

TECHNICAL NOTES

Table of Contents

Revisions and Updates	2
Revisions to 2016 Annual Summary.....	2
Revisions to 2015 Annual Summary.....	2
Revisions to 2014 Annual Summary.....	7
Revisions to 2013 Annual Summary.....	7
Revisions to 2012 Annual Summary.....	7
Revisions to 2011 Annual Summary.....	7
Revisions to 2010 Annual Summary.....	7
Health Equity and Disparities.....	7
Live Births by Trimester Prenatal Care Began by Population Group.....	8
Live Births by Population Group of Mother by Birth Weight in Grams	8
Live births by Population Group of Mother by Final Route of Delivery	8
External Cause of Death by Injury Matrix, Intent and Cause Group Categories	8
Years of Potential Life Lost before Age 75 (YPLL75)	9
2014 Revisions to Certificates	9
2011 Revisions to Certificates	9
2009 Revisions to Certificates	9
General Methods	10
Data Sources	10
Quality of Data.....	10
Unknowns and Imputation	10
Month prenatal care began.....	11
Population group method of reporting race and Hispanic origin.....	11
Residence vs occurrence data	12
Population Estimates.....	12
Peer Groups	13
Cause of Death.....	13
Age-Adjusted Death Rates	14
Comparing Age-Adjusted Death Rates.....	14
Significance test when both rates are based on 100 or more events	15
Rate Reliability.....	15
Adequacy of Prenatal Care Utilization (APNCU) Index	16
Criteria for Small for Gestational Age (SGA)	16
Criteria for Weight Gain in Pregnancy	17

Revisions and Updates

Revisions to 2016 Annual Summary

One new table was added to the Live Births and Fertility Section of the 2016 Annual Summary:
E28. Life-Expectancy at Birth by County of Residence and Peer Group, Kansas, 2012-2016.

This led to a new table number for the previous table E28:
E29. Deaths by Selected City of Residence by Number and Crude Rate, Kansas, 2012-2016.

Revisions to 2015 Annual Summary

The structure of the Annual Summary of Vital Statistics has been substantially revised. First, the Annual Summary was divided into six sections:

- A. Vital Events
- B. Population
- C. Live Births and Fertility
- D. Fetal and Infant Mortality
- E. General Mortality
- F. Marriages and Marriage Dissolutions

The Live Births section includes most of the tables and figures that were previously in the old Pregnancy Outcomes section. The Fetal and Infant Mortality section includes some tables and figures that had been in the old Pregnancy Outcomes section and some that had been in the old Deaths section. Within each section, statewide results are presented first, followed by county and city tables.

Table and figure numbers have been changes so that the numbering in each section is independent of the numbering in the other sections, thus reducing the number of table or figure numbers that would need to be changed if a table or figure were added or removed from a section in the future.

New tables in 2015:

- B1. Population by Year and by Sex, Kansas, 1966-2015
- E1. Deaths by Year and by Population Group, by Number, Crude and Age-Adjusted Rate, Kansas, 2011-2015
- E15. Work-related injury deaths by Occupation/Industry of Decedent, Kansas, 2015
- E17. Diabetes Mellitus as Underlying and contributing Cause of Death, Kansas, 2015
- F1. Marriage and Marriage Dissolution Numbers and Rates by Year of Occurrence, Kansas, 1966-2015

The table that follows maps table and figure numbers in the 2015 Annual Summary to table and figure numbers in the 2014 Annual Summary. To avoid constant repetition of the words “table” and “figure,” rows for figures are highlighted in light orange.

Technical Notes (Cont.)

Table A. Changes to table and figure numbers and sequence in the 2015 Annual Summary

2015	2014	TITLE (with years for 2015 Annual Summary)
A. VITAL EVENTS		
A1	1	Selected Vital Events and Percent Change, Kansas, 2015, 2014, and 1996
A1	1	Every Day During 2015
A2	2	Kansas Vital Events for 2015
A2	2	Selected Vital Event Rates, Kansas, 1996-2015
A3	3	Selected Vital Event Rates, Kansas, 1996-2015
A3	3	Selected Vital Events by Population Group, Kansas, 2015
B. POPULATION		
B1	NEW	Population by Year and by Sex, Kansas, 1966-2015
B1	4	Total Population, Kansas, 1996-2015 (in Thousands)
B2	5	Rate of Natural Increase, Kansas, 1996-2015
B3	6	Median Age, Kansas, 1996-2015
B4	8	Population Density, Kansas and the U.S., 1996-2015
B2	6	Population by Nine Selected Age-Groups and Sex, Kansas, 1996_2015 (in Thousands)
B3	7	Population by 11 Selected Age-Groups, by Population Group and Sex, Kansas, 2015
B5	7	Percent Change in Age-Group population, Both Sexes, Kansas, 1996-2015
B4	4	Population by County and Peer Group, by Population Group, Kansas, 2015
B6	9	Population Density by County of Residence, Kansas, 2015 [MAP]
B5	8	Population by County of Residence and Peer Group, by Population Group, Kansas, 2015
B6	5	City Population, Kansas, 2011-2015
C. LIVE BIRTHS AND FERTILITY		
C1	11	Birth Rates, Kansas and the U.S., 1912-2015
C1	10	Birth Rates, Kansas and the U.S., 1912-2015
C2	11	Fertility Rates, Kansas and the U.S., 1995-2015
C3	12	Age-Specific Fertility Rates by Year by Age-Group of Mother, Kansas, 2011-2015
C2	12	Age-Specific Fertility Rates by Age-Group of Mother, Kansas, 1996-2015
C3	13	Live Births by Age-Group of Mother by Sex of Infant, Kansas, 2015
C4	14	Live Births by Age-Group of Father by Age-Group of Mother, Kansas, 2015
C5	24	Live Births by Age-Group of Mother by Birth Weight in Grams, Kansas, 2015
C4	15	Live Births by Birth Order, Kansas, 2015
C6	25	Live Births by Birth Order by Age-Group of Mother, Kansas, 2015
C7	26	Live Births by Population Group of Mother by Trimester Prenatal Care Began, Kansas, 2015
C8	27	Live Births by Population Group of Mother by Birth Weight in Grams, Kansas, 2015
C9	28	Live Births by Population Group of Mother by Final Route of Delivery, Kansas, 2015
C10	9	Live Births by County of Residence and Peer Group, by Number and Rate, Kansas, 2015
C5	13	Birth Rates by County of Residence, Kansas, 2015 [MAP]
C11	15	Live Births by County of Residence and Peer Group by Age-Group of Mother, Kansas, 2015
C12	16	Live Births by County of Residence and Peer Group by Weeks Gestation, Kansas, 2015

Technical Notes (Cont.)

