



Kansas

Adequacy of Prenatal Care Utilization Index Kansas, 2005

Research Summary

Division of Health

**Center for Health and Environmental Statistics
Kansas Department of Health and Environment**

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Introduction

Prenatal care is defined as pregnancy-related health care services provided to a women between conception and delivery. It is important to track because there is a strong association between prenatal care and pregnancy outcome. Pregnant women who receive inadequate care are at increased risk of bearing infants who have low birth weight, are stillborn, or die within the first year of life.¹ This data can be analyzed to suggest population groups and geographic areas in need of intervention, therefore protecting the health of these future Kansans.

Accurate measurement of prenatal care depends on the accuracy of the index used. Beginning with 1998 data, the Kansas Department of Health and Environment (KDHE) transitioned from a modified Kessner Index to the Adequacy of Prenatal Care Utilization (APNCU) Index, (often referred to as the Kotelchuck Index).² This index attempts to characterize prenatal care (PNC) utilization on two independent and distinctive dimensions: adequacy of initiation of PNC and adequacy 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 categorizes care as inadequate, intermediate, adequate or adequate plus. The index does not assess quality of the prenatal care that is delivered, only its utilization.

This summary is an enhancement of information contained in the 2005 *Annual Summary of Vital Statistics*. Both products can be found at: <http://www.kdheks.gov/ches/index.html>.

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¹ C. Arden Mills, Amy Fine, and Sharon Adams-Taylor. *Monitoring Children's Health: Key Indicators* (2nd edition), American Public Health Association, 1989.

² 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.

Highlights

Starting with 2005, the collection process for prenatal care data has changed. Please see the Technical Notes.

Of the 35,804 Kansas resident live births reporting prenatal care in 2005, 79.1 percent received adequate or better prenatal care, including 32.6 percent with adequate-plus care; 20.9 percent received less than adequate prenatal care, including 13.7 percent with inadequate care.

Among mothers whose prenatal care utilization was classified as inadequate (4,907), the vast majority (4,603) were due to late initiation of care. In other words, only a minority of women (304) who initiated their care within the first four months of care received inadequate care.

Of the 35,804 Kansas resident live births reporting prenatal care in 2005, 79.1 percent received adequate or better prenatal care, including 32.6 percent with adequate-plus care; 20.9 percent received less than adequate prenatal care, including 13.7 percent with inadequate care.

Greeley county had the highest percentage of mothers with adequate or better prenatal care (100.0) followed by Coffey (90.1) and Smith counties (89.2). Haskell county had the lowest percentage of adequate or better prenatal care (43.1), followed by Cheyenne (50.0) and Hamilton (50.0) counties.

The county with the highest percentage of mothers with inadequate care was Cherokee (37.5), followed by Wallace (35.7) and Scott (31.2). Chase county had the lowest percentage of inadequate care (3.6), followed by Sheridan (4.0) and Ellsworth (6.5) counties.

Among mothers of low birth weight infants, nearly 80 (79.9) percent received adequate or better care, while 16.1 percent exhibited inadequate care use.

The proportion of mothers who received adequate or better prenatal care was highest among White Non-Hispanic (83.5 percent), followed by Asian/Pacific Islander Non-Hispanic (79.3 percent) and Other Non-Hispanic (75.4 percent). The population group with the lowest percent was Hispanic (62.6).

The proportion of mothers with inadequate care among Black Non-Hispanic (21.5 percent), Native American Non-Hispanic (21.3 percent) and Hispanic (26.0 percent) were more than twice that of White Non-Hispanic (10.5 percent) population.

**Adequacy of Prenatal Care Utilization Index
Kansas Residents*, 2005**

Adequacy of Initiation	7-9 Month	425	109	245	865
	5-6 Month	59	288	694	1,918
	3-4 Month	164	1,233	7,651	6,156
	1-2 Month	140	1,342	8,984	5,531
		Under 50%	50-79%	80-109%	110+%
		Adequacy of Received Services			

Summary Index

- Inadequate
- Intermediate
- Adequate
- Adequate Plus

*Includes only the 35,804 Kansas resident live births for which number of prenatal visits, date of first prenatal visit and date of last menses were reported on the the birth certificate.

