



Adequacy of Prenatal Care Utilization Index Kansas, 2017

A decorative graphic consisting of approximately 15 horizontal blue lines of varying lengths. Overlaid on these lines are the words "Research" and "Summary" in a white, outlined, sans-serif font. The words are arranged diagonally, with "Research" on top and "Summary" below it.

July 2019

This Research Summary Was Prepared By:

Kansas Department of Health and Environment
Lee A. Norman, MD, Secretary

Bureau of Epidemiology and Public Health Informatics
Elizabeth W. Saadi, PhD, Bureau Director and State Registrar

Prepared by: Cathryn Savage, PhD

Reviewed by: David Oakley, MA

Data for this report were collected by:

Office of Vital Statistics
Kay Haug, Director

Our Vision – Healthy Kansans living in safe and sustainable environments

Our Mission – To protect and improve the health and environment of all Kansans

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Executive Summary

Improving family health is an essential role for public health agencies. Tracking the quantity of prenatal care pregnant women receive through the Adequacy of Prenatal Care Utilization (APNCU) Index enables public health agencies to identify inequities in the provision of care. Using birth certificate information, the Kansas Department of Health and Environment (KDHE) calculates the APNCU using methods developed by Dr. Milton Kotelchuck. In 2017, the percentage of women in Kansas receiving prenatal care defined as less than adequate (inadequate + intermediate) was unchanged (16.6%) from 2016 (16.6%), as was adequate or better prenatal care unchanged from 2016 to 2017 (83.4%). Currently, Kansas' level of adequate or better prenatal care (83.4%) does exceed the Healthy People 2020 target of 77.6 percent; however, inequities by population group and pay source continue.

Introduction

Maintaining and improving family health is an essential component of the public health mission of KDHE. Facilitating healthy pregnancies and positive birth outcomes pays dividends to Kansas society in the form of reduced maternal and infant mortality and children capable of learning and growing into productive members of society. It is in this role the department, through the Division of Public Health's Bureau of Epidemiology and Public Health Informatics (BEPHI), provides this report in order that progress in the provision of adequate prenatal care can be monitored.

Organized prenatal care began with attempts to prevent fetal abnormalities. Later it was recognized it might also reduce maternal, fetal, and neonatal deaths. Prenatal care is health care one receives when pregnant. It includes maternal checkups and prenatal testing in order to spot health problems early. Early treatment can cure many problems and prevent others. A typical prenatal visit may include any or all of the following elements: weight measurement, blood pressure measurement, measurement of the uterus to check for proper

growth of the fetus, physical examination of the mother to detect problems or discomforts, urine tests to detect diabetes, preeclampsia or edema, fetal heart rate measurement, and various screening tests, such as blood tests to check for anemia. Prenatal care is important because potential problems that endanger the mother or her infant can be identified and treated before delivery or even prevented altogether [1, 2, 3].

Inadequate prenatal care has been associated with pre-term delivery, low birthweight and small-for-gestation infants [4, 5]. It has also been linked with a higher overall net cost per pregnancy for mother and newborn care combined [6].

Adequate prenatal care is one of the national goals in the Healthy People 2020 program: “MICH-10: Increase the proportion of pregnant women who receive early and adequate prenatal care.” The target is that 77.6 percent of pregnant women receive early and adequate prenatal care by the year 2020 [7].

The purpose of this report is to inform policy makers, local health departments, program managers and the public of the extent to which adequate prenatal care is provided to pregnant women in Kansas, and to indicate disparities in the provision of that care. The BEPHI has published the adequacy of prenatal care utilization index report since 1998.

Methods

KDHE, through the Office of Vital Statistics, receives reports of births that occur in Kansas. Reporting of Kansas vital events to 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. Births to Kansas residents that occurred in other states are received via Inter-Jurisdictional Exchange. All statistics reported are based on births to women who were Kansas residents.

KDHE collects birth certificate information consistent with the 2003 U.S. Standard Certificate. Data collected since 2005 is based on the standard certificate as modified for use in Kansas. BEPHI uses an 18-month reporting period when creating an analytical file. Thus, all births that occur in a given year – reported during that year or the first six months of the year following – are included in the analytical file. Data used in this report are for 2017 births. The analytical file is considered 99.9 percent complete.

All birth records undergo a two-step quality improvement process. In the Office of Vital Statistics, paper certificates are manually reviewed by staff for missing or illogical information. The Vital Statistics Data Analysis section performs computerized checks of the data on an ongoing basis and once prior to closing the analytical file. Corrections or imputation occurs to geographic information, sex of the child, and mother’s age. See the technical notes in the *2017 Kansas Annual Summary of Vital Statistics* for more information [8].

Statistical tabulations were created using SAS version 9.4 software. Joinpoint regression was used for trend analysis in Figure 5. ArcMap 10.2.1 was used for mapping in Figure 6. Additionally, in accordance with the National Center for Health Statistics practice, the

relative standard error (RSE) was used in this report to evaluate reliability of percentages in Table 7. Values with a RSE of 30 percent or less are considered reliable. Values with a RSE greater than 30 percent but less than 50 percent are considered unreliable, and values with RSE greater than 50 percent have been suppressed [9]. Table 1 of this report was also included in the *Kansas Annual Summary of Vital Statistics, 2017*. The repetition enhances the utility of this report to various audiences.

Accurate measurement of prenatal care depends upon the accuracy of the index used. Beginning with 1998 data, KDHE transitioned from a modified Kessner Index to the Adequacy of Prenatal Care Utilization (APNCU) Index, often referred to as the Kotelchuck Index [10]. This index characterizes prenatal care (PNC) utilization on two independent and distinctive dimensions: adequacy of initiation of PNC and adequacy of utilization of received services once PNC has begun. The index uses information readily available on the Kansas birth certificate (number of prenatal care visits, date of first prenatal visit, date of last menses, and gestational length of pregnancy). The APNCU index combines these data to characterize adequacy of pregnancy-related health services provided to a woman between conception and delivery. The APNCU Index categorizes care as inadequate, intermediate, adequate, or adequate plus (for more details see the Technical Notes, page 24).

The APNCU Index does not assess the quality of prenatal care that is delivered, only its utilization. Assessing the quality of the services provided would require more information than is provided on the Kansas standard birth certificate.

Results & Discussion

Only selected findings are discussed in this section. Other tables and figures are provided to meet evaluation requirements by county or other characteristics.

APNCU Index was calculated on 36,299 out of 36,464 or 99.5 percent of Kansas resident live births in 2017 (Figure 1). The percentage of births that contained the variables necessary to calculate the prenatal care utilization index decreased by 0.2 percentage points from 2016 (37,926 out of 38,048 or 99.7 percent of live births).

Of the 36,299 Kansas resident births for which prenatal care utilization could be calculated in 2017, 83.4 percent received adequate or better prenatal care, including 31.4 percent with adequate-plus care. This level of adequate or better prenatal care meets the target established by Healthy People 2020 (77.6%). However, 16.6 percent received less than adequate prenatal care, with 10.6 percent having inadequate care and 5.9 percent intermediate care (Table 1).

In 2017, the percentage change in women reporting inadequate prenatal care (10.6%) was a decrease of 2.8 percent from 2016 (10.9%). Adequate-plus prenatal care increased by 4.3 percent from 2016 (30.1%) and (31.4%) in 2017, respectively (Table 1).

Among mothers whose prenatal care utilization was classified as inadequate, the vast majority (3,662 or 94.8%) were due to late initiation of care. A minority of women (202 or 5.2%) who initiated their care early (within the first four months of pregnancy) received inadequate care due to an insufficient number of prenatal care visits to their providers (Figure 1).

In 2017, among mothers of infants with low birthweight, 79.6 percent received adequate or better care, while 11.3 percent experienced inadequate care (Table 2, Figure 2).

The percentage of adequate or better prenatal care was highest among White non-Hispanic mothers (87.6%), followed by Asian/Pacific Islander non-Hispanic mothers (83.0%), other non-Hispanic mothers (77.1%), Hispanic mothers (71.0%) and Black non-Hispanic mothers (74.3%). American Indian/Alaska Native mothers had the lowest percentage (69.6%) receiving adequate or better prenatal care (Table 3).

Furthermore, among the population groups, 18.4 percent of Hispanic mothers, 17.2 percent of Black non-Hispanic mothers, and 21.4 percent of Native American non-Hispanic mothers experienced inadequate prenatal care. These percentages were more than twice the percentage (7.9%) of White non-Hispanic mothers who experienced inadequate care (Table 3, Figure 3).

In 2017, 91.8 percent of private paid births received adequate or better care, followed by Tricare (79.1%) and Medicaid (76.2%). The highest percentage of mothers who received inadequate care was paid by Self Pay at (26.4%), followed by Other/Unknown (25.8%) and Other government (23.3%) (Table 4). The percentage of mothers who self-paid and experienced inadequate care remained unchanged from 2016 to 2017 (26.5% to 26.4%, respectively) (Figure 4.).

However, among the 3,864 mothers who received inadequate prenatal care, 49.6 percent of those were paid by Medicaid, followed by private insurance (25.9%) and Self Pay (16.8%) (Table 4).