C13	17	Live Births by County of Residence and Peer Group by Month Prenatal Care Began, Kansas, 2015
C14	18	Live Births by County of Residence and Peer Group by Adequacy of Prenatal Care Utilization (APNCU) Index, Kansas, 2015
C15	19	Live Births by County of Residence and Peer Group by Birth Weight in Grams, Kansas, 2015
C16	20	Live Births by County of Residence and Peer Group by Initiation of Breastfeeding, Kansas, 2015
C17	21	Live Births by County of Residence and Peer Group by Mother's Reported Cigarette Use, Kansas, 2015
C6	14	Percent of Maternal Cigarette Use During Pregnancy by County of Residence, Kansas, 2015 [MAP]
C18	22	Live Births by County of Residence and Peer Group by Birth Weight Category for Gestational Age, Kansas, 2015
C19	23	Mother's Weight Gain in Pregnancy for Singleton Births, by County of Residence and Peer Group, Kansas, 2015
C20	29	Live Births by County of Residence and Peer Group by Population Group of Mother, Kansas, 2015
C21	10	Live Births by Selected City of Residence, by Number and Rate, Kansas, 2011-2015
C7	16	Out-of-Wedlock Birth Ratios, Kansas and the U.S., 1919-2015
C22	30	Out-of-Wedlock Births by County of Residence and Peer Group by Age-Group and Population Group of Mother
C23	31	Teenage Pregnancy Numbers and Rates by Year by Selected Age-Groups, Kansas, 1996-2015
C8	19	Teenage Pregnancy Rates by Age-Group, Kansas, 1996-2015
C9	17	Teen and Non-Teen Live Births: Percent Distribution by Month Prenatal Care Began, Kansas, 2015
C10	18	Teenage Live Births by Population Group, Kansas, 2015
C24	32	Teenage Pregnancy Numbers and Rates by Year for Selected Population Groups and Age-Groups, Kansas, 2011-2015
C25	33	Teenage Pregnancies by County of Residence and Peer Group by Age-Group and Component, Kansas, 2015
C26	34	Teenage Pregnancies for 10-17 Year Olds by County of Residence and Peer Group, by Component, Kansas, 2015
D. FETAL AND INFANT MORTALITY		
D1	45	Stillbirths by Cause of Death and Weeks Gestation, Kansas, 2015
D1	20	Stillbirths by Selected Characteristics, Kansas, 2015
D2	35	Stillbirths by County of Residence and Peer Group, by Age-Group of Mother, Kansas, 2105
D3	36	Total Reported Abortions and Ratios of Abortions to Live Births, Kansas, 1971-2015
D2	21	Ratios of Abortions to Live Births, Kansas, 1971-2015
D3	22	Ratios of Abortions to Live Births by Age-Group of Patient, Kansas, 1996 and 2015
D4	38	Total Reported Abortions by Selected Characteristics by Age-Group of Patient, Kansas, 2015
D5	39	Kansas Resident Abortions by Selected Characteristics, Kansas, 2015
D4	23	Reported Abortions by Selected Characteristics
D6	40	Total Reported Abortions by Population Group by Marital Status, Kansas, 2015

Technical Notes (Cont.)

D7	41	Total Reported Abortions by Population Group by Weeks Gestation
D5	24	Total Reported Abortions by Termination Procedure by Weeks Gestation, Kansas, 2015
D8	42	Total Reported Abortions by Termination Procedure by Weeks Gestation, Kansas, 2015
D9	37	Abortions by County of Residence and Peer Group, by Age-Group of Mother, Kansas, 2015
D10	46	Perinatal Period III Deaths by Component, Kansas, 1996-2016
D11	47	Perinatal Period III Deaths by County of Residence by Component, Kansas, 2015
D12	48	Infant Mortality Rates by Population Group, Kansas, 1996-2015
D6	27	Infant Mortality Rates by Population Group, Five Year Rolling Averages, Kansas, 1991-2015
D13	50	Infant Deaths by Cause of Death by Age-Group of Infant, Kansas, 2015
D7	28	Infant Deaths for Three Age Subgroups, Kansas, 1996-2015
D8	29	Pregnancy Associated Deaths [this is moms]
D14	49	Infant Deaths by County of Residence and Peer Group, by Year of Death, Kansas, 2011-2015
D15	D15	Infant Deaths by County of Residence and Peer Group, by Component, Kansas, 2015
E. GENERAL MORTALITY		
E1	NEW	Deaths by Year and by Population Group, by Number, Crude and Age-Adjusted Rate, Kansas, 2011-2015
E1	26	Crude Death Rates, Kansas and the U.S., 1912-2015
E2	52	Age-Specific Death Rates by Sex, Kansas, 1996-2015
E2	30	Age-Adjusted Death Rates, Kansas and the U.S., 1996-2015
E3	53	Age-Adjusted Death Rates by Sex, Kansas and the U.S., 1996-2015
E4	56	Deaths by Population Group and Sex, by Age-Group and Average Age at Death, Kansas, 2015
E5	57	Ten Leading Causes of Death by Population Group and Sex of Decedent, Kansas, 2015
E6	58	Selected Causes of Death by Age-Group and Average Age at Death, Kansas, 2015
E7	59	Ten Leading Causes of Death, Number, Rate and Average Age at Death, by Sex, Kansas, 2015
E8	60	Death Rates, Age-Adjusted Death Rates and 95% Confidence Intervals for Selected leading Causes of Death, Kansas, 2014-2015
E3	31	Death Rates for Selected Leading Causes of Death, Kansas, 1996-2015
E4	32	Leading Causes of Death by Age-Group, Kansas, 2015
E9	61	Pneumonia and Influenza Mortality, Number and Age-Adjusted Rates, Kansas Residents, 1999-2015
E5	33	Pneumonia and Influenza Deaths by Month and Five-Year Median for Month, Kansas Residents, 2015
E10	62	Heart Disease Deaths by Component and Sex of Decedent, by Age-Group of Decedent, Kansas, 2015
E11	63	Malignant Neoplasm Deaths by Site of Lesion and Sex of Decedent, by Age-Group of Decedent, Kansas, 2015
E12	64	Cerebrovascular Disease Deaths by Component and Sex of Decedent, by Age-Group of Decedent, Kansas, 2015

Technical Notes (Cont.)

