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# Adequacy of Prenatal Care Utilization Index Kansas, 2016



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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 2016, prenatal care defined as less than adequate (inadequate + intermediate) increased by 1.2 percent compared to 2015, while adequate or better prenatal care decreased by 0.4 percent. Currently, Kansas' level of adequate or better prenatal care (83.4%) has exceeded 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 2016 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 *2016 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, 2016*. The repetition enhances the utility of this report to readers.

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 37,926 out of 38,048 or 99.7 percent of Kansas resident live births in 2016 (Figure 1). The percentage of births that contained the variables necessary to calculate the prenatal care utilization index increased by 0.2 percent from 2015 (38,939 out of 39,126 or 99.5 percent of live births).

Of the 37,926 Kansas resident births for which prenatal care utilization could be calculated in 2016, 83.4 percent received adequate or better prenatal care, including 30.1 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 10.9 percent having inadequate care and 5.8 percent intermediate care (Table 1).

In 2016, the number of women reporting inadequate prenatal care (4,115) increased 1.3 percent compared to 2015 (4,062). The number of adequate care utilization decreased by 4.6 percent (21,180 in 2015 and 20,199 in 2016). Adequate-plus prenatal care utilization (11,391 in 2015 and 11,425 in 2016) increased by 0.3 percent (Table 1).

Among mothers whose prenatal care utilization was classified as inadequate, the vast majority (3,908 or 95.0%) were due to late initiation of care. A minority of women (207 or 5.0%) 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 2016, among mothers of infants with low birthweight, 80.2 percent received adequate or better care, while 12.3 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 (85.2%), other non-Hispanic mothers (76.7%) and Black non-Hispanic mothers (73.6%). Hispanic mothers had the lowest percentage (70.4%) receiving adequate or better prenatal care (Table 3).

Furthermore, among the population groups, 18.7 percent of Hispanic mothers, 17.3 percent of Black non-Hispanic mothers, and 17.6 percent of Native American non-Hispanic mothers experienced inadequate prenatal care. These percentages were more than twice the percentage (8.2%) of White non-Hispanic mothers who experienced inadequate care (Table 3, Figure 3).

In 2016, private insurance paid the highest percentage of adequate or better prenatal care (91.8%) followed by Indian Health Service (86.4) and Tricare (79.1%). The highest percentage of mothers who received inadequate care was paid by Self Pay at (26.5%), followed by Other/Unknown (25.0%) and Other government (20.8%) (Table 4). The percentage of mothers who self-paid and experienced inadequate care decreased 1.9 percent from 2015 to 2016 (27.0% to 26.5%, respectively).

However, among the 4,115 mothers who received inadequate prenatal care, 52.9 percent of those were paid by Medicaid, followed by private insurance (22.9%) and Self Pay (16.0%) (Figure 4).

Among mothers having their first live birth, those with adequate or adequate plus prenatal care (85.8%) was about 3 percentage points higher than mothers having second or higher live births (82.1%) (Table 5). Similarly, first births with inadequate prenatal care (9.5%) were less than second or higher births with inadequate prenatal care (11.5%).

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 (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 2016. Trends in less than adequate prenatal care were assessed using joinpoint regression analysis from 2000 to

2016. The annual percentage change (APC) in prenatal care that was less than adequate increased significantly between 2007 to 2011 (APC = -5.8; 95% CI: -9.7%, -1.7%) (Figure 5).

County percentages of mothers who received less than adequate prenatal care in 2016 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 13 counties than the state percentage, and percentages for five 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 2015 to 2016 in Table 7. There was a small percentage increase in less than adequate care for the state of Kansas (1.2%) from 2015 to 2016. There was a very small decrease in adequate and better prenatal care (0.4%).

The percentage of birth mothers receiving less than adequate prenatal care increased or remained unchanged in 24 counties from 2015 to 2016. Sumner county had the largest increase in less than adequate prenatal care (115.9% increase) from 2015 to 2016, followed by Dickinson (40.5% increase) and Atchison (24.9% increase) counties (Table 7).

The percentage of birth mothers receiving less than adequate care decreased in 25 counties from 2015 to 2016. Gray and Jefferson had the largest decrease in less than adequate care (37.2%) followed by Nemaha (36.5%). In 49 counties the percent changes in less than adequate prenatal care were not reliable (RSE>30), and in eight counties the counts were too small to calculate change.

From 2015 to 2016 the percentage of birth mothers receiving adequate and better prenatal care increased or remained unchanged in 48 counties, while 46 counties experienced decreases. Woodson County had the largest decrease in adequate and better prenatal care (29.3%) from 2015 to 2016. In 12 counties the percentage of change in adequate and better prenatal care were not reliable measures.

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## Detailed Tables, Figures, and Appendix

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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, 2016

County of Residence	Live Births*	APNCU Category <sup>†</sup>								n.s. <sup>‡</sup>
		Adequate Plus		Adequate		Intermediate		Inadequate		
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	
Kansas	38,048	11,425	30.1	20,199	53.3	2,187	5.8	4,115	10.9	122
Allen	137	51	37.5	58	42.6	14	10.3	13	9.6	1
Anderson	111	37	33.3	53	47.7	6	5.4	15	13.5	0
Atchison	203	39	19.2	116	57.1	13	6.4	35	17.2	0
Barber	56	8	14.3	38	67.9	2	3.6	8	14.3	0
Barton	331	157	47.4	120	36.3	12	3.6	42	12.7	0
Bourbon	194	98	50.5	61	31.4	4	2.1	31	16.0	0
Brown	112	29	25.9	58	51.8	3	2.7	22	19.6	0
Butler	757	158	20.9	520	68.8	18	2.4	60	7.9	1
Chase	32	14	43.8	14	43.8	1	3.1	3	9.4	0
Chautauqua	28	12	44.4	12	44.4	2	7.4	1	3.7	1
Cherokee	217	81	37.7	85	39.5	15	7.0	34	15.8	2
Cheyenne	39	10	25.6	22	56.4	3	7.7	4	10.3	0
Clark	24	4	16.7	12	50.0	5	20.8	3	12.5	0
Clay	117	34	29.1	69	59.0	4	3.4	10	8.5	0
Cloud	91	23	25.3	51	56.0	5	5.5	12	13.2	0
Coffey	95	34	35.8	58	61.1	2	2.1	1	1.1	0
Comanche	13	4	30.8	6	46.2	1	7.7	2	15.4	0
Cowley	397	182	46.0	147	37.1	14	3.5	53	13.4	1
Crawford	480	147	30.8	219	45.8	43	9.0	69	14.4	2
Decatur	31	5	16.7	19	63.3	2	6.7	4	13.3	1
Dickinson	225	72	32.1	116	51.8	13	5.8	23	10.3	1
Doniphan	74	23	31.1	42	56.8	4	5.4	5	6.8	0
Douglas	1,177	511	43.5	537	45.7	27	2.3	100	8.5	2
Edwards	31	8	25.8	17	54.8	3	9.7	3	9.7	0
Elk	35	15	42.9	17	48.6	1	2.9	2	5.7	0
Ellis	357	85	23.8	225	63.0	15	4.2	32	9.0	0
Ellsworth	63	19	30.2	36	57.1	4	6.3	4	6.3	0
Finney	655	175	26.7	280	42.7	49	7.5	151	23.1	0
Ford	646	109	16.9	236	36.6	138	21.4	161	25.0	2
Franklin	298	94	31.5	160	53.7	11	3.7	33	11.1	0
Geary	967	195	20.2	516	53.4	114	11.8	141	14.6	1
Gove	40	9	22.5	21	52.5	5	12.5	5	12.5	0
Graham	20	4	20.0	15	75.0	0	0.0	1	5.0	0
Grant	123	34	27.6	49	39.8	11	8.9	29	23.6	0
Gray	86	27	31.4	45	52.3	8	9.3	6	7.0	0
Greeley	15	4	26.7	3	20.0	1	6.7	7	46.7	0
Greenwood	67	25	37.3	30	44.8	1	1.5	11	16.4	0
Hamilton	37	7	18.9	12	32.4	7	18.9	11	29.7	0
Harper	65	13	20.0	41	63.1	6	9.2	5	7.7	0
Harvey	379	149	39.4	186	49.2	9	2.4	34	9.0	1
Haskell	55	10	18.2	25	45.5	5	9.1	15	27.3	0
Hodgeman	23	6	26.1	13	56.5	2	8.7	2	8.7	0
Jackson	169	62	36.7	80	47.3	9	5.3	18	10.7	0
Jefferson	202	89	44.1	93	46.0	5	2.5	15	7.4	0
Jewell	36	4	11.1	25	69.4	5	13.9	2	5.6	0
Johnson	7,350	2,743	37.5	3,867	52.9	353	4.8	342	4.7	45
Kearny	61	18	29.5	30	49.2	3	4.9	10	16.4	0
Kingman	74	16	21.6	48	64.9	2	2.7	8	10.8	0
Kiowa	37	4	10.8	26	70.3	4	10.8	3	8.1	0
Labette	293	74	25.5	134	46.2	22	7.6	60	20.7	3
Lane	16	5	31.3	8	50.0	1	6.3	2	12.5	0
Leavenworth	999	352	35.7	511	51.9	41	4.2	81	8.2	14
Lincoln	37	6	16.2	25	67.6	2	5.4	4	10.8	0
Linn	95	38	40.4	48	51.1	0	0.0	8	8.5	1
Logan	34	20	37.0	23	42.6	4	7.4	7	13.0	0

