



Adequacy of Prenatal Care
Utilization Index
Kansas, 2011

**Research
Summary**

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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 Index (APNCU), enables public health to identify inequities in the provision of care. Using birth certificate information, Kansas Department of Health and Environment (KDHE) calculates APNCU using methods developed by Dr. Milton Kotelchuck. In 2011 prenatal care described as inadequate decreased by 9.2 percent compared to 2010. Adequate care increased by 2.4 percent. While Kansas’ level of adequate care (81.8%) is better than the Healthy People 2020 target of 77.6 percent, inequities by population group and pay source continue.

Introduction

Maintaining and improving family health is an essential component of the public health mission of the Kansas Department of Health and Environment. 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.

Prenatal care is a flexible package of services for pregnant women up to the delivery of an infant. It includes physician or midwife monitoring the progress of the pregnancy, examinations for common complications of pregnancy such as edema and preeclampsia, and basic dietary and lifestyle advice [1].

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 discovered and treated before delivery or even prevented altogether [2].

Inadequate prenatal care has been associated with pre-term delivery low birth weight and small for gestation infants [3,4]. It has also been linked with a higher overall net cost per pregnancy for mother and newborn care combined [5].

Adequate prenatal care is one of the national goals laid out 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 will receive early and adequate prenatal care by the year 2020 [6].

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 Interstate 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 – reporting 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 2011 births. The analytical file is considered 99.99 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 for the *2011 Kansas Annual Summary of Vital Statistics* for more information [7].

Statistical tabulations were created using SAS version 9.3 software. One of the tables contained in this report was also included in the *Kansas Annual Summary of Vital Statistics*. The repetition is done to enhance 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 [8]. 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).

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.

Adequacy of prenatal care utilization was calculated on 37,773 Kansas resident live births in 2011, compared to 38,823 in 2010 (Figure 1). This represents 95.0 percent of the 39,628 resident births reported in 2011. Total live births decreased by 2.1 percent from 2010, and variables needed to calculate prenatal care utilization index also declined by 2.7 percent in 2011.

Of the 37,773 Kansas resident births for which prenatal care utilization could be calculated in 2011, 81.8 percent received adequate or better prenatal care, including 32.3 percent with adequate-plus care. This level of adequate or better prenatal care meets the target established by Healthy People 2020 (77.6%). Approximately eighteen percent (18.2%) received less than adequate prenatal care, 12.9 percent inadequate care and 5.3 percent intermediate care (Table 1).

In 2011, reported inadequate prenatal care utilization decreased by 9.2 percent compared to 2010. The percentage of adequate care increased by 0.6 percent and adequate-plus care utilizations increased by 6.5 percent (Table 1).

Among mothers whose prenatal care utilization was classified as inadequate (4,858), the vast majority (4,643) were due to late initiation of care. Only a minority of women

(216) who initiated their care within the first four months of pregnancy received inadequate care (Figure 1).

Among mothers of infants with low birth weight, 82.9 percent received adequate or better care, while 13.9 percent experienced inadequate care (Table 2).

The proportion of mothers who received adequate or better prenatal care was highest among White non-Hispanics (86.2%), followed by Asian/Pacific Islander non-Hispanics (80.4%) and Other non-Hispanics (76.4%). The population group with the lowest percent was Hispanics with 66.4 percent receiving adequate or better prenatal care (Table 3).

The proportion of mothers reporting inadequate care was highest among Hispanics (24.8%), Black non-Hispanics (22.3%), and Native American non-Hispanics (20.5%). These rates are more than twice that of White non-Hispanic women, who experienced inadequate care at a rate of 9.3 percent (Table 3).

The payor with the highest proportion of mothers who received adequate or adequate plus prenatal care was private insurance (91.4%) followed by Champus/TRICARE (82.1%). The payor with the highest proportion of mothers with inadequate prenatal care was self pay (30.6%) (Table 4).

Among first births, the percent of mothers with adequate or adequate plus prenatal care (84.4%) was 5.1 percent greater than among second or higher live births (80.3%) (Table 5).

Among first births, the percent of mothers with inadequate prenatal care (10.8%) was 23.4 percent less than among second or higher live births (14.1%) (Table 5).

In all age groups, the proportion of mothers with inadequate prenatal care among second and higher order live births was significantly greater than among mothers of first births (Table 5).

