - ☐ Breech
   - ☐ Other
4. Final route and method of delivery (check one)
   - ☐ Vaginal/spontaneous
   - ☐ Vaginal/forceps
   - ☐ Vaginal/vacuum
   - ☐ Cesarean, if cesarean was a trial of labor attempted? Yes _____ No_____

LABOR-DELIVERY/NEWBORN

66. OBSTETRICAL PROCEDURES (Check all that apply.)

1. ☐ Cervical cerclage
2. ☐ Tocolysis
3. External cephalic version:
   - ☐ Successful
   - ☐ Failed
4. ☐ None of the above

67. ONSET OF LABOR (Check all that apply.)

1. ☐ Premature Rupture of the Membranes (prolonged, ≥ 12 hours)
2. ☐ Precipitous Labor (< 3 hrs)
3. ☐ Prolonged Labor (≥ 20 hrs)
4. ☐ None of the above

68. CHARACTERISTICS OF LABOR AND DELIVERY (Check all that apply.)

1. ☐ Induction of labor
2. ☐ Augmentation of labor
3. ☐ Non-vertex presentation
4. ☐ Steroids (glucocorticoids) for fetal lung maturation received by the mother prior to delivery
5. ☐ Antibiotics received by the mother during labor
6. ☐ Clinical chorioamnionitis diagnosed during labor or maternal temperature ≥ 38 C (100.4 F)
7. ☐ Moderate/heavy meconium staining of the amniotic fluid
8. ☐ Fetal intolerance of labor: (examples: in-utero resuscitative measures, further fetal assessment, or operative delivery)
9. ☐ Epidural or spinal anesthesia during labor
10. ☐ None of the above

69. MATERNAL MORBIDITY (Check all that apply.) (These are complications associated with labor and delivery.)

1. ☐ Maternal transfusion
2. ☐ Third or fourth degree perineal laceration
3. ☐ Ruptured uterus
4. ☐ Unplanned hysterectomy
5. ☐ Admission to intensive care unit
6. ☐ Unplanned operating room procedure following delivery
7. ☐ None of the above

70. INFECTIONS PRESENT AND/OR TREATED (During this pregnancy, check all that apply.)

1. ☐ Gonorrhea
2. ☐ Syphilis
3. ☐ Herpes Simplex Virus (HSV)
4. ☐ Chlamydia
5. ☐ Hepatitis B
6. ☐ Hepatitis C
7. ☐ AIDS or HIV antibody
8. ☐ None of the above

71. ABNORMAL CONDITIONS OF NEWBORN (Check all that apply)

1. ☐ Assisted ventilation required immediately following delivery
2. ☐ Assisted ventilation required for more than six hours
3. ☐ NICU admission
4. ☐ Newborn given surfactant replacement therapy
5. ☐ Antibiotics received by the newborn for suspected neonatal sepsis
6. ☐ Seizure or serious neurologic dysfunction
7. ☐ Significant birth injury (skeletal fracture(s), peripheral nerve injury, and/or soft tissue/solid organ hemorrhage which requires intervention
8. ☐ None of the above

72. VACCINES ADMINISTERED TO NEWBORN

1. ☐ Hepatitis B Date Given: _____
2. ☐ Other* Specify: _____
   Date Given: _____

73. APGAR SCORE

1 min	5 min	10 min

74. CONGENITAL ANOMALIES OF THE NEWBORN (Check all that apply.)

1. ☐ Anencephaly
2. ☐ Meningomyelocele/Spina bifida
3. ☐ Cyanotic congenital heart disease
4. ☐ Congenital diaphragmatic hernia
5. ☐ Omphalocele
6. ☐ Gastroschisis
7. ☐ Limb reduction defect (excluding congenital amputation and dwarfing syndromes)
8. ☐ Cleft Lip with or without Cleft Palate
9. ☐ Cleft Palate alone
10. ☐ Down Syndrome
    - ☐ Karyotype confirmed
    - ☐ Karyotype pending
11. ☐ Suspected chromosomal disorder
    - ☐ Karyotype confirmed
    - ☐ Karyotype pending
12. ☐ Hypospadias
13. ☐ Fetal alcohol syndrome
14. ☐ Other congenital anomalies *(Specify)* _____
15. ☐ None of the above