Table 1. County of Kansas Resident Live Births by Adequacy of Prenatal Care Utilization (APNCU) Index  
 Kansas, 2016

County of Residence	Live Births*	APNCU Category†								n.s.‡
		Adequate Plus		Adequate		Intermediate		Inadequate		
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	
Lyon	417	246	59.1	115	27.6	8	1.9	47	11.3	1
McPherson	308	131	42.7	143	46.6	13	4.2	20	6.5	1
Marion	118	44	37.3	57	48.3	7	5.9	10	8.5	0
Marshall	112	24	21.6	73	65.8	11	9.9	3	2.7	1
Meade	54	10	18.5	27	50.0	4	7.4	13	24.1	0
Miami	345	109	31.6	208	60.3	7	2.0	21	6.1	0
Mitchell	84	17	20.2	52	61.9	9	10.7	6	7.1	0
Montgomery	385	114	29.8	171	44.8	20	5.2	77	20.2	3
Morris	63	13	21.0	36	58.1	4	6.5	9	14.5	1
Morton	25	4	16.0	11	44.0	2	8.0	8	32.0	0
Nemaha	140	37	26.4	89	63.6	7	5.0	7	5.0	0
Neosho	217	60	27.9	100	46.5	12	5.6	43	20.0	2
Ness	37	10	27.0	16	43.2	5	13.5	6	16.2	0
Norton	66	14	21.5	36	55.4	9	13.8	6	9.2	1
Osage	183	79	43.2	82	44.8	5	2.7	17	9.3	0
Osborne	40	10	25.0	23	57.5	5	12.5	2	5.0	0
Ottawa	61	14	23.0	37	60.7	4	6.6	6	9.8	0
Pawnee	64	26	40.6	29	45.3	4	6.3	5	7.8	0
Phillips	68	25	36.8	28	41.2	8	11.8	7	10.3	0
Pottawatomie	394	109	27.8	226	57.7	17	4.3	40	10.2	2
Pratt	126	36	28.6	70	55.6	9	7.1	11	8.7	0
Rawlins	34	11	32.4	13	38.2	5	14.7	5	14.7	0
Reno	683	292	42.8	271	39.7	34	5.0	85	12.5	1
Republic	43	17	39.5	17	39.5	5	11.6	4	9.3	0
Rice	110	39	35.5	50	45.5	5	4.5	16	14.5	0
Riley	976	231	23.7	523	53.6	93	9.5	129	13.2	0
Rooks	68	11	16.2	49	72.1	4	5.9	4	5.9	0
Rush	40	11	27.5	24	60.0	2	5.0	3	7.5	0
Russell	81	17	21.0	52	64.2	5	6.2	7	8.6	0
Saline	662	145	21.9	400	60.5	57	8.6	59	8.9	1
Scott	63	27	42.9	22	34.9	3	4.8	11	17.5	0
Sedgwick	7,309	1288	17.6	5,148	70.5	220	3.0	649	8.9	4
Seward	429	89	20.8	204	47.7	23	5.4	112	26.2	1
Shawnee	2,189	930	42.5	882	40.3	96	4.4	281	12.8	0
Sheridan	33	7	21.2	21	63.6	1	3.0	4	12.1	0
Sherman	73	23	31.9	37	51.4	5	6.9	7	9.7	1
Smith	40	20	50.0	13	32.5	4	10.0	3	7.5	0
Stafford	53	18	34.0	27	50.9	2	3.8	6	11.3	0
Stanton	25	6	24.0	11	44.0	3	12.0	5	20.0	0
Stevens	74	11	14.9	40	54.1	6	8.1	17	23.0	0
Sumner	255	58	22.7	157	61.6	14	5.5	26	10.2	0
Thomas	119	33	28.2	63	53.8	11	9.4	10	8.5	2
Trego	28	4	14.3	18	64.3	1	3.6	5	17.9	0
Wabaunsee	67	22	33.3	34	51.5	1	1.5	9	13.6	1
Wallace	23	4	18.2	13	59.1	1	4.5	4	18.2	1
Washington	67	19	28.4	35	52.2	7	10.4	6	9.0	0
Wichita	21	3	14.3	13	61.9	2	9.5	3	14.3	0
Wilson	114	38	33.3	62	54.4	4	3.5	10	8.8	0
Woodson	38	10	26.3	16	42.1	2	5.3	10	26.3	0
Wyandotte	2,694	1,000	28.3	1,100	40.2	340	12.9	441	18.6	19
n.s.	4	1	n/a	1	n/a	1	n/a	1	n/a	0

\* Total number of live births in 2016.

† 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, 2016

Birth Weight (Grams)	Live Births*	APNCU Category †								n.s. ‡
		Adequate Plus		Adequate		Intermediate		Inadequate		
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	
Total	38,048	11,425	30.1	20,199	53.3	2,187	5.8	4,115	10.9	122
Under 2,500 (Low)	2,654	1,302	49.6	806	30.7	197	7.5	322	12.3	27
2,500-4,499 (Normal)	34,936	9,994	28.7	19,126	54.9	1,973	5.7	3,748	10.8	95
4,500 and Over (High)	457	129	28.2	267	58.4	17	3.7	44	9.6	0
n.s. ‡	1	0	n/a	0	n/a	0	n/a	1	n/a	0

\* Total number of live births in 2016.

† 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, 2016

Population Groups	Live Births*	APNCU Category <sup>†</sup>								n.s. <sup>‡</sup>
		Adequate Plus		Adequate		Intermediate		Inadequate		
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	
Total	38,048	11,425	30.1	20,199	53.3	2,187	5.8	4,115	10.9	122
White Non-Hispanic	26,786	8,569	32.1	14,816	55.5	1,120	4.2	2,199	8.2	82
Black Non-Hispanic	2,494	619	25.0	1,206	48.6	225	9.1	429	17.3	15
Native American Non-Hispanic	170	59	34.7	72	42.4	9	5.3	30	17.6	0
Asian/Pacific Islander Non-Hispanic	1,221	391	32.1	647	53.1	43	3.5	138	11.3	2
Other Non-Hispanic§	1,056	294	28.0	511	48.7	108	10.3	137	13.0	6
Hispanic Any Race	6,300	1,488	23.7	2,937	46.7	681	10.8	1,178	18.7	16
n.s. <sup>‡</sup>	21	5	n/a	10	n/a	1	n/a	4	n/a	1

\* Total number of live births in 2016.

