



Kansas

Adequacy of Prenatal Care Utilization Index Kansas, 2007

Research Summary

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Our Vision – Healthy Kansans Living in Safe and Sustainable Environments

As the state’s environmental protection and public health agency, KDHE promotes responsible choices to protect the health and environment for all Kansans. Through education, direct services, and the assessment of data and trends, coupled with policy development and enforcement, KDHE will improve health and quality of life. We prevent illness, injuries and foster a safe and sustainable environment for the people of Kansas

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 2007 *Annual Summary of Vital Statistics*. Both products can be found at: <http://www.kdheks.gov/ches/index.html>.

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Technical Notes

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

The collection process for prenatal care data has changed. Please see the Technical Notes.

Of the 39,055 Kansas resident live births reporting prenatal care in 2007, 77.3 percent received adequate or better prenatal care, including 31.9 percent with adequate-plus care; 22.7 percent received less than adequate prenatal care, including 16.3 percent with inadequate care.

Among mothers whose prenatal care utilization was classified as inadequate (6,351), the vast majority (6,094) were due to late initiation of care. In other words, only a minority of women (257) who initiated their care within the first four months of care received inadequate care.

Hodgeman county had the highest percentage of mothers with adequate or better prenatal care (90.0) followed by Anderson (89.8) and Allen and Mitchell counties (87.5). Wichita county had the lowest percentage of adequate or better prenatal care (50.0), followed by Hamilton (51.2) and Seward (52.8) counties.

The county with the highest percentage of mothers with inadequate care was Scott (39.7) followed by Seward (38.5) and Hamilton (34.2). Trego county had the lowest percentage of inadequate care (3.1), followed by Sheridan (4.5) and Hodgeman (5.0) counties.

Among mothers of low birth weight infants, nearly 78 (77.7) percent received adequate or better care, while 18.9 percent exhibited inadequate care use.

The proportion of mothers who received adequate or better prenatal care was highest among White Non-Hispanic (82.5 percent), followed by Asian/Pacific Islander Non-Hispanic (79.4 percent) and Other Non-Hispanic (69.2 percent). The population group with the lowest percent was Hispanic (61.1).

The proportion of mothers with inadequate care among Black Non-Hispanic (27.8 percent), Native American Non-Hispanic (26.2 percent) and Hispanic (30.3 percent) were more than twice that of White Non-Hispanic (11.9 percent) population.

Adequacy of Prenatal Care Utilization Index Kansas Residents*, 2007

Adequacy of Care Initiation	7-9 Month	550	146	368	1,139
	5-6 Month	70	355	892	2,574
	3-4 Month	166	1,352	10,016	7,552
	1-2 Month	91	1,128	7,733	4,923
		Under 50%	50-79%	80-109%	110+%
		Adequacy of Received Services			

Summary Index

- Inadequate
- Intermediate
- Adequate
- Adequate Plus

*Includes only the 39,055 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, 2007