Adequacy of Prenatal Care Utilization (APNCU) Index
By County of Residence
Kansas, 2005

County of Residence	Live Births*	APNCU Category**								Not Stated
		Adequate Plus		Adequate		Intermediate		Inadequate		
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	
Kansas.....	35,804	11,687	32.6	16,635	46.5	2,575	7.2	4,907	13.7	3,897
Allen.....	137	58	42.3	43	31.4	16	11.7	20	14.6	21
Anderson.....	109	48	44.0	45	41.3	6	5.5	10	9.2	4
Atchison.....	166	53	31.9	76	45.8	8	4.8	29	17.5	37
Barber.....	48	9	18.8	29	60.4	3	6.2	7	14.6	3
Barton.....	334	100	29.9	149	44.6	21	6.3	64	19.2	34
Bourbon.....	177	109	61.6	35	19.8	9	5.1	24	13.5	18
Brown.....	128	40	31.3	68	53.1	4	3.1	16	12.5	11
Butler.....	796	205	25.8	477	59.9	36	4.5	78	9.8	22
Chase.....	28	8	28.6	13	46.4	6	21.4	1	3.6	1
Chautauqua.....	27	14	51.9	8	29.6	1	3.7	4	14.8	7
Cherokee.....	40	12	30.0	10	25.0	3	7.5	15	37.5	244
Cheyenne.....	16	4	25.0	4	25.0	4	25.0	4	25.0	5
Clark.....	28	5	17.9	12	42.9	5	17.8	6	21.4	3
Clay.....	98	32	32.7	43	43.9	6	6.1	17	17.3	1
Cloud.....	86	20	23.3	49	57.0	10	11.6	7	8.1	6
Coffey.....	91	39	42.9	43	47.2	2	2.2	7	7.7	11
Comanche.....	14	5	35.7	7	50.0	0	0.0	2	14.3	0
Cowley.....	430	163	37.9	178	41.4	25	5.8	64	14.9	16
Crawford.....	307	142	46.3	105	34.2	16	5.2	44	14.3	223
Decatur.....	20	7	35.0	8	40.0	1	5.0	4	20.0	1
Dickinson.....	195	71	36.4	83	42.6	15	7.7	26	13.3	6
Doniphan.....	29	12	41.4	11	37.9	1	3.5	5	17.2	47
Douglas.....	1,178	381	32.3	532	45.2	117	9.9	148	12.6	57
Edwards.....	41	12	29.3	20	48.8	2	4.9	7	17.0	0
Elk.....	37	16	43.2	15	40.6	2	5.4	4	10.8	1
Ellis.....	335	88	26.3	190	56.7	17	5.1	40	11.9	5
Ellsworth.....	46	12	26.1	27	58.7	4	8.7	3	6.5	2
Finney.....	768	192	25.0	253	32.9	126	16.4	197	25.7	16
Ford.....	616	160	26.0	232	37.6	83	13.5	141	22.9	14
Franklin.....	387	157	40.6	157	40.6	16	4.1	57	14.7	15
Geary.....	512	143	27.9	223	43.6	59	11.5	87	17.0	19
Gove.....	35	10	28.6	20	57.1	2	5.7	3	8.6	2
Graham.....	21	4	19.1	12	57.1	1	4.8	4	19.0	1
Grant.....	109	31	28.4	44	40.4	16	14.7	18	16.5	7
Gray.....	76	27	35.5	28	36.9	8	10.5	13	17.1	3
Greeley.....	11	2	18.2	9	81.8	0	0.0	0	0.0	0
Greenwood.....	66	21	31.8	37	56.1	1	1.5	7	10.6	2
Hamilton.....	32	5	15.6	11	34.4	8	25.0	8	25.0	1
Harper.....	63	3	4.7	42	66.7	10	15.9	8	12.7	4
Harvey.....	421	172	40.9	180	42.7	13	3.1	56	13.3	8
Haskell.....	58	7	12.1	18	31.0	8	13.8	25	43.1	10
Hodgeman.....	28	10	35.7	11	39.3	3	10.7	4	14.3	0
Jackson.....	184	77	41.9	72	39.1	12	6.5	23	12.5	4
Jefferson.....	194	77	39.7	79	40.7	13	6.7	25	12.9	9
Jewell.....	22	4	18.2	11	50.0	4	18.2	3	13.6	0
Johnson.....	6,651	2,998	45.1	2,777	41.8	341	5.1	535	8.0	936
Kearny.....	64	13	20.3	24	37.5	13	20.3	14	21.9	1
Kingman.....	75	13	17.3	43	57.4	7	9.3	12	16.0	1
Kiowa.....	34	5	14.7	21	61.8	3	8.8	5	14.7	1
Labette.....	229	103	45.0	92	40.2	14	6.1	20	8.7	62
Lane.....	18	4	22.2	6	33.4	4	22.2	4	22.2	1
Leavenworth.....	743	333	44.8	288	38.8	50	6.7	72	9.7	120
Lincoln.....	25	7	28.0	11	44.0	4	16.0	3	12.0	2
Linn.....	103	57	55.3	31	30.1	8	7.8	7	6.8	5
Logan.....	25	6	24.0	15	60.0	1	4.0	3	12.0	1