Parent's Telephone Number: _____

SAMPLE

CHILD'S NAME _____ MOTHER'S NAME _____

Test required by K.S.A. 65-153f 153G Serological Test Made: _____ 1st _____ 2nd _____ 3rd (Trimester) _____ At Delivery _____ Not Performed If no test made, state reason:	Test required by K.S.A. 65-180 Infant Neonatal Screening specimen taken: _____ Yes _____ No Kit Number _____ If no test made, state reason:	Test required by K.S.A. 65-1157A Newborn Hearing Screening Accomplished: _____ Yes ____ No

Infant's patient number:

Infant's Primary Care Physician

First	Middle	Last	Title (MD, DO, etc.)

If screening accomplished, Date hearing screened _____/_____/_____ Month Day Year	The results of the hearing screening ✓: Right ear: _____ Pass _____ Refer for further testing Left ear: _____ Pass _____ Refer for further testing

Physiologic equipment used ✓: _____ OAE _____ AABR _____ ABR

If screening not accomplished, ✓ one reason:

_____ b – missed appointment	_____ o – other
_____ c – could not test	_____ r – did not consent
_____ d – deceased	_____ s – scheduled but not completed
_____ i – Incomplete test	_____ t – transferred to another hospital
_____ m – Infant discharged before screening	_____ u – no information
_____ n – transferred to NICU	_____ x – invalid results

SAMPLE

Kansas Department Of Health And Environment
Office of Vital Statistics

CERTIFICATE OF DEATH

State File Number

1. DECEDENT'S LEGAL NAME (First, Middle, Last)
2. SEX
3. IF FEMALE, NAME PRIOR TO FIRST MARRAIGE
4. DATE OF DEATH (Month, Day, Year)
5. SOCIAL SECURITY NUMBER
6. DATE OF BIRTH (Month, Day, Year)
7a. AGE-Last Birthday (Years)
7b. UNDER 1 YEAR: Months, Days
7c. UNDER 1 DAY: Hours, Minutes
8. PLACE OF BIRTH (City and State or Foreign Country)
9. WAS DECEDENT EVER IN U.S. ARMED FORCES? ☐ Yes ☐ No ☐ Unknown
10a. PLACE OF DEATH (Check only one)
HOSPITAL ☐ Inpatient ☐ DOA ☐ ER/Outpatient
☐ Nursing Home ☐ Hospice Facility ☐ Assisted Living Facility
☐ Decedent's Residence ☐ Other (Specify) _____
10b. FACILITY NAME (If not institution, give street and number)
10c. COUNTY OF DEATH
10d. CITY OR TOWN OF DEATH
10e. ZIP CODE
11. MARITAL STATUS ☐ Married ☐ Married, but separated ☐ Widowed ☐ Divorced ☐ Never Married ☐ Unknown
12. SURVIVING SPOUSE (If wife, give name before first marriage)
13a. RESIDENCE-STREET ADDRESS & APARTMENT NO.
13b. STATE
13c. COUNTY
13d. CITY OR TOWN
13e. ZIP CODE
13f. INSIDE CITY LIMITS? ☐ Yes ☐ No ☐ Unknown
14. FATHER'S NAME (First, Middle, Last)
15. MOTHER'S NAME PRIOR TO FIRST MARRIAGE (First, Middle, Last)
16a. INFORMANT'S NAME (First, Middle, Last)
16b. MAILING ADDRESS (Street and Number, City, State, Zip Code)
16c. RELATIONSHIP TO DECEDENT
17. METHOD OF DISPOSITION ☐ Burial ☐ Cremation ☐ Removal from State ☐ Donation ☐ Entombment ☐ Other (Specify) _____
18a. PLACE OF DISPOSITION (Name of cemetery, crematory, or other place)
18b. LOCATION-City or Town, and State
19. FUNERAL SERVICE LICENSEE & LICENSE NO. (Signature)
20. NAME OF EMBALMER & LICENSE NO.
21. NAME AND ADDRESS OF FIRM
22. CAUSE OF DEATH – Part I. Enter the chain of events - diseases, injuries, or complications-that directly caused the death. DO NOT enter terminal events such as cardiac arrest, respiratory arrest, or ventricular fibrillation without showing the etiology. DO NOT ABBREVIATE. Enter only one cause on a line. Add additional lines if necessary.