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Appendix

1. Certificate of Live Birth

Table 1. Adequacy of Prenatal Care Utilization (APNCU) Index
by County of Residence
Kansas, 2011

County of Residence	Live Births*	APNCU Category†								Not Stated‡
		Adequate Plus		Adequate		Intermediate		Inadequate		
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	
Kansas.....	39,628	12,210	32.3	18,686	49.5	2,018	5.3	4,859	12.9	1,855
Allen.....	153	58	39.5	60	40.8	6	4.1	23	15.6	6
Anderson.....	108	44	41.1	49	45.8	5	4.7	9	8.4	1
Atchison.....	212	49	24.3	116	57.4	12	5.9	25	12.4	10
Barber.....	66	17	25.8	38	57.6	1	1.5	10	15.2	0
Barton.....	379	146	41.1	148	41.7	19	5.4	42	11.8	24
Bourbon.....	205	98	49.0	66	33.0	9	4.5	27	13.5	5
Brown.....	161	49	31.4	72	46.2	13	8.3	22	14.1	5
Butler.....	725	192	27.2	425	60.3	15	2.1	73	10.4	20
Chase.....	23	6	27.3	10	45.5	3	13.6	3	13.6	1
Chautauqua.....	38	15	41.7	14	38.9	2	5.6	5	13.9	2
Cherokee.....	254	40	16.6	108	44.8	33	13.7	60	24.9	13
Cheyenne.....	34	12	35.3	17	50.0	2	5.9	3	8.8	0
Clark.....	22	5	22.7	13	59.1	2	9.1	2	9.1	0
Clay.....	106	37	35.6	52	50.0	2	1.9	13	12.5	2
Cloud.....	107	28	26.7	55	52.4	14	13.3	8	7.6	2
Coffey.....	77	18	24.3	45	60.8	5	6.8	6	8.1	3
Comanche.....	31	11	35.5	18	58.1	2	6.5	0	0.0	0
Cowley.....	467	170	37.3	172	37.7	17	3.7	97	21.3	11
Crawford.....	508	137	27.5	250	50.1	55	11.0	57	11.4	9
Decatur.....	31	8	25.8	16	51.6	3	9.7	4	12.9	0
Dickinson.....	240	69	29.1	125	52.7	17	7.2	26	11.0	3
Doniphan.....	83	23	29.5	48	61.5	2	2.6	5	6.4	5
Douglas.....	1,216	539	45.4	492	41.4	25	2.1	132	11.1	28
Edwards.....	29	8	30.8	10	38.5	3	11.5	5	19.2	3
Elk.....	17	3	17.6	8	47.1	2	11.8	4	23.5	0
Ellis.....	408	106	26.1	224	55.2	46	11.3	30	7.4	2
Ellsworth.....	69	16	23.2	43	62.3	3	4.3	7	10.1	0
Finney.....	721	136	19.3	206	29.2	141	20.0	222	31.5	16
Ford.....	700	171	25.9	275	41.7	84	12.7	130	19.7	40
Franklin.....	304	110	36.5	153	50.8	6	2.0	32	10.6	3
Geary.....	930	251	27.6	412	45.3	104	11.4	142	15.6	21
Gove.....	35	10	28.6	19	54.3	3	8.6	3	8.6	0
Graham.....	25	5	21.7	11	47.8	5	21.7	2	8.7	2
Grant.....	127	32	27.6	45	38.8	13	11.2	26	22.4	11
Gray.....	87	17	20.0	35	41.2	14	16.5	19	22.4	2
Greeley.....	19	3	17.6	7	41.2	2	11.8	5	29.4	2
Greenwood.....	65	13	21.0	35	56.5	2	3.2	12	19.4	3
Hamilton.....	43	8	19.5	19	46.3	5	12.2	9	22.0	2
Harper.....	68	16	25.4	34	54.0	2	3.2	11	17.5	5
Harvey.....	428	218	52.3	141	33.8	6	1.4	52	12.5	11
Haskell.....	52	8	15.7	19	37.3	5	9.8	19	37.3	1
Hodgeman.....	21	9	45.0	8	40.0	3	15.0	0	0.0	1
Jackson.....	156	56	37.3	69	46.0	7	4.7	18	12.0	6
Jefferson.....	172	83	49.1	59	34.9	1	0.6	26	15.4	3
Jewell.....	19	5	27.8	9	50.0	2	11.1	2	11.1	1
Johnson.....	7,355	2,811	40.5	3,466	49.9	263	3.8	403	5.8	412
Kearny.....	62	16	26.2	26	42.6	8	13.1	11	18.0	1
Kingman.....	71	20	28.6	42	60.0	2	2.9	6	8.6	1
Kiowa.....	38	6	16.2	24	64.9	1	2.7	6	16.2	1
Labette.....	243	106	45.7	78	33.6	17	7.3	31	13.4	11
Lane.....	22	11	50.0	8	36.4	0	0.0	3	13.6	0
Leavenworth.....	967	337	36.9	429	47.0	56	6.1	91	10.0	54
Lincoln.....	38	13	34.2	21	55.3	2	5.3	2	5.3	0
Linn.....	101	38	38.0	48	48.0	2	2.0	12	12.0	1
Logan.....	36	13	36.1	14	38.9	4	11.1	5	13.9	0

Table 1. Adequacy of Prenatal Care Utilization (APNCU) Index
by County of Residence
Kansas, 2011