Among mothers having their first live birth, those with adequate or adequate plus prenatal care (86.0%) was about 4 percentage points higher than mothers having second or higher live births (82.0%) (Table 5). Similarly, first births with inadequate prenatal care (9.0%) were less than second or higher births with inadequate prenatal care (11.5%) (Table 5).

Inadequate prenatal care was lower across every age group among mothers with first births than among mothers with second or higher live births, except for the 10-14 age group which could not be determined among second or higher order births (Table 5).

Inadequate prenatal care was higher among younger mothers (age groups 15-19 and 20-24) than older mothers aged 25 years and above (Table 6).

Overall, the percentage of births where the mother received less than adequate prenatal care in Kansas decreased from 18.4 percent in 2000 to 16.6 percent in 2017. Trends in less than adequate prenatal care were assessed using joinpoint regression analysis from 2000 to

2017. The annual percentage change (APC) in prenatal care that was less than adequate decreased significantly only between 2007 and 2011 (APC = -5.9%; 95%CI: -9.5%, -2.1%) (Figure 5).

County percentages of mothers who received less than adequate prenatal care in 2017 were compared to the state percentage and tested for statistically significant differences. The percentage of mothers who received less than adequate prenatal care was significantly higher in 10 counties than the state percentage, and percentages for eight counties were significantly lower than the state percentage. Percentages for 39 counties were not statistically significantly different from the state percentage, while 48 counties could not be measured and compared reliably due to the small number of people who received less than adequate prenatal care (Figure 6).

The percentage changes in adequate and better prenatal care and less than adequate prenatal care are shown by individual Kansas counties from 2016 to 2017 in Table 7. There was no percentage change in less than adequate prenatal care or adequate or better prenatal care for the state of Kansas from 2016 to 2017.

The percentage of birth mothers receiving less than adequate prenatal care increased or remained unchanged reliably in 31 counties from 2016 to 2017. Clay county had the largest reliable increase in less than adequate prenatal care (83.7% increase) from 2016 to 2017, followed by Phillips (57.3% increase) and Marshall (47.3% increase) counties (Table 7).

The percentage of birth mothers receiving less than adequate care decreased reliably in 19 counties from 2016 to 2017. Anderson had the largest reliable decrease in less than adequate care (33.9%) followed by Neosho (30.4%). In 37 counties the percentage changes in less than adequate prenatal care were not reliable (RSE>30), and in 18 counties the counts were too small to calculate change.

From 2016 to 2017 the percentage of birth mothers receiving adequate and better prenatal care increased or remained unchanged in 46 counties, while 45 counties experienced decreases. Sherman County had the largest decrease in adequate and better prenatal care (23.9%) from 2016 to 2017. In 14 counties the percentage of changes in adequate and better prenatal care were not reliable measures.

References

1. Alexander G R, Kotelchuck M. Assessing the Role and Effectiveness of Prenatal Care: History, Challenges and Directions for Future Research. *Public Health Rep.* 2001 Jul-Aug; 116(4): 306–316.
2. MedlinePlus [Internet] Bethesda MD: U.S. National Library of Medicine.[updated 2013 Sep 17, cited 2013 Oct 16] Available from: <http://www.nlm.nih.gov/medlineplus/prenatalcare.html>.
3. Huth CC. Prenatal Care and Infant Mortality in Nevada. [Cited 16 Dec 2011]. Available from: <http://cdclv.unlv.edu/healthnv/prenatalcare.html>.
4. Krueger PM, Scholl TO. Adequacy of prenatal care and pregnancy outcome. *JAOA* 2010 Aug; 100(8): 485-492.
5. Heaman MI, Newborn-Cook CV, Green CG, Elliott LJ, Helewa ME. Inadequate prenatal care and its association with adverse pregnancy outcomes: A comparison of indices. *BMC Pregnancy and Childbirth*

2008, 8:15.

6. Schramm WF. Weighing costs and benefits of adequate prenatal care for 12,023 births in Missouri's Medicaid program 1988. *Public Health Rep.* 1992 Nov-Dec; 107(6): 647-52.
7. Healthy People 2020 Goals and Objectives [Internet] Department of Health and Human Services. [Cited 16 Dec. 2011; Updated: 23 Nov 2011]. Available from: <http://www.healthypeople.gov/2020/topicsobjectives2020/overview.aspx?topicid=26>.
8. Oakley D, Crawford G, Savage C (2017). Kansas Annual Summary of Vital Statistics, 2017. Kansas Department of Health and Environment, Bureau of Epidemiology and Public Health Informatics.
9. Mathews TJ, MacDorman MF. Infant mortality statistics from the 2010 period linked birth/infant death data set [internet]. Hyattsville (MD): National Center for Health Statistics. 2013 Dec [cited 2014 DEC 28]; 62(8). Available from: http://www.cdc.gov/nchs/data/nvsr/nvsr62/nvsr62_08.pdf
10. Kotelchuck M. An Evaluation of the Kessner of Adequacy of Prenatal Care Index and a proposed Adequacy of Prenatal Care Utilization Index. *American Journal of Public Health*, 1994; 84:1414-1420.

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Technical Notes Appendix

1. Certificate of Live Birth

Table 1. County of Kansas Resident Live Births by Adequacy of Prenatal Care Utilization (APNCU) Index
 Kansas, 2017

County of Residence	Live Births*	APNCU Category [†]								n.s.*
		Adequate Plus		Adequate		Intermediate		Inadequate		
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	
Kansas	36,464	11,380	31.4	18,906	52.1	2,149	5.9	3,864	10.6	165
Allen	140	57	40.7	58	41.4	7	5.0	18	12.9	0
Anderson	104	41	39.4	50	48.1	4	3.8	9	8.7	0
Atchison	174	50	28.7	89	51.1	13	7.5	22	12.6	0
Barber	55	10	18.5	35	64.8	4	7.4	5	9.3	1
Barton	284	124	43.7	106	37.3	18	6.3	36	12.7	0
Bourbon	180	88	48.9	57	31.7	3	1.7	32	17.8	0
Brown	130	35	26.9	73	56.2	11	8.5	11	8.5	0
Butler	763	166	21.8	506	66.5	27	3.5	62	8.1	2
Chase	19	9	47.4	7	36.8	0	0.0	3	15.8	0
Chautauqua	30	19	63.3	7	23.3	1	3.3	3	10.0	0
Cherokee	212	74	34.9	99	46.7	15	7.1	24	11.3	0
Cheyenne	30	7	23.3	16	53.3	5	16.7	2	6.7	0
Clark	22	2	9.1	16	72.7	2	9.1	2	9.1	0
Clay	91	29	31.9	42	46.2	7	7.7	13	14.3	0
Cloud	109	23	21.1	68	62.4	7	6.4	11	10.1	0
Coffey	94	37	39.4	46	48.9	2	2.1	9	9.6	0
Comanche	18	6	33.3	10	55.6	2	11.1	0	0.0	0
Cowley	415	184	44.3	150	36.1	21	5.1	60	14.5	0
Crawford	460	170	37.1	201	43.9	32	7.0	55	12.0	2
Decatur	33	6	18.2	23	69.7	3	9.1	1	3.0	0
Dickinson	208	68	33.2	109	53.2	9	4.4	19	9.3	3
Doniphan	69	23	33.8	35	51.5	3	4.4	7	10.3	1
Douglas	1,134	488	43.1	490	43.3	36	3.2	118	10.4	2
Edwards	23	6	26.1	12	52.2	0	0.0	5	21.7	0
Elk	24	5	20.8	18	75.0	0	0.0	1	4.2	0
Ellis	299	79	26.5	187	62.8	12	4.0	20	6.7	1
Ellsworth	58	15	25.9	35	60.3	6	10.3	2	3.4	0
Finney	625	161	26.0	255	41.2	55	8.9	148	23.9	6
Ford	589	88	15.0	278	47.4	93	15.8	128	21.8	2
Franklin	305	92	30.5	160	53.0	11	3.6	39	12.9	3
Geary	890	219	24.8	406	46.0	126	14.3	132	14.9	7
Gove	31	8	25.8	18	58.1	3	9.7	2	6.5	0
Graham	21	4	19.0	10	47.6	3	14.3	4	19.0	0
Grant	113	19	16.8	54	47.8	12	10.6	28	24.8	0
Gray	88	20	23.0	49	56.3	10	11.5	8	9.2	1
Greeley	25	6	24.0	9	36.0	3	12.0	7	28.0	0
Greenwood	57	21	36.8	28	49.1	0	0.0	8	14.0	0
Hamilton	31	7	22.6	11	35.5	5	16.1	8	25.8	0
Harper	64	6	9.4	51	79.7	3	4.7	4	6.3	0
Harve	379	159	42.0	184	48.5	12	3.2	24	6.3	0
Haskell	46	8	17.4	30	65.2	2	4.3	6	13.0	0
Hodgeman	17	2	11.8	11	64.7	3	17.6	1	5.9	0
Jackson	180	62	34.4	83	46.1	6	3.3	29	16.1	0
Jefferson	178	76	43.4	90	51.4	2	1.1	7	4.0	3
Jewell	31	10	32.3	15	48.4	5	16.1	1	3.2	0
Johnson	7,207	2,893	40.4	3,543	49.5	360	5.0	361	5.0	50
Kearny	65	18	27.7	32	49.2	5	7.7	10	15.4	0
Kingman	72	14	19.4	49	68.1	3	4.2	6	8.3	0
Kiowa	32	7	21.9	21	65.6	0	0.0	4	12.5	0
Labette	260	65	25.4	115	44.9	19	7.4	57	22.3	4
Lane	15	6	40.0	7	46.7	1	6.7	1	6.7	0
Leavenworth	951	308	32.4	514	54.1	40	4.2	88	9.3	1
Lincoln	22	4	18.2	15	68.2	2	9.1	1	4.5	0
Linn	99	39	39.4	44	44.4	1	1.0	15	15.2	0
Logan	39	7	17.9	23	59.0	2	5.1	7	17.9	0