† 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, 2016

Pay Source	Live Births*	APNCU Category <sup>†</sup>								n.s. <sup>‡</sup>
		Adequate Plus		Adequate		Intermediate		Inadequate		
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	
Total	38,048	11,425	30.1	20,199	53.3	2,187	5.8	4,115	10.9	122
Medicaid	11,921	3,413	28.7	5,561	46.8	733	6.2	2,178	18.3	36
Private Insurance	21,138	7,068	33.5	12,267	58.2	791	3.8	943	4.5	69
Self Pay	2,490	374	15.1	1,026	41.3	425	17.1	659	26.5	6
Indian Health Service	22	10	45.5	9	40.9	0	0.0	3	13.6	0
Champus/Tricare	1,888	398	21.1	1,094	58.0	197	10.4	198	10.5	1
Other Government	255	67	26.3	124	48.6	11	4.3	53	20.8	0
Other/Unknown	334	95	29.3	118	36.4	30	9.3	81	25.0	10

\* Total number of live births in 2016.

† 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, 2016

First Order Live Births	Live Births*	APNCU Category †								n.s. ‡
		Adequate Plus		Adequate		Intermediate		Inadequate		
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	
Total	13,297	4,255	32.1	7,110	53.7	619	4.7	1,265	9.5	48
Age Groups										
10-14	22	6	27.3	10	45.5	1	4.5	5	22.7	0
15-19	1,820	507	27.9	817	45.0	122	6.7	370	20.4	4
20-24	4,208	1,248	29.7	2,238	53.3	225	5.4	486	11.6	11
25-29	4,028	1,350	33.6	2,260	56.3	163	4.1	241	6.0	14
30-34	2,433	845	34.9	1,395	57.6	76	3.1	106	4.4	11
35 and Over	786	299	38.4	390	50.1	32	4.1	57	7.3	8
Second and Higher Order Live Births	Live Births*	Adequate Plus		Adequate		Intermediate		Inadequate		n.s. ‡
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	
Total	24,751	7,170	29.1	13,089	53.0	1,568	6.4	2,850	11.5	74
Age Groups										
15-19	306	70	23.0	130	42.6	32	10.5	73	23.9	1
20-24	4,488	1,174	26.2	2,107	47.1	373	8.3	822	18.4	12
25-29	7,784	2,252	29.0	4,167	53.6	492	6.3	858	11.0	15
30-34	8,054	2,333	29.1	4,530	56.4	435	5.4	732	9.1	24
35 and Over	4,116	1,341	32.8	2,152	52.6	236	5.8	365	8.9	22
n.s. ‡	3	0	n/a	3	n/a	0	n/a	0	n/a	0

\* Total number of live births in 2016.

† 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, 2016

Age Group	Live Births*	APNCU Category †								n.s. ‡
		Adequate Plus		Adequate		Intermediate		Inadequate		
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	
Total	38,048	11,425	30.1	20,199	53.3	2,187	5.8	4,115	10.9	122
Age Groups										
10-14	22	6	27.3	10	45.5	1	4.5	5	22.7	0
15-19	2,126	577	27.2	947	44.6	154	7.3	443	20.9	5
20-24	8,696	2,422	27.9	4,345	50.1	598	6.9	1,308	15.1	23
25-29	11,812	3,602	30.6	6,427	54.5	655	5.6	1,099	9.3	29
30-34	10,487	3,178	30.4	5,925	56.7	511	4.9	838	8.0	35
35 and Over	4,902	1,640	33.7	2,542	52.2	268	5.5	422	8.7	30
n.s. ‡	3	0	n/a	3	n/a	0	n/a	0	n/a	0

\* Total number of live births in 2016.

† 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 Count of Residence, Kansas 2015-2016

County of Residence	Adequate or Better†			Less than Adequate†		
	2015	2016	2015-2016	2015	2016	2015-2016
	Percent	Percent	% Change	Percent	Percent	% Change
Kansas	83.7	83.4	-0.4	16.4	16.6	1.2
Allen	75.7	80.1	5.9	24.3	19.9	-18.3
Anderson	81.0	81.1	0.2	19.0	18.9	-0.7
Atchison	81.1	76.4	-5.8	18.9	23.6	24.9
Barber	88.1	82.1	-6.8	11.9 ‡	17.9 ‡	‡
Barton	86.7	83.7	-3.5	13.3	16.3	23.0
Bourbon	79.8	82.0	2.7	20.2	18.0	-10.7
Brown	77.4	77.7	0.3	22.6	22.3	-1.0
Butler	88.6	89.7	1.3	11.4	10.3	-9.8
Chase	79.2 ‡	87.5	‡	N/A	N/A	N/A
Chautauqua	82.9	88.9	7.2	17.1 ‡	N/A	N/A
Cherokee	81.0	77.2	-4.7	19.0	22.8	20.3
Cheyenne	76.9	82.1	6.7	23.1 ‡	17.9 ‡	‡
Clark	76.0 ‡	66.7 ‡	‡	N/A	33.3 ‡	N/A
Clay	83.1	88.0	5.9	16.9	12.0	-29.0
Cloud	78.7	81.3	3.3	21.3	18.7	-12.1
Coffey	85.5	96.8	13.2	14.5 ‡	N/A	N/A
Comanche	90.5 ‡	76.9 ‡	‡	N/A	N/A	N/A
Cowley	82.2	83.1	1.0	17.8	16.9	-4.7
Crawford	74.1	76.6	3.3	25.9	23.4	-9.5
Decatur	85.3	80.0	-6.2	14.7 ‡	20.0 ‡	‡
Dickinson	88.6	83.9	-5.2	11.4	16.1	40.5
Doniphan	82.5	87.8	6.5	17.5	12.2 ‡	‡
Douglas	89.2	89.2	0.0	10.8	10.8	0.1
Edwards	82.8	80.6	-2.6	17.2 ‡	19.4 ‡	‡
Elk	76.2 ‡	91.4	‡	23.8 ‡	N/A	N/A
Ellis	86.8	86.8	0.0	13.2	13.2	0.0
Ellsworth	86.2	87.3	1.3	13.8 ‡	12.7 ‡	‡
Finney	71.5	69.5	-2.8	28.5	30.5	7.0
Ford	61.1	53.6	-12.3	38.9	46.4	19.2
Franklin	86.5	85.2	-1.4	13.5	14.8	9.2
Geary	74.1	73.6	-0.7	25.9	26.4	1.9
Gove	75.7	75.0	-0.9	24.3 ‡	25.0 ‡	‡
Graham	85.7 ‡	95.0 ‡	‡	14.3 ‡	N/A	N/A
Grant	70.0	67.5	-3.6	30.0	32.5	8.3
Gray	74.1	83.7	13.0	25.9	16.3	-37.2
Greeley	68.8 ‡	46.7 ‡	‡	31.3 ‡	53.3 ‡	‡
Greenwood	78.3	82.1	4.9	21.7	17.9 ‡	‡
Hamilton	82.4	51.4	-37.6	17.6 ‡	48.6	‡
Harper	90.0	83.1	-7.7	10.0 ‡	16.9 ‡	‡
Harvey	90.9	88.6	-2.5	9.1	11.4	24.8
Haskell	80.4	63.6	-20.8	19.6 ‡	36.4	‡
Hodgeman	50.0 ‡	82.6 ‡	‡	50.0 ‡	N/A	N/A
Jackson	76.0	84.0	10.5	24.0	N/A	N/A
Jefferson	84.2	90.1	7.0	15.8	9.9	-37.2
Jewell	87.1	80.6	-7.5	12.9 ‡	19.4 ‡	‡
Johnson	90.0	90.5	0.5	10.0	9.5	-4.6
Kearny	77.4	78.7	1.6	22.6	21.3 ‡	‡
Kingman	86.5	86.5	0.0	13.5	13.5 ‡	‡
Kiowa	89.2	81.1	-9.1	10.8 ‡	18.9 ‡	‡
Labette	74.9	71.7	-4.2	25.1	28.3	12.7
Lane	100.0 ‡	81.3 ‡	‡	N/A	N/A	N/A
Leavenworth	83.7	87.6	4.7	16.3	N/A	N/A
Lincoln	92.9	83.8	-9.8	7.1 ‡	16.2 ‡	‡
Linn	88.0	91.5	4.0	12.0	8.5 ‡	‡
Logan	73.8	79.6	7.9	N/A	20.4 ‡	N/A