County of Residence	Live Births*	APNCU Category†								Not Stated‡
		Adequate Plus		Adequate		Intermediate		Inadequate		
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	
Lyon.....	420	184	49.3	104	27.9	17	4.6	68	18.2	47
McPherson.....	347	148	43.5	149	43.8	13	3.8	30	8.8	7
Marion.....	112	58	51.8	43	38.4	3	2.7	8	7.1	0
Marshall.....	114	18	15.9	66	58.4	10	8.8	19	16.8	1
Meade.....	72	20	29.0	27	39.1	10	14.5	12	17.4	3
Miami.....	380	142	37.7	194	51.5	17	4.5	24	6.4	3
Mitchell.....	84	20	25.0	53	66.3	4	5.0	3	3.8	4
Montgomery.....	457	187	44.5	149	35.5	27	6.4	57	13.6	37
Morris.....	64	11	17.7	42	67.7	2	3.2	7	11.3	2
Morton.....	39	13	35.1	10	27.0	3	8.1	11	29.7	2
Nemaha.....	125	31	24.8	82	65.6	8	6.4	4	3.2	0
Neosho.....	214	77	36.5	104	49.3	4	1.9	26	12.3	3
Ness.....	28	8	28.6	17	60.7	3	10.7	0	0.0	0
Norton.....	49	16	32.7	19	38.8	5	10.2	9	18.4	0
Osage.....	184	74	43.0	72	41.9	8	4.7	18	10.5	12
Osborne.....	39	10	25.6	22	56.4	2	5.1	5	12.8	0
Ottawa.....	46	15	32.6	26	56.5	0	0.0	5	10.9	0
Pawnee.....	75	24	34.3	26	37.1	6	8.6	14	20.0	5
Phillips.....	50	9	18.0	24	48.0	8	16.0	9	18.0	0
Pottawatomie.....	354	130	37.6	169	48.8	11	3.2	36	10.4	8
Pratt.....	164	49	30.2	92	56.8	3	1.9	18	11.1	2
Rawlins.....	15	4	26.7	7	46.7	2	13.3	2	13.3	0
Reno.....	759	296	39.9	303	40.9	38	5.1	104	14.0	18
Republic.....	46	13	28.3	28	60.9	2	4.3	3	6.5	0
Rice.....	119	36	33.0	47	43.1	11	10.1	15	13.8	10
Riley.....	1,119	333	30.2	573	51.9	85	7.7	112	10.2	16
Rooks.....	63	13	21.0	40	64.5	3	4.8	6	9.7	1
Rush.....	26	5	19.2	12	46.2	5	19.2	4	15.4	0
Russell.....	85	22	25.9	45	52.9	8	9.4	10	11.8	0
Saline.....	756	229	30.6	392	52.4	38	5.1	89	11.9	8
Scott.....	76	36	47.4	22	28.9	6	7.9	12	15.8	0
Sedgwick.....	7,818	1,399	18.6	4,864	64.6	180	2.4	1,083	14.4	292
Seward.....	451	88	19.9	192	43.4	38	8.6	124	28.1	9
Shawnee.....	2,464	1,032	45.2	860	37.7	109	4.8	283	12.4	180
Sheridan.....	31	9	29.0	19	61.3	2	6.5	1	3.2	0
Sherman.....	72	22	31.0	30	42.3	11	15.5	8	11.3	1
Smith.....	27	12	44.4	7	25.9	4	14.8	4	14.8	0
Stafford.....	45	17	38.6	23	52.3	1	2.3	3	6.8	1
Stanton.....	29	6	21.4	19	67.9	1	3.6	2	7.1	1
Stevens.....	84	22	26.5	34	41.0	8	9.6	19	22.9	1
Sumner.....	263	70	28.0	144	57.6	12	4.8	24	9.6	13
Thomas.....	99	46	46.9	36	36.7	4	4.1	12	12.2	1
Trego.....	27	8	29.6	13	48.1	5	18.5	1	3.7	0
Wabaunsee.....	83	32	41.0	37	47.4	4	5.1	5	6.4	5
Wallace.....	18	7	38.9	9	50.0	1	5.6	1	5.6	0
Washington.....	61	16	27.1	30	50.8	8	13.6	5	8.5	2
Wichita.....	23	8	38.1	7	33.3	1	4.8	5	23.8	2
Wilson.....	114	39	35.1	53	47.7	6	5.4	13	11.7	3
Woodson.....	31	13	43.3	14	46.7	0	0.0	3	10.0	1
Wyandotte.....	2,732	707	30.2	930	39.7	183	7.8	524	22.4	388
N.S.	1	0	n/a	0	n/a	0	n/a	1	n/a	0

* Total number of live births in 2011.

† 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.

