

INFANT AND MATERNAL MORTALITY IN KANSAS
(1917-1921)

by

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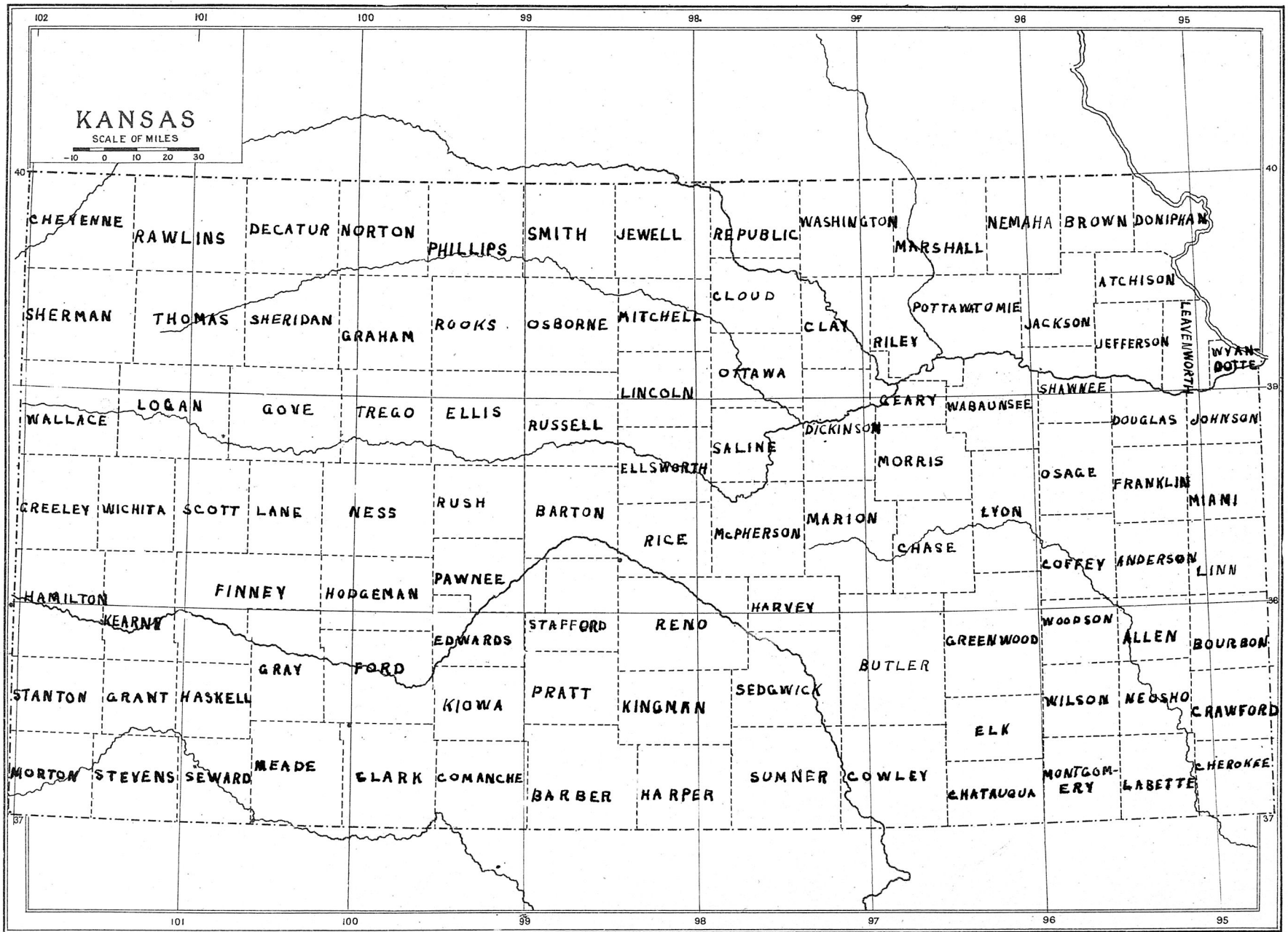
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INTRODUCTION

It is a recognized fact that the wealth and happiness of a nation depend to a great extent upon the health of its people. Much attention has been given in the United States in recent years to the subject of health by the United States Public Health Service, the Federal Children's Bureau, State and Local Departments of Health, and by similar organizations.

As a result of this work the death rate from preventable diseases has been greatly reduced. For instance, by careful studies of vital statistics the Children's Bureau showed that, "During the years 1900 to 1917 the typhoid rate has been reduced to one-third the former rate, the tuberculosis rate markedly reduced, the diphtheria rate reduced more than one-half."¹ The studies, also, disclosed the astonishing fact that our maternal deaths which are known to be largely preventable had not decreased in the period. Infant deaths from preventable causes remained unduly high.

¹"Save the Youngest," Bureau Publication No. 61, U. S. Children's Bureau, p. 2.

The Children's Bureau has made studies of different localities in the United States in order to determine as nearly as possible the causes which produce the high infant and maternal mortality. An attempt has been made in this study to show by graphs and tables how the same factors operate in Kansas and where there are differences. It is hoped that such a study will aid in applying preventive and remedial measures.

METHOD OF WORK

In the study only the figures from the states which had been in the registration area since 1917 were used except that in the 1920 studies all the states in the area at that time were included. The birth registration area of the United States consists of those states and cities which report at least 90 per cent of their births. In 1917, there were 19 states in this area; in 1920, there were 23 states representing 59.8 per cent of the population of the United States. Four states were added in 1921.

Since Kansas was admitted to the registration area in 1917, the years 1917 to 1921 were chosen to furnish the data. For the cities, figures for the years 1918 to 1921 were used because statistics in only 12 cities of the 30 were kept separate from the county in 1917.

An infant is considered a child under one year. Infant mortality is defined as the number of infant deaths per 1,000 live births. There are several methods of computing infant mortality rates. One method is to find the rate per 100,000 population. This is not fair because the

birth rate varies in different localities. The most accurate method is the rate per 1,000 births which includes all deaths under one year of age. The rate most generally used is per 1,000 live births because it is difficult and often impossible to secure full reports of still births and miscarriages. It is obvious that the infant mortality rate as usually expressed does not represent all of the lives lost. The infant mortality rate is computed as follows: Multiply the infant deaths by 1,000 and divide by the number of live births.

The maternal mortality rate is the number of maternal deaths per 1,000 live births. Maternal mortality rates are computed in three ways:

1. Rate per 100,000 women. This method is inaccurate since it includes all women whether they are bearing children or not.

2. Rate per 100,000 women of child-bearing age (15-44). This is more accurate, but not all women of this age are bearing children every year.

3. Rate per 1,000 births. The rate per 1,000 live births is the one used in the United States. This is not absolutely accurate, but as has been noted it is difficult to secure reports of miscarriages and still births.

Since this is a statistical study the data were taken from the Sixth Annual Report, Birth Statistics, for the Birth Registration Area of the United States, 1920, Department of Commerce, Bureau of the Census; tables released by the same department; tables compiled by the Children's Bureau, United States Department of Labor, Washington, D. C.; the Ninth, Tenth, and Eleventh Biennial Reports of the Kansas State Board of Health; Supplement Kansas Casualties in the World War, 1917-1919; and from the files of the State Board of Health at Topeka.

The graphs and tables were compiled from statistics found in the above. Where possible they were copied directly and any inconsistencies were allowed to remain, as there were no means of checking errors in the reports except where there were mistakes in division.

INFANT MORTALITY

The infant mortality rate of the United States is being reduced; that for the birth registration area for 1920 being 86, while that for 1921 was 76. The place this country holds in reference to certain other countries is shown in the following table:

TABLE I
U.S. Department of Labor Children's Bureau, Washington, D. C.
COMPARATIVE INFANT MORTALITY RATES
IN THE UNITED STATES AND CERTAIN FOREIGN COUNTRIES

COUNTRY AND YEAR	INFANT AND MORTALITY RATE
New Zealand (1921)	48
Norway (1917)	64
Australia (1920)	69
Sweden (1916)	70
The Netherlands (1920)	73
U.S. (Birth Registration Area) (1921)	76
England and Wales (1921)	83
Ireland (1920)	84
Denmark (1920)	91
Scotland (1920)	92
Ontario (1919)	96
Belgium (1919)	103
Uruguay (1920)	117
France (77 Depts. 1919)	119
Germany (1920)	131
Finland (1919)	135
Italy (1917)	139
Quebec (1919)	143
Spain (1919)	156
Austria (1919)	156
Japan (1918)	189
Chile (1920)	263

Source: Compiled from Official Sources or from
Annuaire International de Statistique.

Latest figures available December 1, 1922.

Among the 19 states that had been in the Birth Registration Area since 1917, Kansas ranked fourth in the average infant mortality rate for the years 1917-1921. The five-year average for the State was 73, while the rate for 1921 was 61.6. (Graph I)

A study of the infant mortality rates in the birth registration area for 1920 in rural and urban districts revealed the fact that the rural rate in Kansas was 67 and the urban rate 92, placing the State third for rural rate and eleventh for the urban rate. We had 17 cities with a population of 10,000 or more that year. Why was our urban rate so high? The question has, also, been asked, "Why was the Kansas rate 71 in 1920 and 61.6 in 1921 when that of Nebraska, an adjoining state, with similar population, was 64 in 1920 and 58.6 in 1921?" (Graph II)

Infant mortality rates may vary because of incomplete registration of births and deaths. Letters were sent to the State Department of Health in a number of states, asking for their interpretation of figures. The infant mortality rate for Augusta, Maine, was 160 in 1920. The director of the Division of Nursing and Child Hygiene, State Department of Health, Augusta, Maine, stated that the apparently high rate in 1920 was influenced by poor

reporting of births and that the rate in 1921, without any particular change of conditions, was far lower because of better reporting.

The colored infant mortality rate is usually much higher than that for white infants, but in Virginia some counties showed a higher rate for the white. The State Registrar of Virginia wrote that the deaths of infants are not always reported because coffins are often bought at a country store or made by a carpenter and a burial permit is not secured. This is especially true of colored infants.

It was noticed that the rate for Green Bay, Wisconsin, was much higher than for the rural section of the county. The reply was that, "One reason for the very high infant mortality rate in Green Bay is the Maternity and Orphan Home which is conducted within the city limits. The death rate in all such institutions as these is very high."

In most instances the rural rate is lower than the urban, especially for diarrhoea, but the State of Washington has a higher rural rate. Paul Turner, M. D., Director of Health, Seattle, Washington, said: "In the big majority of rural homes in this area no water is obtainable except ditch water and, all too frequently, the rancher neglects to chlorinate properly the water used for drinking and culinary purposes."

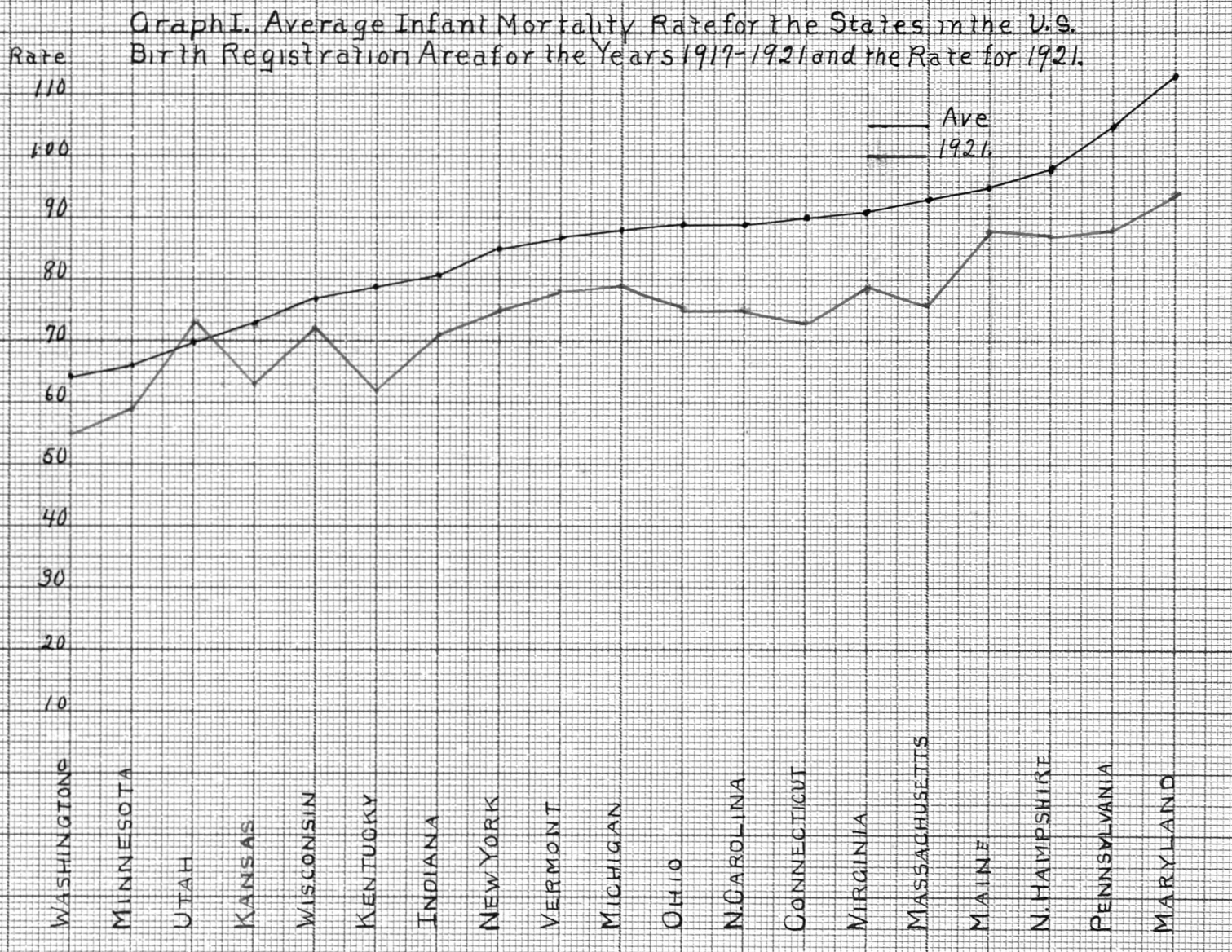
The above are illustrations of the dangers of interpreting statistics without a knowledge of local conditions. The effects of inaccurate reporting and improper diagnosis should be considered in any study.