E13	65	Unintentional Injury Deaths by Component and Sex of Decedent, by Age-Group of decedent, Kansas, 2015
E14	66	Selected External Causes of Death by Injury Matrix Group and Intent, Kansas, 2015
E15	NEW	Work-related injury deaths by Occupation/Industry of Decedent, Kansas, 2015
E16	67	Selected Chronic Disease Deaths by Component and Sex of Decedent, by Age-Group of Decedent, Kansas, 2006- 2015
E17	NEW	Diabetes Mellitus as Underlying and Contributing Cause of Death, Kansas, 2015
E18	68	Deaths by Occupation of Decedent by Selected Causes of Death, Kansas, 2015
E19	69	Deaths by Industry of Decedent by Selected Causes of Death, Kansas, 2015
E20	70	Selected Causes of Death and Years of Potential Life Lost (YPLL) Before Age 75, Kansas, 2015
E6	34	Percent Years of Potential Life Lost before Age 75
E21	72	Deaths from 39 Selected Causes by Number and Percent and Sex of Decedent Related to Tobacco, Kansas, 2015
E22	73	Deaths from 39 Selected Causes and Sex by Age-Group of Decedent
E23	43	Deaths by County of Residence and Peer Group, by Number, Crude and Age-Adjusted Rate, Kansas, 2011-2015
E7	25	Age-Adjusted Death Rates by County of Residence, Kansas, 2015 [MAP]
E24	54	Deaths by County of Residence and Peer Group, by Age-Group and Average Age at Death, Kansas, 2015
E25	55	Deaths by County of Residence and Peer Group, by Population Group, Kansas, 2015
E26	71	Deaths by County of Residence and Peer Group, by Number and Percent Related to Tobacco, Kansas, 2015
E27	74	Selected Causes of Death by County of Residence and Peer Group, Kansas, 2015
E28	44	Deaths by Selected City of Residence, by Number and Crude Rate, Kansas, 2011-2015
F. MARRIAGES AND MARRIAGE DISSOLUTIONS		
F1	NEW	Marriage and Marriage Dissolution Numbers and Rates by Year of Occurrence, Kansas, 1966-2015
F1	37	Marriage Rates, Kansas and the U.S., 1913-2015
F2	38	Marriage Dissolution Rates, Kansas and the U.S., 1951-2015
F2	77	Marriages by Population Group of Groom by Population Group of Bride, Kansas, 2015
F3	78	Marriage Dissolutions by Population Group of Husband by Population Group of Wife, Kansas, 2015
F3	39	Number of Marriages by Month, Kansas, 2015
F4	79	Marriages by Premarital Status of Groom by Premarital Status of Bride, Kansas, 2015
F5	80	Marriages by Age-Group of Groom by Age-Group of Bride, Kansas, 2015
F4	40	Average Age at Marriage, Kansas, 1996-2015
F6	81	Marriage Dissolutions by Age-Group of Husband by Age-Group of Wife, Kansas, 2015
F5	41	Average Age at Marriage Dissolution, Kansas, 1996-2015
F7	82	Marriage Dissolutions by Duration of Marriage in Years, Kansas, 2015

Technical Notes (Cont.)

F6	42	Marriage Dissolution Percent Distribution by Number of Minor Children, Kansas, 2015
F8	83	Marriage Dissolutions by Number of Minor Children Reported and Number of Minor Children Affected
F9	75	Marriages by County of Marriage and Peer Group, by Number and Rate, Kansas, 2011-2015
F10	76	Marriage Dissolutions by County of Action and Peer Group, By Number and Rate, Kansas, 2011-2015
F7	35	Marriage Rates by County of Occurrence, Kansas, 2015 [MAP]
F8	36	Marriage Dissolution Rates by County of Action, Kansas, 2015 [MAP]

Revisions to 2014 Annual Summary

One new table (Table 61) and one new figure (Figure 33) related to pneumonia and influenza mortality have been added in the *2014 Annual Summary of Kansas Vital Statistics*. Tables previously numbered 61-82 are now numbered 62-83, and figures previously numbered 33-41 are now numbered 34-42.

Revisions to 2013 Annual Summary

No tables and figures in the 2013 Annual Summary have been added or dropped. Table and figure numbers remain unchanged from 2012. The cause of death code lists included in several mortality tables have been modified. To improve readability the lists of codes have been removed from the tables and placed in appendices in the back of the report. The number of tables to include population density peer groups has been increased to include all tables for which county level, multi-year statistics are provided. Birth tables that report on gestation have been modified to reflect the establishment of a gestational age category called 'near term' which includes 37 and 38 weeks gestation. This will enable the determination of near term birth rates. Figure 28 has been redesigned to better indicate changes in the count of infant deaths by gestational age.

Revisions to 2012 Annual Summary

The Annual Summary for 2012 contains no new tables, but some categories in Table 64 were subdivided to allow matching to categories used in the Healthy People 2020 project. No tables or figures have been deleted from the past year. The narrative has been expanded to include comparisons to selected Healthy People 2020 targets. Table and figure numbers remain unchanged from 2011.

Revisions to 2011 Annual Summary

The Annual Summary for 2011 contains no new tables. No tables or figures have been deleted from the past year. Table and figure numbers remain unchanged from 2010.

Revisions to 2010 Annual Summary

The Annual Summary for 2010 contains four new tables. No tables or figures have been deleted from the past year. Please see Technical Notes for past years for information on other table and figure changes. Table and figure numbers are updated to reflect the changes.

Health Equity and Disparities

Several new tables present data and statistics on health disparities or health equality. According to the National Partnership for Action to End Health Disparities (NPA),

Technical Notes (Cont.)

“**Health equity** is attainment of the highest level of health for all people. Achieving health equity requires valuing everyone equally with focused and ongoing societal efforts to address avoidable inequalities, historical and contemporary injustices, and the elimination of health and healthcare disparities”.¹

Live Births by Trimester Prenatal Care Began by Population Group

This table shows the number and percentage of live births by trimester prenatal care began and population group. Starting prenatal care in the first trimester is particularly important for women with risk factors for poor infant and maternal outcomes. As an example, national data (2008) shows wide differences in pre-pregnancy diabetes (DM) and gestational diabetes (GDM) observed by race and Hispanic origin. Among the three largest racial and ethnic groups, Black non-Hispanic women are more likely than White non-Hispanic and Hispanic women to have DM; Hispanic and white non-Hispanic mothers are more likely to develop GDM than black non-Hispanic mothers.²

Data caveats

- In calculating percent, unknowns are excluded.
- Border county residents who deliver out of state may have a high number of unknown or missing values.

Live Births by Population Group of Mother by Birth Weight in Grams

This table shows the number of live births by birth weight in grams and population group. Infant weight at birth is an important predictor of short term complications and long term health. Smaller infants, especially those born at less than 1,500 grams are at the greatest risk. Among the three largest racial and ethnic groups, national data (2008) shows that Black non-Hispanic women are more likely than White non-Hispanic and Hispanic women to have very low birth weight babies.³

Live births by Population Group of Mother by Final Route of Delivery

This table shows the number of deliveries by the final route of delivery and the percentage of cesarean births and cesarean births preceded by a trial of labor. Nationally, the total cesarean delivery rate has been increasing since the mid-1990s, reaching 32.3 percent in 2008[3]. The increase in cesarean births is a public health concern, since the surgery may have risks for both the mother and newborn.

Cesarean deliveries may contribute to the growing number of babies who are born "late pre-term," between 34 and 36 weeks gestation. While babies born at this time are usually considered healthy, they are more likely to have medical problems than babies born a few weeks later at fullterm.⁴

Data caveats

- In calculating percent, unknowns are excluded.
- Data collected on cesarean deliveries by the birth certificate before 2005 are not comparable to data collected in 2005 and after.

External Cause of Death by Injury Matrix, Intent and Cause Group Categories

This table uses the Centers for Disease Control & Prevention (CDC) injury matrix to categorize cause or mechanism of death by intent. The ICD-10 codes for the intent categories by mechanism are available for download at the following internet address.

http://www.cdc.gov/nchs/injury/injury_tools.htm

Technical Notes (Cont.)

Injuries, including all intents, are the leading cause of death in the 1-44 age-groups. This table with intent is provided to give a better understanding of the problem and help identify intervention activities.

Data caveats

- Adverse effects of drugs and medical care are excluded.