Table 7. Live Births by Percentages of Adequate or Better and Less Than Adequate\* Prenatal Care by Count of Residence, Kansas 2015-2016

County of Residence	Adequate or Better†			Less than Adequate‡		
	2015	2016	2015-2016	2015	2016	2015-2016
	Percent	Percent	% Change	Percent	Percent	% Change
Lyon	88.4	86.8	-1.9	11.6	13.2	14.3
McPherson	86.0	89.3	3.8	14.0	10.7	-23.4
Marion	90.7	85.6	-5.7	9.3 ‡	14.4	‡
Marshall	86.2	87.4	1.3	13.8	12.6	-8.4
Meade	67.6	68.5	1.3	32.4	31.5	-2.7
Miami	90.9	91.9	1.0	9.1	8.1	-10.5
Mitchell	77.9	82.1	5.4	22.1	17.9	-19.1
Montgomery	72.5	74.6	2.9	27.5	25.4	-7.7
Morris	88.9	79.0	-11.1	11.1 ‡	21.0 ‡	‡
Morton	79.2 ‡	60.0 ‡	‡	20.8 ‡	40.0 ‡	‡
Nemaha	84.2	90.0	6.8	15.8	10.0	-36.5
Neosho	74.6	74.4	-0.2	25.4	25.6	0.7
Ness	81.8	70.3	-14.1	18.2 ‡	29.7 ‡	‡
Norton	63.9	76.9	20.3	36.1	23.1	-36.0
Osage	88.0	88.0	0.0	12.0	12.0	0.0
Osborne	93.9	82.5	-12.1	6.1 ‡	17.5 ‡	‡
Ottawa	88.3	83.6	-5.4	11.7 ‡	16.4 ‡	‡
Pawnee	71.6	85.9	20.0	28.4	14.1 ‡	‡
Phillips	70.0	77.9	11.3	30.0	22.1	-26.5
Pottawatomie	84.5	85.5	1.2	15.5	14.5	-6.3
Pratt	84.5	84.1	-0.4	15.5	15.9	2.5
Rawlins	80.8	70.6	-12.6	19.2 ‡	29.4 ‡	‡
Reno	82.2	82.6	0.5	17.8	17.4	-2.2
Republic	79.6	79.1	-0.7	20.4 ‡	20.9 ‡	‡
Rice	82.6	80.9	-2.0	17.4	19.1	9.6
Riley	80.2	77.3	-3.7	19.8	22.7	14.9
Rooks	81.0	88.2	8.9	19.0 ‡	11.8 ‡	‡
Rush	78.4	87.5	11.6	N/A	12.5 ‡	N/A
Russell	87.8	85.2	-3.0	12.2 ‡	14.8 ‡	‡
Saline	80.9	82.5	1.9	19.1	17.5	-8.1
Scott	82.4	77.8	-5.6	17.6 ‡	22.2	‡
Sedgwick	88.2	88.1	-0.1	11.8	11.9	0.6
Seward	70.7	68.5	-3.2	29.3	31.5	7.7
Shawnee	84.4	82.8	-1.9	15.6	17.2	10.3
Sheridan	71.4	84.8	18.8	28.6 ‡	15.2 ‡	‡
Sherman	76.2	83.3	9.4	23.8	16.7 ‡	‡
Smith	76.0	82.5	8.6	24.0 ‡	17.5 ‡	‡
Stafford	81.8	84.9	3.8	18.2 ‡	15.1 ‡	‡
Stanton	71.8	68.0 ‡	‡	N/A	32.0 ‡	N/A
Stevens	75.0	68.9	-8.1	25.0	31.1	24.3
Sumner	92.7	84.3	-9.1	7.3	15.7	115.9
Thomas	79.0	82.1	3.8	21.0	17.9	-14.3
Trego	78.3	78.6	0.4	21.7 ‡	21.4 ‡	‡
Wabaunsee	86.7	84.8	-2.1	13.3 ‡	15.2 ‡	‡
Wallace	75.0 ‡	77.3 ‡	‡	N/A	22.7 ‡	N/A
Washington	90.7	80.6	-11.1	9.3 ‡	19.4 ‡	‡
Wichita	70.0 ‡	76.2 ‡	‡	30.0 ‡	23.8 ‡	‡
Wilson	88.8	87.7	-1.2	11.2 ‡	12.3	‡
Woodson	96.8	68.4	-29.3	3.2 ‡	31.6 ‡	‡
Wyandotte	70.4	68.5	-2.8	29.6	31.5	6.6

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

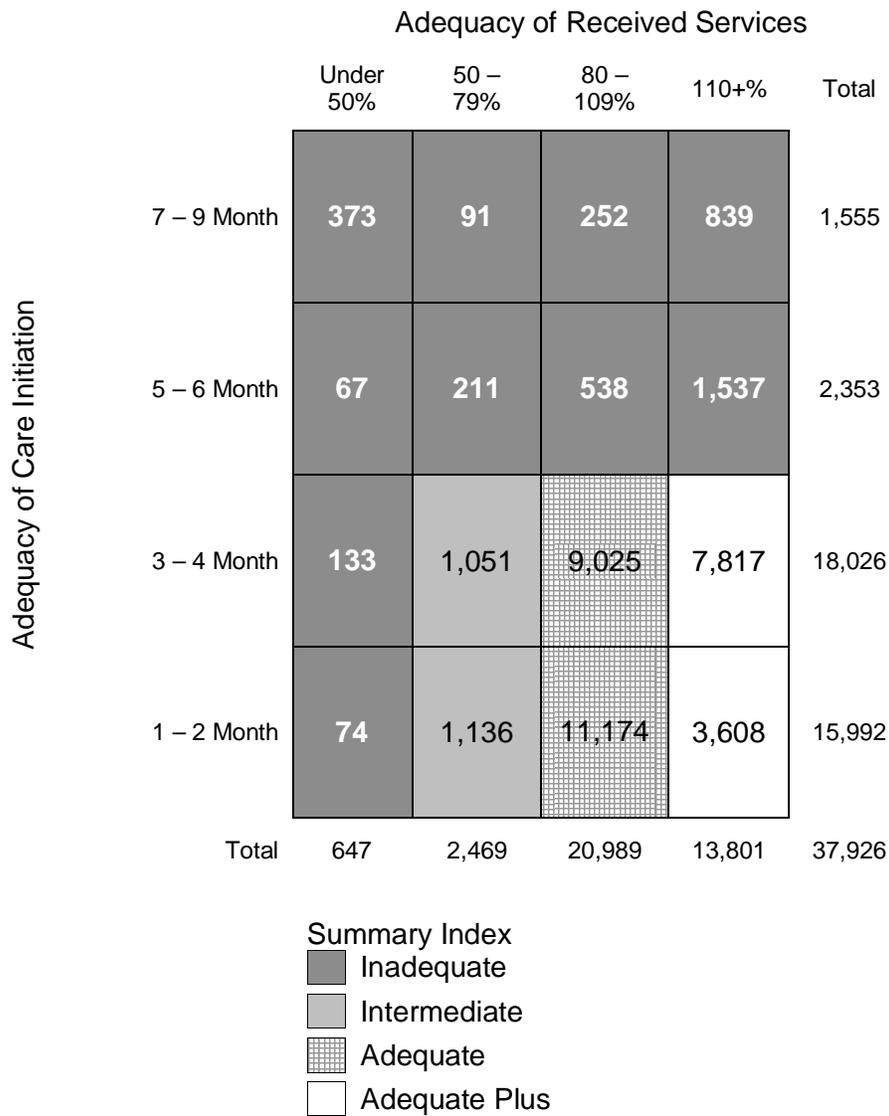
† Includes only Kansas resident live births for which number of prenatal visits, date of first prenatal visit and date of last menses were reported on the birth certificate

‡ 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. The percentage changes are suppressed