Approximate Interval: Onset to Death

IMMEDIATE CAUSE (Final disease or condition resulting in death)
a.
DUE TO (OR AS A CONSEQUENCE OF)
b.
DUE TO (OR AS A CONSEQUENCE OF)
c.
DUE TO (OR AS A CONSEQUENCE OF)
d.

Sequentially list conditions, if any, leading to immediate cause listed on line a. Enter the UNDERLYING CAUSE (disease or injury that initiated the events resulting in death) LAST.

PART II. Enter other significant conditions contributing to death, but not resulting in the underlying cause given in Part I.

23a. AUTOPSY ☐ Yes ☐ No ☐ Unknown
23b. WERE AUTOPSY FINDINGS AVAILABLE TO COMPLETE THE CAUSE OF DEATH? ☐ Yes ☐ No ☐ Unknown ☐ Not Applicable
23c. WAS CORONER CONTACTED? ☐ Yes ☐ No ☐ Unknown
24. DID TOBACCO USE CONTRIBUTE TO DEATH? ☐ Yes ☐ Probably ☐ No ☐ Unknown
25. IF FEMALE
☐ Not pregnant within past year
☐ Pregnant at time of death
☐ Not pregnant, but pregnant within 42 days of death
☐ Not pregnant, but pregnant 43 days to 1 year before death
☐ Unknown if pregnant within the last year
26. MANNER OF DEATH ☐ Natural ☐ Homicide ☐ Accident ☐ Pending Investigation ☐ Suicide ☐ Could not be determined
27a. DATE OF INJURY (Month, Day, Year)
27b. TIME OF INJURY A.M. P.M.
27c. INJURY AT WORK ☐ Yes ☐ No
27d. DESCRIBE HOW INJURY OCCURRED
27e. PLACE OF INJURY-Residence, farm, street, factory, building, etc. (Specify)
27f. LOCATION (Street and Number or Rural Route, City or Town, State, Zip Code)
28a. DATE PRONOUNCED DEAD (Month, Day, Year)
28b. TIME PRONOUNCED DEAD A.M. P.M.
28c. ACTUAL OR PRESUMED TIME OF DEATH A.M. P.M.
28d. NAME OF PERSON PRONOUNCING DEATH (If applicable)
28e. LICENSE NO.
29a. CERTIFIER (Check only one)
☐ Certifying physician - To the best of my knowledge, death occurred due to the cause(s) and manner stated.
☐ Pronouncing & Certifying physician - To the best of my knowledge, death occurred at the time, date, and place, and due to the cause(s) and manner stated.
☐ Coroner - On the basis of examination, and/or investigation, in my opinion, death occurred at the time, date, and place, and due to the cause(s) and manner stated.

Signature of certifier ➢ LICENSE NO. DATE CERTIFIER SIGNED

29b. NAME, ADDRESS, AND ZIP CODE OF PERSON COMPLETING CAUSE OF DEATH ☐ M.D. ☐ D.O. ☐ SPEC. DEPUTY
30. DATE FILED BY STATE REGISTRAR (Month, Day, Year)

Sample

VS231 Rev. 04/01/2011

31. ANCESTRY-What is this person's ancestry or ethnic origin? Italian, German, Dominican, Vietnamese, Hmong, French Canadian, etc. (Specify below)

32. HISPANIC ORIGIN (Check the box or boxes that best describes whether the decedent is Spanish/Hispanic/Latino. Check the "no" box if the decedent is not Spanish/Hispanic/Latino)

- ☐ No, not Spanish/Hispanic/Latino
- ☐ Yes, Mexican/Mexican American/Chicano
- ☐ Yes, Puerto Rican
- ☐ Yes, Cuban
- ☐ Yes, Central American
- ☐ Yes, South American
- ☐ Yes, other Spanish/Hispanic/Latino (Specify)

_____

- ☐ Unknown

33. RACE (Check one or more boxes to indicate what race(s) the decedent considered himself or herself to be.)

- ☐ White
- ☐ Black or African American
- ☐ American Indian or Alaska Native (Name of the enrolled or principal tribes)