Years of Potential Life Lost before Age 75 (YPLL75)

The YPLL75, for this report, is a measurement of the number of years of potential life lost by each death occurring before age 75.⁵ This calculation provides more information on the societal impact of mortality. Years of potential life lost counts deaths at a younger age more heavily than those at older ages (e.g., the younger person has a greater potential for years left than an elderly person). YPLL75 values were calculated by subtracting the age of the decedent from 75 only for those persons who died before that age. The resulting value represents the years of potential life lost. These values are then summed for all individuals, providing the total years of life lost.

This method represents a new approach for years of potential life lost calculations. Formerly, KDHE used the life expectancy for males and females for the calculations. The change allows for more uniformity in calculation of YPLL75 as well as better comparability to national statistics. YPLL75 statistics in this report can't be compared to statistics from prior years' reports because of the change in methodology.

2014 Revisions to Certificates

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.

Beginning in July 2014, the department implemented a revised form for reporting abortions. This revised VS 213 form resulted in changes to the reverse side wherein information about procedures performed at 22 weeks or greater and partial birth abortions are collected. No changes were made to the obverse side of the form. Please see the sample form later in the Technical Notes.

2011 Revisions to Certificates

Beginning in July 2011, Kansas implemented a revised form for reporting abortions. This revised VS213 form resulted from changed made in abortion reporting laws passed by the Kansas Legislature. Question 14 that asks the reasons for determining gestational age, is now required to be completed on all abortions, rather than only abortions that occurred at 22 weeks gestation or later. One new question (#15 on the revised form) addresses whether a report of physical, mental, or emotional abuse or neglect has been filed about the patient pursuant to K.S.A. 38-2223.

2009 Revisions to Certificates

Beginning in July 2009, Kansas implemented an Electronic Death Registration System involving online entry of medical information by physicians. At the same time, the death certificate was modified to include a new item "3. *If female, name prior to first marriage.*" Neither change has an effect on the information included in this report.

Technical Notes (Cont.)

Certificates used for the collection of births, stillbirths, and deaths conform to the U.S. Standard Certificates. These standards were implemented in Kansas beginning in 2005. Please refer to Technical Notes in previous reports for information on certificate changes in past years.

General Methods

Data Sources

Data derived on information collected on vital records (birth, stillbirth, death, marriage, and marriage dissolution) and abortion, serves as the basis for the following reports: Annual Summary of Vital Statistics, Preliminary Abortion Report, Vital Statistics Annual Tables, Adequacy of Prenatal Care Utilization Index, Adolescent and Teenage Pregnancy, Selected Special Statistics Stillbirths and Infant Deaths, Natality Report by Racial and Ethnic Population Groups.

Reporting of Kansas vital events to the Kansas Department of Health and Environment (KDHE) is mandated by law (K.S.A. 65-102, K.S.A. 65-2422b, K.S.A. 65-445). The filing of birth and death records began in 1911, the registration of marriages was initiated in 1913, and divorce tabulations started in 1951. The reporting of abortions began in 1970. Birth, death, stillbirth, marriage, marriage dissolution certificates, and abortion reports are completed by the combined efforts of physicians, hospital personnel, funeral directors, attorneys, and district courts. All certificates and reports are filed with the Office of Vital Statistics by direct reporting. Since the registration of vital events began, over 10 million records have been processed, filed, and indexed.

Quality of Data

The quality of the analyses in the *Annual Summary of Vital Statistics* depends on complete and accurate reporting of vital events. The Office of Vital Statistics (OVS) collects the certificates and works to ensure the completeness and accuracy of the certificates filed. OVS staff receive records for events that occur in the state. Other states or jurisdictions provide occurrence information on births, deaths, and stillbirths that occur to Kansas residents. In recent years an electronic interstate jurisdictional exchange system has been improving the timeliness of receipt of out-of-state records. Events involving Kansas from 56 other registration states/jurisdictions and Canada are shared with KDHE.

All vital events included in this report cover a calendar year. Birth, death, and stillbirth events are counted in the *2015 Kansas Annual Summary of Vital Statistics* if they were reported by June 30, 2016. The number of events received from other states after the cutoff is less than one percent of the total reports filed and does not have an impact on report statistics.

Incomplete reporting of marriage dissolution impacts statistics. As more counties and attorneys use the KDHE electronic reporting system, completeness has been improving. However, there may be some undercount. Users of marriage dissolution statistics should take this into account when interpreting the information.

Unknowns and Imputation

Unknown values in vital records can result in incomplete statistics. As part of ongoing data quality efforts, BEPHI identifies records with missing or illogical information and works with hospitals and physicians to fill in the blanks and correct mistakes. However, there are occasions when the information remains unknown in the analytical files used to create the statistics in this report.

Technical Notes (Cont.)

BEPHI displays counts for "not stated" (N.S.) in tables and graphs throughout this publication. To ensure statistical accuracy in pregnancy outcome tables, the "not stated" count has been subtracted from the denominator when calculating percentages.

In limited instances, BEPHI will impute missing information using commonly accepted techniques in the civil registration/data analysis field. Imputation can either involve review of other information in the vital record to deduce the unknown value or using some form of algorithm to randomly assign a value. For 2015 data, the Bureau addressed unknowns or illogical values in age, county of residence, and sex. Cities and counties were corrected for spelling, city-county designation, and for missing information. Race and ethnicity entries were corrected when "unknown" and a specified category were selected. Not every unknown can be corrected.

Month prenatal care began

Calculation of month prenatal care began uses the dates of last menstrual period and the date of first prenatal care visit. This date difference method began in 2005. Prior to that time, month care began was a value entered on the birth certificate by the hospital. Because of the change, month prenatal care began statistics in this report can't be compared to statistics from annual summary reports prior to 2005.

Population group method of reporting race and Hispanic origin

The 2000 U.S. Census and implementation of the revised birth, death and stillbirth certificates in Kansas in 2005 altered the way race and Hispanic origin was reported. These changes were implemented to provide a better picture of the nation's variation in race and Hispanic origin. The expanded race and Hispanic origin categories on Kansas certificates are compliant with the provisions of the Statistical Policy Directive No. 15, Race and Ethnic Standards for Federal Statistics and Administrative Reporting, issued by the Office of Management and Budget (OMB) in 1997.⁶ Under these guidelines, when race and Hispanic origin are collected separately, Hispanic origin is collected first on the certificate.

Changes in collection of race and Hispanic origin information on vital events certificates necessitated the use of a population group method for grouping the information. The population group method utilizes mutually exclusive groups of race and Hispanic origin to encompass the 16 race checkboxes and the eight Hispanic origin checkboxes on each certificate.

Table B. Aggregation Grid for Population Groups

Aggregation Level	Population Groups								
None	Hispanic any Race	White Non-Hispanic	Black Non-Hispanic	Asian Non-Hispanic	NHOPI Non-Hispanic	AIAN Non-Hispanic	Multi race Non-Hispanic	Other race Non-Hispanic	Unknown Non-Hispanic
Partial	Hispanic any Race	White Non-Hispanic	Black Non-Hispanic	Asian/NHOPI Non-Hispanic		AIAN Non-Hispanic	Multi & other non-specified race(s) Non-Hispanic		N.A.
Full	Hispanic any Race	White Non-Hispanic	Black Non-Hispanic	Multi, other specified & non-specified race(s) Non-Hispanic					N.A.