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

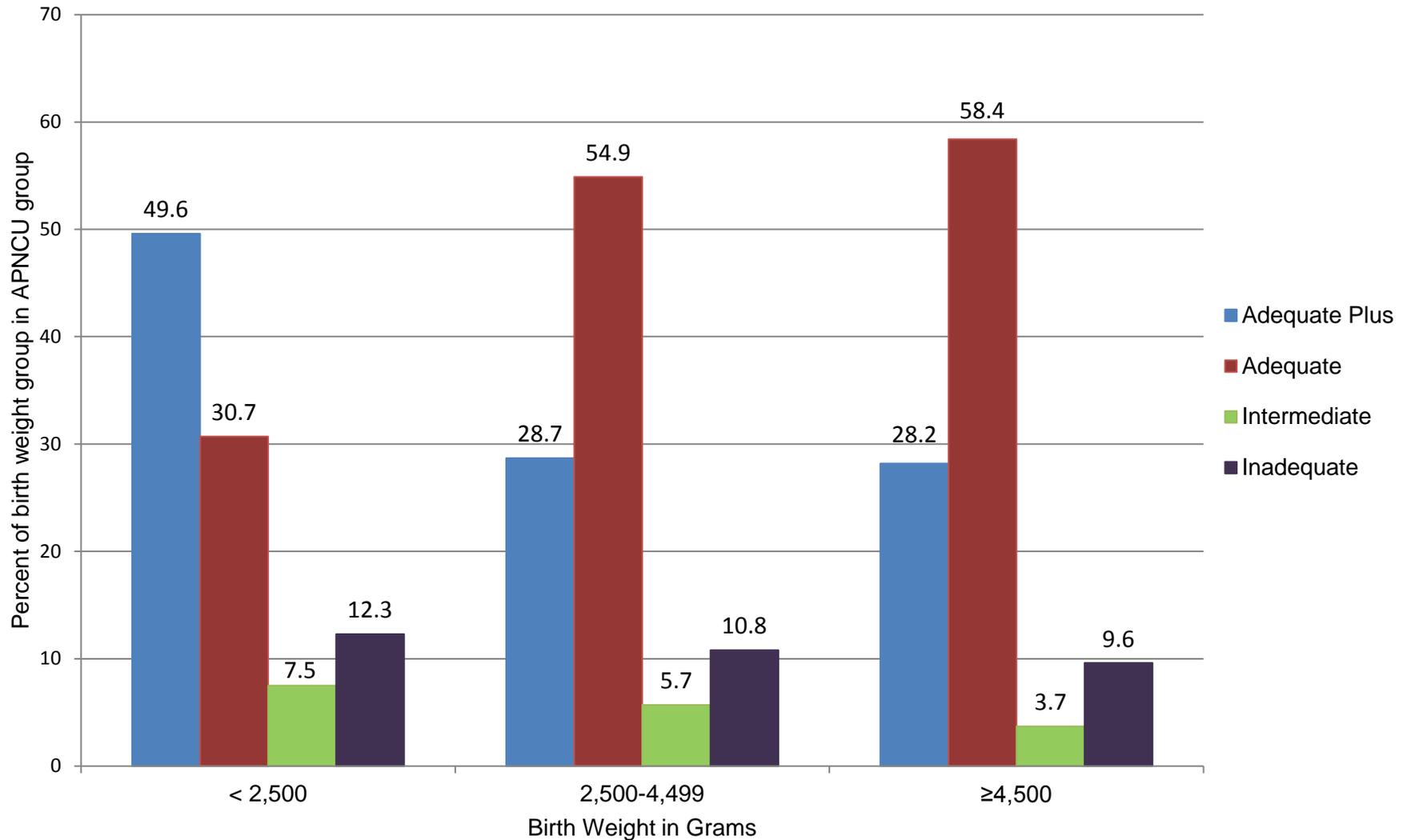
Figure 1. Number of Live Births by Adequacy of Prenatal Care Utilization (APNCU) among Kansas Residents\*, 2016



\* Includes 99.7 percent (37,926) of 38,048 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.

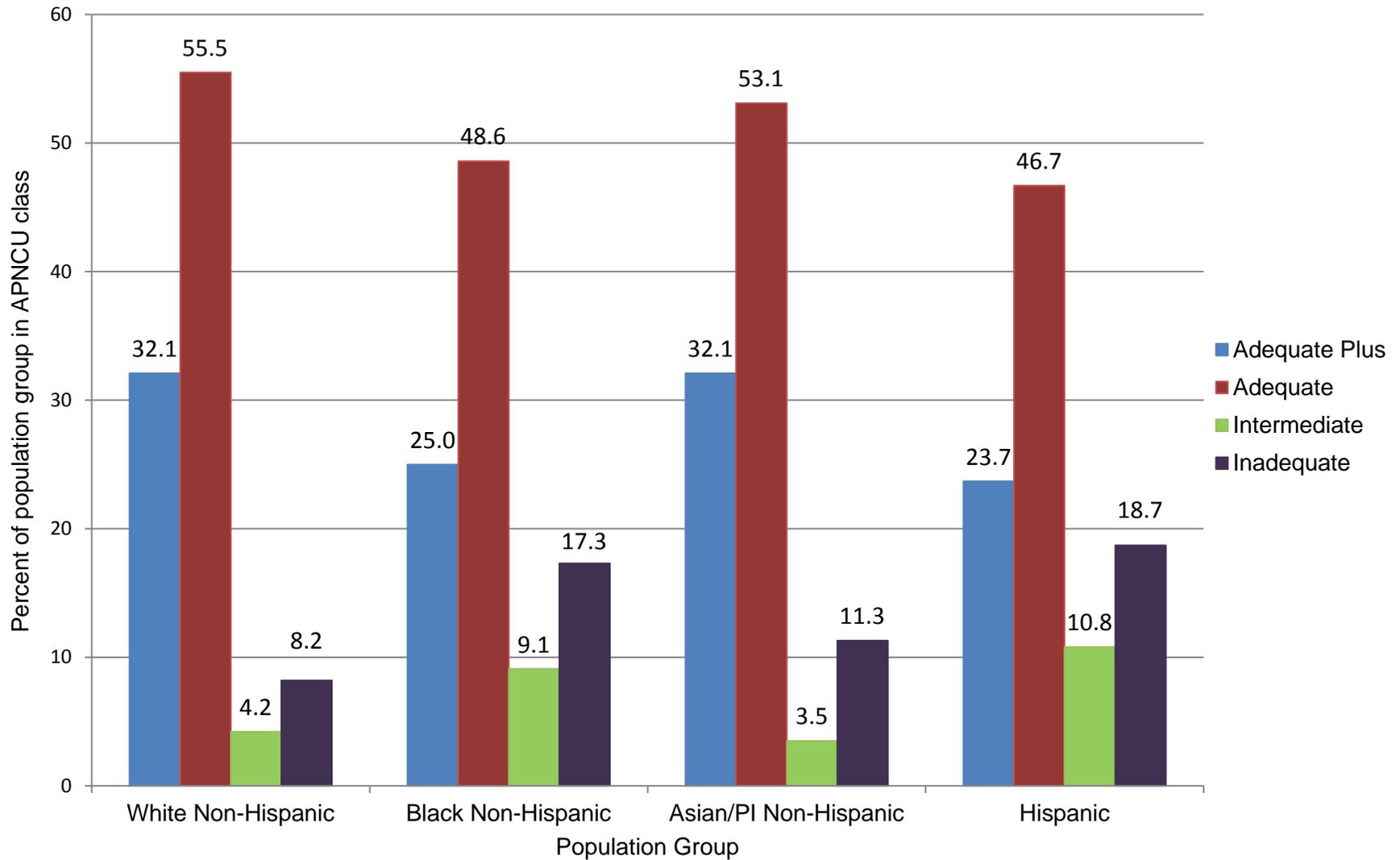
Source: Kansas Department of Health and Environment, Bureau of Epidemiology and Public Health Informatics

Figure 2. Percent of Adequacy of Prenatal Care Utilization (APNCU) by Birth Weight, Kansas, 2016