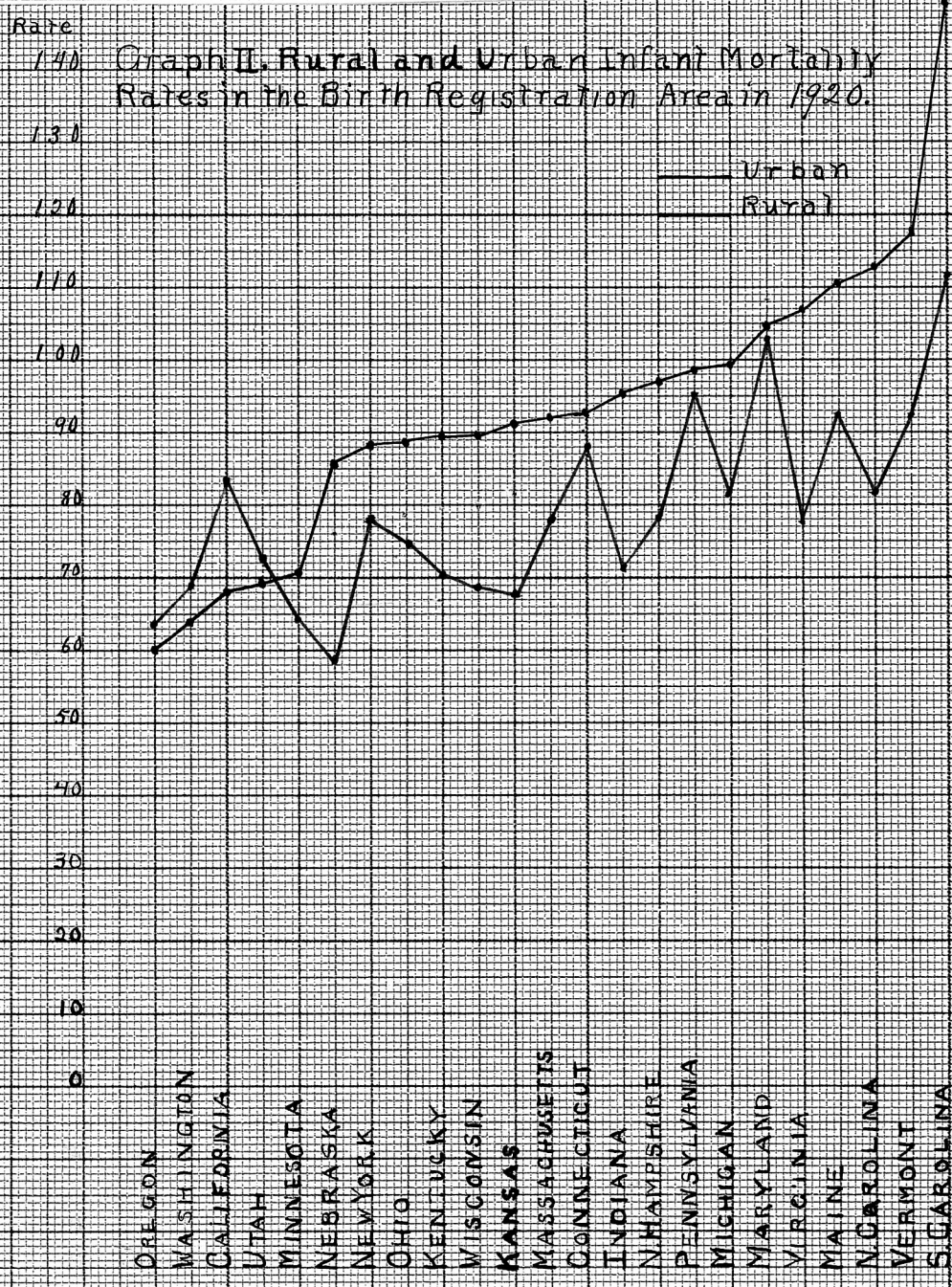
The files of the Kansas State Board of Health have listed infant deaths from 110 causes. In some cases there had been only one death in the five-year period from a particular cause. An example of this is, "General Paralysis of the Insane." The greatest number of deaths was from "Premature Birth." Some figures are interesting, as, for instance, there were 19 deaths reported from "Cerebral Hemorrhage" during the four years 1917 to 1920, and 15 deaths in the one year 1921. What is the cause of this increase? Is it due to better diagnoses and more accurate reporting, or are there other factors to be considered?

Ten infants were murdered during the years 1917 to 1921. The figures show that whooping cough is a dangerous disease for infants. There were 75 deaths in 1917, 123 deaths in 1918, 31 deaths in 1919, 105 deaths in 1920, and 61 deaths in 1921, making a total of 395 deaths from this cause in the five years. Measles ranks next to whooping cough as a cause of infant deaths among the communicable diseases.

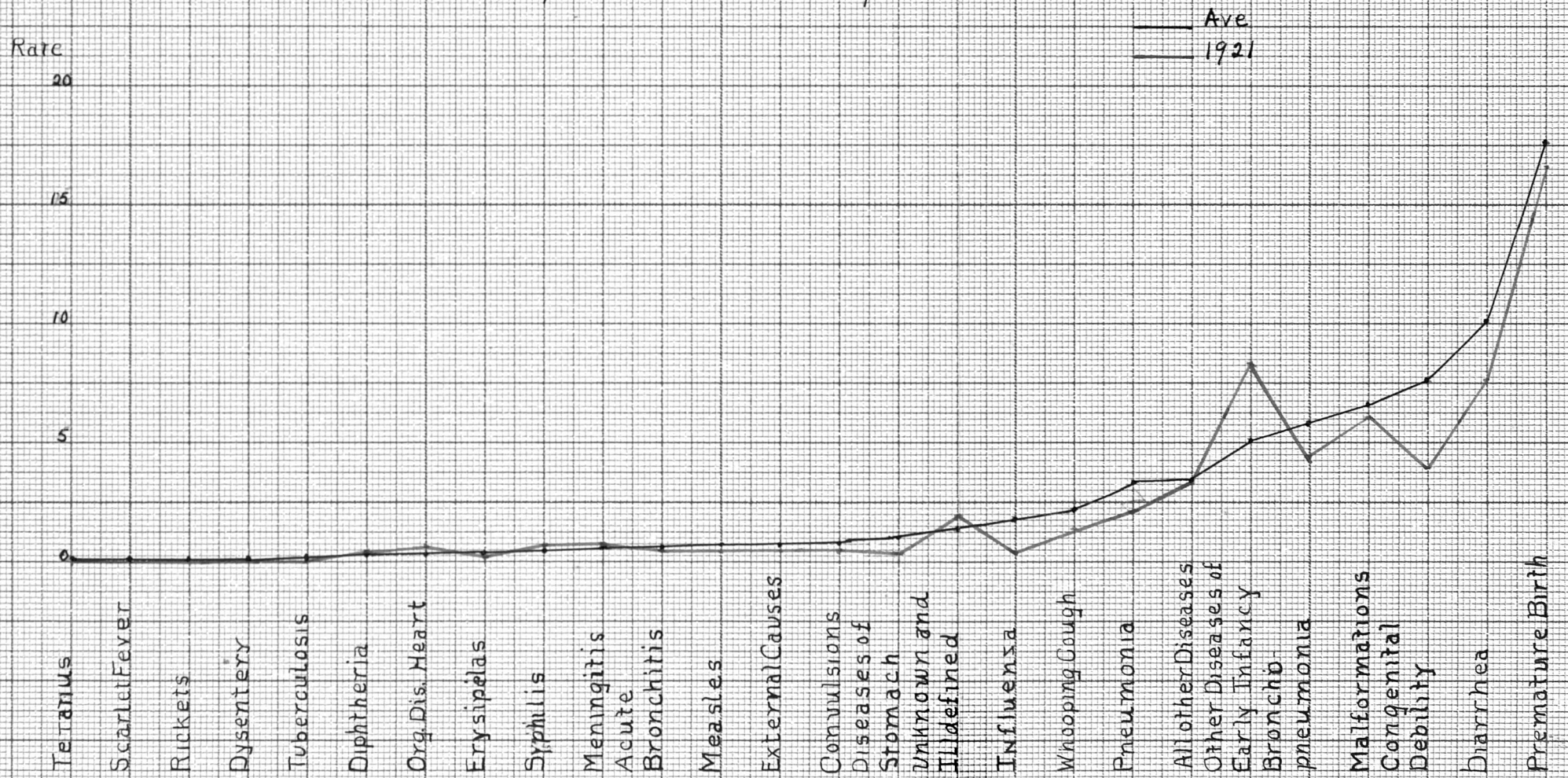
The Kansas five-year average infant mortality rate and the rate for 1921 for some of the principal diseases have been shown in Graph III. The average mortality rate for premature birth was 17.7; in 1920 the rate was 16.6. The rate for diarrhoea and congenital debility was reduced but that for diseases of early infancy or from causes operative at birth increased 3.2 in 1921. There were variations between the rural and urban rates for these diseases, the principal differences being that fewer deaths occurred in the rural districts from syphilis, diseases of the respiratory tract, and premature birth. (Graph IV)

Why was the Kansas infant mortality rate 40 for the first month of life in 1920? This was more than six times the rate for the second month, which was 5.8. The rate was also higher for the 3-5 month age group than for either of the following two month periods. Apparently, the chance for survival increased with age. (Graph V)





Graph III Average Infant Mortality Rates in Kansas from All Causes for the Years 1917-1921 and the Rate for 1921.



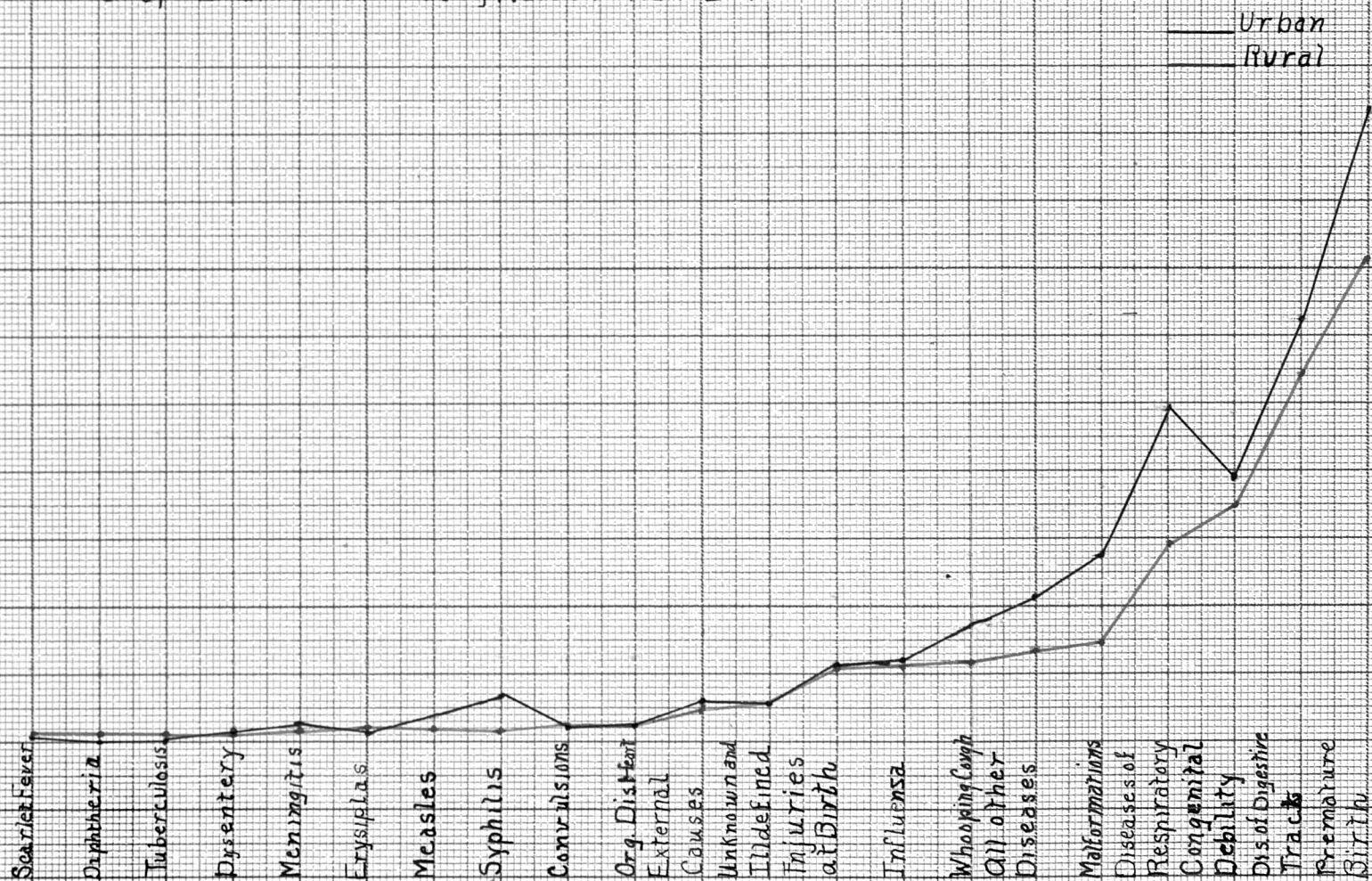
Graph IV. Infant Mortality Rates in Kansas from All Causes in 1920.