County of Residence	Live Births*	APNCU Category**								Not Stated
		Adequate Plus		Adequate		Intermediate		Inadequate		
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	
Kansas.....	39,055	12,475	31.9	17,749	45.4	2,480	6.4	6,351	16.3	2,896
Allen.....	184	100	54.3	61	33.2	4	2.2	19	10.3	1
Anderson.....	117	52	44.5	53	45.3	4	3.4	8	6.8	3
Atchison.....	168	53	31.5	84	50.0	5	3.0	26	15.5	50
Barber.....	49	8	16.3	27	55.1	3	6.1	11	22.5	2
Barton.....	400	117	29.3	172	43.0	19	4.7	92	23.0	8
Bourbon.....	225	131	58.2	50	22.2	7	3.1	37	16.5	25
Brown.....	132	43	32.6	67	50.8	6	4.5	16	12.1	14
Butler.....	812	179	22.0	503	61.9	33	4.1	97	12.0	23
Chase.....	23	3	13.1	13	56.5	3	13.0	4	17.4	2
Chautauqua.....	28	4	14.3	14	50.0	2	7.1	8	28.6	10
Cherokee.....	49	16	32.7	13	26.5	5	10.2	15	30.6	208
Cheyenne.....	19	6	31.6	5	26.3	2	10.5	6	31.6	1
Clark.....	28	11	39.3	9	32.2	2	7.1	6	21.4	0
Clay.....	107	34	31.8	46	43.0	13	12.1	14	13.1	1
Cloud.....	117	32	27.4	59	50.4	8	6.8	18	15.4	4
Coffey.....	90	43	47.8	34	37.8	2	2.2	11	12.2	0
Comanche.....	12	4	33.4	6	50.0	1	8.3	1	8.3	2
Cowley.....	442	145	32.8	178	40.3	21	4.7	98	22.2	15
Crawford.....	368	163	44.3	117	31.8	31	8.4	57	15.5	199
Decatur.....	28	8	28.6	12	42.9	5	17.8	3	10.7	0
Dickinson.....	262	78	29.8	129	49.2	18	6.9	37	14.1	3
Doniphan.....	21	7	33.3	6	28.6	3	14.3	5	23.8	75
Douglas.....	1,288	644	50.0	449	34.9	38	2.9	157	12.2	20
Edwards.....	44	8	18.2	20	45.4	5	11.4	11	25.0	0
Elk.....	29	12	41.4	9	31.0	2	6.9	6	20.7	1
Ellis.....	370	90	24.3	203	54.9	39	10.5	38	10.3	15
Ellsworth.....	62	15	24.2	34	54.8	4	6.5	9	14.5	0
Finney.....	730	208	28.5	207	28.4	99	13.5	216	29.6	6
Ford.....	647	189	29.2	233	36.0	70	10.8	155	24.0	7
Franklin.....	345	159	46.1	121	35.1	18	5.2	47	13.6	13
Geary.....	760	175	23.0	330	43.4	92	12.1	163	21.5	15
Gove.....	37	8	21.6	13	35.2	4	10.8	12	32.4	1
Graham.....	31	9	29.0	13	42.0	4	12.9	5	16.1	0
Grant.....	119	33	27.7	42	35.3	14	11.8	30	25.2	12
Gray.....	91	25	27.5	33	36.2	11	12.1	22	24.2	3
Greeley.....	13	4	30.8	7	53.8	0	0.0	2	15.4	0
Greenwood.....	83	27	32.5	34	41.0	4	4.8	18	21.7	1
Hamilton.....	41	10	24.4	11	26.8	6	14.6	14	34.2	1
Harper.....	69	8	11.6	46	66.7	1	1.4	14	20.3	4
Harvey.....	444	207	46.6	158	35.6	10	2.3	69	15.5	17
Haskell.....	53	12	22.6	22	41.5	3	5.7	16	30.2	4
Hodgeman.....	20	5	25.0	13	65.0	1	5.0	1	5.0	0
Jackson.....	153	60	39.2	61	39.9	9	5.9	23	15.0	10
Jefferson.....	212	92	43.4	80	37.7	17	8.0	23	10.9	9
Jewell.....	32	9	28.2	17	53.1	1	3.1	5	15.6	0
Johnson.....	7,257	3,215	44.3	2,903	40.0	424	5.8	715	9.9	647
Kearny.....	55	18	32.7	14	25.5	5	9.1	18	32.7	1
Kingman.....	88	13	14.8	56	63.6	4	4.6	15	17.0	6
Kiowa.....	22	4	18.2	14	63.6	0	0.0	4	18.2	0
Labette.....	269	90	33.4	110	40.9	18	6.7	51	19.0	61
Lane.....	18	6	33.4	6	33.3	2	11.1	4	22.2	0
Leavenworth.....	874	363	41.6	363	41.5	49	5.6	99	11.3	66
Lincoln.....	39	8	20.5	25	64.1	0	0.0	6	15.4	0
Linn.....	124	56	45.2	40	32.2	12	9.7	16	12.9	4
Logan.....	29	2	6.9	22	75.9	2	6.9	3	10.3	0