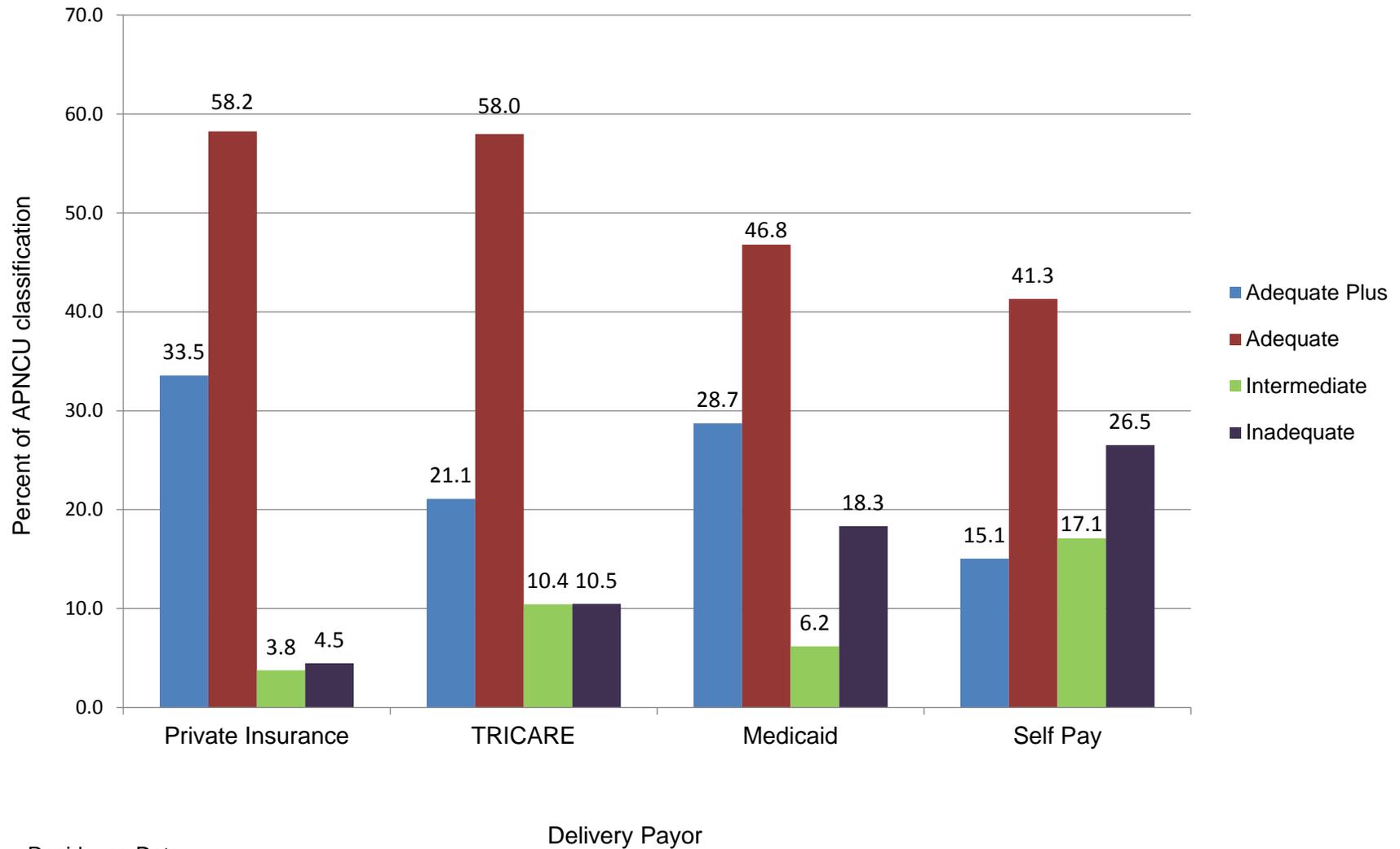
Residence Data  
 Source: Bureau of Epidemiology and Public Health Informatics  
 Kansas Department of Health and Environment

Figure 3. Percent of Adequacy of Prenatal Care Utilization (APNCU) by Population Group, Kansas, 2016



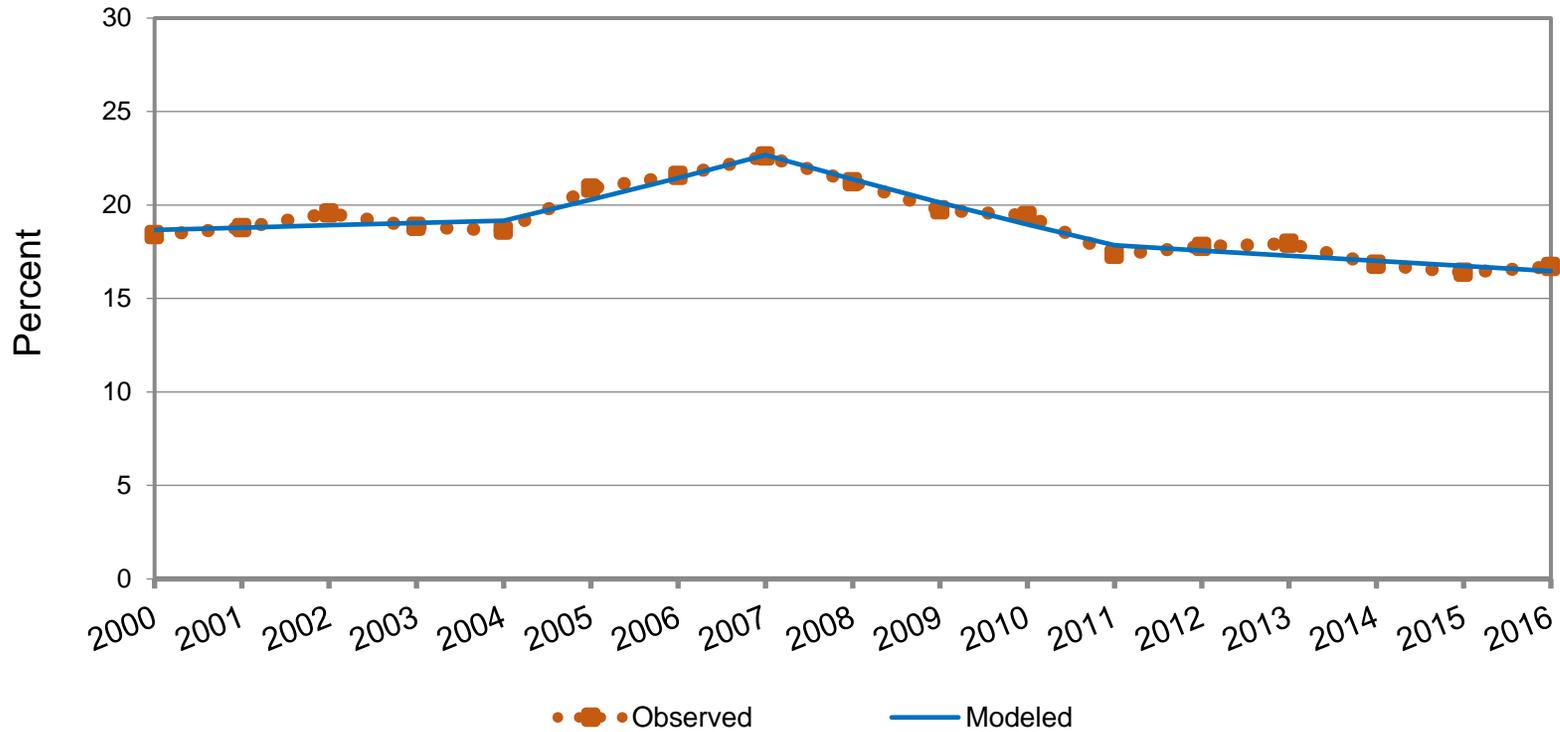
Residence Data  
 Source: Bureau of Epidemiology and Public Health Informatics  
 Kansas Department of Health and Environment

Figure 4. Percent of Adequacy of Prenatal Care Utilization (APNCU) by Selected Delivery Payor Groups, Kansas, 2016