_____

_____

- ☐ Asian Indian
- ☐ Chinese
- ☐ Filipino
- ☐ Japanese
- ☐ Korean
- ☐ Vietnamese
- ☐ Other Asian (Specify)

_____

_____

- ☐ Native Hawaiian
- ☐ Guamanian or Chamorro
- ☐ Samoan
- ☐ Other Pacific Islander (Specify)

_____

_____

- ☐ Other (Specify)

_____

_____

- ☐ Unknown

34. EDUCATION (Check the box that best describes the highest degree or level of school completed at the time of death.)

- ☐ 8th grade or less
- ☐ 9th - 12th grade; no diploma
- ☐ High school graduate or GED
- ☐ Some College credit, but no degree
- ☐ Associate degree (e.g., AA, AS)
- ☐ Bachelor's degree (e.g., BA, AB, BS)
- ☐ Master's degree (e.g., MA, MS, MEng, MEd, MSW, MBA)
- ☐ Doctorate (e.g., PhD, EdD) or Professional degree (e.g., MD, DDS, DVM, LLB, JD)
- ☐ Unknown

35. DECEDENT'S USUAL OCCUPATION (Give kind of work done during most of working life. Do not use retired.)

36. KIND OF BUSINESS/INDUSTRY (Do not give name of company.)

Sample

Kansas Department of Health and Environment
Office of Vital Statistics

CERTIFICATE OF STILLBIRTH (FETAL DEATH)

State File Number

1. NAME (First, Middle, Last, Suffix)
2. DATE OF DELIVERY (Month, Day, Year)
3. TIME OF DELIVERY M
4. SEX
5. CITY, TOWN, OR LOCATION OF DELIVERY
6. COUNTY OF DELIVERY
7. PLACE OF DELIVERY
☐ Hospital ☐ Freestanding Birthing Center ☐ Home Delivery
☐ Clinic/Doctor's Office ☐ Other (Specify) _____
8. FACILITY NAME (If not institution, give street and number and zip code)
9. MOTHER'S CURRENT LEGAL NAME (First, Middle, Last, Suffix)
10. MOTHER'S LAST NAME PRIOR TO FIRST MARRIAGE
11. DATE OF BIRTH (Month, Day, Year)
12. BIRTHPLACE (State, Territory, or Foreign Country)
13. PRESENT RESIDENCE-STATE
14. COUNTY
15. CITY, TOWN, OR LOCATION
16. STREET AND NUMBER OF PRESENT RESIDENCE
17. ZIPCODE
18. INSIDE CITY LIMITS?
☐ Yes ☐ No
19. MOTHER'S MAILING ADDRESS (If same as residence, leave blank)
20. FATHER'S CURRENT LEGAL NAME (First, Middle, Last, Suffix)
21. DATE OF BIRTH (Month, Day, Year)
22. BIRTHPLACE (State, Territory, or Foreign Country)
23. I CERTIFY THAT THE PERSONAL INFORMATION PROVIDED ON THE CERTIFICATE IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.
Signature of Parent (or Other Informant) ➢
24. DATE SIGNED (Month, Day, Year)
25. CAUSE/CONDITIONS CONTRIBUTING TO FETAL DEATH
25a. 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 Injury (Specify) _____
Other Fetal Conditions/Disorders (Specify) _____
Fetal Anomaly (Specify) _____
Fetal Infection (Specify) _____
☐ Unknown
25b. OTHER SIGNIFICANT CAUSES OR CONDITIONS (Select or specify all other conditions contributing to death in item 25a.)
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 Injury (Specify) _____
Other Fetal Conditions/Disorders (Specify) _____
Fetal Anomaly (Specify) _____
Fetal Infection (Specify) _____
☐ Unknown
26. ESTIMATED TIME OF FETAL DEATH
☐ Dead at time of first assessment, no labor ongoing
☐ Dead at time of first assessment, labor ongoing
☐ Died during labor, after first assessment
☐ Unknown time of fetal death
27a. WAS AN AUTOPSY PERFORMED?
☐ Yes ☐ No ☐ Planned
27b. WAS A HISTOLOGICAL PLACENTAL EXAMINATION PERFORMED?
☐ Yes ☐ No ☐ Planned
27c. WERE AUTOPSY OR HISTOLOGICAL PLACENTAL EXAMINATION RESULTS USED IN DETERMINING THE CAUSE OF FETAL DEATH?
☐ Yes ☐ No
28. I CERTIFY THAT THIS DELIVERY OCCURRED ON THE DATE STATED ABOVE AND THE FETUS WAS BORN DEAD.
Signature ➢
29. DATE SIGNED (Month, Day, Year)
30. ATTENDANT'S NAME AND TITLE (If delivery not attended by physician)
Name (Type) _____
☐ CNM/CM ☐ Other Midwife ☐ Other (Specify)_____
31. CERTIFIER'S NAME AND TITLE (Type)
_____
☐ M.D. ☐ D.O.
☐ Other (Specify)_____
32. CERTIFIER'S MAILING ADDRESS (Street and Number or Rural Route, City or Town, State, Zip Code)
33a. METHOD OF DISPOSITION
☐ Burial ☐ Cremation ☐ Donation
☐ Hospital Disposition ☐ Removal from State
☐ Other (Specify) _____
33b. PLACE OF DISPOSITION (Name of cemetery, crematory, or other place)
33c. LOCATION (City or Town, and State)
34. FUNERAL DIRECTOR OR HOSPITAL ADMINISTRATOR
Signature ➢
35. FIRM OR HOSPITAL NAME AND ADDRESS
36. DATE FILED BY STATE REGISTRAR (Month, Day, Year)