This approach results in a unique matrix of population groups for reporting statistics. At the most detailed level, there are nine population-groups: Hispanic any race, White non-Hispanic, Black non-Hispanic, Asian non-Hispanic, Native Hawaiian and other Pacific Islander (NHOPI) non-Hispanic, American Indian/Alaska Native (AIAN) non-Hispanic, Multiple race non-Hispanic, Other race non-Hispanic, and Unknown race non-Hispanic. In the event Hispanic origin is unknown but race information is known, the individual will be reported as the specified race and non-Hispanic.

Technical Notes (Cont.)

BEPHI developed an aggregation grid (Table A) to use when counts for population-groups are too small to be displayed or used in a rate calculation. This report uses partial or full aggregation of population groups for reporting statistics.

The principal advantage of using population groups is the ability to more closely tabulate population estimates to the same groups as those used for vital events.

The U.S. Census Bureau (USCB) population estimates, used in this *Annual Summary*, can be collapsed into seven of the nine population-groups. Population-based rates using compatible numerators and denominators produce more accurate statistics.

Residence vs occurrence data

Residence data is information compiled according to the usual residence regardless of where the event occurred (including events occurring out-of-state). Occurrence data is information compiled according to the geographical location where the event took place, regardless of the actual residence. Information compiled for births, stillbirths, and deaths in this report are residence data, while marriages and marriage dissolutions are occurrence data; and abortions are reported in both data formats (residence and occurrence).

Population Estimates

All population data used in the Annual Summary come from the United States Census Bureau (USCB), which provides actual counts for Census years, and estimates for other years. The estimates update Census counts by adjusting for subsequent births, deaths, and net migration. At the state level, USCB estimates are provided by sex (2 categories), race (6 categories), and Hispanic origin (2 categories), by single year of age. At the county level, USCB estimates are provided by the same sex, race, and Hispanic origin categories as for the state, but by eighteen 5-year age groups (0-4, 5-9, ..., 80-84, and 85+) rather than by single year of age. The reduction in granularity in the age category is necessary to assure that the statistical methods used provide reliable estimates for counties, where the population is usually at least an order of magnitude smaller than that of the state.

Due to rounding and variation in estimation methods within the USCB, some discrepancies may be found between population estimates provided for the state and those provided for the counties. Usually, differences are negligible and rarely result in discrepancies in the totals. We advise you to utilize state totals from the county population totals when a total population estimate is needed.

However, the age categories provided by the USCB estimates are not adequate for all purposes. For example, analysis of infant deaths requires population estimates for a single year of age (under one), analysis of teen pregnancy traditionally uses age brackets other than the two USCB categories that cover the age group (10-14 and 15-19), and age-adjusted death rate calculations normally use eleven standard age groups (0, 1-4, 5-14, 15-24, ..., 75-84, 85+) that cannot be obtained by combining the eighteen USCB age groups. For these purposes, KDHE uses population estimates provided by the National Center for Health Statistics (NCHS) known as the bridged-race estimates. NCHS creates these estimates by taking the USCB estimates and applying a computer algorithm which provides single-year-of-age estimates for counties, but at the cost of reducing the number of race categories from six to four. KDHE then combines the NCHS single-year-of-age estimates to obtain the eleven standard age groups or other grouping required for analysis.

Technical Notes (Cont.)

Because the USCB reassigns the race of certain categories in their bridged and unbridged estimates, 2010 totals by population group may be inconsistent with 2009 estimates. This affects population-based rates using 2010 population estimates as the denominator in a rate. It may result in an artificially lower rate than the prior year. The greatest impact will involve rates for the smaller population groups.

For 2001, time constraints associated with analysis of the 2000 census data left the Census Bureau unable to provide population estimates by the time they were needed by KDHE. For that year, KDHE produced its own estimates, though the methods used were necessarily less sophisticated than those ultimately used by the Census Bureau. In due time, KDHE population tables were updated with the appropriate USCB and NCHS estimates, but the rates calculated for the Annual Summary and other reports of the year were not re-calculated with the updated population estimates.

The 2001 state and county estimates for teenage females (10-14, 10-17, 15-19, 10-19) were compiled by the KDHE based on 2000 USCB numbers. In order to estimate the 2001 teenage female population for the various age groupings, the 2000 proportion for the age grouping within the total population had to be derived. These estimates were calculated as in the following example for 2001.

$$\begin{array}{r} \text{Female Population 10-14 Year} \\ \text{Age Group (2000)} \\ \text{-----} \\ \text{2000 Population All Ages} \end{array} \times \begin{array}{r} \text{2001 Population} \\ \text{All Ages} \end{array} = \begin{array}{r} \text{10-14 Year} \\ \text{Age-Group} \\ \text{(2001)} \end{array}$$

Peer Groups

For various demographic studies, it is useful to compare county statistics to counties with similar characteristics. "Peer groups" of counties, as used in this report, are defined as those with similar population density based on a method derived by the KDHE Bureau of Community Health Systems. (See Appendices 1 and 2 for county tables indicating population density peer group membership before and after the 2010 U.S. Census.) Peer groups are updated after every 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.

BEPHI uses peer groups in county statistics tables. 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.⁷ Sources for calculation of population densities are population figures from the 2010 U.S. Census and land areas from the 2010 U.S. Census.

Cause of Death

For 1999 and later years, underlying causes of death in the *Annual Summary of Vital Statistics* are established through a system known as the International Classification of Diseases, 10th Revision (ICD-10). This system promotes uniformity and comparability in the collection and presentation of mortality data. Prior to 1999, Kansas used ICD-9 to report mortality statistics. Periodically, the classification system needs to be updated to address new diseases and reflect

Technical Notes (Cont.)

a better understanding of causes of death. The World Health Organization maintains ICD-10 and the NCHS, which compiles national statistics, modifies ICD-10 for use by Kansas and other states [3].⁸ Death data from 1999 forward are classified by ICD-10, and trends in mortality will be comparable. Such data trends are not comparable if the statistics bridge 1998-1999.

In accordance with NCHS guidelines, stillbirths that were coded Symptoms, Signs & Abnormal Findings (R00 - R99) are now coded unspecified cause (P95).

Age-Adjusted Death Rates

The mortality rate, the number of deaths per 100,000 population, is a common way to report death statistics so that comparisons can be made from year to year or among geographic areas. Crude death rates compensate for the differences in population within the areas or time periods studied. Crude death rates, however, do not compensate for the different age make up of compared populations. For example, some Kansas counties may have older residents than other counties. To address this, statisticians prepare age-adjusted death rates. The direct method for calculating age-adjusted death rates was used in this report. Age-adjusting is a process by which the age composition of a population is defined as constant so that differences in age composition can be eliminated from the analysis. This is necessary as the risk of dying increases with age. Age-adjusted rates allow for more meaningful comparison of the risk of mortality over time and among groups.

For this report, age-adjusted death rates were calculated using the 2000 population standard. Kansas began using the 2000 population standard, as recommended by NCHS, in the *1999 Annual Summary of Vital Statistics*.