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, 2000-2016

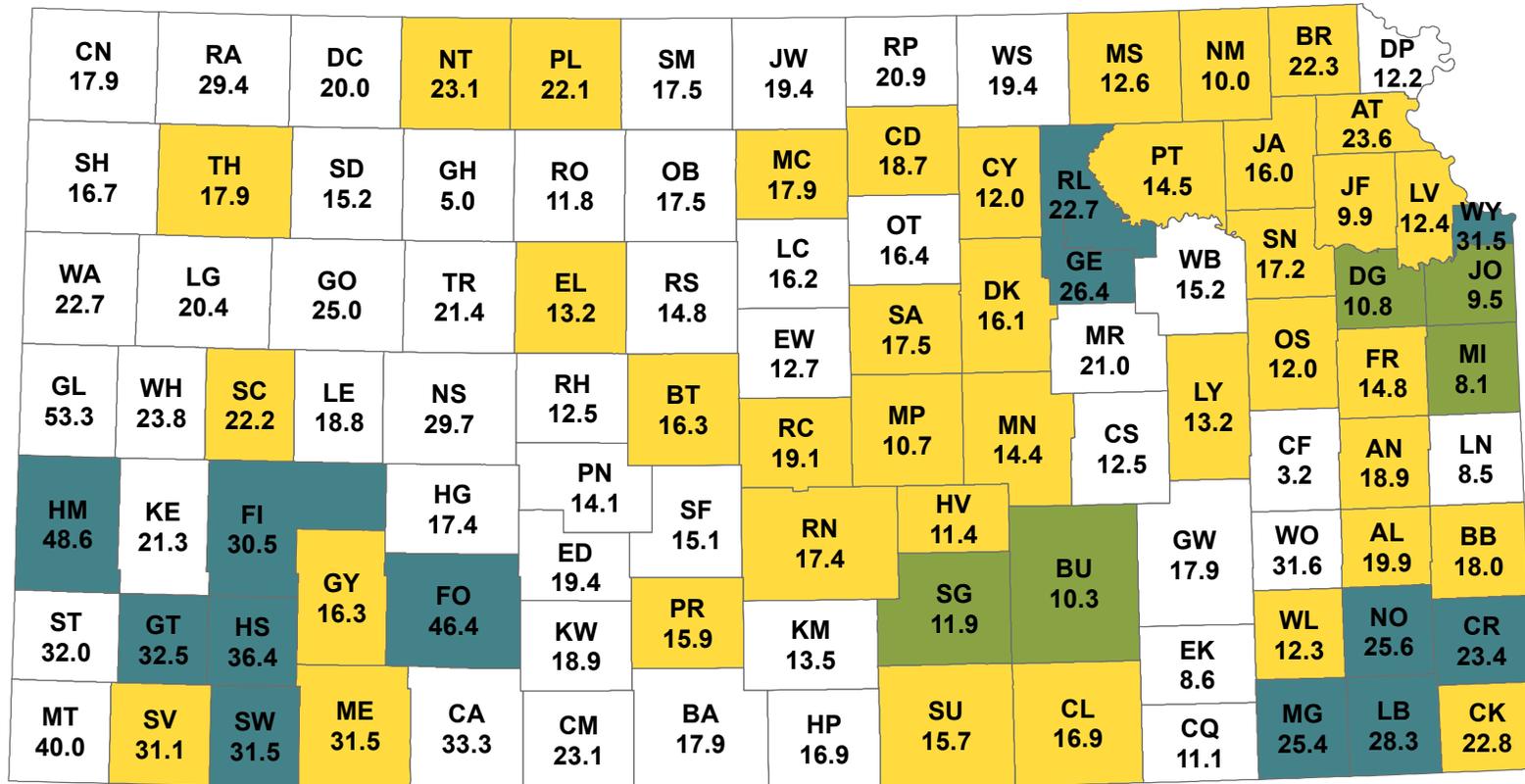


\* Less than adequate prenatal care is the combination of Inadequate and Intermediate prenatal care on the Adequacy of Prenatal Care (APNCU) Index.

APC = -5.8 (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

Figure 6. Percentage of Live Births Having Less than Adequate Prenatal Care\* by County, Kansas 2016



Statewide: 16.6 Percent  
Kansas Resident Live Births

- Number too small to make reliable comparison of percentages
- County percent not statistically different from state percent
- County percent statistically above state percent
- County percent statistically below state percent

\* Less than adequate care is the combination of inadequate and intermediate categories of the Adequacy of Prenatal Care (APNCU) Index

## 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:

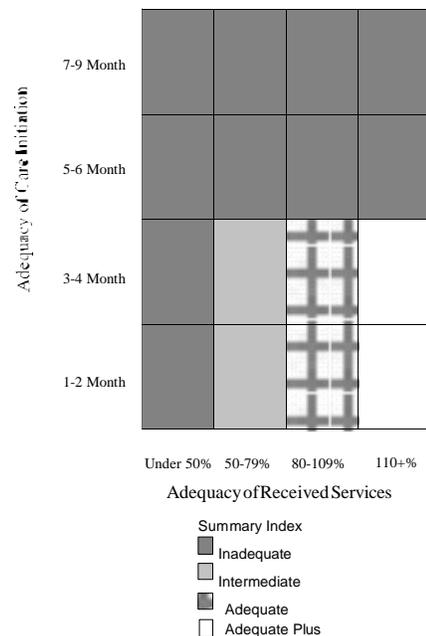
Adequate Plus: Prenatal care begun by the 4th

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.