Rate

Urban
Rural

Scarlet fever
Diphtheria
Tuberculosis
Dysentery
Meningitis
Erysipelas
Measles
Syphilis
Convulsions
Org. Disturb
External
Causes
Unknown and
Undefined
Injuries
at Birth
Influenza
Whooping Cough
All other
Diseases
Malformations
Diseases of
Respiratory
Congenital
Debility
Dis. of Digestive
Tract
Premature
Birth

25
20
15
10
5
0



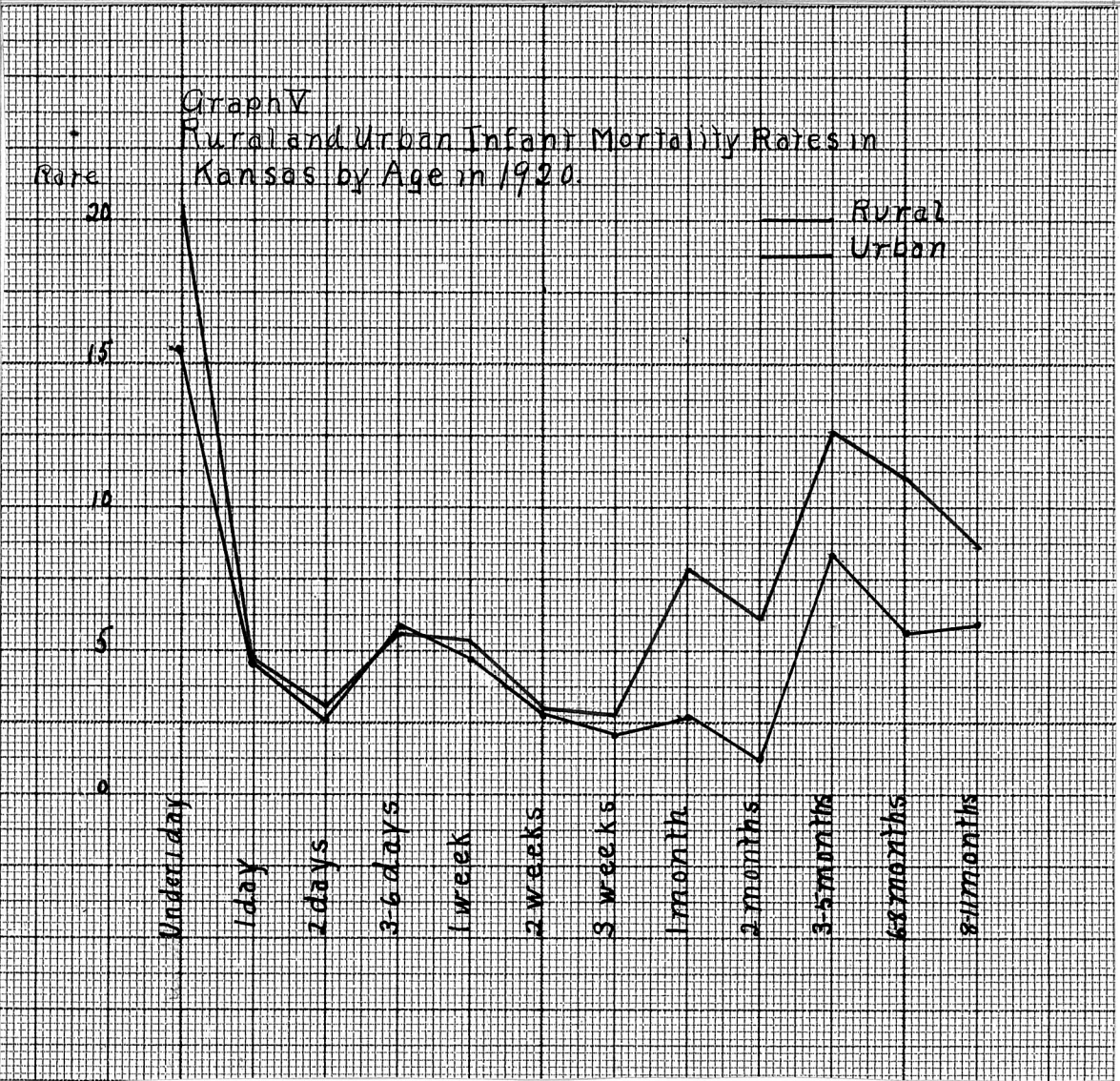


TABLE II
BIRTHS, AND INFANT AND MATERNAL MORTALITY BY COUNTIES
IN KANSAS FOR THE YEARS 1917-1921

YEAR	BIRTHS	DEATHS	MATERNAL DEATHS	YEAR	BIRTHS	DEATHS	MATERNAL DEATHS
ALLEN				BOURBON			
1917	490	41	2	1917	229	15	0
1918	287	26	2	1918	273	17	2
1919	283	22	3	1919	240	18	4
1920	304	19	0	1920	275	13	1
1921	315	23	4	1921	292	16	1
ANDERSON				BROWN			
1917	239	8	0	1917	459	32	4
1918	264	17	2	1918	472	30	4
1919	233	16	2	1919	413	28	3
1920	286	27	0	1920	427	32	1
1921	273	15	3	1921	566	24	3
ATCHISON				BUTLER			
1917	189	16	2	1917	802	75	5
1918	217	14	1	1918	517	37	3
1919	193	11	1	1919	557	28	0
1920	195	9	0	1920	604	33	1
1921	221	14	1	1921	651	39	4
BARBER				CHASE			
1917	230	17	2	1917	135	12	1
1918	250	18	2	1918	178	7	0
1919	244	15	2	1919	150	12	0
1920	226	29	1	1920	163	14	0
1921	217	11	2	1921	172	3	0
BARTON				CHATAUQUA			
1917	482	27	3	1917	244	19	1
1918	347	22	4	1918	217	8	1
1919	290	17	4	1919	237	17	1
1920	301	24	3	1920	275	28	1
1921	359	18	3	1921	296	21	1

TABLE II (CONT.)

YEAR	BIRTHS	DEATHS	MATERNAL	YEAR	BIRTHS	DEATHS	MATERNAL
			DEATHS				DEATHS
CHEROKEE				COFFEY			
1917	850	85	8	1917	291	18	4
1918	721	67	4	1918	286	19	0
1919	589	59	4	1919	300	22	1
1920	753	52	4	1920	319	14	2
1921	661	44	4	1921	323	19	0
CHEYENNE				COMANCHE			
1917	136	7	0	1917	143	6	1
1918	149	8	2	1918	90	7	1
1919	154	8	0	1919	108	6	0
1920	177	13	1	1920	121	11	0
1921	189	12	0	1921	138	4	0
CLARK				COWLEY			
1917	160	5	1	1917	670	50	4
1918	133	6	0	1918	321	17	1
1919	113	8	2	1919	286	17	0
1920	110	5	1	1920	310	18	0
1921	136	4	0	1921	313	17	1
CLAY				CRAWFORD			
1917	341	23	2	1917	929	117	8
1918	344	21	1	1918	1047	100	13
1919	310	18	0	1919	987	68	11
1920	314	9	3	1920	936	77	7
1921	315	16	2	1921	1049	73	5
CLOUD				DECATUR			
1917	461	33	3	1917	202	10	2
1918	264	25	2	1918	200	13	0
1919	266	13	1	1919	195	9	3
1920	289	22	2	1920	199	12	0
1921	277	17	2	1921	209	18	0

TABLE II (CONT.)

YEAR	BIRTHS	DEATHS	MATERNAL DEATHS	YEAR	BIRTHS	DEATHS	MATERNAL DEATHS
DICKINSON				ELLIS			
1917	539	34	0	1917	448	38	1
1918	576	47	6	1918	448	44	4
1919	552	42	3	1919	396	35	2
1920	557	36	1	1920	523	36	5
1921	610	45	4	1921	553	50	11
DONIPHAN				ELLSWORTH			
1917	328	24	1	1917	258	13	1
1918	295	23	1	1918	261	21	3
1919	297	24	0	1919	217	14	1
1920	359	24	2	1920	260	17	0
1921	342	23	0	1921	287	13	2
DOUGLAS				FINNEY			
1917	216	8	1	1917	190	28	2
1918	202	9	2	1918	194	17	3
1919	138	8	0	1919	171	20	1
1920	230	8	2	1920	199	23	1
1921	188	7	1	1921	224	18	3
EDWARDS				FORD			
1917	182	17	1	1917	501	43	3
1918	181	9	1	1918	219	14	2
1919	169	9	0	1919	236	15	2
1920	161	10	0	1920	240	20	1
1921	178	9	1	1921	260	12	1
ELK				FRANKLIN			
1917	212	8	2	1917	372	38	0
1918	210	18	2	1918	241	27	0
1919	150	9	1	1919	193	2	2
1920	195	9	2	1920	246	20	0
1921	231	8	1	1921	209	9	1

TABLE II (CONT.)

YEAR	BIRTHS	DEATHS	MATERNAL DEATHS	YEAR	BIRTHS	DEATHS	MATERNAL DEATHS
GEARY				GREELEY			
1917	233	17	2	1917	19	5	0
1918	107	3	1	1918	17	0	0
1919	113	3	0	1919	6	1	0
1920	162	10	2	1920	33	3	0
1921	132	7	0	1921	37	1	0
GOVE				GREENWOOD			
1917	148	14	1	1917	300	19	4
1918	130	4	0	1918	348	12	3
1919	94	7	0	1919	307	19	1
1920	107	10	0	1920	308	12	4
1921	149	12	0	1921	373	23	3
GRAHAM				HAMILTON			
1917	238	21	3	1917	61	8	1
1918	199	17	0	1918	83	5	1
1919	175	8	0	1919	67	3	1
1920	198	10	0	1920	77	5	0
1921	221	11	1	1921	70	7	1
GRANT				HARPER			
1917	16	4	0	1917	368	23	2
1918	20	2	0	1918	313	20	1
1919	19	0	0	1919	288	25	2
1920	18	2	0	1920	320	15	2
1921	21	0	0	1921	318	15	1
GRAY				HARVEY			
1917	155	4	2	1917	507	23	4
1918	130	12	0	1918	227	5	0
1919	118	5	1	1919	230	18	1
1920	119	8	2	1920	215	16	2
1921	145	11	1	1921	223	11	0

TABLE II (CONT.)

YEAR	BIRTHS	DEATHS	MATERNAL DEATHS	YEAR	BIRTHS	DEATHS	MATERNAL DEATHS
HASKELL				JOHNSON			
1917	73	6	0	1917	280	19	0
1918	52	5	0	1918	245	25	0
1919	50	1	0	1919	257	18	1
1920	45	3	0	1920	325	17	2
1921	33	3	1	1921	376	25	3
HODGEMAN				KEARNY			
1917	109	7	1	1917	62	3	0
1918	107	7	0	1918	58	3	1
1919	99	5	0	1919	57	2	1
1920	66	6	1	1920	55	4	0
1921	99	3	0	1921	61	4	0
JACKSON				KINGMAN			
1917	323	21	0	1917	325	15	3
1918	314	24	3	1918	276	13	3
1919	298	19	2	1919	259	16	2
1920	323	20	2	1920	377	26	2
1921	307	22	0	1921	339	18	2
JEFFERSON				KIOWA			
1917	275	23	1	1917	227	11	1
1918	305	25	5	1918	165	9	1
1919	282	16	4	1919	154	10	0
1920	345	13	0	1920	180	16	1
1921	301	20	2	1921	153	12	0
JEWELL				LABETTE			
1917	401	28	1	1917	348	24	1
1918	349	24	1	1918	359	29	2
1919	282	12	2	1919	342	23	2
1920	343	16	4	1920	376	26	2
1921	334	16	2	1921	365	21	1

TABLE II (CONT.)

YEAR	BIRTHS	DEATHS	MATERNAL DEATHS	YEAR	BIRTHS	DEATHS	MATERNAL DEATHS
LANE				LYON			
1917	106	8	1	1917	546	30	0
1918	84	2	2	1918	331	21	2
1919	70	4	0	1919	285	15	0
1920	107	4	2	1920	325	26	0
1921	77	2	0	1921	315	13	0
LEAVENWORTH				MARION			
1917	285	26	2	1917	475	42	4
1918	282	23	0	1918	521	42	2
1919	227	18	2	1919	467	34	1
1920	306	10	1	1920	642	52	5
1921	277	13	0	1921	624	46	1
LINCOLN				MARSHALL			
1917	255	14	2	1917	463	24	4
1918	250	11	0	1918	480	33	4
1919	198	13	0	1919	419	27	1
1920	268	12	0	1920	511	24	2
1921	243	11	0	1921	556	37	3
LINN				MCPHERSON			
1917	296	25	1	1917	505	34	1
1918	289	17	1	1918	497	36	4
1919	282	17	1	1919	428	21	0
1920	314	13	2	1920	466	30	1
1921	309	18	1	1921	467	19	3
LOGAN				MEADE			
1917	54	4	1	1917	162	14	1
1918	85	6	0	1918	133	8	2
1919	55	2	0	1919	156	12	0
1920	64	8	0	1920	158	5	0
1921	84	8	1	1921	156	9	1

TABLE II (CONT.)

YEAR	BIRTHS	DEATHS	MATERNAL		YEAR	BIRTHS	DEATHS	MATERNAL			
			DEATHS	DEATHS				DEATHS	DEATHS		
MIAMI				NEMAHA							
1917	335	32		2	1917	400	20		4		
1918	320	21		4	1918	406	32		5		
1919	346	22		4	1919	373	22		1		
1920	387	36		3	1920	331	20		2		
1921	402	28		3	1921	423	14		3		
MITCHELL				NEOSHO							
1917	369	21		5	1917	473	42		0		
1918	286	15		5	1918	290	32		0		
1919	256	18		1	1919	288	12		2		
1920	280	16		0	1920	286	17		3		
1921	321	22		3	1921	299	17		1		
MONTGOMERY				NESS							
1917	562	51		2	1917	197	18		0		
1918	518	35		5	1918	200	7		0		
1919	511	41		5	1919	188	10		1		
1920	564	49		4	1920	180	12		1		
1921	568	47		2	1921	211	20		1		
MORRIS				NORTON							
1917	288	13		0	1917	278	19		2		
1918	247	11		1	1918	239	21		5		
1919	241	16		0	1919	193	10		6		
1920	282	20		2	1920	232	15		3		
1921	223	15		4	1921	312	17		1		
MORTON				OSAGE							
1917	53	2		1	1917	348	26		2		
1918	67	13		0	1918	339	33		0		
1919	45	4		0	1919	322	15		3		
1920	93	5		1	1920	395	16		1		
1921	106	4		0	1921	359	22		0		

TABLE II (CONT.)