Comparing Age-Adjusted Death Rates

Mortality rates, derived from vital records, are not subject to sampling error but are subject to what is termed random error. This arises from random variations in the number of deaths over time or between different communities. The potential impact of random error increases as the number of events decreases. This makes resulting rates subject to volatility, and requires caution when comparing them to rates from other populations, geographic areas, and time periods.

Confidence intervals are often used in research when comparing two age-adjusted death rates (for two different or independent populations) to determine whether a significant difference exists between them. Ninety-five percent confidence intervals are provided for the age-adjusted rates in this report. The precise statistical definition of the 95% confidence interval is that if the measurement was conducted 100 times, 95 percent of the time the true value would be within the calculated confidence interval and five percent of the time the true value would be either higher or lower than the range of the confidence interval.

The first step in calculating a confidence interval for an age-adjusted rate is the computation of a standard error (SE), which defines the rate's variability. The SE for an adjusted rate per 100,000 population can be estimated by dividing that rate by the square root of the number of events (n) upon which the rate was based:

$$Rate/\sqrt{n}$$

The estimated SE can then be used to compute a 95% confidence interval (CI) for the rate. The standard formula for determining the 95% CI of a rate is:

$$R \pm (1.96 \times SE)$$

Technical Notes (Cont.)

Computing confidence limits for pairs of rates varies depending on the number of events on which each rate was created. The formula below was used for calculating confidence intervals that appear in this report. (Table E8)

Confidence limits for rates when the numerator is 100 or more

In this case, use the following formula for the rate R based on the standard error SE:

$$\begin{aligned}\text{Lower limit} &= R - (1.96 \times \text{SE}) \\ \text{Upper limit} &= R + (1.96 \times \text{SE})\end{aligned}$$

where:

$$\begin{aligned}R &= \text{the rate (age-adjusted rate)} \\ \text{SE} &= \text{the rate divided by the square root of the number of events (deaths)}\end{aligned}$$

An example of this would be the comparison of cancer age-adjusted death rates for two years. If 2007's rate has a 95% confidence interval of 174.3-183.9 and the 95% confidence interval for 2008 is 168.3-177.7, then they overlap and there is no significant difference between the two years' rates, at the 95% confidence level.

There are various statistical formulas for comparing rates, depending on the types of rates or populations being studied and the number of events involved. Please note that the formulas shown above are a conservative approach and, in some cases, may not be the most appropriate.

Significance test when both rates are based on 100 or more events

To compare two rates when both are based on 100 or more events, first calculate the difference between the two rates by subtracting the lower rate from the higher rate. This difference is considered statistically significant if it exceeds the statistic in the formula below. This statistic equals 1.96 times the standard error for the difference between two rates.

$$1.96 \sqrt{\frac{R_1^2}{N_1} + \frac{R_2^2}{N_2}}$$

where:

$$\begin{aligned}R_1 &= \text{the first rate} \\ R_2 &= \text{the second rate} \\ N_1 &= \text{the first number of events} \\ N_2 &= \text{the second number of events}\end{aligned}$$

If the difference is greater than this statistic, then the difference would occur by chance less than five times out of 100. The difference is statistically significant at the 95 percent confidence level.

If the difference is less than this statistic, the difference might occur by chance more than five times out of 100. The difference is not statistically significant at the 95 percent confidence level.

NCHS was used as a source for confidence interval and significance tests based on the *Vital Statistics of the United States: Mortality, 1999* Technical Appendix.

Rate Reliability

Vital statistics are easily influenced by random variation and single-year rates can fluctuate widely. A multiple-year rate such as a five- or ten-year average of single-year rates would be more reliable in determining trends in vital events. For example, between 2005 and 2009 the

Technical Notes (Cont.)

infant death rate for Kansas ranged from 7.0 to 7.9, while the 2005-2009 five-year infant death rate for Kansas was 7.4 infant deaths per 1,000 live births. A five or 10-year rate smooths some of the single-year rate variation and is a more reliable indicator of Kansas infant death rates.

Rates based on a small or large number of events in a sparsely populated area can vary widely. To exemplify the variation that may occur with a small change in the number of events, in 2009 Greeley County was the least populated county in Kansas with 1,234 residents, and Johnson County was the largest with 542,737 residents. With 15 deaths occurring in Greeley County in 2009, the crude death rate was 12.2 deaths per 1,000 population; whereas 3,234 deaths occurring in Johnson County resulted in a crude death rate of 6.0 deaths per 1,000 population. If five more deaths occurred in each county (e.g., multiple-death accident), Greeley County's crude death rate would have increased to 16.2, while Johnson County's rate would have increased by only a few hundredths and, with rounding, still remain 6.0 deaths per 1,000 population. Therefore, one must use caution when comparing rates of vital events between counties of extreme population size differences to avoid misleading conclusions.

Adequacy of Prenatal Care Utilization (APNCU) Index

Adequacy of prenatal care utilization values are based on a method developed by Dr. Milton Kotelchuck:⁹

I. Month prenatal care began (Adequacy of Initiation of Prenatal Care)

- Adequate Plus: 1st or 2nd month
- Adequate: 3rd or 4th month
- Intermediate: 5th or 6th month
- Inadequate: 7th month or later or no prenatal care

II. Proportion of the number of visits recommended by the American College of Obstetricians and Gynecologists (ACOG) received from the time prenatal care began until delivery (Adequacy of Received Services)

- Adequate Plus: 110% or more
- Adequate: 80% - 109%
- Intermediate: 50% - 79%
- Inadequate: less than 50%

III. Summary Adequacy of Prenatal Care Utilization Index

- Adequate Plus: Prenatal care begun by the 4th month and 110% or more of recommended visits received
- Adequate: Prenatal care begun by the 4th month and 80% - 109% of recommended visits received
- Intermediate: Prenatal care begun by the 4th month and 50% - 79% of recommended visits received
- Inadequate: Prenatal care begun after the 4th month or less than 50% of recommended visits received

Criteria for Small for Gestational Age (SGA)

Small for gestational age is when the infant's birth-weight is less than the 10th percentile, (lowest 9.9 percent of births). These infants may be normal but small or pathologically small (intrauterine growth restriction).

Technical Notes (Cont.)

“Many different things can lead to intrauterine growth restriction (IUGR). An unborn baby may not get enough nutrition because of:

- High altitudes,
- Multiple pregnancies (twins, triplets, etc.),
- Placenta problems,
- Preeclampsia or eclampsia

Congenital or chromosomal abnormalities are often associated with below-normal weight. Infections during pregnancy that affect the developing baby, such as rubella, cytomegalovirus, toxoplasmosis, and syphilis may also affect the weight of the developing baby”.¹⁰

Infants born small for gestational age but constitutionally normal may represent 40% or more of the SGA infants at term.¹¹ However, “In early preterm gestations, the definition of SGA may be justified as a proxy for IUGR”.¹² Statistics reported for SGA are based on using birth-weights from 2010 births for the state as a whole as the reference in establishing the cutoff point. In calculating percents, unknowns are excluded. Data are adjusted for gender or population group of the infant.

Criteria for Weight Gain in Pregnancy

This table presents weight gain in pregnancy based on pre-pregnancy BMI categories underweight, normal weight, overweight and obese by county. According to the March of Dimes,

“Gaining the right amount of weight helps protect the health of your baby. Women who gain too little are at increased risk of having a small baby (less than 5 1/2 pounds).