SAMPLE

VS233 Rev. 05/01/2010

37. IF HOME DELIVERY, WAS DELIVERY PLANNED AT HOME? ☐ Yes ☐ No ☐ Unknown

38. MOTHER'S MEDICAL RECORD NO.

39a. WAS MOTHER EVER MARRIED? ☐ Yes ☐ No ☐ Unknown

39b. MOTHER MARRIED? (At birth, conception or any time between) ☐ Yes ☐ No ☐ Unknown

40. PARENT'S HISPANIC ORIGIN (Check the box or boxes that best describes whether the parent is Spanish, Hispanic, or Latino. Check the "no" box if the parent is not Spanish, Hispanic, or Latino.)

40a. MOTHER-
- ☐ No, not Spanish/ Hispanic/Latina
- ☐ Yes, Mexican/Mexican American/Chicana
- ☐ Yes, Puerto Rican
- ☐ Yes, Cuban
- ☐ Yes, Central American
- ☐ Yes, South American
- ☐ Yes, other Spanish/ Hispanic/Latina (Specify) _____
- ☐ Unknown

40b. FATHER-
- ☐ No, not Spanish/ Hispanic/Latino
- ☐ Yes, Mexican/Mexican American/Chicano
- ☐ Yes, Puerto Rican
- ☐ Yes, Cuban
- ☐ Yes, Central American
- ☐ Yes, South American
- ☐ Yes, other Spanish/ Hispanic/Latino (Specify) _____
- ☐ Unknown

41. PARENT'S RACE (Check one or more races to indicate what you consider yourself to be.)

41a. MOTHER
- ☐ White
- ☐ Black or African American
- ☐ American Indian or Alaska Native (Name of the enrolled or principal tribes) _____
- ☐ Asian Indian
- ☐ Chinese
- ☐ Filipino
- ☐ Japanese
- ☐ Korean
- ☐ Vietnamese
- ☐ Other Asian (Specify) _____
- ☐ Native Hawaiian
- ☐ Guamanian or Chamorro
- ☐ Samoan
- ☐ Other Pacific Islander (Specify) _____
- ☐ Other (Specify) _____
- ☐ Unknown

41b. FATHER
- ☐ White
- ☐ Black or African American
- ☐ American Indian or Alaska Native (Name of the enrolled or principal tribes) _____
- ☐ Asian Indian
- ☐ Chinese
- ☐ Filipino
- ☐ Japanese
- ☐ Korean
- ☐ Vietnamese
- ☐ Other Asian (Specify) _____
- ☐ Native Hawaiian
- ☐ Guamanian or Chamorro
- ☐ Samoan
- ☐ Other Pacific Islander (Specify) _____
- ☐ Other (Specify) _____
- ☐ Unknown

42. ANCESTRY - What is the parents' ancestry or ethnic origin?- Italian, German, Dominican, Vietnamese, Hmong, French Canadian, etc. (Specify below)

42a. MOTHER

42b. FATHER

43. OCCUPATION AND BUSINESS/INDUSTRY

	Occupation	Business/Industry (Do not give name of company.)
42a. MOTHER	43a. MOTHER (Most recent)	43c. MOTHER
42b. FATHER	43b. FATHER (Usual)	43d. FATHER

44. EDUCATION (Check the box that best describes the highest degree or level of school completed at the time of delivery.)