YEAR	BIRTHS	DEATHS	MATERNAL DEATHS	YEAR	BIRTHS	DEATHS	MATERNAL DEATHS
OSBORNE				PRATT			
1917	315	18	5	1917	286	21	4
1918	312	16	0	1918	312	27	2
1919	263	12	2	1919	264	16	0
1920	312	14	4	1920	340	20	1
1921	354	20	2	1921	295	16	0
OTTAWA				RAWLINS			
1917	263	21	3	1917	177	9	0
1918	222	14	1	1918	165	8	2
1919	192	16	0	1919	151	10	2
1920	252	8	2	1920	158	13	2
1921	232	13	2	1921	184	17	1
PAWNEE				RENO			
1917	254	17	4	1917	549	26	3
1918	225	19	0	1918	506	33	1
1919	237	18	1	1919	471	42	2
1920	238	14	0	1920	471	26	2
1921	237	19	1	1921	550	24	1
PHILLIPS				REPUBLIC			
1917	293	18	1	1917	371	18	2
1918	308	19	2	1918	301	11	1
1919	254	12	1	1919	320	18	4
1920	270	17	1	1920	291	17	2
1921	328	12	0	1921	322	16	2
POTTAWATOMIE				RICE			
1917	324	18	1	1917	305	23	0
1918	362	25	1	1918	325	29	2
1919	340	13	1	1919	312	20	2
1920	347	24	1	1920	321	22	3
1921	386	11	1	1921	345	23	4

TABLE II (CONT.)

YEAR	BIRTHS	DEATHS	MATERNAL	YEAR	BIRTHS	DEATHS	MATERNAL
			DEATHS				DEATHS
RILEY				SCOTT			
1917	348	23	4	1917	73	6	1
1918	219	18	3	1918	80	5	0
1919	170	7	2	1919	60	2	0
1920	192	6	0	1920	69	7	0
1921	224	10	0	1921	109	5	4
ROOKS				SEDGEWICK			
1917	255	22	0	1917	416	31	0
1918	212	10	0	1918	426	29	0
1919	188	13	0	1919	432	24	1
1920	186	9	1	1920	461	31	3
1921	229	11	0	1921	434	16	0
RUSH				SEWARD			
1917	289	28	0	1917	158	12	2
1918	259	14	0	1918	171	14	5
1919	188	8	1	1919	171	18	2
1920	229	20	0	1920	216	19	1
1921	299	17	0	1921	197	14	2
RUSSELL				SHAWNEE			
1917	318	25	1	1917	394	33	0
1918	244	15	0	1918	376	33	2
1919	252	15	0	1919	337	24	1
1920	275	17	1	1920	389	26	1
1921	279	20	2	1921	362	15	2
SALINE				SHERIDAN			
1917	502	56	2	1917	152	6	0
1918	225	14	0	1918	131	6	0
1919	207	8	1	1919	123	7	0
1920	189	11	2	1920	132	15	0
1921	209	11	1	1921	177	15	0

TABLE II (CONT.)

YEAR	BIRTHS	DEATHS	MATERNAL DEATHS	YEAR	BIRTHS	DEATHS	MATERNAL DEATHS
SHERMAN				SUMNER			
1917	106	9	0	1917	684	51	6
1918	111	4	0	1918	491	34	7
1919	88	5	1	1919	419	19	1
1920	123	7	1	1920	549	27	4
1921	134	4	1	1921	494	17	1
SMITH				THOMAS			
1917	385	13	2	1917	153	7	2
1918	348	20	4	1918	130	5	1
1919	323	26	4	1919	136	5	0
1920	348	16	3	1920	186	8	0
1921	341	13	3	1921	171	9	3
STAFFORD				TREGO			
1917	287	14	2	1917	173	11	2
1918	267	27	3	1918	163	8	0
1919	273	27	3	1919	145	8	0
1920	291	19	5	1920	139	8	1
1921	276	18	2	1921	158	10	0
STANTON				WABAUNSEE			
1917	14	1	1	1917	252	21	0
1918	27	1	0	1918	269	35	2
1919	10	0	1	1919	248	9	0
1920	26	0	0	1920	250	12	1
1921	19	0	0	1921	258	11	0
STEVENS				WALLACE			
1917	81	9	2	1917	67	8	0
1918	93	6	1	1918	47	7	0
1919	106	14	0	1919	57	6	0
1920	82	7	0	1920	53	5	0
1921	136	7	1	1921	76	3	1

TABLE II (CONT.)

YEAR	BIRTHS	DEATHS	MATERNAL DEATHS	YEAR	BIRTHS	DEATHS	MATERNAL DEATHS
WASHINGTON				WOODSON			
1917	437	20	4	1917	167	18	3
1918	405	20	3	1918	201	18	1
1919	397	18	4	1919	191	10	1
1920	371	20	2	1920	204	9	2
1921	392	31	2	1921	185	7	1
WICHITA				WYANDOTTE			
1917	16	2	0	1917	351	41	3
1918	37	3	0	1918	188	15	1
1919	41	3	0	1919	155	16	0
1920	44	0	0	1920	180	21	1
1921	57	3	0	1921	254	11	1
WILSON							
1917	539	43	6				
1918	432	45	4				
1919	525	23	3				
1920	490	26	5				
1921	615	37	4				

TABLE III
 BIRTHS AND INFANT AND MATERNAL DEATHS
 IN URBAN SECTIONS IN KANSAS
 1918-1921

YEAR	BIRTHS	INFANT DEATHS	MATERNAL DEATHS	YEAR	BIRTHS	INFANT DEATHS	MATERNAL DEATHS
ATCHISON				COFFEYVILLE			
1918	231	24	2	1918	251	28	1
1919	227	18	2	1919	253	20	2
1920	241	20	7	1920	296	17	3
1921	288	23	1	1921	359	17	4
AUGUSTA				DODGE CITY			
1918	175	23	1	1918	157	5	4
1919	166	23	0	1919	160	15	0
1920	160	19	0	1920	165	19	0
1921	142	11	0	1921	197	15	1
ARKANSAS CITY				EMPORIA			
1918	251	27	0	1918	249	20	2
1919	226	18	1	1919	245	16	1
1920	321	19	2	1920	272	22	2
1921	310	17	1	1921	281	19	0
CONCORDIA				ELDORADO			
1918	110	8	2	1918	253	42	6
1919	102	6	3	1919	318	32	1
1920	122	11	0	1920	336	26	3
1921	122	7	5	1921	321	18	2
CHANUTE				FORT SCOTT			
1918	258	34	3	1918	231	29	7
1919	225	24	4	1919	244	14	6
1920	292	26	2	1920	243	33	0
1921	284	25	3	1921	278	23	4

TABLE III (CONT.)

YEAR	BIRTHS	INFANT DEATHS	MATERNAL DEATHS	YEAR	BIRTHS	INFANT DEATHS	MATERNAL DEATHS
GALENA				KANSAS CITY			
1918	145	13	0	1918	1921	261	25
1919	112	12	2	1919	2059	223	23
1920	96	5	3	1920	2266	242	17
1921	96	4	1	1921	2407	175	23
GREAT BEND				LAWRENCE			
1918	93	6	1	1918	193	14	3
1919	73	11	1	1919	187	5	1
1920	129	7	2	1920	249	13	2
1921	147	10	1	1921	254	25	1
HUTCHINSON				LEAVENWORTH			
1918	440	38	6	1918	339	46	4
1919	458	41	3	1919	314	34	9
1920	565	56	4	1920	312	25	6
1921	596	36	1	1921	364	30	3
INDEPENDENCE				MANHATTAN			
1918	357	29	5	1918	210	18	3
1919	331	21	3	1919	160	7	1
1920	424	39	1	1920	187	10	1
1921	295	27	2	1921	201	10	6
IOLA				NEWTON			
1918	198	16	0	1918	283	22	3
1919	155	15	0	1919	330	25	3
1920	207	20	0	1920	347	30	7
1921	213	15	0	1921	341	24	2
JUNCTION CITY				OTTAWA			
1918	196	28	3	1918	168	19	0
1919	179	12	1	1919	188	17	2
1920	208	13	3	1920	185	12	0
1921	174	14	0	1921	189	10	2

TABLE III (CONT.)

YEAR	BIRTHS	INFANT DEATHS	MATERNAL DEATHS	YEAR	BIRTHS	INFANT DEATHS	MATERNAL DEATHS
PARSONS				TOPEKA			
1918	337	43	4	1918	1087	109	12
1919	317	29	3	1919	970	75	10
1920	361	30	3	1920	1130	105	9
1921	329	22	4	1921	1253	107	13
PITTSBURG				WELLINGTON			
1918	340	31	4	1918	122	12	1
1919	287	17	2	1919	140	14	3
1920	295	21	1	1920	158	22	3
1921	419	25	0	1921	207	13	2
ROSEDALE				WINFIELD			
1918	144	26	4	1918	163	13	2
1919	132	11	3	1919	202	14	3
1920	181	25	2	1920	192	19	2
1921	216	17	1	1921	197	10	2
SALINA				WICHITA			
1918	348	28	5	1918	1460	128	9
1919	303	23	3	1919	1410	128	7
1920	360	23	3	1920	1675	157	15
1921	408	21	4	1921	1793	131	21

TABLE IV
 POPULATION OF COUNTIES OF KANSAS IN 1921
 INFANT MORTALITY, NUMBER & RATE
 AND
 MATERNAL MORTALITY, NUMBER & RATE
 1917-1921

COUNTY	POPULA- TION 1921	BIRTHS	INFANT MORTALITY NUMBER	RATE	MATERNAL MORTALITY NUMBER	RATE
Allen	16526	1679	131	78	11	6.5
except *Iola	8872	773	66	86	0	0.0
Anderson	12291	1295	83	63	7	5.4
Atchison	11430	1015	64	63	4	3.9
except *Atchison	15280	1200	103	87	16	13.3
Barber	9263	1167,	90	77	9	7.6
Barton	13702	1779	108	61	17	9.5
except *Great Bend	5006	442	34	77	5	11.3
Bourbon	12725	1309	79	61	8	6.1
except *Fort Scott	12344	1188	125	105	17	15.9
Brown	20437	2337	146	63	15	6.4
Butler	25739	3131	212	67	13	4.1
except *Augusta	4338	643	76	118	1	1.5
*Eldorado	11284	1228	118	96	12	9.7
Chase	6755	798	48	60	1	1.2
Chatauqua	11843	1269	93	73	5	3.9
Cherokee	30473	3574	307	86	24	6.7
except *Galena	4712	449	34	75	6	13.3

TABLE IV (CONT.)

COUNTY	POPULA- TION 1921	BIRTHS	INFANT MORTALITY NUMBER	MORTALITY RATE	MATERNAL MORTALITY NUMBER	MORTALITY RATE
Cheyenne	5780	805	48	60	3	3.7
Clark	4880	652	28	43	4	6.1
Clay	15630	1624	87	53	8	4.9
Cloud except *Concordia	12888 4641	1557 456	110 32	71 70	10 10	6.4 21.7
Coffey	15029	1519	92	61	7	4.6
Comanche	5062	600	34	55	2	3.3
Cowley except *Arkansas City *Winfield	14906 11513 8931	1900 1108 754	119 81 56	63 73 74	6 4 9	3.1 3.5 11.8
Crawford except *Pittsburg	42719 18074	4948 1661	435 127	87 76	44 8	8.8 4.8
Decatur	8063	1005	62	61	5	4.9
Dickinson	25320	2834	204	72	14	4.9
Doniphan	15279	1621	118	73	4	2.4
Douglas except *Lawrence	11612 13503	974 1086	40 74	41 68	6 11	6.1 10.1
Edwards	6808	871	54	62	3	3.4
Elk	10239	998	52	52	8	8.0
Ellis	14771	2368	203	86	23	9.7

TABLE IV (CONT.)

COUNTY	POPULA- TION 1921	BIRTHS	INFANT MORTALITY NUMBER	RATE	MATERNAL MORTALITY NUMBER	RATE
Ellsworth	10191	1283	78	61	7	5.4
Finney	7453	978	106	108	10	10.2
Ford	9164	1456	104	71	9	6.1
except *Dodge City	6038	679	54	79	5	7.3
Franklin	12748	1261	96	76	3	2.3
except *Ottawa	9520	730	58	79	4	5.4
Geary	6330	747	40	53	5	6.6
except *Junction City	7068	757	67	88	7	9.2
Gove	5109	628	47	75	1	1.5
Graham	7483	1031	67	65	4	3.8
Grant	1306	94	8	85	0	0.0
Gray	4640	667	40	60	6	8.9
Greeley	1133	112	10	89	0	0.0
Greenwood	15237	1636	85	52	15	8.6
Hamilton	2488	358	28	78	4	11.1
Harper	13473	1607	98	61	8	4.9
Harvey	10842	1402	73	52	7	4.2
except *Newton	9773	1301	101	78	15	11.3
Haskell	1621	253	18	71	1	3.9

TABLE IV (CONT.)

COUNTY	POPULATION 1921	BIRTHS		INFANT MORTALITY		MATERNAL MORTALITY	
		NUMBER	RATE	NUMBER	RATE	NUMBER	RATE
Hodgeman	3555	480	28	58	2	4.1	
Jackson	15135	1565	106	61	7	4.4	
Jefferson	14031	1508	97	64	12	7.9	
Jewell	14461	1709	96	56	10	5.8	
Johnson	17890	1483	104	70	6	4.0	
Kearny	2487	293	16	55	2	6.8	
Kingman	11705	1576	88	55	12	7.6	
Kiowa	6099	879	58	66	3	3.4	
Labette except	17754	1790	123	68	8	4.4	
*Parsons	17521	1662	149	90	18	10.8	
Lane	2702	444	20	45	5	11.2	
Leavenworth except	20857	1377	90	65	5	3.7	
*Leavenworth	20009	1645	164	100	26	15.8	
Lincoln	10011	1214	61	50	2	1.6	
Linn	15176	1490	90	60	6	4.0	
Logan	3618	342	28	81	2	5.8	
Lyon except	14472	1802	105	52	2	1.1	
*Emporia	12024	1047	77	73	5	4.7	
Marion	25948	2729	216	79	13	4.7	

TABLE IV (CONT.)