Adequacy of Prenatal Care Utilization (APNCU) Index
By County of Residence
Kansas, 2005

County of Residence	Live Births*	APNCU Category**								Not Stated
		Adequate Plus		Adequate		Intermediate		Inadequate		
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	
Lyon.....	558	185	33.1	247	44.3	28	5.0	98	17.6	6
Marion.....	112	48	42.8	45	40.2	3	2.7	16	14.3	2
Marshall.....	114	27	23.7	63	55.2	14	12.3	10	8.8	3
McPherson.....	322	109	33.8	173	53.7	15	4.7	25	7.8	7
Meade.....	55	20	36.4	19	34.5	5	9.1	11	20.0	7
Miami.....	371	159	42.9	158	42.6	26	7.0	28	7.5	26
Mitchell.....	62	14	22.6	33	53.2	7	11.3	8	12.9	0
Montgomery.....	387	209	54.0	90	23.3	22	5.7	66	17.0	116
Morris.....	52	11	21.2	28	53.8	5	9.6	8	15.4	0
Morton.....	45	9	20.0	20	44.5	6	13.3	10	22.2	8
Nemaha.....	129	37	28.7	73	56.6	9	7.0	10	7.7	0
Neosho.....	185	86	46.5	77	41.6	9	4.9	13	7.0	19
Ness.....	23	9	39.1	7	30.4	1	4.4	6	26.1	0
Norton.....	60	15	25.0	25	41.7	7	11.7	13	21.6	2
Osage.....	199	95	47.7	78	39.2	7	3.5	19	9.6	3
Osborne.....	38	13	34.2	17	44.7	3	7.9	5	13.2	1
Ottawa.....	53	22	41.5	24	45.3	3	5.7	4	7.5	1
Pawnee.....	61	16	26.2	31	50.8	6	9.9	8	13.1	1
Phillips.....	54	7	13.0	28	51.8	10	18.5	9	16.7	0
Pottawatomie.....	269	95	35.3	123	45.7	20	7.5	31	11.5	6
Pratt.....	115	38	33.0	54	47.0	3	2.6	20	17.4	5
Rawlins.....	21	7	33.4	10	47.6	2	9.5	2	9.5	1
Reno.....	792	255	32.2	368	46.4	56	7.1	113	14.3	22
Republic.....	45	17	37.8	18	40.0	6	13.3	4	8.9	0
Rice.....	110	26	23.6	52	47.3	12	10.9	20	18.2	5
Riley.....	899	265	29.5	411	45.7	127	14.1	96	10.7	44
Rooks.....	48	10	20.8	26	54.2	4	8.3	8	16.7	4
Rush.....	35	12	34.3	17	48.6	0	0.0	6	17.1	4
Russell.....	58	18	31.0	29	50.0	3	5.2	8	13.8	5
Saline.....	768	209	27.2	410	53.4	63	8.2	86	11.2	54
Scott.....	64	20	31.3	20	31.3	4	6.2	20	31.2	1
Sedgwick.....	7,249	1,163	16.0	4,603	63.5	440	6.1	1,043	14.4	497
Seward.....	429	102	23.8	173	40.3	35	8.2	119	27.7	96
Shawnee.....	2,458	1,051	42.8	947	38.5	130	5.3	330	13.4	62
Sheridan.....	25	9	36.0	12	48.0	3	12.0	1	4.0	0
Sherman.....	52	15	28.9	22	42.3	5	9.6	10	19.2	9
Smith.....	37	19	51.4	14	37.8	0	0.0	4	10.8	0
Stafford.....	51	8	15.7	27	52.9	3	5.9	13	25.5	6
Stanton.....	37	8	21.6	18	48.7	7	18.9	4	10.8	6
Stevens.....	87	12	13.8	45	51.7	8	9.2	22	25.3	15
Sumner.....	292	60	20.6	184	63.0	14	4.8	34	11.6	23
Thomas.....	91	34	37.3	37	40.7	7	7.7	13	14.3	6
Trego.....	37	8	21.6	20	54.1	0	0.0	9	24.3	1
Wabaunsee.....	85	32	37.6	36	42.4	10	11.8	7	8.2	1
Wallace.....	14	5	35.7	3	21.4	1	7.2	5	35.7	1
Washington.....	57	21	36.8	23	40.4	5	8.8	8	14.0	1
Wichita.....	29	8	27.6	13	44.8	2	6.9	6	20.7	0
Wilson.....	101	41	40.6	40	39.6	8	7.9	12	11.9	15
Woodson.....	33	9	27.3	19	57.6	2	6.0	3	9.1	2
Wyandotte.....	2,025	713	35.2	598	29.5	241	11.9	473	23.4	772

*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. Residence data.