44a. MOTHER'S EDUCATION
- ☐ Unknown
- ☐ 8th grade or less
- ☐ Some College credit, but no degree
- ☐ Master's degree (e.g., MA, MS, MEng, MEd, MSW, MBA)
- ☐ 9th - 12th grade, no diploma
- ☐ Associate degree (e.g., AA,AS)
- ☐ Doctorate (e.g., PhD, EdD) or Professional degree (e.g., MD, DDS, DVM, LLB, JD)
- ☐ High school graduate or GED
- ☐ Bachelor's degree (e.g., BA, AB, BS)

44a. FATHER'S EDUCATION
- ☐ Unknown
- ☐ 8th grade or less
- ☐ Some College credit, but no degree
- ☐ Master's degree (e.g., MA, MS, MEng, MEd, MSW, MBA)
- ☐ 9th - 12th grade, no diploma
- ☐ Associate degree (e.g., AA,AS)
- ☐ Doctorate (e.g., PhD, EdD) or Professional degree (e.g., MD, DDS, DVM, LLB, JD)
- ☐ High school graduate or GED
- ☐ Bachelor's degree (e.g., BA, AB, BS)

45. PREVIOUS LIVE BIRTHS (Do not include this child.)

45a. Now living Number _____ ☐ None

45b. Now dead Number _____ ☐ None

46. NUMBER OF OTHER OUTCOMES (Spontaneous or induced losses or ectopic or stillbirth pregnancies)

46a. Before 20 weeks Number _____ ☐ None

46b. 20 weeks & over Number _____ ☐ None

47. PLURALITY – Single, Twin, Triplet, etc. (Specify)

48. IF NOT A SINGLE BIRTH – Born First, Second, Third, etc. (Specify)

49. DATE LAST NORMAL MENSES BEGAN (Month, Day, Year)

50. OBSTETRIC ESTIMATE OF GESTATION (Completed Weeks)

45c. DATE OF LAST LIVE BIRTH (Month, Year)

46c. DATE OF LAST OTHER PREGNANCY OUTCOME (Month, Year)

51. WEIGHT OF FETUS (grams)

52. PRENATAL CARE? ☐ Yes ☐ No

53. DATE OF FIRST PRENATAL CARE VISIT (Month, Day, Year)

54. DATE OF LAST PRENATAL CARE VISIT (Month, Day, Year)

55. PRENATAL VISIT – Total number (If none, enter "0")

56. CIGARETTE SMOKING BEFORE & DURING PREGNANCY: Did mother smoke 3 mos. before or during pregnancy?
☐ Yes ☐ No ☐ Unknown

For each time period, enter either the number of cigarettes or the number of packs of cigarettes **smoked per day**. If none, enter "0".

Average number of cigarettes or packs of cigarettes smoked **per day**:

	No.	No.
Three months before pregnancy:	_____ cigarettes or	_____ packs
First three months of pregnancy:	_____ cigarettes or	_____ packs
Second three months of pregnancy:	_____ cigarettes or	_____ packs
Third Trimester of pregnancy:	_____ cigarettes or	_____ packs

57. PRINCIPAL SOURCE OF PAYMENT FOR THIS DELIVERY
- ☐ Medicaid
- ☐ Indian Health Service
- ☐ Other
- ☐ Private/Employer Ins.
- ☐ CHAMPUS/TRICARE
- ☐ Unknown
- ☐ Self-pay
- ☐ Other government

58a. MOTHER TRANSFERRED IN FOR DELIVERY DUE TO MATERNAL, MEDICAL, OR FETAL INDICATIONS?
☐ Yes ☐ No (If yes, enter facility name)

58b. FACILITY TRANSFERRED FROM:

CHILD'S NAME _____ MOTHER'S NAME _____

SAMPLE

PRENATAL	LABOR-DELIVERY/STILLBORN FETUS

59. NUTRITION OF MOTHER

1. Height _____
2. Prepregnancy Weight _____
3. Weight at delivery _____
4. Did mother get WIC food for herself?

   Yes _____ No _____ Unknown ___

60. MEDICAL RISK FACTORS (Check all that apply.)

1. ☐ Diabetes, prepregnancy
2. ☐ Diabetes, gestational
3. Hypertension
   - ☐ Prepregnancy (Chronic)
   - ☐ Gestational (PIH, preeclampsia)
   - ☐ Eclampsia
4. ☐ Previous preterm birth
5. ☐ Other previous poor pregnancy outcome (SGA, perinatal death, etc.)
6. ☐ Vaginal bleeding during this pregnancy prior to labor
7. ☐ Pregnancy resulted from infertility treatment (If yes, check all that apply.)
   - ☐ Fertility-enhancing drugs, Artificial insemination or Intrauterine insemination
   - ☐ Assisted reproductive technology (e.g. in vitro fertilization (IVF), gamete intrafallopian transfer (GIFT))
8. ☐ Mother had a previous cesarean delivery, if yes, how many Number ____
9. ☐ Alcohol use No. of drinks per week: _____
10. ☐ None of the above

61. METHOD OF DELIVERY

1. Forceps attempted? Yes ____ No____

   Successful: Yes _____ No_____
2. Vacuum extraction attempted?

   Yes _____ No_____

   Successful: Yes _____ No _____
3. Fetal presentation at delivery
   - ☐ Cephalic
   - ☐ Breech
   - ☐ Other
4. Final route and method of delivery (check one)
   - ☐ Vaginal/spontaneous
   - ☐ Vaginal/forceps
   - ☐ Vaginal/vacuum
   - ☐ Cesarean, if cesarean was a trial of labor attempted?

     Yes _____ No_____
5. Hysterotomy/Hysterectomy

   Yes _____ No _____

62. MATERNAL MORBIDITY (Check all that apply.)
(These are complications associated with labor and delivery.)

1. ☐ Maternal transfusion
2. ☐ Third or fourth degree perineal laceration
3. ☐ Ruptured uterus
4. ☐ Unplanned hysterectomy
5. ☐ Admission to intensive care unit
6. ☐ Unplanned operating room procedure following delivery
7. ☐ None of the above

63. INFECTIONS PRESENT AND/OR TREATED (During this pregnancy, check all that apply.)

1. ☐ Gonorrhea
2. ☐ Syphilis
3. ☐ Herpes Simplex Virus (HSV)
4. ☐ Chlamydia
5. ☐ Listeria
6. ☐ Group B Streptococcus
7. ☐ Cytomeglovirus
8. ☐ Parvo virus
9. ☐ Toxoplasmosis
10. ☐ AIDS or HIV antibody
11. ☐ None of the above
12. ☐ Other (Specify) _____

64. CONGENITAL ANOMALIES OF THE NEWBORN (Check all that apply.)

1. ☐ Anencephaly
2. ☐ Meningomyelocele/Spina bifida
3. ☐ Cyanotic congenital heart disease
4. ☐ Congenital diaphragmatic hernia
5. ☐ Omphalocele
6. ☐ Gastroschisis
7. ☐ Limb reduction defect (excluding congenital amputation and dwarfing syndromes)
8. ☐ Cleft Lip with or without Cleft Palate
9. ☐ Cleft Palate alone
10. ☐ Down Syndrome
    - ☐ Karyotype confirmed
    - ☐ Karyotype pending
11. ☐ Suspected chromosomal disorder
    - ☐ Karyotype confirmed
    - ☐ Karyotype pending
12. ☐ Hypospadias
13. ☐ Fetal alcohol syndrome
14. ☐ Other congenital anomalies *(Specify)* _____
15. ☐ None of the above

THIS IS NOT PART OF THE CERTIFICATE OF STILLBIRTH
Test required by K.S.A. 65-153F, 153G

Serological Test Made: _____ 1st _____ 2nd _____ 3rd (Trimester) _____ At Delivery _____ Not Performed

If no test made, state reason: _____

SAMPLE