See Technical Notes

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

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, 2011

Birth Weight (Grams)	Live Births*	APNCU Category								Not Stated†
		Adequate Plus		Adequate		Intermediate		Inadequate		
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	
Total.....	37,772	12,210	32.3	18,686	49.5	2,018	5.3	4,858	12.9	1,855
Under 2,500 (Low).....	2,535	1,568	61.9	532	21.0	82	3.2	353	13.9	332
2,500-4,499 (Normal)....	34,819	10,521	30.2	17,935	51.5	1,912	5.5	4,451	12.8	1,507
4,500 and Over (High)....	414	118	28.5	219	52.9	24	5.8	53	12.8	14
Not Stated.....	4	3	n/a	0	n/a	0	n/a	1	n/a	2

n/a Not applicable

*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.

† Number of live births with insufficient information (Not Stated) to calculate APNCU. Residence data.

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, 2011

Population Groups	Live Births*	APNCU Category										Not Stated§
		Adequate Plus		Adequate		Intermediate		Inadequate		Number	Percent	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent			
Total.....	37,773	12,210	32.3	18,686	49.5	2,018	5.3	4,859	12.9			1,855
White Non-Hispanic.....	27,518	9,548	34.7	14,163	51.5	1,252	4.5	2,555	9.3			864
Black Non-Hispanic.....	2,454	713	29.1	1,053	42.9	141	5.7	547	22.3			254
Native American Non-Hispanic.....	219	65	29.7	91	41.6	18	8.2	45	20.5			10
Asian/Pacific Islander Non-Hispanic.....	1,087	325	29.9	549	50.5	64	5.9	149	13.7			45
Other Non-Hispanic†.....	757	245	32.4	333	44.0	39	5.2	140	18.5			105
Hispanic Any Race.....	5,723	1,313	22.9	2,490	43.5	502	8.8	1,418	24.8			570
Not Stated.....	15	1	n/a	7	n/a	2	n/a	5	n/a			7

n/a Not applicable

*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.

†Includes multiple races

§Number of live births with insufficient information (Not Stated) to calculate APNCU. Residence data.

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, 2011.

Pay Source	Live Births*	APNCU Category										Not Stated†
		Adequate Plus		Adequate		Intermediate		Inadequate		Number	Percent	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent			
Total	37,773	12,210	32.3	18,686	49.5	2,018	5.3	4,859	12.9			1,855
Medicaid	12,630	3,825	30.3	5,331	42.2	732	5.8	2,742	21.7			709
Private Insurance	19,604	7,220	36.8	10,695	54.6	770	3.9	919	4.7			401
Self Pay	2,510	414	16.5	1,110	44.2	217	8.6	769	30.6			320
Champus/Tricare	2,064	535	25.9	1,160	56.2	189	9.2	180	8.7			36
Other Government	223	67	30.0	92	41.3	18	8.1	46	20.6			9
Other/Unknown	742	149	20.1	298	40.2	92	12.4	203	27.4			380

*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.

† Number of live births with insufficient information (Not Stated) to calculate APNCU. Residence data.

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 by Age Group of the Mother by Adequacy of Prenatal Care Utilization (APNCU) Index Kansas, 2011

Birth Order	Live Births*	APNCU Category										Not Stated**	
		Adequate Plus		Adequate		Intermediate		Inadequate		Number	Percent		
		Number	Percent	Number	Percent	Number	Percent	Number	Percent				
First Live Births													
Total	14,260	4,814	33.8	7,222	50.6	682	4.8	1,542	10.8				631
Age Groups													
10-14	44	10	n/a	14	n/a	0	n/a	20	n/a				7
15-19	2,659	740	27.8	1,202	45.2	169	6.4	548	20.6				145
20-24	4,666	1,485	31.8	2,323	49.8	241	5.2	617	13.2				199
25-29	4,272	1,514	35.4	2,326	54.4	190	4.4	242	5.7				163
30-34	1,965	793	40.4	1,038	52.8	53	2.7	81	4.1				85
35 and Over	654	272	41.6	319	48.8	29	n/a	34	5.2				32
Second and Higher Order Live Births													
Total	23,512	7,396	31.5	11,464	48.8	1,336	5.7	3,316	14.1				1,223
Age Groups													
15-19	641	158	24.6	224	34.9	51	8.0	208	32.4				48
20-24	5,105	1,404	27.5	2,250	44.1	342	6.7	1,109	21.7				295
25-29	7,705	2,420	31.4	3,832	49.7	462	6.0	991	12.9				398
30-34	6,714	2,222	33.1	3,516	52.4	314	4.7	662	9.9				290
35 and Over	3,347	1,192	35.6	1,642	49.1	167	5.0	346	10.3				192

n/a The number is too small to calculate percent (<20).

*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.