Table 1. County of Kansas Resident Live Births by Adequacy of Prenatal Care Utilization (APNCU) Index
 Kansas, 2017

County of Residence	Live Births*	APNCU Category†								n.s.‡
		Adequate Plus		Adequate		Intermediate		Inadequate		
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	
Lyon	393	234	59.8	101	25.8	12	3.1	44	11.3	2
McPherson	324	115	35.6	148	45.8	20	6.2	40	12.4	1
Marion	113	49	43.8	51	45.5	3	2.7	9	8.0	1
Marshall	121	23	19.0	76	62.8	11	9.1	11	9.1	0
Meade	44	12	27.3	23	52.3	4	9.1	5	11.4	0
Miami	387	147	38.1	199	51.6	8	2.1	32	8.3	1
Mitchell	74	13	17.8	53	72.6	7	9.6	0	0.0	1
Montgomery	350	133	38.7	145	42.2	14	4.1	52	15.1	6
Morris	72	22	30.6	45	62.5	1	1.4	4	5.6	0
Morton	45	12	26.7	19	42.2	3	6.7	11	24.4	0
Nemaha	151	35	23.2	95	62.9	6	4.0	15	9.9	0
Neosho	196	65	34.0	92	48.2	6	3.1	28	14.7	5
Ness	15	3	20.0	10	66.7	1	6.7	1	6.7	0
Norton	50	7	14.0	28	56.0	9	18.0	6	12.0	0
Osage	171	76	44.7	65	38.2	10	5.9	19	11.2	1
Osborne	45	10	22.2	27	60.0	6	13.3	2	4.4	0
Ottawa	44	12	27.9	26	60.5	4	9.3	1	2.3	1
Pawnee	81	30	37.0	30	37.0	7	8.6	14	17.3	0
Phillips	49	4	8.2	28	57.1	11	22.4	6	12.2	0
Pottawatomie	355	108	30.6	182	51.6	20	5.7	43	12.2	2
Pratt	104	20	19.2	67	64.4	6	5.8	11	10.6	0
Rawlins	33	14	42.4	13	39.4	2	6.1	4	12.1	0
Reno	693	319	46.1	241	34.8	36	5.2	96	13.9	1
Republic	60	12	20.0	35	58.3	8	13.3	5	8.3	0
Rice	103	43	41.7	36	35.0	7	6.8	17	16.5	0
Riley	883	235	26.7	452	51.4	68	7.7	125	14.2	3
Rooks	52	10	19.2	36	69.2	3	5.8	3	5.8	0
Rush	31	7	22.6	16	51.6	3	9.7	5	16.1	0
Russell	73	19	26.0	46	63.0	2	2.7	6	8.2	0
Saline	702	186	26.7	396	56.9	48	6.9	66	9.5	6
Scott	57	12	22.2	30	55.6	4	7.4	8	14.8	3
Sedgwick	6,907	1,189	17.2	4,795	69.5	268	3.9	649	9.4	6
Seward	419	121	29.4	164	39.9	26	6.3	100	24.3	8
Shawnee	2,065	840	40.9	886	43.1	81	3.9	248	12.1	10
Sheridan	29	6	20.7	21	72.4	1	3.4	1	3.4	0
Sherman	73	19	26.8	26	36.6	13	18.3	13	18.3	2
Smith	43	12	27.9	21	48.8	7	16.3	3	7.0	0
Stafford	54	19	35.2	26	48.1	3	5.6	6	11.1	0
Stanton	28	8	28.6	17	60.7	1	3.6	2	7.1	0
Stevens	69	25	37.3	29	43.3	0	0.0	13	19.4	2
Sumner	262	56	21.4	176	67.2	7	2.7	23	8.8	0
Thomas	120	30	25.4	65	55.1	10	8.5	13	11.0	2
Trego	27	3	11.1	21	77.8	1	3.7	2	7.4	0
Wabaunsee	77	23	29.9	45	58.4	1	1.3	8	10.4	0
Wallace	18	3	17.6	9	52.9	2	11.8	3	17.6	1
Washington	76	22	29.3	43	57.3	5	6.7	5	6.7	1
Wichita	30	10	33.3	17	56.7	0	0.0	3	10.0	0
Wilson	113	45	39.8	51	45.1	6	5.3	11	9.7	0
Woodson	34	15	44.1	11	32.4	3	8.8	5	14.7	0
Wyandotte	2,539	797	31.5	1,022	40.4	327	12.9	383	15.1	10
n.s.‡	0	0	n/a	0	n/a	0	n/a	0	n/a	0

* Total number of live births in 2017.

† Includes only Kansas resident live births for which number of prenatal visits, date of first prenatal visit and date of last menses were reported on the birth certificate.

‡ Not Stated. Number of live births with insufficient information to calculate APNCU. This number is subtracted from total live births for percent calculation.

n/a: Not applicable

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

Table 2. Number and Percent of Live Births by Birth Weight by Adequacy of Prenatal Care Utilization (APNCU) Index Kansas, 2017

Birth Weight (Grams)	Live Births*	APNCU Category [†]								n.s. [‡]
		Adequate Plus		Adequate		Intermediate		Inadequate		
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	
Total	36,464	11,380	31.4	18,906	52.1	2,149	5.9	3,864	10.6	165
Under 2,500 (Low)	2,697	1,249	47.1	864	32.6	240	9.0	300	11.3	44
2,500-4,499 (Normal)	33,358	10,008	30.1	17,804	53.6	1,897	5.7	3,531	10.6	118
4,500 and Over (High)	400	120	30.0	236	59.0	12	3.0	32	8.0	0
n.s. [‡]	9	3	n/a	2	n/a	0	n/a	1	n/a	3

* Total number of live births in 2017.

† Includes only Kansas resident live births for which number of prenatal visits, date of first prenatal visit and date of last menses were reported on the birth certificate.

‡ Not Stated. Number of live births with insufficient information to calculate APNCU. This number is subtracted from total live births for percent calculation.

n/a: Not applicable; the number is too small to calculate percent reliably and is suppressed.

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

Table 3. Number and Percent of Live Births by Population Groups
by Adequacy of Prenatal Care Utilization (APNCU) Index
Kansas, 2017

Population Groups	Live Births*	APNCU Category [†]								n.s. [‡]
		Adequate Plus		Adequate		Intermediate		Inadequate		
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	
Total	36,464	11,380	31.4	18,906	52.1	2,149	5.9	3,864	10.6	165
White Non-Hispanic	25,431	8,421	33.3	13,772	54.4	1,127	4.5	2,002	7.9	109
Black Non-Hispanic	2,463	663	27.0	1,162	47.3	207	8.4	423	17.2	8
Native American Non-Hispanic	168	58	34.5	59	35.1	15	8.9	36	21.4	0
Asian/Pacific Islander Non-Hispanic	1,255	390	31.2	648	51.8	55	4.4	158	12.6	4
Other Non-Hispanic§	1,177	356	30.5	543	46.6	115	9.9	152	13.0	11
Hispanic Any Race	5,945	1,487	25.1	2,716	45.9	627	10.6	1,086	18.4	29
n.s. [‡]	25	5	n/a	6	n/a	3	n/a	7	n/a	4

* Total number of live births in 2017.

† Includes only Kansas resident live births for which number of prenatal visits, date of first prenatal visit and date of last menses were reported on the birth certificate.

‡ Not Stated. Number of live births with insufficient information to calculate APNCU. This number is subtracted from total live births for percent calculation.

§ Includes multiple races

n/a: Not applicable; the number is too small to calculate percent reliably and is suppressed.

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

Table 4. Number and Percent of Live Births by Selected Payor Groups
by Adequacy of Prenatal Care Utilization (APNCU) Index
Kansas, 2017

Pay Source	Live Births*	APNCU Category [†]								n.s. [‡]
		Adequate Plus		Adequate		Intermediate		Inadequate		
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	
Total	36,464	11,380	31.4	18,906	52.1	2,149	5.9	3,864	10.6	165
Medicaid	11,439	3,368	29.6	5,308	46.6	785	6.9	1,918	16.9	60
Private Insurance	20,409	7,169	35.3	11,442	56.3	721	3.5	1,002	4.9	75
Self Pay	2,477	351	14.3	1,026	41.7	435	17.7	650	26.4	15
Indian Health Service	21	5	23.8	11	52.4	1	4.8	4	19.0	0
Champus/Tricare	1,633	379	23.3	909	55.8	168	10.3	173	10.6	4
Other Government	210	53	25.2	98	46.7	10	4.8	49	23.3	0
Other/Unknown	275	55	20.8	112	42.4	29	11.0	68	25.8	11

* Total number of live births in 2017.