Women who gain too much are at increased risk of having an early baby or a large baby. They may also have health problems themselves such as diabetes, high blood pressure and varicose veins.¹³

Table C. Recommendations for Total and Rate of Weight Gain During Pregnancy, by Pre-pregnancy BMI

Pre-pregnancy weight	Recommended weight gain
Underweight (BMI less than 18.5)	28 to 40 pounds
Normal weight (BMI 18.5 to 24.9)	25 to 35 pounds
Overweight (BMI 25 to 29.9)	15 to 25 pounds
Obese (BMI 30 or greater)	11 to 20 pounds

Source: Institute of Medicine

The BMI/weight categories used in the *Annual Summary* are based on the Institute of Medicine of the National Academies guidelines that reflect changing U. S. demographics (Table B).¹⁴

Historical Changes in Reporting Abortion Data

- The increase in the 1989-1992 figures from previous years may not reflect an increase in the number of abortions being performed but rather an increase in the number of providers voluntarily reporting data.
- Residency data was not available for all abortions in 1989-1990. However, due to improved reporting, residency was obtained for most of the abortions reported in subsequent years. This improved reporting is also responsible for the increase in the resident abortion ratio between 1990 and 1991.

Technical Notes (Cont.)

References

-
- ¹ The National Partnership for Action to End Health Disparities. (2011, March). Health equity and disparities. Retrieved 10/4/2011 from <http://www.minorityhealth.hhs.gov/npa/templates/browse.aspx?lvl=1&lvlid=34>
 - ² Osterman MJK, Martin JA, Mathews TJ, Hamilton BE. (2011). Expanded data from the new birth certificate, 2008. National vital statistics reports; vol 59 no 7. Hyattsville, MD: National Center for Health Statistics.
 - ³ Martin JA, Hamilton BE, Sutton PD, et al. Births: Final data for 2008. National vital statistics reports; vol 59 no 1. Hyattsville, MD: National Center for Health Statistics.
 - ⁴ March of Dimes. (2008, July). C-section: medical reasons. Retrieved 10/4/2011 from http://www.marchofdimes.com/pregnancy/csection_indepth.html
 - ⁵ Crawford G. "Peer Groups Revised in Kansas", Kansas Health Statistics Report. August 2011, No. 50: 4.
 - ⁶ Office of Management and Budget. (1997, October). Standards for Maintaining, Collecting, and Presenting Federal Data on Race and Ethnicity. Retrieved 10/4/2011 from https://www.whitehouse.gov/sites/default/files/omb/assets/information_and_regulatory_affairs/re_app-a-update.pdf.
 - ⁷ Statistical Measures and Definitions. National Association of Public Health Statistics and Information Systems. Retrieved 10/5/2011 from <https://naphsis-web.sharepoint.com/Pages/StatisticalMeasuresandDefinitions.aspx>.
 - ⁸ Classification of Diseases, Functioning, and Disability. National Center for Health Statistics. Retrieved 10/4/2011 from <http://www.cdc.gov/nchs/icd/icd10.htm>.
 - ⁹ Kotelchuck, M. An Evaluation of the Kessner Adequacy of Prenatal Care Index and a Proposed Adequacy of Prenatal Care Utilization Index. American Journal of Public Health, 1994; 84(9): 1414-1420.
 - ¹⁰ Vorvick, L. (2010, November). Intrauterine growth restriction. Medline Plus. Retrieved 11/2/2011 from <http://www.nlm.nih.gov/medlineplus/ency/article/001500.htm>.
 - ¹¹ Ross, M.G. (2011, February). Fetal growth restriction, Medscape reference. Retrieved 11/2/2011 from <http://emedicine.medscape.com/article/261226-overview>.
 - ¹² Ananth, C. V, Vintzileos A. M. (2009, October). Distinguishing pathological from constitutional small for gestational age births in population-based studies. Early Hum Dev. 85(10):653-8.
 - ¹³ March of Dimes. (2009, September). Weight gain during pregnancy. Retrieved 10/14/2010 from http://www.marchofdimes.com/pnhec/159_153.asp.
 - ¹⁴ Institute of Medicine of the National Academies. (2009, May). Weight Gain During Pregnancy: Reexamining the Guidelines. Available at: <http://iom.edu/~media/Files/Report%20Files/2009/Weight-Gain-During-Pregnancy-Reexamining-the-Guidelines/Report%20Brief%20-%20Weight%20Gain%20During%20Pregnancy.pdf>.

DEFINITIONS

The following terms, formulas, and symbols are defined for more meaningful interpretations of the data contained in this report.

Abortion (induced termination of pregnancy):	The use or prescription of any instrument, medicine, drug or any other substance or device to termination the pregnancy of a woman known to be pregnant with the intention other than to increase the probability of a live birth, to preserve the life or health of the child after live birth, or to remove a dead unborn child who died as the result of natural causes in utero, accidental trauma or criminal assault on the pregnant woman or her unborn child, and which causes the premature termination of the pregnancy. [K.S.A. 65-6701(a)].
Adequacy of Prenatal Care Utilization (APNCU) Index:	An assessment of the adequacy of prenatal care measured by the APNCU Index (often referred to as the Kotelchuck Index), a composite measure based on gestational age of the newborn, the trimester prenatal care began, and the number of prenatal visits made.
Age-Adjusted Death Rate:	A calculation by which the age composition of a population is defined as constant so that differences in age composition can be eliminated from the analysis.
Annulment:	The invalidation of a marriage contract.
Birth Order:	Live birth order is determined from birth certificates specifying the total number of live births (living and dead) the mother had. It is calculated as the sum of the prior live births plus the current birth.
Birth Weight:	The weight of the fetus or infant at the time of delivery.
Body mass index (BMI):	A key index for relating a person's body weight to their height. The BMI is a person's weight in pounds times 703 divided by their height in inches squared.
Cause of Death:	The underlying cause of death or that condition giving rise to the chain of events leading to death.
Congenital Anomalies:	Defects existing at and usually before birth regardless of causation.
Divorce:	The dissolution of a legally binding marriage contract.
Hebdomadal Death:	The death of a live-born infant which occurs prior to the seventh day of life.
High Birth Weight:	Weight of a fetus or infant at delivery which is 4,000 2,500 grams or higher (8 pounds 13 ounces or higher.).
ICD Code:	The cause-identifying number classified in the Tenth Revision of the International Classification of Diseases implemented by NCHS for deaths in 1999.
Infant Death:	The death of a live-born infant which occurs within the first year of life.

DEFINITIONS (cont.)