**Number of live births with insufficient information (Not Stated) to calculate APNCU. Residence data.

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, 2011

Age Group	Live Births*	APNCU Category										Not Stated†
		Adequate Plus		Adequate		Intermediate		Inadequate		Number	Percent	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent			
Total	37,772	12,210	32.3	18,686	49.5	2,018	5.3	4,858	12.9			1,855
Age Groups												
10-14	44	10	n/a	14	n/a	0	n/a	20	n/a			8
15-19	3,300	898	27.2	1,426	43.2	220	6.7	756	22.9			193
20-24	9,771	2,889	29.6	4,573	46.8	583	6.0	1,726	17.7			494
25-29	11,977	3,934	32.8	6,158	51.4	652	5.4	1,233	10.3			561
30-34	8,679	3,015	34.7	4,554	52.5	367	4.2	743	8.6			375
35 and Over	4,001	1,464	36.6	1,961	49.0	196	n/a	380	9.5			224

n/a The number is too small to calculate percent (<20).

*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.

†Number of live births with insufficient information (Not Stated) to calculate APNCU. Residence data.

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

Figure 1. Number of Live Births by APNCU, Kansas*, 2011

		Adequacy of Received Services				Total
		Under 50%	50 – 79%	80 – 109%	110+%	
Adequacy of Care Initiation	7 – 9 Month	425	131	272	900	1,728
	5 – 6 Month	51	271	661	1,932	2,915
	3 – 4 Month	147	1,099	10,021	7,721	18,988
	1 – 2 Month	69	919	8,665	4,489	14,142
Total		692	2,420	19,619	15,042	37,773

Summary Index
 Inadequate
 Intermediate
 Adequate
 Adequate Plus

* Includes only the 37,773 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.