† Includes only Kansas resident live births for which number of prenatal visits, date of first prenatal visit and date of last menses were reported on the birth certificate.

‡ Not Stated. Number of live births with insufficient information to calculate APNCU. This number is subtracted from total live births for percent calculation.

n/a: Not applicable; the number is too small to calculate percent reliably and is suppressed.

Source: Bureau of Epidemiology and Public Health Informatics

Kansas Department of Health and Environment

Table 5. Number and Percent of Live Births by Birth Order and Age Group of the Mother
by Adequacy of Prenatal Care Utilization (APNCU) Index
Kansas, 2017

First Order Live Births	Live Births*	APNCU Category †								n.s.‡
		Adequate Plus		Adequate		Intermediate		Inadequate		
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	
Total	12,848	4,229	33.1	6,761	52.9	635	5.0	1,155	9.0	68
Age Groups										
10-14	12	3	25.0	5	41.7	1	8.3	3	25.0	0
15-19	1,685	478	28.5	768	45.7	121	7.2	313	18.6	5
20-24	3,938	1,212	30.9	2,033	51.9	217	5.5	454	11.6	22
25-29	4,070	1,379	34.0	2,272	56.0	169	4.2	236	5.8	14
30-34	2,346	844	36.3	1,295	55.7	86	3.7	101	4.3	20
35 and Over	797	313	39.6	388	49.1	41	5.2	48	6.1	7
Second and Higher Order Live Births	Live Births*	Adequate Plus		Adequate		Intermediate		Inadequate		n.s.‡
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	
Total	23,616	7,151	30.4	12,145	51.6	1,514	6.4	2,709	11.5	97
Age Groups										
10-14	1	0	n/a	0	n/a	0	n/a	1	n/a	0
15-19	368	92	25.0	151	41.0	37	10.1	88	23.9	0
20-24	4,046	1,100	27.3	1,929	47.9	320	8.0	676	16.8	21
25-29	7,426	2,186	29.5	3,856	52.1	474	6.4	883	11.9	27
30-34	7,657	2,397	31.4	4,157	54.5	418	5.5	650	8.5	35
35 and Over	4,117	1,376	33.5	2,051	50.0	265	6.5	411	10.0	14
n.s.‡	1	0	n/a	1	n/a	0	n/a	0	n/a	0

* Total number of live births in 2017.

† Includes only Kansas resident live births for which number of prenatal visits, date of first prenatal visit and date of last menses were reported on the birth certificate.

‡ Not Stated. Number of live births with insufficient information to calculate APNCU. This number is subtracted from total live births for percent calculation.

n/a: Not applicable; the number is too small to calculate percent reliably and is suppressed.

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

Table 6. Number and Percent of Live Births by Age Group of the Mother
by Adequacy of Prenatal Care Utilization (APNCU) Index
Kansas, 2017

Age Group	Live Births*	APNCU Category †								n.s. ‡
		Adequate Plus		Adequate		Intermediate		Inadequate		
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	
Total Age Groups	36,464	11,380	31.4	18,906	52.1	2,149	5.9	3,864	10.6	165
10-14	13	3	23.1	5	38.5	1	7.7	4	30.8	0
15-19	2,053	570	27.8	919	44.9	158	7.7	401	19.6	5
20-24	7,984	2,312	29.1	3,962	49.9	537	6.8	1,130	14.2	43
25-29	11,496	3,565	31.1	6,128	53.5	643	5.6	1,119	9.8	41
30-34	10,003	3,241	32.6	5,452	54.8	504	5.1	751	7.5	55
35 and Over	4,914	1,689	34.5	2,439	49.8	306	6.3	459	9.4	21
n.s. ‡	1	0	n/a	1	n/a	0	n/a	0	n/a	0

* Total number of live births in 2017.

† Includes only Kansas resident live births for which number of prenatal visits, date of first prenatal visit and date of last menses were reported on the birth certificate.

‡ Not Stated. Number of live births with insufficient information to calculate APNCU. This number is subtracted from total live births for percent calculation.

n/a: Not applicable; the number is too small to calculate the percentage reliably and is suppressed.

Source: Bureau of Epidemiology and Public Health Informatics

Kansas Department of Health and Environment

Table 7. Live Births by Percentages of Adequate or Better and Less Than Adequate* Prenatal Care by County of Residence, Kansas 2016-2017

County of Residence	Adequate or Better†			Less than Adequate†		
	2016	2017	2016-2017	2016	2017	2016-2017
	Percent	Percent	% Change	Percent	Percent	% Change
Kansas	83.4	83.4	0.0	16.6	16.6	0.0
Allen	80.1	82.1	2.5	2.5	19.9	17.9
Anderson	81.1	87.5	7.9	7.9	18.9	12.5
Atchison	76.4	79.9	4.6	4.6	23.6	20.1
Barber	82.1	83.3	1.4	1.4	17.9 ‡	16.7 ‡
Barton	83.7	81.0	-3.2	-3.2	16.3	19.0
Bourbon	82.0	80.6	-1.7	-1.7	18.0	19.4
Brown	77.7	83.1	6.9	6.9	22.3	16.9
Butler	89.7	88.3	-1.5	-1.5	10.3	11.7
Chase	87.5	84.2	-3.8 ‡	-3.8 ‡	N/A	N/A
Chautauqua	88.9	86.7	-2.5	-2.5	N/A	N/A
Cherokee	77.2	81.6	5.7	5.7	22.8	18.4
Cheyenne	82.1	76.7	-6.6	-6.6	17.9 ‡	23.3 ‡
Clark	66.7 ‡	81.8 ‡	22.7 ‡	22.7 ‡	N/A	N/A
Clay	88.0	78.0	-11.4	-11.4	12.0	22.0
Cloud	81.3	83.5	2.7	2.7	18.7	16.5
Coffey	96.8	88.3	-8.8	-8.8	N/A	N/A
Comanche	76.9 ‡	88.9 ‡	15.6 ‡	15.6 ‡	N/A	N/A
Cowley	83.1	80.5	-3.1	-3.1	16.9	19.5
Crawford	76.6	81.0	5.8	5.8	23.4	19.0
Decatur	80.0	87.9	9.8	9.8	N/A	N/A
Dickinson	83.9	86.3	2.9	2.9	16.1	13.7
Doniphan	87.8	85.3	-2.9	-2.9	12.2 ‡	14.7 ‡
Douglas	89.2	86.4	-3.1	-3.1	10.8 ‡	13.6
Edwards	80.6	78.3 ‡	-3.0 ‡	-3.0 ‡	19.4 ‡	21.7 ‡
Elk	91.4	95.8	4.8	4.8	N/A	N/A
Ellis	86.8	89.3	2.8	2.8	13.2	10.7
Ellsworth	87.3	86.2	-1.3	-1.3	12.7 ‡	13.8 ‡
Finney	69.5	67.2	-3.3	-3.3	30.5	32.8
Ford	53.6	62.4	16.4	16.4	46.4	37.6
Franklin	85.2	83.4	-2.1	-2.1	14.8	16.6
Geary	73.6	70.8	-3.8	-3.8	26.4	29.2
Gove	75.0	83.9	11.8	11.8	25.0 ‡	16.1 ‡
Graham	95.0 ‡	66.7 ‡	-29.8 ‡	-29.8 ‡	N/A	N/A
Grant	67.5	64.6	-4.3	-4.3	32.5	35.4
Gray	83.7	79.3	-5.3	-5.3	16.3	20.7
Greeley	46.7 ‡	60.0 ‡	28.6 ‡	28.6 ‡	53.3 ‡	40.0 ‡
Greenwood	82.1	86.0	4.7	4.7	17.9 ‡	14.0 ‡
Hamilton	51.4	58.1	13.1	13.1	48.6 ‡	41.9 ‡
Harper	83.1	89.1	7.2	7.2	16.9 ‡	10.9 ‡
Harvey	88.6	90.5	2.1	2.1	11.4	9.5
Haskell	63.6	82.6	29.8	29.8	36.4 ‡	17.4 ‡
Hodgeman	82.6 ‡	76.5 ‡	-7.4 ‡	-7.4 ‡	N/A	N/A
Jackson	84.0	80.6	-4.1	-4.1	16.0	19.4
Jefferson	90.1	94.9	5.3	5.3	9.9 ‡	5.1 ‡
Jewell	80.6	80.6	0.1	0.1	19.4 ‡	19.4 ‡
Johnson	90.5	89.9	-0.6	-0.6	9.5	10.1
Kearny	78.7	76.9	-2.2	-2.2	21.3	23.1
Kingman	86.5	87.5	1.2	1.2	13.5 ‡	12.5 ‡
Kiowa	81.1	87.5	7.9	7.9	N/A	N/A
Labette	71.7	70.3	-2.0	-2.0	28.3	29.7
Lane	81.3 ‡	86.7 ‡	6.7 ‡	6.7 ‡	N/A	N/A
Leavenworth	87.6	86.5	-1.2	-1.2	12.4	13.5
Lincoln	83.8	86.4 ‡	3.1 ‡	3.1 ‡	N/A	N/A
Linn	91.5	83.8	-8.4	-8.4	8.5	16.2
Logan	79.6	76.9	-3.4	-3.4	20.4 ‡	23.1 ‡