COUNTY	POPULATION 1921	BIRTHS	INFANT NUMBER	MORTALITY RATE	MATERNAL NUMBER	MORTALITY RATE
Marshall	22467	2429	145	60	14	5.7
McPherson	21331	2363	140	59	9	3.8
Meade	5339	765	48	63	4	5.2
Miami	18743	1790	139	78	16	8.9
Mitchell	13055	1512	92	61	14	9.2
Montgomery except	24002	2723	223	85	18	6.6
*Coffeyville	12577	1493	116	78	15	10.0
*Independence	16067	1621	131	81	15	9.3
Morris	12046	1281	75	59	7	5.3
Morton	3227	364	28	77	2	5.4
Nemaha	18457	1933	108	51	15	7.7
Neosho except	12976	1636	120	73	6	3.6
*Cherokee	11079	1059	109	103	12	11.3
Ness	7466	976	67	69	3	3.0
Norton	11467	1254	82	65	17	13.5
Osage	20021	1763	112	63	6	3.4
Osborne	12765	1556	80	51	13	8.3
Ottawa	10591	1161	72	62	8	6.8
Pawnee	8653	1191	87	73	6	4.1
Phillips	12743	1453	78	54	5	3.4

TABLE IV (CONT.)

COUNTY	POPULA- TION 1921	BIRTHS		INFANT MORTALITY		MATERNAL MORTALITY	
		NUMBER	RATE	NUMBER	RATE	NUMBER	RATE
Pottawat- omie	15180	1759	91	52	5	2.8	
Pratt	12800	1497	100	67	7	4.6	
Rawlins	6370	835	57	68	7	8.3	
Reno except	20970	2547	151	60	9	3.1	
*Hutchinson	27016	2489	206	83	18	7.2	
Republic	15901	1605	80	50	12	7.4	
Rice	13997	1608	117	73	11	6.8	
Riley except	9609	1153	64	55	9	7.8	
*Manhattan	6706	758	45	59	11	14.5	
Rooks	10147	1070	65	61	1	0.9	
Rush	8133	1264	87	69	1	0.7	
Russell	10979	1368	92	67	4	2.9	
Saline except	9799	1332	100	75	6	4.5	
*Salina	15401	1419	95	67	15	10.5	
Scott	3362	391	25	64	5	12.5	
Sedgewick except	19675	2169	131	60	4	1.8	
*Wichita	79571	7669	649	85	63	8.2	
Seward	6265	913	77	84	12	13.1	
Shawnee except	20386	1558	131	84	6	3.8	
*Topeka	49600	5445	504	91	49	8.9	

TABLE IV (CONT.)

COUNTY	POPULATION 1921	BIRTHS	INFANT NUMBER	MORTALITY RATE	MATERNAL NUMBER	MORTALITY RATE
Sheridan	5667	715	49	68	0	0.0
Sherman	5729	562	29	52	3	5.3
Smith	15127	1745	88	50	16	9.1
Stafford	11257	1394	105	75	15	11.4
Stanton	1008	96	2	21	2	21.8
Stevens	4060	498	43	86	4	8.0
Sumner	21002	2637	148	56	19	7.1
except *Wellington	6944	627	61	97	9	14.3
Thomas	5824	776	34	45	6	7.7
Trego	6088	778	45	58	3	3.8
Wabaunsee	10789	1277	88	69	3	2.3
Wallace	2452	300	29	96	1	3.3
Washington	117104	2002	109	54	15	7.4
Wichita	1947	195	11	56	0	0.0
Wilson	21273	2601	174	67	22	8.4
Woodson	9000	948	62	65	8	8.4
Wyandotte	12313	1128	104	92	6	5.4
except *Kansas City	102736	10808	1135	104	100	9.2
*Rosedale	7888	673	79	117	10	14.8

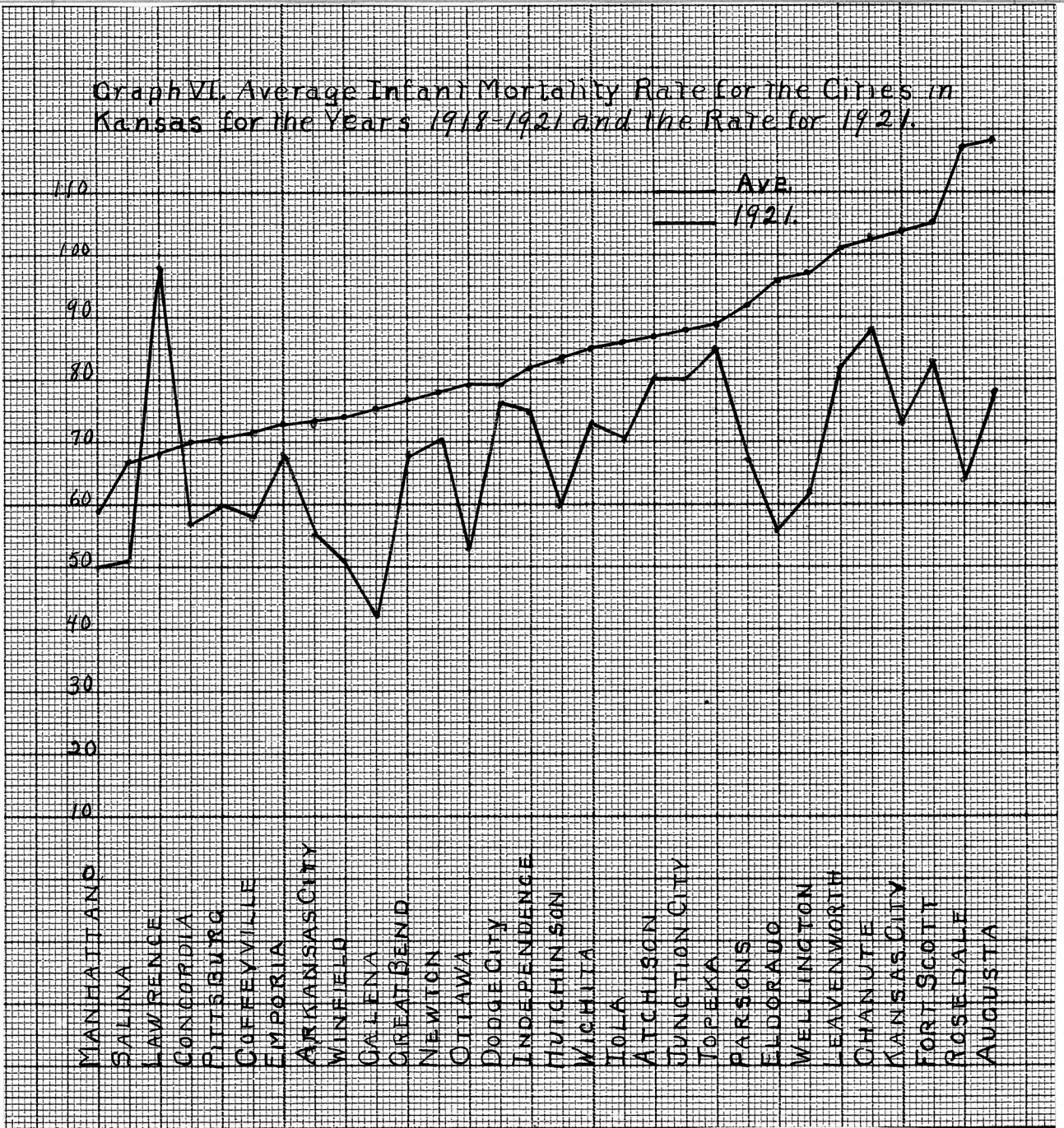
*Included in Rural Section, 1917.

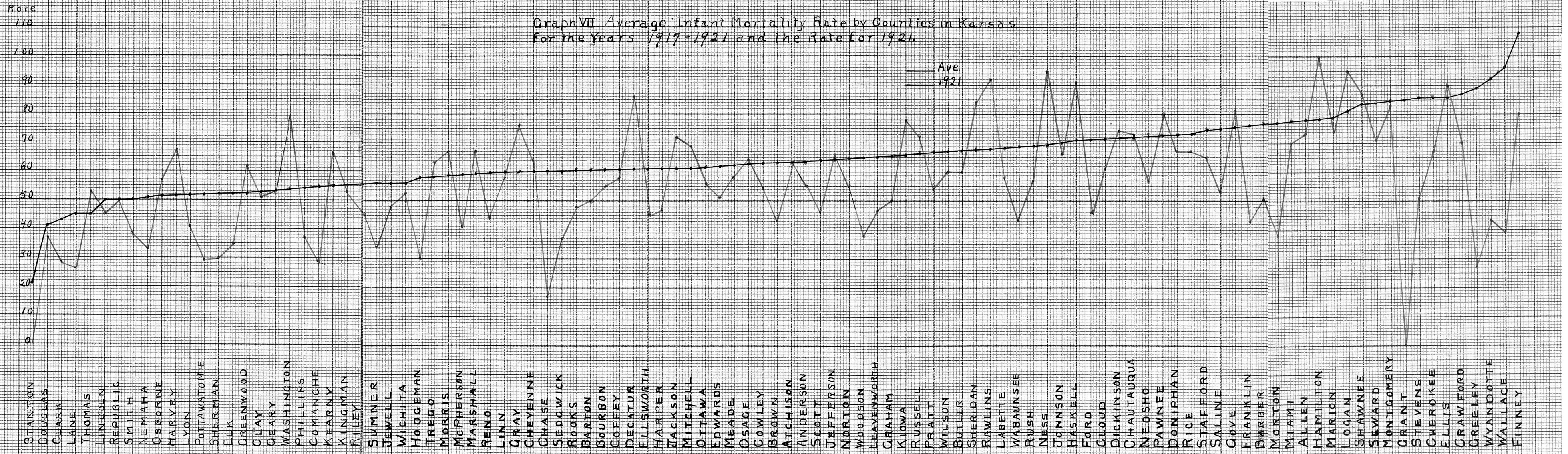
The fore-going tables show a variation in the average infant mortality rates for the five-year period in counties in the same section of the state. Some counties had very few births, and one death made the rate appear high, but since the rates were per 1,000 live births they are reasonably fair. Grant and Stanton Counties had less than 100 births each, during the years 1917-1921, and 14, or nearly one-seventh, of the counties had less than 100 births per year. Those having a high rate in this group were Grant, 85; Hamilton, 78; Haskell, 71; Logan, 81; Morton, 77; Stevens, 86; and Greeley, 89. Many of the western counties have a population of less than 5,000, and the people are far from good medical aid and hospitals. In 1917, Greeley County had 19 births with 5 infant deaths, and in the same year, Grant County had 16 births and 4 deaths. In the eastern section of the state, where the population is more dense, some of the higher rates are Wyandotte, 92; Crawford, 87; Cherokee, 86; and Montgomery, 85. The lowest rural rate for the counties is 21 in Stanton, and that for the cities is 59 in Manhattan. The highest rural rate in the counties is 108 in Finney, and the highest rate for the cities is 118 in Augusta.

The year 1921 showed an improvement, as 74 of the 105 counties had rates below their five-year average and some went far above their average. In 1921, only one city had a rate above its four-year average, and in some of those with high averages the rates had been reduced. (Graph VII)

Why should the infant mortality rate in Fort Scott in Bourbon County be 105 and the rural rate in the same county be 79 when the birth rate is practically the same? In 25 of the cities the urban rate exceeds the rural rate, the exceptions are Pittsburg, Galena, Coffeyville, Independence, and Concordia. With the exception of Concordia, these counties are in the southeast corner of the State. (Graph VI)

Graph VI. Average Infant Mortality Rate for the Cities in Kansas for the Years 1918-1921 and the Rate for 1921.



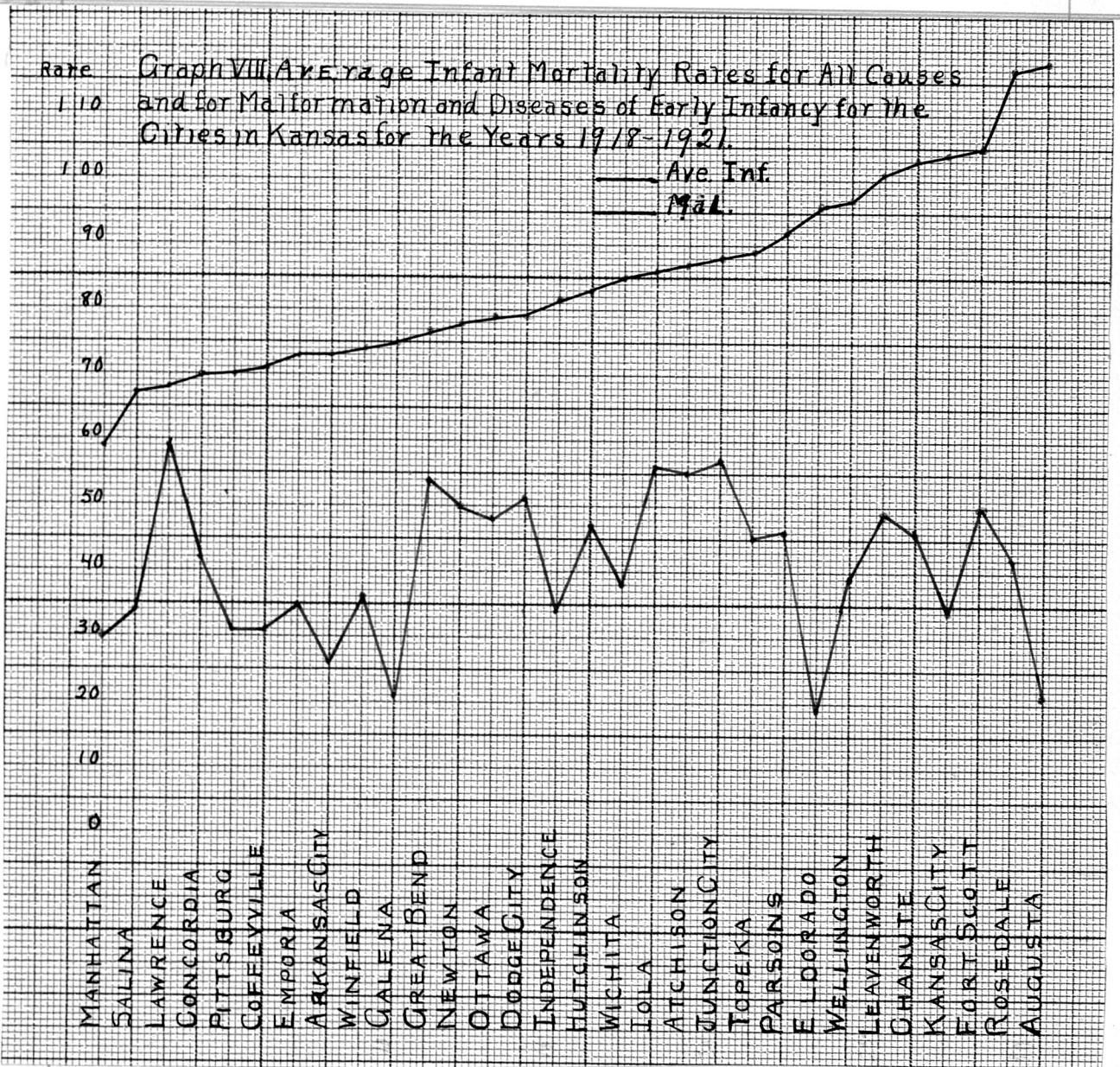


In 1921, 57 per cent of the deaths of infants in Kansas was from causes operative at birth. In many cases where less than 50 per cent of the deaths was from these causes the rate for diarrhoea and enteritis under two years was very high. The cities of Emporia, Kansas City, and Galena, and the counties of Ellis, Cherokee, and Finney are examples of this variation. On the other hand, Ottawa, Concordia, and Winfield, and the counties of Riley, Norton, and Wallace had a high per cent of deaths from causes operative at birth and low rates for diarrhoea and enteritis under two years. This does not mean, necessarily, that deaths due to causes operative at birth are being reduced. It may mean that there is a relative increase in the deaths due to diarrhoea and enteritis compared with other counties. A comparative graph for diarrhoea and enteritis with the deaths from malformation and diseases of early infancy was not made because it was not possible to obtain the deaths from diarrhoea and enteritis under one year by counties. (Graphs VIII, IX, X, and XI)