Figure 2. Percent of APNCU by Birth Weight, Kansas, 2011

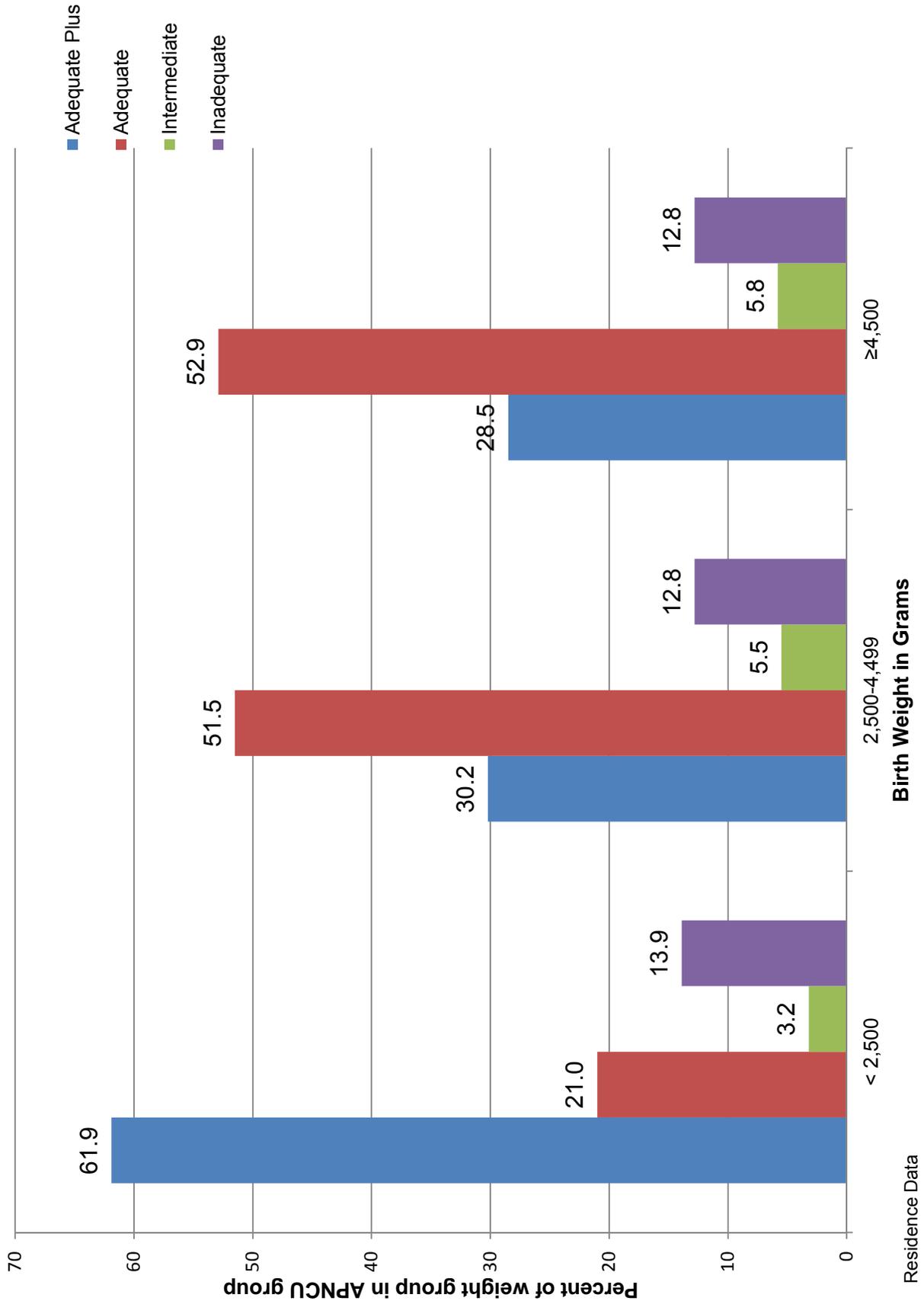


Figure 3. Percent of