Table 7. Live Births by Percentages of Adequate or Better and Less Than Adequate* Prenatal Care by County of Residence, Kansas 2016-2017

County of Residence	Adequate or Better†			Less than Adequate†		
	2016	2017	2016-2017	2016	2017	2016-2017
	Percent	Percent	% Change	Percent	Percent	% Change
Lyon	86.8	85.7	-1.3	-1.3	13.2	14.3
McPherson	89.3	89.3	0.0	0.0	10.7 ‡	10.7 ‡
Marion	85.6	81.8	-4.4	-4.4	14.4	18.2
Marshall	87.4	81.4	-6.8	-6.8	12.6	18.6
Meade	68.5	79.5	16.1	16.1	31.5 ‡	20.5 ‡
Miami	91.9	89.6	-2.4	-2.4	8.1	10.4
Mitchell	82.1	90.4	10.1	10.1	17.9 ‡	9.6 ‡
Montgomery	74.6	80.8	8.3	8.3	25.4	19.2
Morris	79.0	93.1	17.7	17.7	21.0 ‡	6.9 ‡
Morton	60.0 ‡	68.9	14.8 ‡	14.8 ‡	40.0 ‡	31.1 ‡
Nemaha	90.0	86.1	-4.3	-4.3	10.0	13.9
Neosho	74.4	82.2	10.5	10.5	25.6	17.8
Ness	70.3	86.7 ‡	23.3 ‡	23.3 ‡	N/A	N/A
Norton	76.9	70.0	-9.0	-9.0	23.1	30.0
Osage	88.0	82.9	-5.7	-5.7	12.0	17.1
Osborne	82.5	82.2	-0.3	-0.3	17.5 ‡	17.8 ‡
Ottawa	83.6	88.4	5.7	5.7	16.4 ‡	11.6 ‡
Pawnee	85.9	74.1	-13.8	-13.8	14.1	25.9
Phillips	77.9	65.3	-16.2	-16.2	22.1	34.7
Pottawatomie	85.5	82.2	-3.9	-3.9	14.5	17.8
Pratt	84.1	83.7	-0.6	-0.6	15.9	16.3
Rawlins	70.6	81.8	15.9	15.9	29.4 ‡	18.2 ‡
Reno	82.6	80.9	-2.0	-2.0	17.4	19.1
Republic	79.1	78.3	-0.9	-0.9	20.9 ‡	21.7 ‡
Rice	80.9	76.7	-5.2	-5.2	19.1	23.3
Riley	77.3	78.1	1.1	1.1	22.7	21.9
Rooks	88.2	88.5	0.3	0.3	11.8 ‡	11.5 ‡
Rush	87.5	74.2	-15.2	-15.2	12.5 ‡	25.8 ‡
Russell	85.2	89.0	4.5	4.5	14.8 ‡	11.0 ‡
Saline	82.5	83.6	1.4	1.4	17.5	16.4
Scott	77.8	77.8	0.0	0.0	22.2 ‡	22.2 ‡
Sedgwick	88.1	86.7	-1.6	-1.6	11.9	13.3
Seward	68.5	69.3	1.3	1.3	31.5	30.7
Shawnee	82.8	84.0	1.5	1.5	17.2	16.0
Sheridan	84.8	93.1	9.7	9.7	N/A	N/A
Sherman	83.3	63.4	-23.9	-23.9	16.7	36.6
Smith	82.5	76.7	-7.0	-7.0	17.5 ‡	23.3 ‡
Stafford	84.9	83.3	-1.9	-1.9	15.1 ‡	16.7 ‡
Stanton	68.0 ‡	89.3	31.3 ‡	31.3 ‡	N/A	N/A
Stevens	68.9	80.6	16.9	16.9	31.1 ‡	19.4 ‡
Sumner	84.3	88.5	5.0	5.0	15.7	11.5
Thomas	82.1	80.5	-1.9	-1.9	17.9	19.5
Trego	78.6	88.9	13.1	13.1	N/A	N/A
Wabaunsee	84.8	88.3	4.1	4.1	15.2 ‡	11.7 ‡
Wallace	77.3 ‡	70.6 ‡	-8.7 ‡	-8.7 ‡	N/A	N/A
Washington	80.6	86.7	7.5	7.5	19.4 ‡	13.3 ‡
Wichita	76.2 ‡	90.0	18.1 ‡	18.1 ‡	N/A	N/A
Wilson	87.7	85.0	-3.2	-3.2	12.3	15.0
Woodson	68.4	76.5	11.8	11.8	31.6 ‡	23.5 ‡
Wyandotte	68.5	71.9	5.0	5.0	31.5	28.1

* Adequate and Better = Adequate + Adequate Plus Care; Less than Adequate= Intermediate + Inadequate Care Categories.

† Includes only Kansas resident live births for which number of prenatal visits, date of first prenatal visit and date of last menses were reported on the birth certificate.

‡: A percentage in the calculation of the change in percentage has a relative standard error greater than 30, and should be used with caution since it does not meet the standards of reliability.

N/A: Not applicable; the number is too small to calculate the percentage reliably and is suppressed.

Note: There were no statistically significant differences in any percentage changes among the counties.

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

Figure 1. Number of Live Births by Adequacy of Prenatal Care Utilization (APNCU) among Kansas Residents*, 2017

		Adequacy of Received Services				Total
		Under 50%	50 – 79%	80 – 109%	110+%	
Adequacy of Care Initiation	7 – 9 Month	409	96	254	717	1,476
	5 – 6 Month	57	214	511	1,404	2,186
	3 – 4 Month	105	1,042	8,416	7,999	17,562
	1 – 2 Month	97	1,107	10,490	3,381	15,075
Total		668	2,459	19,671	13,501	36,299

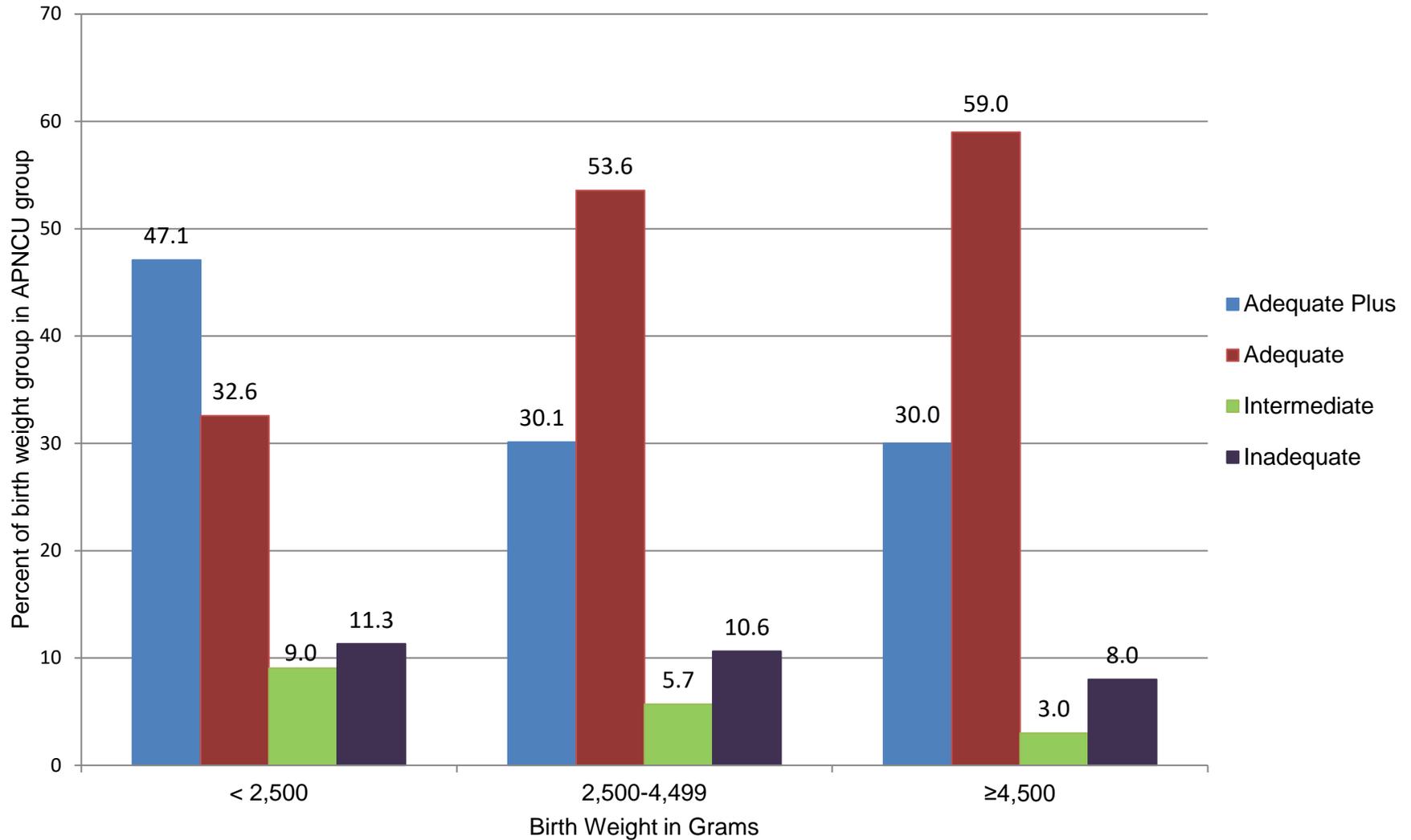
Summary Index

-  Inadequate
-  Intermediate
-  Adequate
-  Adequate Plus

* Includes 99.5 percent (36,299) of 36,464 total Kansas resident births for which the number of prenatal visits, date of first prenatal visit, and the date of last menses were reported on the birth certificate.