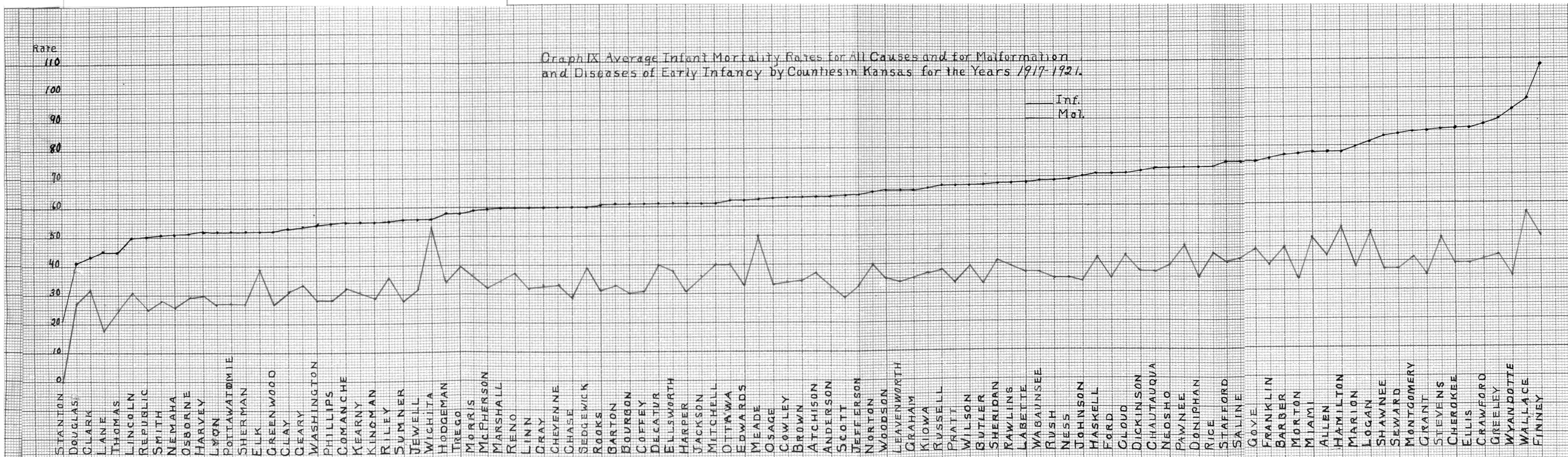
The rate for causes operative at birth was lower in 1921 than for the five-year average, but the rate had not decreased in the same proportion as for other diseases. (Graph XII)

There has been a steady decrease since 1917 in the deaths from diarrhoea and enteritis under two years. The hot summer months have taken a heavy toll of children, but 1921 showed a decrease in these months except July, and the rate for September dropped to the average for June. (Graph XIII).

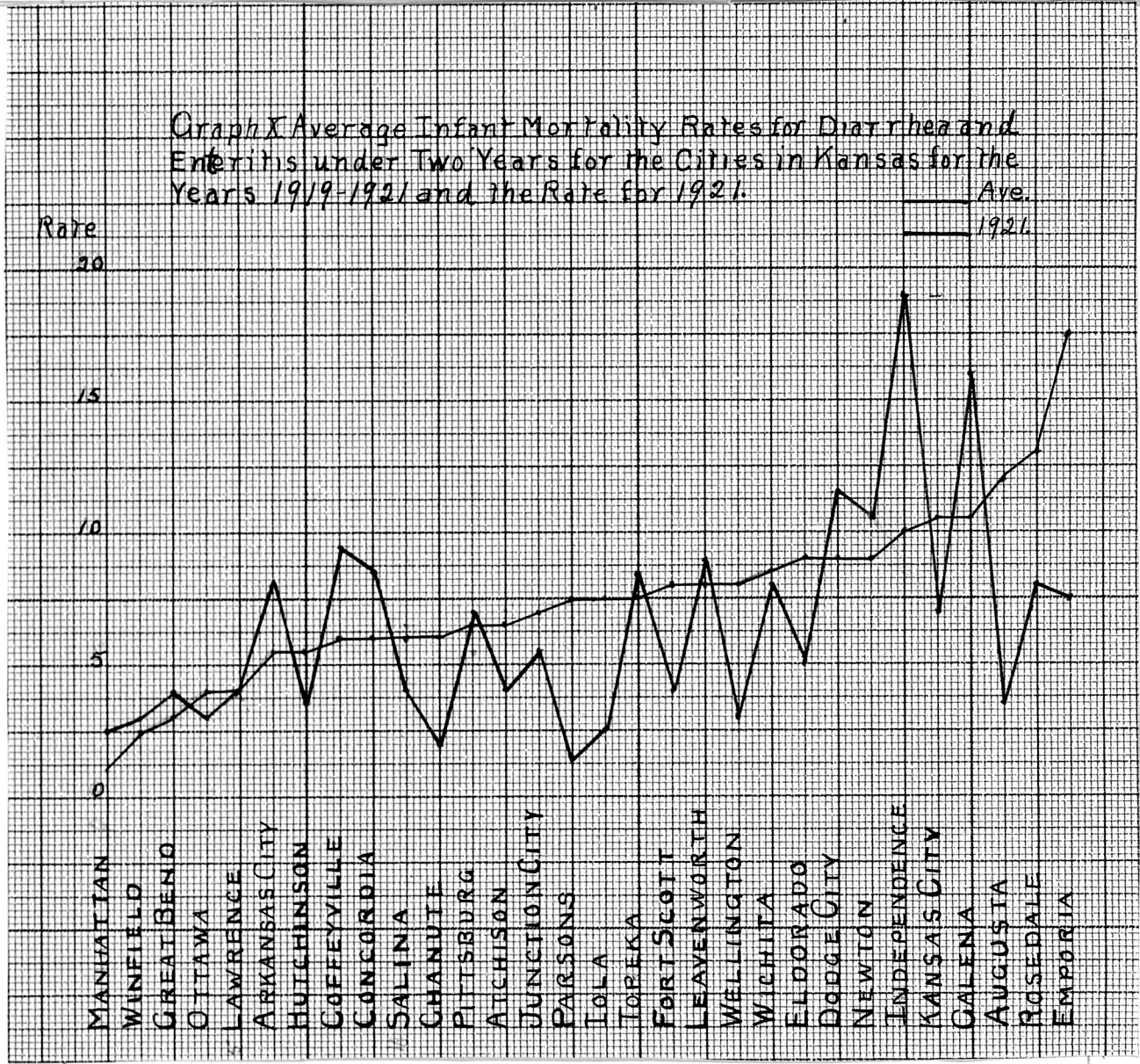
Rate **Graph VIII, Average Infant Mortality Rates for All Causes and for Malformation and Diseases of Early Infancy for the Cities in Kansas for the Years 1918-1921.**



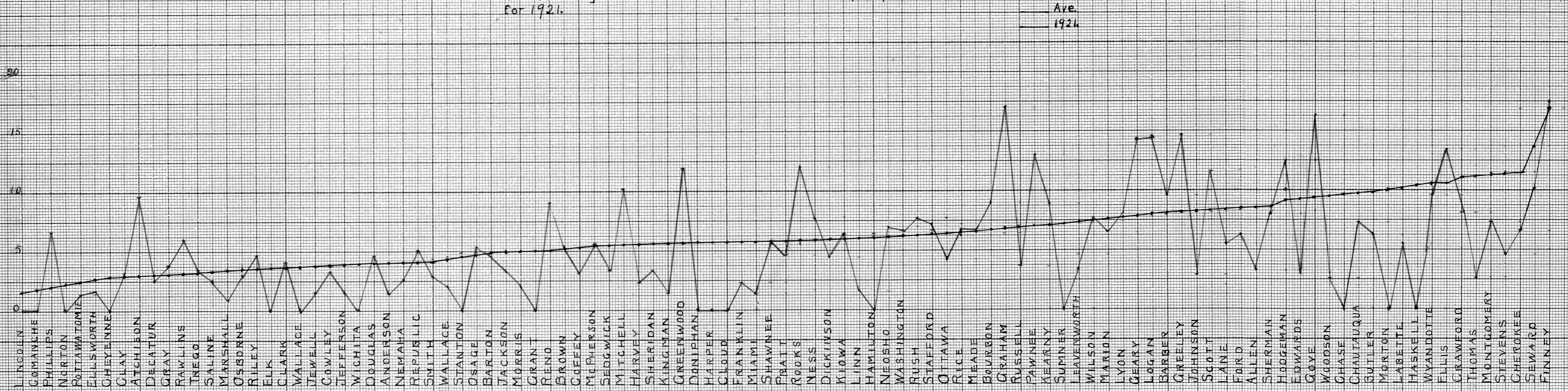
Graph IX Average Infant Mortality Rates for All Causes and for Malformation and Diseases of Early Infancy by Counties in Kansas for the Years 1917-1921.

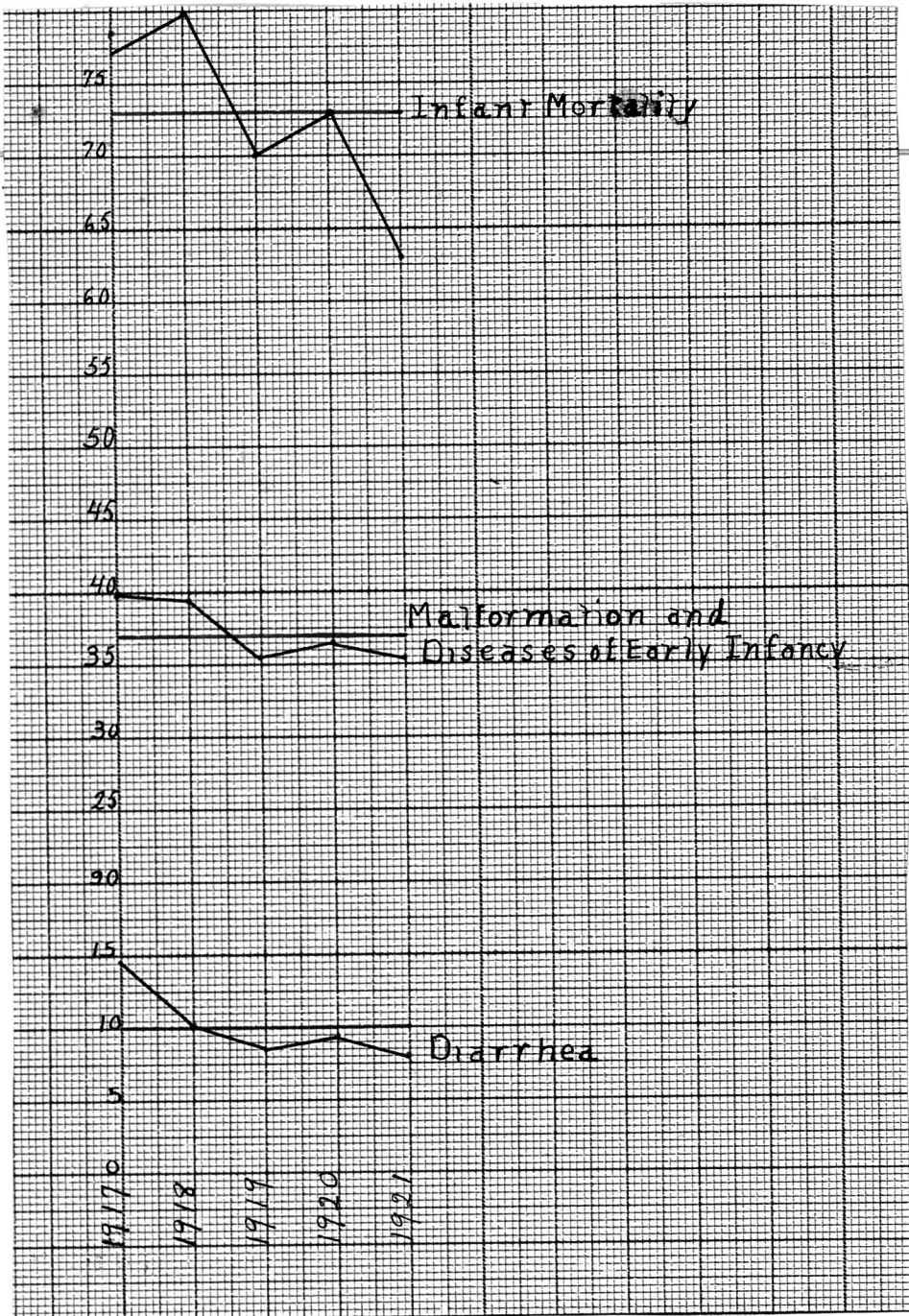


Graph X Average Infant Mortality Rates for Diarrhea and Enteritis under Two Years for the Cities in Kansas for the Years 1919-1921 and the Rate for 1921.