Number and Percent of Live Births by Birth Weight
By Adequacy of Prenatal Care Utilization (APNCU) Index
Kansas, 2005

Birth Weight (Grams)	Live Births*	APNCU Category								Not Stated
		Adequate Plus		Adequate		Intermediate		Inadequate		
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	
Total.....	35,804	11,687	32.6	16,635	46.5	2,575	7.2	4,907	13.7	3,897
Under 2,500(Low).....	2,432	1,471	60.5	472	19.4	97	4.0	392	16.1	420
2,500-4,499(Normal)...	32,977	10,127	30.7	15,938	48.3	2,445	7.4	4,467	13.6	3,427
4,500 and Over(High).	391	88	22.5	224	57.3	32	8.2	47	12.0	47
Not Stated.....	4	1	n/a	1	n/a	1	n/a	1	n/a	3

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.

Residence data.

Source: Center for Health & Environmental Statistics
Kansas Department of Health and Environment

Number and Percent of Live Births by Population Groups
By Adequacy of Prenatal Care Utilization (APNCU) Index
Kansas, 2005

Population Groups	Live Births*	APNCU Category								Not Stated
		Adequate Plus		Adequate		Intermediate		Inadequate		
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	
Total.....	35,804	11,687	32.6	16,635	46.5	2,575	7.2	4,907	13.7	3,897
White Non-Hispanic.....	26,426	9,316	35.2	12,752	48.3	1,593	6.0	2,765	10.5	2,477
Black Non-Hispanic.....	2,277	673	29.6	875	38.4	239	10.5	490	21.5	393
Native American Non-Hispanic.....	296	85	28.7	127	42.9	21	7.1	63	21.3	28
Asian/Pacific Islander Non-Hispanic.....	979	267	27.3	509	52.0	77	7.8	126	12.9	92
Other Non-Hispanic**	581	180	31.0	258	44.4	49	8.4	94	16.2	40
Hispanic***	5,223	1,163	22.3	2,105	40.3	595	11.4	1,360	26.0	850
Not Stated.....	22	3	n/a	9	n/a	1	n/a	9	n/a	17

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

***Hispanic origin can be of any race

Residence data.

Source: Center for Health & Environmental Statistics
Kansas Department of Health and Environment

Technical Notes

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. These changes can affect comparability with previous years APNCU data.

Prenatal care visits In previous years, the mother or prenatal care provider reported the month of pregnancy in which the mother began prenatal care. As of 2005, this item was replaced by the exact dates of first and last prenatal visit. Therefore, the month prenatal care began is now calculated from the last normal menses date and the date of first prenatal care visit. Unfortunately, because exact dates are harder to get, the month prenatal care began now has high numbers of missing data. The missing data has 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 76.0 percent based on the 2005 revised data. The APNCU showed a small increase in the proportion of women receiving less than adequate care between 2004 (18.7 percent) and 2005 (20.9 percent). Much of the difference between 2004 and 2005 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 is 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 ethnicity. The expanded racial and ethnic categories are compliant with the provisions to 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 is 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.

Technical Notes (Cont.)

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

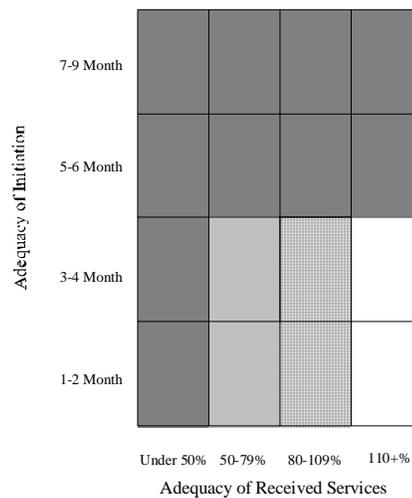
II. Proportion of the number of visits recommended by the American College of Obstetricians and Gynecologists (ACOG) received from the time prenatal care began until delivery (Adequacy of Received Services)

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

Adequacy of Prenatal Care Utilization Index Matrix



Summary Index
 ■ Inadequate
 ■ Intermediate
 ■ Adequate
 □ Adequate Plus

NOTE: The APNCU Index requires the use of the following data elements reported on the live birth certificate: number of prenatal care visits, date of first prenatal visit, date of last menses and gestational length of pregnancy.

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.