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

Figure 2. Percent of Adequacy of Prenatal Care Utilization (APNCU) by Birth Weight, Kansas, 2017



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

Figure 3. Percent of Adequacy of Prenatal Care Utilization (APNCU) by Population Group, Kansas, 2017

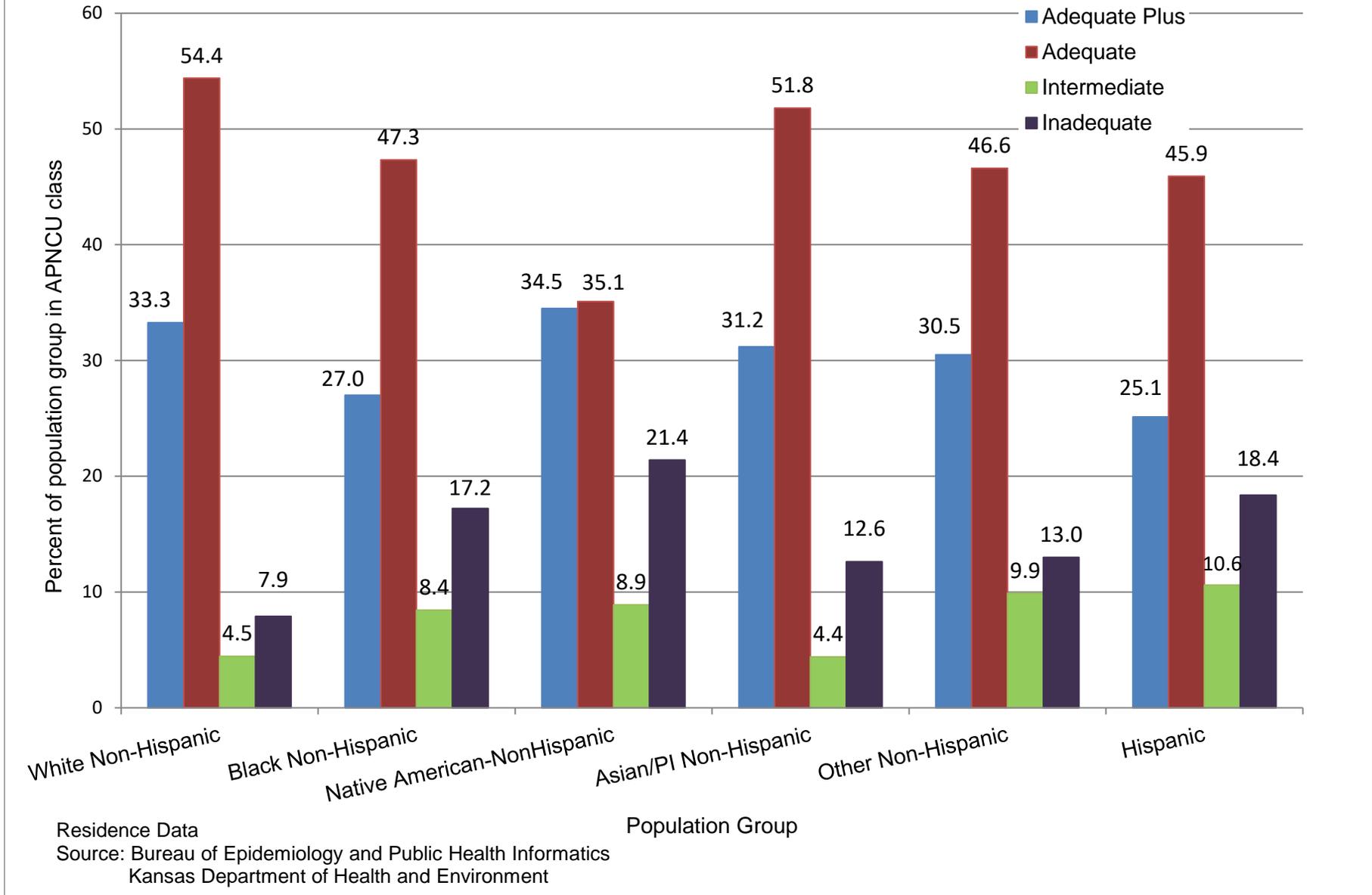
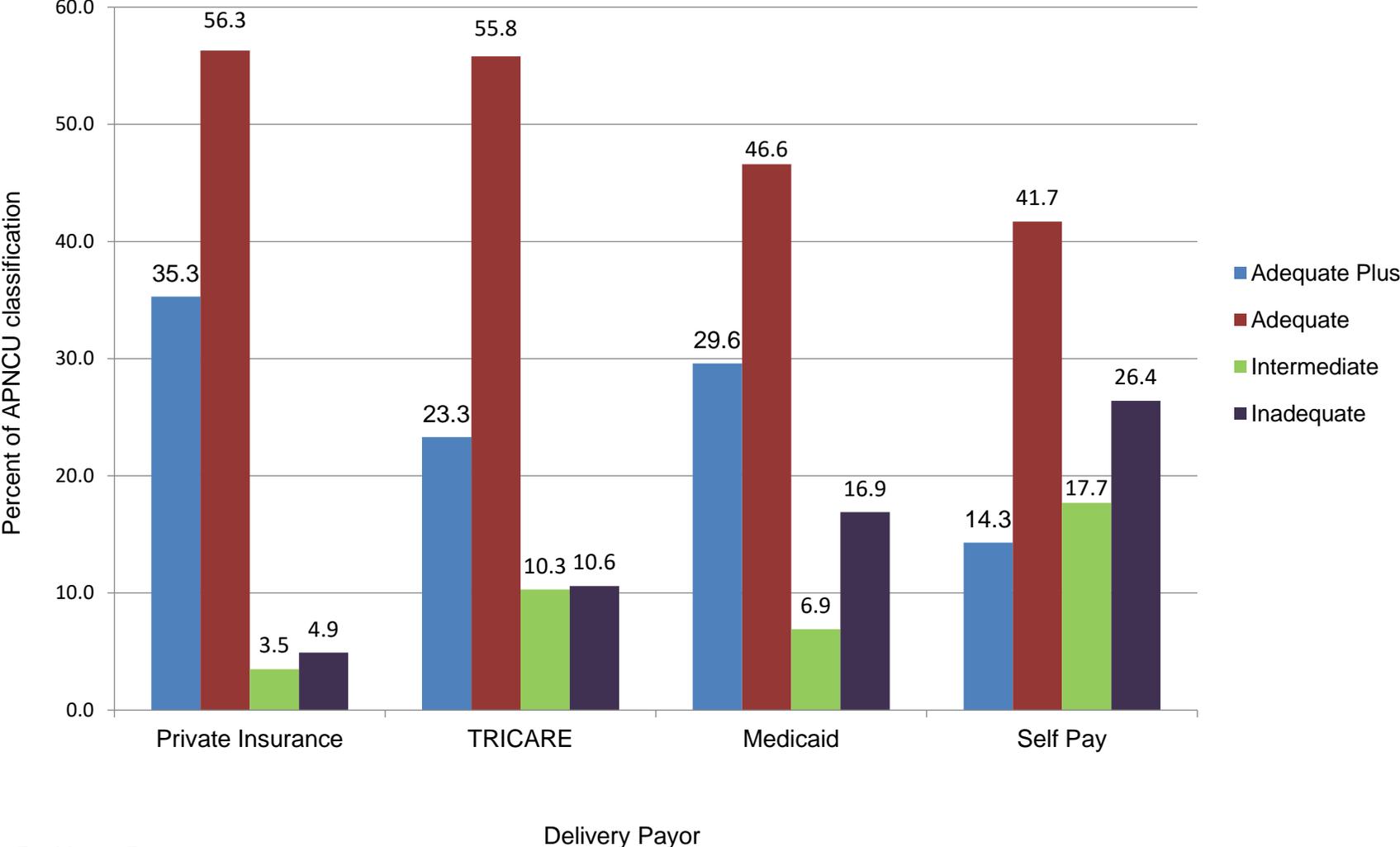
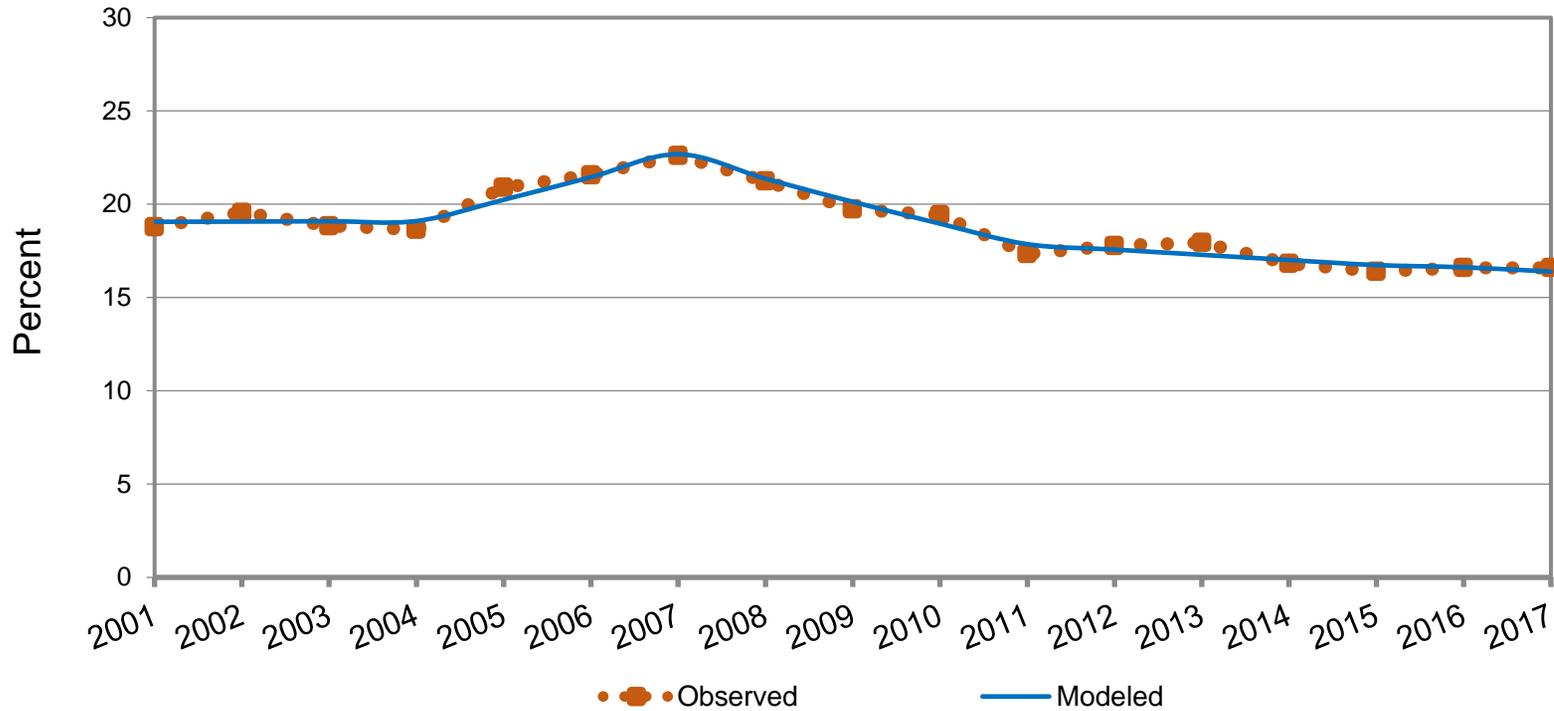