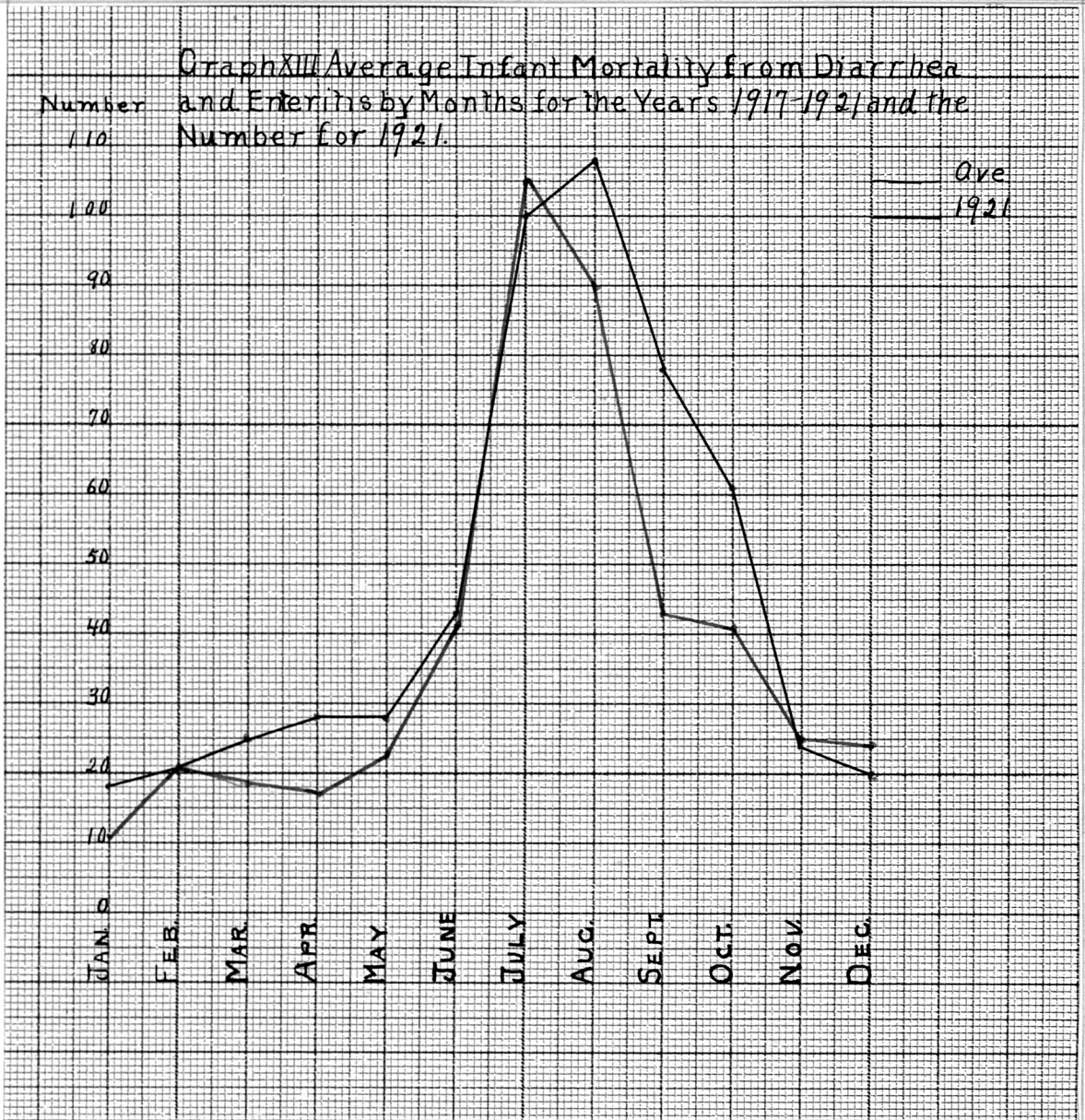
Graph XI. Average Mortality Rate for Diarrhea and Enteritis under Two Years by Counties in Kansas for the Years 1917-1921 and the Rate for 1924.





Graph XII. Infant Mortality Rates for Malformation and Diseases of Early Infancy and Diarrhea in Kansas for the Years 1917-1921 and the Five Year Average.

Graph XIII Average Infant Mortality from Diarrhea and Enteritis by Months for the Years 1917-1921 and the Number for 1921.



Why are more male infants born each year and why do more of them die? "The infant mortality rate is much higher among males than among females. For every 1,000 females there were 1,056 males born in the United States Registration Area in the period 1915-1920, and for every 1,000 females who died under one year there were 1,310 deaths among males under one year."¹ The rates are quite different during the first day of life and during the 3-5 month period. (Graph XIV)

During the years 1918-1921, there were 80,850 male and 76,514 female infants born, and 6,428 male and 4,834 female infants died in Kansas. This leaves an excess of males.

¹"Eleventh Biennial Report," Kansas State Board of Health, p. 240.

Graph XIV Infant Mortality Rates by Sex and Age in Kansas in 1920

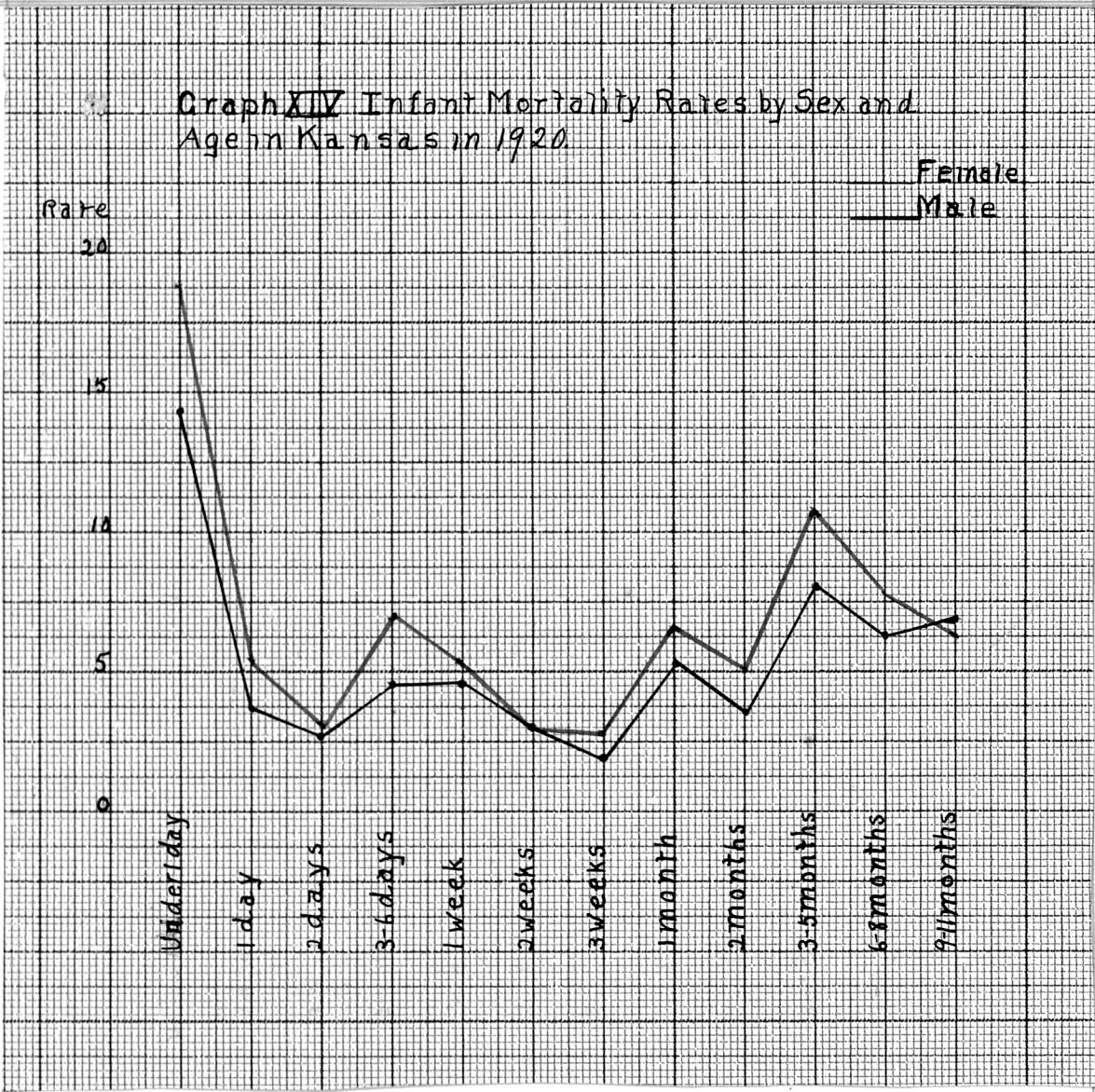


TABLE V
 NUMBER OF DEATHS AND RATE PER 1000 LIVE BIRTHS OF
 CERTAIN DISEASES BY SEX
 1918-1921

DISEASE	NUMBER	RATE
Pneumonia		
Male	344	4.2
Female	274	3.5
Diseases of Early Infancy		
Male	532	6.5
Female	344	4.4
Bronco Penumonia		
Male	453	5.6
Female	366	4.7
Malformation		
Male	600	7.4
Female	444	5.6
Congenital Debility		
Male	521	6.4
Female	451	5.8
Diarrhoea		
Male	830	10.2
Female	598	7.8
Premature Birth		
Male	1567	19.3
Female	1237	16.1

MATERNAL MORTALITY

The United States does not hold an enviable place among the nations in maternal mortality rate, as eighteen countries have lower rates than that of the United States Registration Area.

TABLE VI
MATERNAL MORTALITY RATES FOR THE UNITED STATES
AND CERTAIN FOREIGN COUNTRIES

COUNTRY AND YEAR	DEATHS FROM PUERPERAL CAUSES PER 1000 LIVE BIRTHS
The Netherlands (1920)	2.4
Sweden (1917)	2.5
Italy (1917)	3.0
Norway (1917)	3.0
Uruguay (1920)	3.4
Japan (1918)	3.8
Hungary (1915)	4.0
England and Wales (1920)	4.3
Finland (1918)	4.4
Ontario (1919)	4.5
German Empire (1918)	4.9
Australia (1920)	5.0
New Zealand (1921)	5.1
Spain (1915)	5.2
Ireland (1920)	5.5
Switzerland (1915)	5.5
France (1914)	5.7
Scotland (1919)	6.2
U. S. Registration Area (1921)	6.8
Belgium (1919)	7.2
Chile (1920)	7.5

Source: Compiled from official sources or from
Annuaire International de Statistique.
Latest figures available December 1, 1922.
Released by the Children's Bureau, Department of
Labor, Washington, D. C.

"In 1917, childbirth caused more deaths among women from 15 to 44 years than any other disease except tuberculosis; it caused in the same year among the same age group more than five times as many deaths as typhoid fever."¹

The maternal death rate for the states that have been in the registration area since 1917 decreased slightly in 1921, but this was not true of deaths due to child-bed fever or puerperal septicemia, as in 1921 only four of the states fell below the average for the five years. One of these states was Kansas. (Graph XV)

Kansas ranks sixteenth in maternal mortality among the states which have been in the registration area since 1917. In the World War, during the years 1917-1919, there were 569 Kansas men killed in action and 215 who died of wounds². Among the women who were bearing future citizens, during the last four months of 1917 and the years 1918 and 1919, there were 633 who died from causes operative at childbirth. It is true, the influenza made the maternal death rate high in 1918, but there were only about

¹"Save the Youngest," Children's Bureau Publication No. 61, P. 2.

²Supplement Kansas Casualties, 1917-1919.

50 more deaths that year than other years. It should be remembered that all deaths of soldiers were reported while maternal deaths are often reported as due to some other cause; such as, peritonitis or convulsions. This is so generally recognized that it is customary for the State Board of Health to make further inquiry when deaths of women are reported as due to these causes. Shall we allow the casualties of motherhood to continue at this high rate?

rate
25

Graph XV Average Maternal Mortality Rates for All Causes and for Puerperal Septicaemia for the States in the Birth Registration Area for the Years 1917-1921 and the Rate for 1921.