Adequacy of Prenatal Care Utilization (APNCU) Index
By County of Residence
Kansas, 2007

County of Residence	Live Births*	APNCU Category**								Not Stated
		Adequate Plus		Adequate		Intermediate		Inadequate		
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	
Lyon.....	549	165	30.1	201	36.6	33	6.0	150	27.3	7
Marion.....	108	40	37.0	45	41.7	1	0.9	22	20.4	1
Marshall.....	132	46	34.8	64	48.5	7	5.3	15	11.4	2
McPherson.....	313	113	36.1	160	51.1	8	2.6	32	10.2	9
Meade.....	52	7	13.5	27	51.9	1	1.9	17	32.7	6
Miami.....	375	155	41.4	152	40.5	20	5.3	48	12.8	12
Mitchell.....	56	15	26.8	34	60.7	3	5.4	4	7.1	1
Montgomery.....	428	184	43.0	124	29.0	27	6.3	93	21.7	90
Morris.....	67	10	14.9	38	56.7	2	3.0	17	25.4	0
Morton.....	44	6	13.6	22	50.0	4	9.1	12	27.3	11
Nemaha.....	124	24	19.3	74	59.7	9	7.3	17	13.7	4
Neosho.....	212	108	50.9	74	34.9	9	4.3	21	9.9	14
Ness.....	24	3	12.5	15	62.5	3	12.5	3	12.5	2
Norton.....	46	15	32.6	21	45.7	6	13.0	4	8.7	0
Osage.....	177	81	45.8	62	35.0	13	7.3	21	11.9	8
Osborne.....	40	17	42.5	15	37.5	4	10.0	4	10.0	2
Ottawa.....	80	18	22.5	47	58.8	6	7.5	9	11.2	0
Pawnee.....	75	26	34.7	36	48.0	5	6.7	8	10.6	1
Phillips.....	57	9	15.8	28	49.1	10	17.6	10	17.5	0
Pottawatomie.....	347	150	43.2	136	39.2	17	4.9	44	12.7	9
Pratt.....	111	35	31.5	54	48.7	5	4.5	17	15.3	4
Rawlins.....	20	4	20.0	11	55.0	1	5.0	4	20.0	2
Reno.....	822	303	36.9	367	44.6	37	4.5	115	14.0	21
Republic.....	42	19	45.2	10	23.8	6	14.3	7	16.7	0
Rice.....	130	46	35.4	45	34.6	10	7.7	29	22.3	1
Riley.....	1,036	334	32.2	456	44.0	102	9.9	144	13.9	24
Rooks.....	72	21	29.2	29	40.3	12	16.6	10	13.9	3
Rush.....	39	13	33.3	17	43.6	5	12.8	4	10.3	3
Russell.....	86	18	20.9	40	46.5	14	16.3	14	16.3	6
Saline.....	804	189	23.5	449	55.8	57	7.1	109	13.6	4
Scott.....	73	29	39.7	12	16.5	3	4.1	29	39.7	1
Sedgwick.....	7,775	1,137	14.6	5,036	64.8	287	3.7	1,315	16.9	469
Seward.....	449	73	16.3	164	36.5	39	8.7	173	38.5	90
Shawnee.....	2,447	974	39.8	975	39.8	161	6.6	337	13.8	169
Sheridan.....	22	6	27.3	12	54.6	3	13.6	1	4.5	0
Sherman.....	87	31	35.6	34	39.1	14	16.1	8	9.2	0
Smith.....	31	10	32.3	15	48.4	0	0.0	6	19.3	2
Stafford.....	58	19	32.8	28	48.3	2	3.4	9	15.5	0
Stanton.....	34	8	23.5	15	44.1	4	11.8	7	20.6	6
Stevens.....	100	21	21.0	45	45.0	6	6.0	28	28.0	9
Sumner.....	272	46	16.9	166	61.0	18	6.6	42	15.5	19
Thomas.....	100	40	40.0	37	37.0	10	10.0	13	13.0	2
Trego.....	32	9	28.2	17	53.1	5	15.6	1	3.1	2
Wabaunsee.....	94	37	39.4	38	40.4	7	7.4	12	12.8	3
Wallace.....	9	2	22.2	5	55.6	0	0.0	2	22.2	0
Washington.....	74	39	52.7	22	29.7	6	8.1	7	9.5	3
Wichita.....	34	10	29.4	7	20.6	7	20.6	10	29.4	0
Wilson.....	132	64	48.5	45	34.1	6	4.5	17	12.9	12
Woodson.....	32	14	43.8	9	28.1	3	9.4	6	18.7	1
Wyandotte.....	2,603	711	27.3	847	32.6	297	11.4	748	28.7	291