Live Birth:	The complete expulsion or extraction of a product of human conception from its mother, irrespective of the duration of pregnancy, that, after such expulsion or extraction, shows any evidence of life such as breathing, heartbeat, pulsation of the umbilical cord, or voluntary muscle movement, whether or not the umbilical cord has been cut or the placenta attached.
Low Birth Weight:	Weight of a fetus or infant at delivery which is less than 2,500 grams (less than five pounds, 8 ounces).
Marriage:	The legal union of a male and female.
Marriage Dissolution:	A marriage dissolved by either a divorce or an annulment.
Maternal Death:	The death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and the site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management, but not from accidental or incidental causes (Included in these deaths are ICD-10 codes A34, O00-O95, and O98-O99).
Medical Procedure I:	Refers to use of the drug mifepristone as a pregnancy termination procedure.
Medical Procedure II:	Refers to use of the drug methotrexate as a pregnancy termination procedure.
Natural Increase:	Live births minus total deaths of a population within a given year.
Neonatal Death:	The death of a live-born infant which occurs prior to the 28th day of life.
Normal Birth Weight:	Weight of a fetus or infant at delivery which is between 2,500 and 3999 grams, inclusive (between 5 pounds 8 ounces and 8 pounds 12 ounces).
Occurrence Data:	Vital statistics compiled on the basis of where the vital event happened.
Out-of-Wedlock Birth:	A birth occurring to a mother who is not married at the time of conception or at the time of birth or at any time between conception and birth.
Peer Group:	A group of counties with similar population densities in persons per square mile, as adopted by the Kansas Department of Health and Environment, Bureau of Local and Rural Health.
Perinatal Period III Death:	The aggregate total of stillbirths (fetus weighs over 350 grams) and hebdomadal deaths (deaths that occur prior to the 7th day of life).
Population Density:	The average number of inhabitants per square mile.

DEFINITIONS (cont.)

Population Group:	A reporting matrix of race and Hispanic origin (ethnicity) information comprised of distinct categories.
Post-Hebdomadal Death:	The death of a live-born infant occurring seven days to prior to the twenty-eighth day of life.
Post-Neonatal Death:	The death of a live-born infant occurring 28 days to prior to the 365th day of life.
Pregnancy-Associated Death:	The death of any woman, from any cause, while pregnant or within one calendar year of termination of pregnancy, regardless of the duration and the site of pregnancy. Maternal deaths are a subset of pregnancy-associated deaths.
Prenatal Care:	Pregnancy-related health care services provided to a woman between conception and delivery.
Previous Pregnancy:	Includes all previous reported spontaneous terminations, previous induced abortions, children born still living and children born now dead.
Puerperium:	Period of time after delivery, usually six to eight weeks, during which all maternal reproductive organs return to the normal pre-pregnancy condition.
Small for Gestational Age (SGA):	Condition where the live born infant's birth weight lies below the 10th percentile for that gestational age.
Stillbirth:	<p>Effective July 1, 2014, the definition of stillbirth changed. The new definition is: "Any complete expulsion or extraction from its mother of a product of human conception, the gestation of which is 20 weeks or greater, resulting in other than a live birth, and which is not an induced termination of pregnancy."</p> <p>The old definition used until June 30, 2014 used a fetal weight value of greater than 350 grams to determine whether a miscarriage was a reportable stillbirth.</p>
Residence Data:	Vital statistics compiled on the basis of the usual place of residence of the person(s) to whom the vital event occurred.
Teenage Pregnancy:	A live birth, stillbirth or abortion occurring to a female under 20 years of age.
Total Reported:	Used only for abortion reporting this represents all abortions reported regardless of residence or occurrence locations.
Trimester:	A three-month period of time. First trimester care, for example, refers to care initiated in the first three months of pregnancy. When a pregnancy runs past the normal nine months (up to 11.75 months of pregnancy are possible according to CDC guidance) the additional months are considered part of the third trimester.

DEFINITIONS (cont.)

Very Low Birth Weight:	Weight of a fetus or infant at delivery which is less than 1,500 grams (less than 3 pounds, 5 ounces).
Weeks Gestation:	The number of weeks between first day of the last reported normal menses and the delivery of the fetus or infant.
Work-Related Injury:	“Yes” has been selected in death certificate box 27c INJURY AT WORK.
Years of Life Expectancy at Birth:	The hypothetical number of years a newborn would live, on average, if (s)he experienced the levels of mortality prevailing within each age group at the time of his birth as he aged. The method used to calculate life expectancy for the Annual Summary is based on that posted by David Backus (Heinz Riehl Professor, Stern School of Business, New York University) at pages.stern.nyu.edu/~dbackus/BCH/ms/Espen_lifeexpectancy.pdf .
Years of Potential Life Lost (YPLL75):	A measurement of the number of years of potential life lost by each death occurring before the age of 75.

RATES AND RATIOS

Abortion Ratio:	$\frac{\text{induced abortions}}{\text{live births}}$	x 1,000
Age-Adjusted Death Rate:	$\frac{\sum M_a P_a}{P}$	x 1,000 or 100,000
Where	M_a = age-specific death rate per 1,000 or 100,000 population for a given age-group P_a = standard population in a given age-group P = total standard population	
Age-Specific Death Rate:	$\frac{\text{deaths in a specific age-group}}{\text{population in a specific age-group}}$	x 1,000
Age-Specific Fertility Rate:	$\frac{\text{live births in a specific age-group}}{\text{female population in a specific age-group}}$	x 1,000
Birth Rate:	$\frac{\text{live births}}{\text{total population}}$	x 1,000
Cause-Specific Death Rate:	$\frac{\text{cause-specific deaths}}{\text{total population}}$	x 100,000
Death Rate:	$\frac{\text{total deaths}}{\text{total population}}$	x 1,000
Divorce Rate:	$\frac{\text{divorces}}{\text{total population}}$	x 1,000
Marriage Dissolution Rate:	$\frac{\text{divorces and annulments}}{\text{total population}}$	x 1,000
Fertility Rate:	$\frac{\text{live births}}{\text{female population 15-44}}$	x 1,000
Stillbirth Rate:	$\frac{\text{stillbirths}}{\text{live births + stillbirths}}$	x 1,000
Hebdomadal Death Rate:	$\frac{\text{hebdomadal deaths}}{\text{live births}}$	x 1,000
Infant Death Rate:	$\frac{\text{infant deaths}}{\text{live births}}$	x 1,000
Marriage Rate:	$\frac{\text{marriages}}{\text{total population}}$	x 1,000
Maternal Death Rate:	$\frac{\text{maternal deaths}}{\text{live births}}$	x 100,000

RATES AND RATIOS (Cont.)

Natural Increase Rate:	live birth rate minus total death rate	
Neonatal Death Rate:	$\frac{\text{neonatal deaths}}{\text{live births}}$	x 1,000
Out-of-Wedlock Birth Ratio:	$\frac{\text{out-of-wedlock births}}{\text{live births}}$	x 100
Perinatal Period III Death Rate:	$\frac{\text{perinatal period III deaths}}{\text{live births} + \text{stillbirths}}$	x 1,000
Post-Neonatal Death Rate:	$\frac{\text{post-neonatal deaths}}{\text{live births}}$	x 1,000
Teenage Pregnancy Rate:	$\frac{\text{live births, stillbirths, abortions for females in a specific age-group}}{\text{female population in a specific age-group}}$	x 1,000
Years of Potential Life Lost Rate	$\frac{\text{years of potential life lost}}{\text{population}}$	x 1,000

SYMBOLS AND ABBREVIATIONS

n.s.	not stated
n.a	not available
n/a	not applicable
0.0	quantity or percent more than zero but less than 0.05