APNCU by Population Group, Kansas, 2011

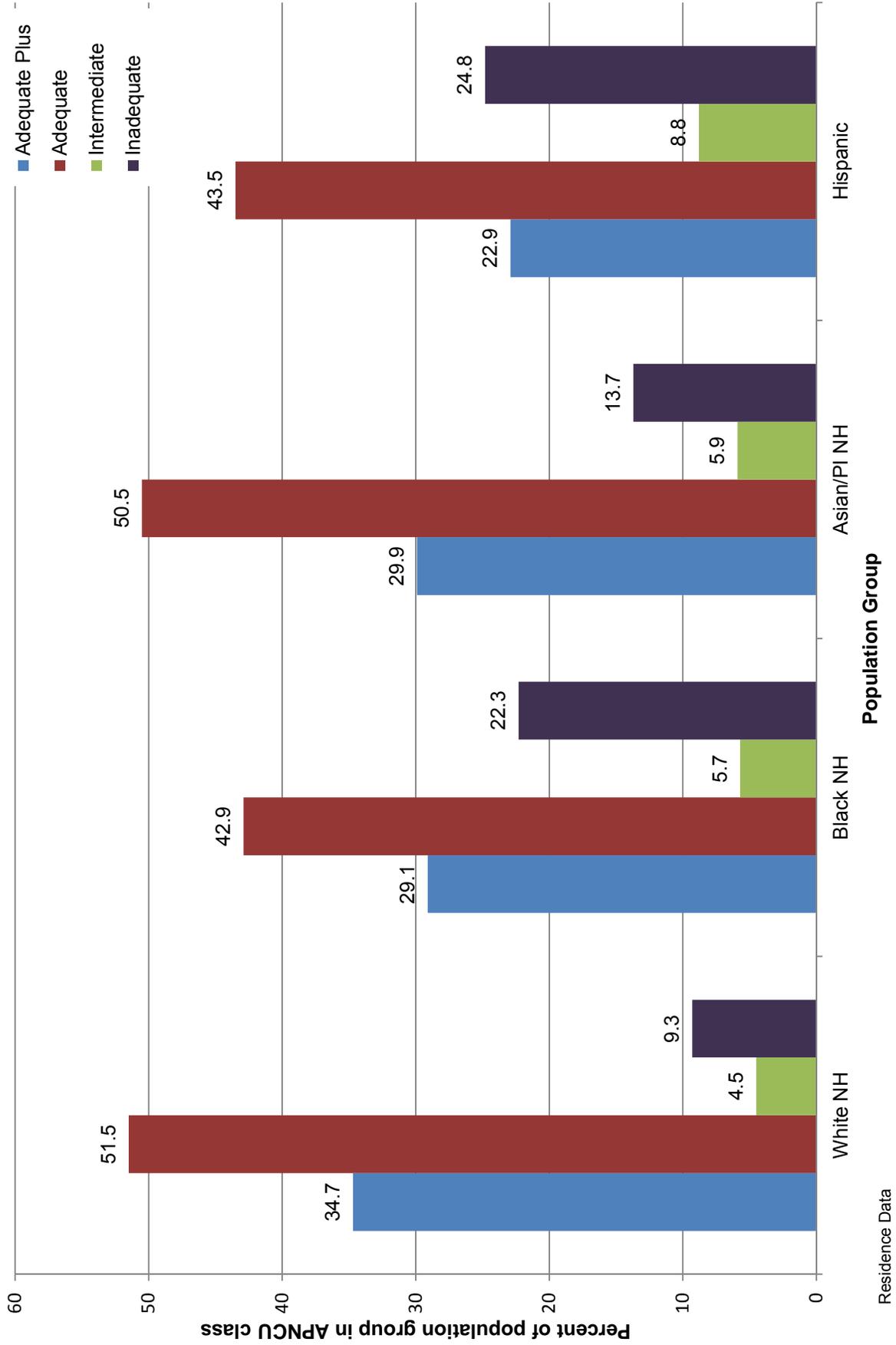
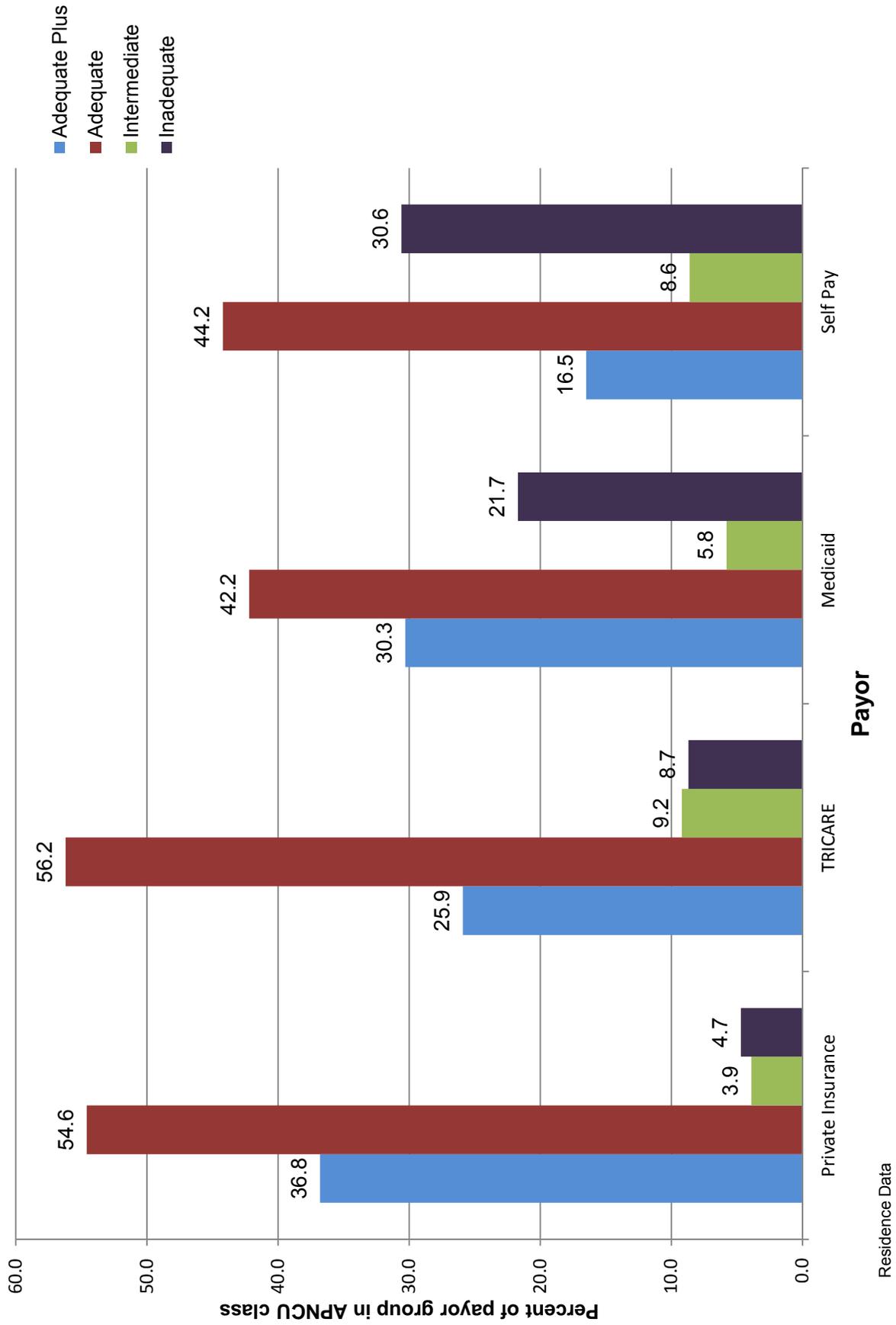