*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
Residence data.

Number and Percent of Live Births by Birth Weight
By Adequacy of Prenatal Care Utilization (APNCU) Index
Kansas, 2007

Birth Weight (Grams)	Live Births*	APNCU Category								Not Stated
		Adequate Plus		Adequate		Intermediate		Inadequate		
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	
Total.....	39,055	12,475	31.9	17,749	45.4	2,480	6.4	6,351	16.3	2,896
Under 2,500(Low).....	2,620	1,484	56.6	552	21.1	89	3.4	495	18.9	362
2,500-4,499(Normal)...	36,024	10,889	30.2	16,978	47.1	2,362	6.6	5,795	16.1	2,509
4,500 and Over(High).	405	100	24.7	218	53.8	28	6.9	59	14.6	24
Not Stated.....	6	2	n/a	1	n/a	1	n/a	2	n/a	1

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, 2007

Population Groups	Live Births*	APNCU Category								Not Stated
		Adequate Plus		Adequate		Intermediate		Inadequate		
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	
Total.....	39,055	12,475	31.9	17,749	45.4	2,480	6.4	6,351	16.3	2,896
White Non-Hispanic.....	28,127	9,822	34.9	13,388	47.6	1,575	5.6	3,342	11.9	2,043
Black Non-Hispanic.....	2,580	644	25.0	992	38.4	226	8.8	718	27.8	276
Native American Non-Hispanic.....	252	81	32.1	90	35.7	15	6.0	66	26.2	24
Asian/Pacific Islander Non-Hispanic.....	1,117	328	29.4	559	50.0	65	5.8	165	14.8	60
Other Non-Hispanic**	722	203	28.1	297	41.1	56	7.8	166	23.0	42
Hispanic***	6,230	1,387	22.3	2,415	38.8	540	8.6	1,888	30.3	446
Not Stated.....	27	10	n/a	8	n/a	3	n/a	6	n/a	5

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 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 72.4 percent based on the 2007 revised data. The APNCU showed a small increase in the proportion of women receiving less than adequate care between 2004 (18.7 percent) and 2007 (22.7 percent). Much of the difference between 2004 and 2007 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 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.

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

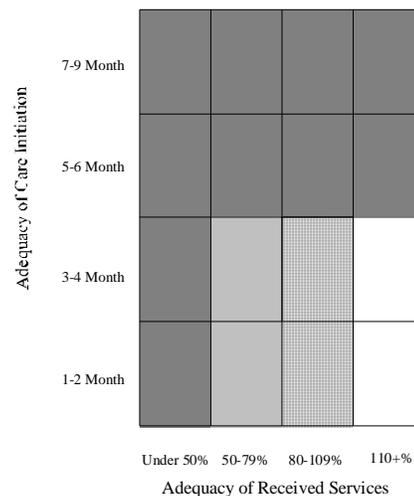
II. Proportion of the number of visits recommended by the American College of Obstetricians and Gynecologists (ACOG) received from the time prenatal care began until delivery (Adequacy of Received Services)

- 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.