Figure 4. Percent of Adequacy of Prenatal Care Utilization (APNCU) by Selected Delivery Payor Groups, Kansas, 2017



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

Figure 5. Trends in Prenatal Care Where Care Was Less Than Adequate*
 Kansas, 2001-2017



* Less than adequate prenatal care is the combination of Inadequate and Intermediate prenatal care on the Adequacy of Prenatal Care (APNCU) Index.

APC = -5.9 (2007-2011) †

† The Annual Percentage Change (APC) is significantly different from zero at alpha=0.05.

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

Technical Notes

Preparation of the Adequacy of Prenatal Care Utilization Index requires the use of information from four items on the birth certificate and a calculated value for the month care began calculated from the difference of the date of first prenatal care visit and the date of last menses. If any of these values are unknown or can't be calculated, the Index value will be not stated. The data elements used for the calculation, database field names, and item numbers from the standard Kansas Birth Certificate are:

- Number of prenatal care visits– NPREV (Item 49)
- Month prenatal care visits began – Calculated from DOFP and DLMP (Items 47 & 50)
- Sex of infant – ISEX (Item 4)
- Gestational age – OWGEST (Item 51)
- Birth weight in grams – BWG (Item 5)

2005 Revisions to Certificates. Beginning with the reporting of 2005 data, Kansas implemented the latest revision of the U.S. standard live birth certificate.

Please note that not all states have implemented the use of the new certificate format. Therefore, items which were added or significantly revised will most likely not have information provided for Kansas residents who had births in another state. In such cases, the non-responses are shown as “not stated” (n.s.) in the tables and have been removed from totals when calculating percentages.

Certain data elements (see below) used in the Adequacy of Prenatal Care Utilization Index (APNCU) have changed considerably with the use of the revised birth certificate. These changes can affect comparability with previous years APNCU data.

Month prenatal care began. Prior to 2005, the mother or prenatal care provider reported the month of pregnancy when the mother began prenatal care. Beginning in 2005, this approach was replaced by one that subtracted the last normal menses date from the date of first prenatal care visit. Because exact dates are harder to get, month prenatal care began is missing more often. Records missing this information have been removed from totals when calculating percentages.

As a result of changes in reporting, levels of prenatal care utilization based on the new revised data are lower than those based on data from previous certificates. For example, 2004 data for Kansas indicates that 86.5 percent of residents began care in the first trimester compared to 74.1 percent based on the 2009 data derived from the revised birth certificate. The APNCU showed an increase in the proportion of women receiving less than adequate care between 2004 (18.6 percent) and 2009 (21.0 percent). Much of the difference between 2004 and 2009 is related to changes in reporting and not to changes in prenatal care utilization. Accordingly, prenatal care data in this report is not directly comparable to data collected from previous certificates.

Race-Ethnicity. The revised certificate contains significant changes in the way self-reported race and ethnicity are collected. The race item was revised to allow the

reporting of multiple races and can capture up to 15 categories and eight literal entries. In addition, Hispanic origin is now collected as a separate question from ancestry. These changes were implemented to provide a better picture of the nation's variation in race and Hispanic origin. The expanded racial and origin categories 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.

For this report, race and Hispanic origin categories are combined and labeled as population groups. Self-reported single race data are utilized for White non-Hispanic, Black non-Hispanic, Native American non-Hispanic, Asian/Pacific Islander non-Hispanic, and Other non-Hispanic. If more than one racial category is checked, the person's race is classified as "Multiple" and is collapsed into the Other non-Hispanic category. Data shown for Hispanic persons include all persons of Hispanic origin of any race. These particular groupings are categories that reflect the cultural and ethnic identities of subgroups of the population commonly addressed in the public health field and on which health disparities can be measured.

Criteria for the Kansas Adequacy of Prenatal Care Utilization (APNCU) Index

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

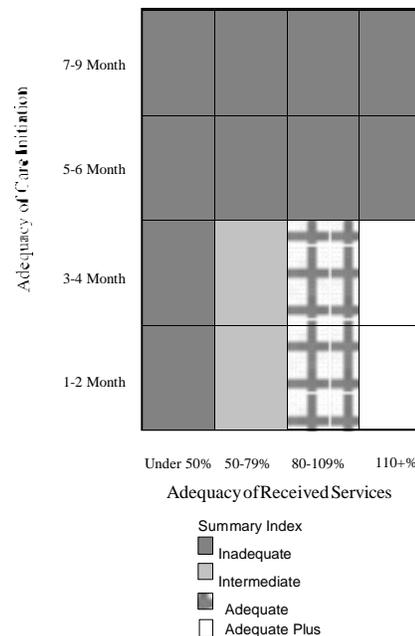
II. Proportion of the number of visits Recommended by the American College of Obstetricians and Gynecologists (ACOG) received from the time prenatal care began until delivery (Adequacy of Received Services)

- 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.

Adequacy of Prenatal Care Utilization Index Matrix



Inadequate: Prenatal care begun after the 4th month or less than 50% of recommended visits received

APNCU Reference: 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; 84:1414-1420.

Definitions

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.

Adequacy of Received Services: A measure of the adequacy of prenatal services received based on when care began in the pregnancy.

Adequacy of Care Initiation: A measure of the adequacy of prenatal care services based on the number of prenatal care visits during the pregnancy.

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).