Figure 4. Percent of APNCU by Selected Delivery Payor Groups, Kansas, 2011



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

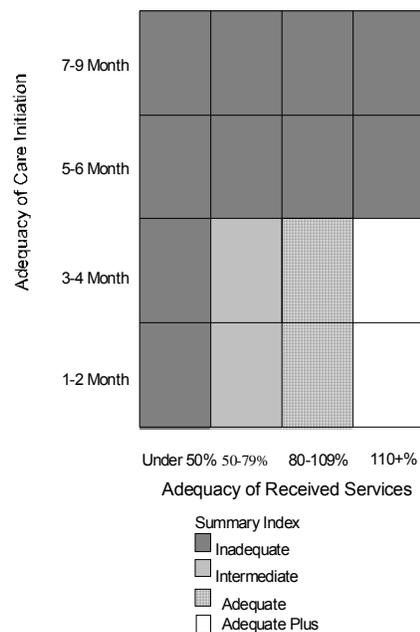
I. Month prenatal care began
(Adequacy of Initiation of Prenatal Care)

- 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%

Adequacy of Prenatal Care Utilization Index Matrix



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

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 <p style="text-align: right;">M</p>	
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)

CONFIDENTIAL INFORMATION FOR INTERNAL USE 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		39b. FATHER		40a. 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		<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		<input type="checkbox"/> White <input type="checkbox"/> Black or African American <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"/> Native Hawaiian <input type="checkbox"/> Guamanian or Chamorro <input type="checkbox"/> Samoan <input type="checkbox"/> Other Pacific Islander (Specify) _____ <input type="checkbox"/> Other (Specify) _____ <input type="checkbox"/> Unknown	
40b. FATHER		42. OCCUPATION AND BUSINESS/INDUSTRY			
<input type="checkbox"/> White <input type="checkbox"/> Black or African American <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"/> Native Hawaiian <input type="checkbox"/> Guamanian or Chamorro <input type="checkbox"/> Samoan <input type="checkbox"/> Other Pacific Islander (Specify) _____ <input type="checkbox"/> Other (Specify) _____ <input type="checkbox"/> Unknown		Occupation		Business/Industry (Do not give name of company.)	
41. ANCESTRY - What is the parents' ancestry or ethnic origin?- Italian, German, Dominican, Vietnamese, Hmong, French Canadian, etc. (Specify below)		42a. MOTHER (Most recent)			
41a. MOTHER		42b. FATHER (Usual)		42c. MOTHER	
41b. FATHER		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		43b. FATHER'S EDUCATION		49. PRENATAL VISITS-Total Number (If none, enter "0")	
<input type="checkbox"/> 8 th grade or less <input type="checkbox"/> Some College credit, but no degree <input type="checkbox"/> Unknown <input type="checkbox"/> Master's degree (e.g., MA, MS, MEng, MEd, MSW, MBA)		<input type="checkbox"/> 8 th grade or less <input type="checkbox"/> Some College credit, but no degree <input type="checkbox"/> Unknown <input type="checkbox"/> Master's degree (e.g., MA, MS, MEng, MEd, MSW, MBA)		<input type="checkbox"/> 9 th - 12 th 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)	
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		47. DATE OF FIRST PRENATAL CARE VISIT (Month, Day, Year)	
44c. DATE OF LAST LIVE BIRTH (Month, Year)		45a. Before 20 weeks Number _____ <input type="checkbox"/> None		48. DATE OF LAST PRENATAL CARE VISIT (Month, Day, Year)	
44d. DATE OF LAST LIVE BIRTH (Month, Year)		45b. 20 weeks & over Number _____ <input type="checkbox"/> None		50. DATE LAST NORMAL MENSES BEGAN (Month, Day, Year)	
45c. DATE OF LAST OTHER PREGNANCY OUTCOME (Month, Year)		54. TOTAL LIVE BIRTHS AT THIS DELIVERY		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)		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		58. PRINCIPAL SOURCE OF PAYMENT FOR THIS DELIVERY	
59. MOTHER'S MEDICAL RECORD NO.		60. NEWBORN'S MEDICAL RECORD NO.		61. MOTHER TRANSFERRED IN FOR DELIVERY DUE TO MATERNAL, MEDICAL, OR	
62. INFANT TRANSFERRED (Within 24 hours of delivery)		For each time period, enter either the number of cigarettes or the number of packs of cigarettes smoked per day during each time period. If none, enter "0". Average number of cigarettes or packs of cigarettes smoked per day for each period: No. No. Three months before pregnancy: _____ cigarettes or _____ packs First three months of pregnancy: _____ cigarettes or _____ packs Second three months of pregnancy: _____ cigarettes or _____ packs Third Trimester of pregnancy: _____ cigarettes or _____ packs		<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	

Parent's Telephone Number: _____

CHILD'S NAME _____

MOTHER'S NAME _____

Test required by K.S.A. 65-153f 153G Serological Test Made: _____ 1 st _____ 2 nd _____ 3 rd (Trimester) _____ At Delivery _____ Not Performed If no test made, state reason:		Test required by K.S.A. 65-180 Infant Neonatal Screening specimen taken: _____ Yes _____ No Kit Number _____ If no test made, state reason:		Test required by K.S.A. 65-1157A Newborn Hearing Screening Accomplished: _____ Yes _____ No			
Infant's patient number:							
Infant's Primary Care Physician							
First		Middle		Last		Title (MD, DO, etc.)	
If screening accomplished, Date hearing screened _____/_____/_____ Month/Day/Year			The results of the hearing screening ✓:			Right ear: _____ Pass _____ Refer for further testing Left ear: _____ Pass _____ Refer for further testing	
Physiologic equipment used ✓: _____ OAE _____ AABR _____ ABR							
If screening not accomplished, ✓ one reason: _____ b – missed appointment _____ c – could not test _____ d – deceased _____ i – incomplete test _____ m – Infant discharged before screening _____ n – transferred to NICU _____ o – other _____ r – did not consent _____ s – scheduled but not completed _____ t – transferred to another hospital _____ u – no information _____ x – invalid results							