**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)	

34. IF HOME BIRTH, WAS DELIVERY PLANNED AT HOME? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown					
35. MOTHER'S SOCIAL SECURITY NUMBER			36. FATHER'S SOCIAL SECURITY NUMBER		
37a. WAS MOTHER EVER MARRIED? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown		37b. MOTHER MARRIED? (At birth, conception or any time between) <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown			
37c. IF NO, HAS PATERNITY ACKNOWLEDGMENT BEEN SIGNED? <input type="checkbox"/> Yes <input type="checkbox"/> No		37d. MOTHER REFUSES TO GIVE HUSBAND'S INFORMATION <input type="checkbox"/> Yes <input type="checkbox"/> No			
38. WHAT IS THE PRIMARY LANGUAGE SPOKEN IN THE HOME? <input type="checkbox"/> English <input type="checkbox"/> Spanish <input type="checkbox"/> Vietnamese <input type="checkbox"/> German <input type="checkbox"/> French <input type="checkbox"/> Russian <input type="checkbox"/> Ukrainian <input type="checkbox"/> Mandarin <input type="checkbox"/> Cantonese <input type="checkbox"/> Sign Language <input type="checkbox"/> Other (Specify) _____					
39. PARENT'S HISPANIC ORIGIN (Check the box or boxes that best describes whether the parent is Spanish, Hispanic, or Latino. Check the "No" box if the parent is not Spanish, Hispanic, or Latino.)		40. PARENT'S RACE (Check one or more races to indicate what you consider yourself to be.)			
39a. MOTHER <input type="checkbox"/> No, not Spanish/Hispanic/Latina <input type="checkbox"/> Yes, Mexican/Mexican American/Chicana <input type="checkbox"/> Yes, Puerto Rican <input type="checkbox"/> Yes, Cuban <input type="checkbox"/> Yes, Central American <input type="checkbox"/> Yes, South American <input type="checkbox"/> Yes, other Spanish/Hispanic/Latina (Specify) _____ <input type="checkbox"/> Unknown		39b. FATHER <input type="checkbox"/> No, not Spanish/Hispanic/Latino <input type="checkbox"/> Yes, Mexican/Mexican American/Chicano <input type="checkbox"/> Yes, Puerto Rican <input type="checkbox"/> Yes, Cuban <input type="checkbox"/> Yes, Central American <input type="checkbox"/> Yes, South American <input type="checkbox"/> Yes, other Spanish/Hispanic/Latino (Specify) _____ <input type="checkbox"/> Unknown		40a. MOTHER <input type="checkbox"/> White <input type="checkbox"/> Native Hawaiian <input type="checkbox"/> Black or African American <input type="checkbox"/> Guamanian or Chamorro <input type="checkbox"/> American Indian or Alaska Native (Name of the enrolled or principal tribes) _____ <input type="checkbox"/> Asian Indian _____ <input type="checkbox"/> Chinese <input type="checkbox"/> Filipino <input type="checkbox"/> Japanese <input type="checkbox"/> Korean <input type="checkbox"/> Vietnamese <input type="checkbox"/> Other Asian (Specify) _____ <input type="checkbox"/> Other (Specify) _____ <input type="checkbox"/> Unknown	
		40b. FATHER <input type="checkbox"/> White <input type="checkbox"/> Native Hawaiian <input type="checkbox"/> Black or African American <input type="checkbox"/> Guamanian or Chamorro <input type="checkbox"/> American Indian or Alaska Native (Name of the enrolled or principal tribes) _____ <input type="checkbox"/> Asian Indian _____ <input type="checkbox"/> Chinese <input type="checkbox"/> Filipino <input type="checkbox"/> Japanese <input type="checkbox"/> Korean <input type="checkbox"/> Vietnamese <input type="checkbox"/> Other Asian (Specify) _____ <input type="checkbox"/> Other (Specify) _____ <input type="checkbox"/> Unknown			
41. ANCESTRY - What is the parents' ancestry or ethnic origin?- Italian, German, Dominican, Vietnamese, Hmong, French Canadian, etc. (Specify below)			42. OCCUPATION AND BUSINESS/INDUSTRY		
			Occupation	Business/Industry (Do not give name of company.)	
41a. MOTHER		42a. MOTHER (Most recent)		42c. MOTHER	
41b. FATHER		42b. FATHER (Usual)		42d. FATHER	
43. EDUCATION (Check the box that best describes the highest degree or level of school completed at the time of delivery.)					
43a. MOTHER'S EDUCATION		<input type="checkbox"/> 8 <sup>th</sup> grade or less <input type="checkbox"/> Some College credit, but no degree <input type="checkbox"/> Master's degree (e.g., MA, MS, MEng, MEd, MSW, MBA) <input type="checkbox"/> Unknown		<input type="checkbox"/> 9 <sup>th</sup> - 12 <sup>th</sup> grade; no diploma <input type="checkbox"/> Associate degree (e.g., AA,AS) <input type="checkbox"/> Doctorate (e.g., PhD, EdD) or Professional degree (e.g., MD, DDS, DVM, LLB, JD) <input type="checkbox"/> High school graduate or GED <input type="checkbox"/> Bachelor's degree (e.g., BA, AB, BS)	
43b. FATHER'S EDUCATION		<input type="checkbox"/> 8 <sup>th</sup> grade or less <input type="checkbox"/> Some College credit, but no degree <input type="checkbox"/> Master's degree (e.g., MA, MS, MEng, MEd, MSW, MBA) <input type="checkbox"/> Unknown		<input type="checkbox"/> 9 <sup>th</sup> - 12 <sup>th</sup> grade; no diploma <input type="checkbox"/> Associate degree (e.g., AA,AS) <input type="checkbox"/> Doctorate (e.g., PhD, EdD) or Professional degree (e.g., MD, DDS, DVM, LLB, JD) <input type="checkbox"/> High school graduate or GED <input type="checkbox"/> Bachelor's degree (e.g., BA, AB, BS)	
44. PREVIOUS LIVE BIRTHS (Do not include this child.)		45. NUMBER OF OTHER OUTCOMES (Spontaneous or induced losses or ectopic or stillbirth pregnancies)		46. PRENATAL CARE? <input type="checkbox"/> Yes <input type="checkbox"/> No	
44a. Now living Number <input type="checkbox"/> None	44b. Now dead Number <input type="checkbox"/> None	45a. Before 20 weeks Number <input type="checkbox"/> None	45b. 20 weeks & over Number <input type="checkbox"/> None	47. DATE OF FIRST PRENATAL CARE VISIT (Month, Day, Year)	
44c. DATE OF LAST LIVE BIRTH (Month, Year)		45c. DATE OF LAST OTHER PREGNANCY OUTCOME (Month, Year)		48. DATE OF LAST PRENATAL CARE VISIT (Month, Day, Year)	
49. PRENATAL VISITS-Total Number (If none, enter "0")		50. DATE LAST NORMAL MENSES BEGAN (Month, Day, Year)	51. OBSTETRIC ESTIMATE OF GESTATION (Completed Weeks)		
52. PLURALITY-Single, Twin, Triplet, etc. (Specify)		53. IF NOT A SINGLE BIRTH - Born First, Second, Third, etc. (Specify)	54. TOTAL LIVE BIRTHS AT THIS DELIVERY	55. IS INFANT ALIVE AT THE TIME OF THIS REPORT? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown	
56. IS INFANT BEING BREAST-FED AT DISCHARGE? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown					
57. CIGARETTE SMOKING BEFORE & DURING PREGNANCY: Did mother smoke 3 mos. before or during pregnancy? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown For each time period, enter either the number of cigarettes or the number of packs of cigarettes smoked <b>per day</b> during each time period. If none, enter "0". Average number of cigarettes or packs of cigarettes <b>smoked per day</b> for each period: No. No. Three months before pregnancy: _____cigarettes or _____packs First three months of pregnancy: _____cigarettes or _____packs Second three months of pregnancy: _____cigarettes or _____packs Third Trimester of pregnancy: _____cigarettes or _____packs				58. PRINCIPAL SOURCE OF PAYMENT FOR THIS DELIVERY <input type="checkbox"/> Medicaid <input type="checkbox"/> Private/Employer Ins. <input type="checkbox"/> Self-pay <input type="checkbox"/> Indian Health Service <input type="checkbox"/> CHAMPUS/TRICARE <input type="checkbox"/> Other government <input type="checkbox"/> Other (Specify) _____ <input type="checkbox"/> Unknown	
				59. MOTHER'S MEDICAL RECORD NO.	60. NEWBORN'S MEDICAL RECORD NO.
61. MOTHER TRANSFERRED IN FOR DELIVERY DUE TO MATERNAL, MEDICAL, OR FETAL INDICATIONS? <input type="checkbox"/> Yes <input type="checkbox"/> No (If yes, enter facility name) FACILITY TRANSFERRED FROM:				62. INFANT TRANSFERRED (Within 24 hours of delivery) <input type="checkbox"/> Yes <input type="checkbox"/> No (If yes, enter facility name) FACILITY TRANSFERRED TO:	

PRENATAL (Birth)	LABOR-DELIVERY/NEWBORN				
<b>63. NUTRITION OF MOTHER</b> 1. Height _____ 2. Prepregnancy Weight _____ 3. Weight at delivery _____ 4. Did mother get WIC food for herself? Yes _____ No _____ Unknown _____	<b>66. OBSTETRICAL PROCEDURES</b> (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	<b>70. INFECTIONS PRESENT AND/OR TREATED</b> (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			
	<b>64. MEDICAL RISK FACTORS</b> (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	<b>67. ONSET OF LABOR</b> (Check all that apply.) 1. <input type="checkbox"/> Premature Rupture of the Membranes (prolonged, $\geq 12$ hours) 2. <input type="checkbox"/> Precipitous Labor (< 3 hrs) 3. <input type="checkbox"/> Prolonged Labor ( $\geq 20$ hrs) 4. <input type="checkbox"/> None of the above	<b>71. ABNORMAL CONDITIONS OF NEWBORN</b> (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		
<b>65. METHOD OF DELIVERY</b> 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 _____	<b>68. CHARACTERISTICS OF LABOR AND DELIVERY</b> (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 $\geq 38$ 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	<b>72. VACCINES ADMINISTERED TO NEWBORN</b> 1. <input type="checkbox"/> Hepatitis B Date Given: _____ 2. <input type="checkbox"/> Other* Specify: _____ Date Given: _____			
	<b>69. MATERNAL MORBIDITY</b> (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	<b>73. APGAR SCORE</b> <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			
		<b>74. CONGENITAL ANOMALIES OF THE NEWBORN</b> (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>_____1<sup>st</sup>_____2<sup>nd</sup>_____3<sup>rd</sup> (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

# Errata

On July 5, 2019, the KDHE Bureau of Public Health Informatics made a correction to the 2016 Adequacy of Prenatal Care Utilization Index Report. The pages affected were:

Page 7, Results and discussion;

Page 22, Tables and Figures;

The change reflects a correction to the model trend line in the Join point regression analysis and the average percentage change (APC) analysis results in Figure 5.

Copies of the report downloaded before July 19, 2019, should be replaced with this version.