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).

Population Group: A reporting matrix of race and Hispanic origin (ethnicity) information comprised of distinct categories.

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 <input type="checkbox"/> Hospital <input type="checkbox"/> Freestanding Birthing Center <input type="checkbox"/> Home Birth <input type="checkbox"/> Clinic/Doctor's Office <input type="checkbox"/> 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 _____ <input type="checkbox"/> M.D. <input type="checkbox"/> D.O. <input type="checkbox"/> C.N.M. <input type="checkbox"/> Other Midwife <input type="checkbox"/> Other (Specify) _____		
13. Certifier's Name and Title (Type) Name _____ <input type="checkbox"/> M.D. <input type="checkbox"/> D.O. <input type="checkbox"/> Hosp Adm. <input type="checkbox"/> C.N.M. <input type="checkbox"/> Other Midwife <input type="checkbox"/> 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? <input type="checkbox"/> YES <input type="checkbox"/> 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? <input type="checkbox"/> YES <input type="checkbox"/> NO		30. IMMUNIZATION REGISTRY I wish to enroll my child in the Immunization Registry <input type="checkbox"/> YES <input type="checkbox"/> 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)	

PRENATAL (Birth)	LABOR-DELIVERY/NEWBORN				
63. NUTRITION OF MOTHER 1. Height _____ 2. Prepregnancy Weight _____ 3. Weight at delivery _____ 4. Did mother get WIC food for herself? Yes _____ No _____ Unknown _____	66. OBSTETRICAL PROCEDURES (Check all that apply.) 1. <input type="checkbox"/> Cervical cerclage 2. <input type="checkbox"/> Tocolysis 3. External cephalic version: <input type="checkbox"/> Successful <input type="checkbox"/> Failed 4. <input type="checkbox"/> None of the above	70. INFECTIONS PRESENT AND/OR TREATED (During this pregnancy, check all that apply.) 1. <input type="checkbox"/> Gonorrhea 2. <input type="checkbox"/> Syphilis 3. <input type="checkbox"/> Herpes Simplex Virus (HSV) 4. <input type="checkbox"/> Chlamydia 5. <input type="checkbox"/> Hepatitis B 6. <input type="checkbox"/> Hepatitis C 7. <input type="checkbox"/> AIDS or HIV antibody 8. <input type="checkbox"/> None of the above			
	64. MEDICAL RISK FACTORS (Check all that apply.) 1. <input type="checkbox"/> Diabetes, prepregnancy 2. <input type="checkbox"/> Diabetes, gestational 3. Hypertension <input type="checkbox"/> Prepregnancy (Chronic) <input type="checkbox"/> Gestational (PIH, preeclampsia) <input type="checkbox"/> Eclampsia 4. <input type="checkbox"/> Previous preterm birth 5. <input type="checkbox"/> Other previous poor pregnancy outcome (SGA, perinatal death, etc.) 6. <input type="checkbox"/> Vaginal bleeding during this pregnancy prior to labor 7. <input type="checkbox"/> Pregnancy resulted from infertility treatment (If yes, check all that apply.) <input type="checkbox"/> Fertility-enhancing drugs, Artificial insemination or Intrauterine insemination <input type="checkbox"/> Assisted reproductive technology (e.g. in vitro fertilization (IVF), gamete intrafallopian transfer (GIFT)) 8. <input type="checkbox"/> Mother had a previous cesarean delivery, if yes, how many? Number: _____ 9. <input type="checkbox"/> Alcohol use No. of drinks per week: _____ 10. <input type="checkbox"/> None of the above	67. ONSET OF LABOR (Check all that apply.) 1. <input type="checkbox"/> Premature Rupture of the Membranes (prolonged, ≥ 12 hours) 2. <input type="checkbox"/> Precipitous Labor (< 3 hrs) 3. <input type="checkbox"/> Prolonged Labor (≥ 20 hrs) 4. <input type="checkbox"/> None of the above	71. ABNORMAL CONDITIONS OF NEWBORN (Check all that apply) 1. <input type="checkbox"/> Assisted ventilation required immediately following delivery 2. <input type="checkbox"/> Assisted ventilation required for more than six hours 3. <input type="checkbox"/> NICU admission 4. <input type="checkbox"/> Newborn given surfactant replacement therapy 5. <input type="checkbox"/> Antibiotics received by the newborn for suspected neonatal sepsis 6. <input type="checkbox"/> Seizure or serious neurologic dysfunction 7. <input type="checkbox"/> Significant birth injury (skeletal fracture(s), peripheral nerve injury, and/or soft tissue/solid organ hemorrhage which requires intervention) 8. <input type="checkbox"/> 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 <input type="checkbox"/> Cephalic <input type="checkbox"/> Breech <input type="checkbox"/> Other 4. Final route and method of delivery (check one) <input type="checkbox"/> Vaginal/spontaneous <input type="checkbox"/> Vaginal/forceps <input type="checkbox"/> Vaginal/vacuum <input type="checkbox"/> Cesarean, if cesarean was a trial of labor attempted? Yes _____ No _____	68. CHARACTERISTICS OF LABOR AND DELIVERY (Check all that apply.) 1. <input type="checkbox"/> Induction of labor 2. <input type="checkbox"/> Augmentation of labor 3. <input type="checkbox"/> Non-vertex presentation 4. <input type="checkbox"/> Steroids (glucocorticoids) for fetal lung maturation received by the mother prior to delivery 5. <input type="checkbox"/> Antibiotics received by the mother during labor 6. <input type="checkbox"/> Clinical chorioamnionitis diagnosed during labor or maternal temperature ≥ 38 C (100.4 F) 7. <input type="checkbox"/> Moderate/heavy meconium staining of the amniotic fluid 8. <input type="checkbox"/> Fetal intolerance of labor: (examples: in-utero resuscitative measures, further fetal assessment, or operative delivery) 9. <input type="checkbox"/> Epidural or spinal anesthesia during labor 10. <input type="checkbox"/> None of the above	72. VACCINES ADMINISTERED TO NEWBORN 1. <input type="checkbox"/> Hepatitis B Date Given: _____ 2. <input type="checkbox"/> Other* Specify: _____ Date Given: _____			
	69. MATERNAL MORBIDITY (Check all that apply.) (These are complications associated with labor and delivery.) 1. <input type="checkbox"/> Maternal transfusion 2. <input type="checkbox"/> Third or fourth degree perineal laceration 3. <input type="checkbox"/> Ruptured uterus 4. <input type="checkbox"/> Unplanned hysterectomy 5. <input type="checkbox"/> Admission to intensive care unit 6. <input type="checkbox"/> Unplanned operating room procedure following delivery 7. <input type="checkbox"/> None of the above	73. APGAR SCORE <table border="1"> <tr> <td>1 min</td> <td>5 min</td> <td>10 min</td> </tr> </table>		1 min	5 min
1 min	5 min	10 min			
74. CONGENITAL ANOMALIES OF THE NEWBORN (Check all that apply.) 1. <input type="checkbox"/> Anencephaly 2. <input type="checkbox"/> Meningocele/Spina bifida 3. <input type="checkbox"/> Cyanotic congenital heart disease 4. <input type="checkbox"/> Congenital diaphragmatic hernia 5. <input type="checkbox"/> Omphalocele 6. <input type="checkbox"/> Gastroschisis 7. <input type="checkbox"/> Limb reduction defect (excluding congenital amputation and dwarfing syndromes) 8. <input type="checkbox"/> Cleft Lip with or without Cleft Palate 9. <input type="checkbox"/> Cleft Palate alone 10. <input type="checkbox"/> Down Syndrome <input type="checkbox"/> Karyotype confirmed <input type="checkbox"/> Karyotype pending 11. <input type="checkbox"/> Suspected chromosomal disorder <input type="checkbox"/> Karyotype confirmed <input type="checkbox"/> Karyotype pending 12. <input type="checkbox"/> Hypospadias 13. <input type="checkbox"/> Fetal alcohol syndrome 14. <input type="checkbox"/> Other congenital anomalies (Specify) _____ 15. <input type="checkbox"/> None of the above					

Parent's Telephone Number: _____

CHILD'S NAME _____

MOTHER'S NAME _____

<p>Test required by K.S.A. 65-153f 153G Serological Test Made:</p> <p>_____1st_____2nd_____3rd (Trimester) _____At Delivery_____Not Performed</p> <p>If no test made, state reason:</p>	<p>Test required by K.S.A. 65-180 Infant Neonatal Screening specimen taken:</p> <p>_____Yes_____No</p> <p>Kit Number _____</p> <p>If no test made, state reason:</p>	<p>Test required by K.S.A. 65-1157A Newborn Hearing Screening Accomplished:</p> <p>_____Yes_____No</p>
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Infant's patient number: _____

Infant's Primary Care Physician

First	Middle	Last	Title (MD, DO, etc.)
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<p>If screening accomplished, Date hearing screened _____</p> <p>Month / Day / Year</p>	<p>The results of the hearing screening ✓:</p> <p>Right ear: _____ Pass _____ Refer for further testing Left ear: _____ Pass _____ Refer for further testing</p>
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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