20

15

10

5

0

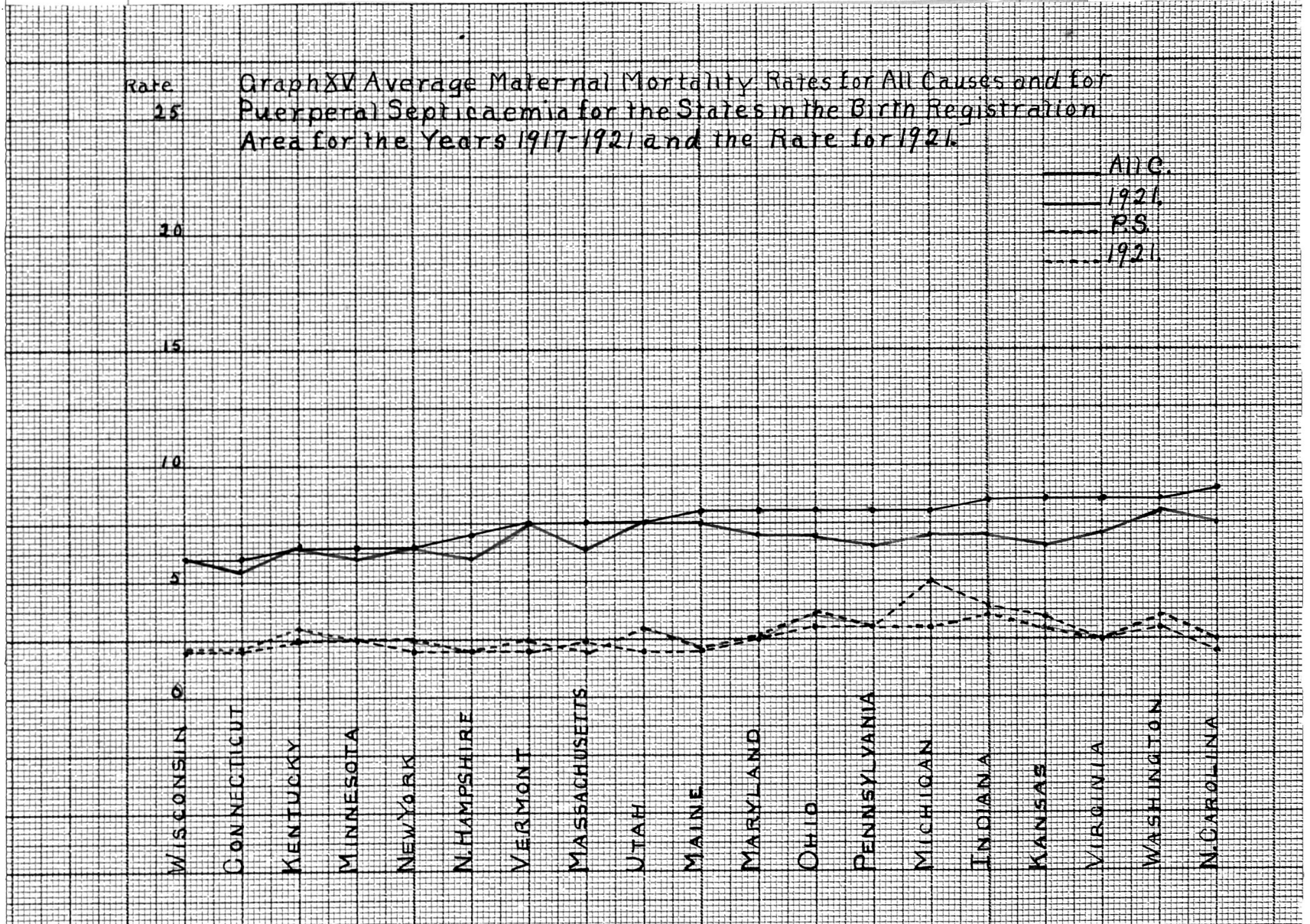
A.T.C.

1921

P.S.

1921

WISCONSIN
 CONNECTICUT
 KENTUCKY
 MINNESOTA
 NEW YORK
 N. HAMPSHIRE
 VERMONT
 MASSACHUSETTS
 UTAH
 MAINE
 MARYLAND
 OHIO
 PENNSYLVANIA
 MICHIGAN
 INDIANA
 KANSAS
 VIRGINIA
 WASHINGTON
 N. CAROLINA



Do color, nativity, or age influence the maternal death rate? The maternal death rate for the colored for the four years 1918-1921 was 15, while that for the white was 6.6. No doubt, this is the result of the lack of proper medical care. The number of colored births is small since there are few colored people in Kansas. We do not have a high percentage of foreign born mothers but their death rate was 7.8, while that for the native born was 6.7. The colored and foreign rates were lower in 1921 than in previous years.

The greatest number of births and the lowest maternal death rate in the years 1917-1921 occurred in the group of women 20-24 years of age. For those above this age group the numbers of births decreased and the maternal death rate increased.

In Table VII the births for color and nativity were taken from the Tenth and Eleventh Biennial Reports of the Kansas State Board of Health. The Ninth Biennial Report did not include this information. The deaths were taken from the files of the State Board of Health at Topeka. The only available statistics for births by age of the mother and for illegitimate births were those by the Sixth Annual Report Birth Statistics Bureau of Census. So births for 1920 were used as an average in computing the rates for these conditions.

TABLE VII
BIRTHS, MATERNAL MORTALITY, AND AVERAGE RATE
FOR YEARS 1918-1921
ACCORDING TO COLOR, NATIVITY, AND SOCIAL CONDITION

	1917	1918	1919	1920	1921	RATE
Color:						Average for Four years
White						
Births		37435	35081	39365	41353	
Maternal Deaths		287	233	238	253	6.6
Black						
Births		926	911	1048	1104	
Maternal Deaths		20	14	17	9	15.0
Nativity:						
Native						
Births		27150	33722	38126	40086	
Maternal Deaths		284	229	236	259	6.7
Foreign						
Births		2242	2311	2320	2407	
Maternal Deaths		23	18	19	13	7.8
Social Condition						Average for Five Years
Single						
Births						
Maternal Deaths	6	11	7	12	9	32.4
Married						
Births						
Maternal Deaths	253	296	240	243	253	6.5

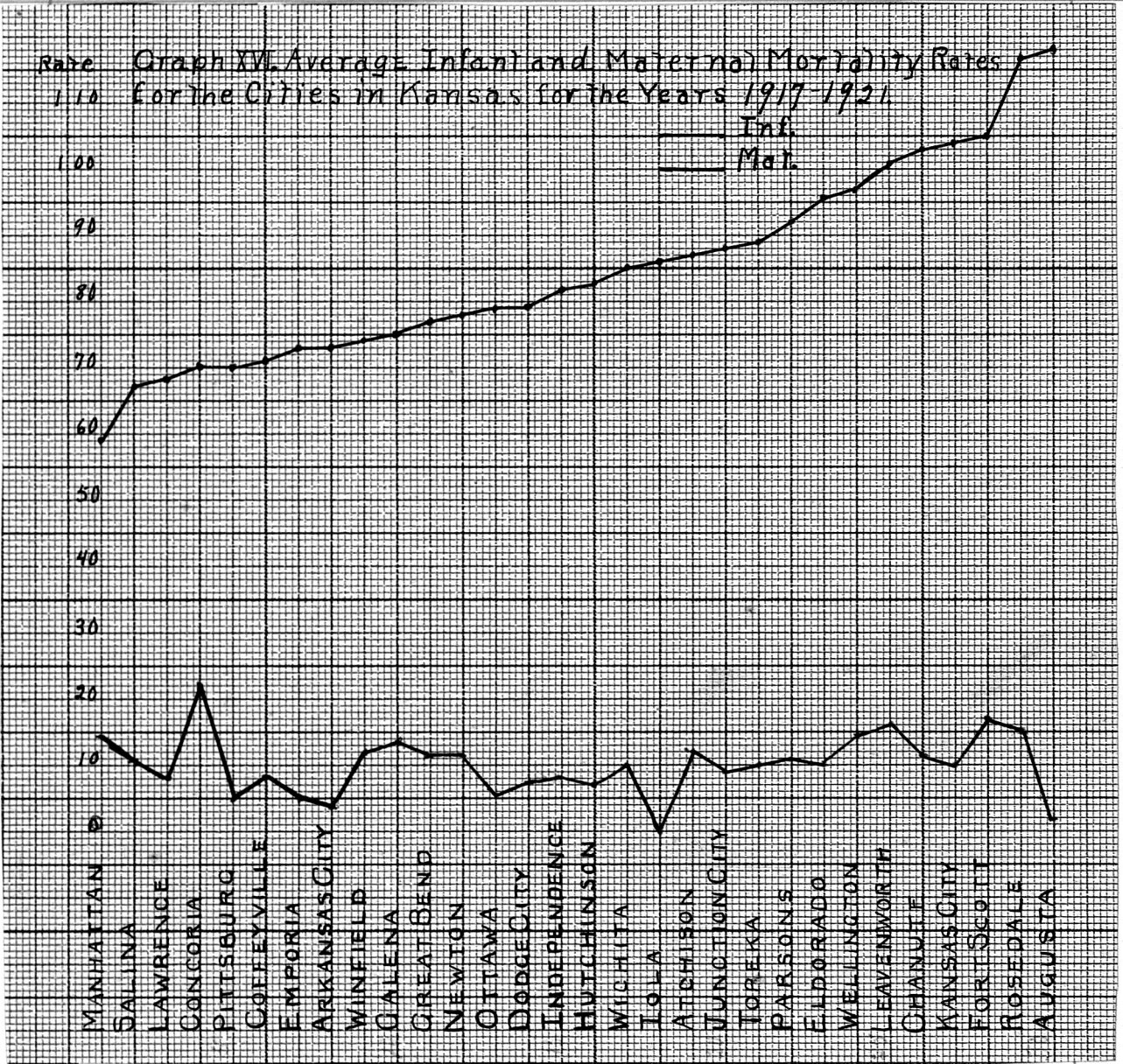
TABLE VIII
BIRTHS 1920, MATERNAL MORTALITY AND AVERAGE RATE
ACCORDING TO AGE OF MOTHER FOR YEARS 1917-1921

AGE (Years)	BIRTHS 1920	MATERNAL DEATHS					RATE
		1917	1918	1919	1920	1921	
10-14	7	1	0	0	0	0	
15-19	3836	18	36	23	29	18	6.5
20-24	11701	47	47	48	56	68	4.7
25-29	10581	62	76	51	49	61	5.6
30-34	7101	60	64	54	53	50	7.6
35-39	4542	48	54	49	46	45	10.6
40-44	1586	20	27	19	22	17	13.2
45-49	143	2	3	3	0	2	13.9
50-54	2	0	0	0	0	1	

Although the Children's Bureau found that in Waterbury, Connecticut, the infant mortality rate among the motherless babies was three times the average for the city, and in Baltimore five times the average for the city, this does not seem to be true in Kansas. (Graph XVI and XVII) Some of the localities with a high infant mortality rate had a low maternal mortality rate. Augusta had an infant mortality rate of 118 which is far above 73¹, the average for the State, while her maternal mortality rate was 1.5, which is below the State average of 8.4¹. Iola reported no maternal deaths during the four years and her infant mortality rate was 86, while Manhattan with 59, the lowest infant mortality rate for the four-year average, had a maternal mortality average of 14.5. What progress are we making? In 1921, there were 71 counties and 24 cities which went below their average for the years 1918-1921.

¹U. S. Department of Commerce, Bureau of Census Tables.

Rate Graph XVI. Average Infant and Maternal Mortality Rates for the Cities in Kansas for the Years 1917-1921



Graph XVII. Average Infant and Maternal Mortality Rates by Counties in Kansas for the Years 1917-1921.

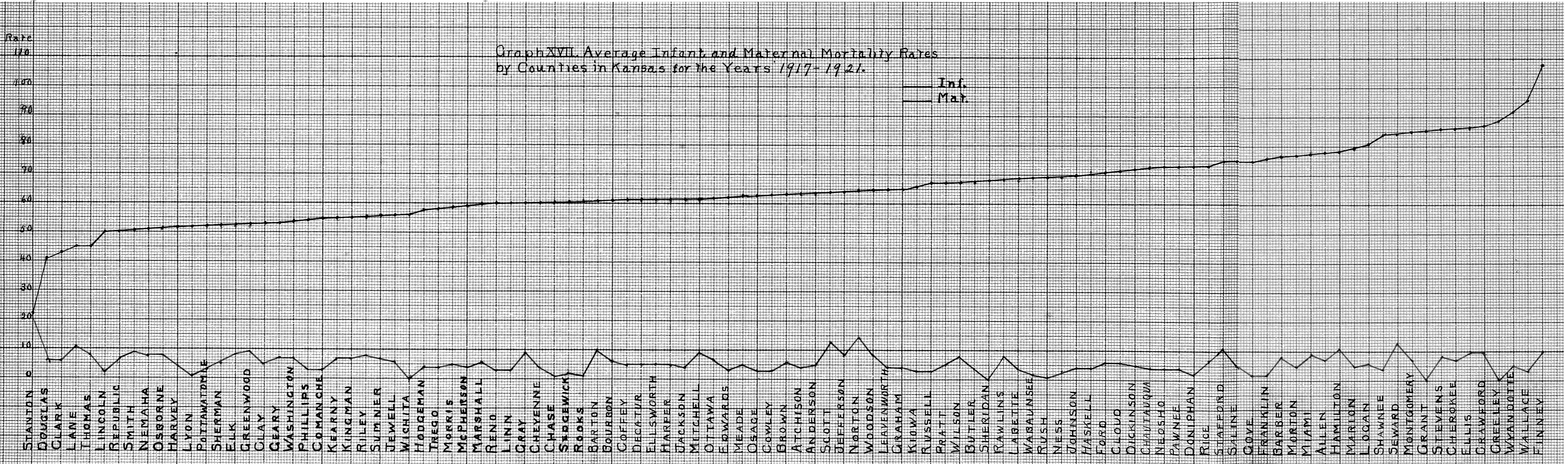


TABLE IX
CAUSE AND NUMBER OF MATERNAL DEATHS IN KANSAS
1917-1921

CAUSE	1917	1918	1919	1920	1921	TOTAL
Accident of Pregnancy	24	50	55	54	29	212
Puerperal Haemorrhage	14	29	22	19	41	125
Other Accidents of Labor	15	16	13	17	9	70
Puerperal Septicemia	116	132	82	85	105	520
Puerperal Albuminuria and Convulsions	66	70	67	69	62	334
Puerperal Phlegmasia	15	9	6	6	5	41
Following Childbirth	<u>9</u>	<u>1</u>	<u>2</u>	<u>5</u>	<u>11</u>	<u>28</u>
TOTALS	259	307	247	255	262	1330

"These diseases fall naturally into two groups which differ considerably as to the degree to which they are preventable:

"1. Childbed fever or puerperal septicemia (an infection arising in connection with miscarriage or confinement) which is to a great degree a preventable disease.

"2. All other diseases and complications caused by pregnancy, including conditions varying very much in the degree to which they can be prevented or cured."¹

"Month by month a third of the women dying in childbirth continue to die of that world old disgrace, childbed fever; nearly another third die of the preventable and curable condition of uremic poisoning."²

What relation has the rate for puerperal septicemia to the rate for all causes in Kansas? (Graphs XVIII and XIX) While there is no regular relation, those counties or cities that have a high rate for all causes have a high rate for puerperal septicemia. Some of the counties have few births and one death will make a very high average. Grant and Stanton Counties had less than 100 births each during the years 1917-1921. Stanton County had only two maternal deaths during the five-year period, but that made the rate 21.8 the highest for the counties of the State. In Lincoln County there were two maternal deaths during the five-year period and both were from puerperal septicemia. The same was true of Hodgeman County with two deaths, and

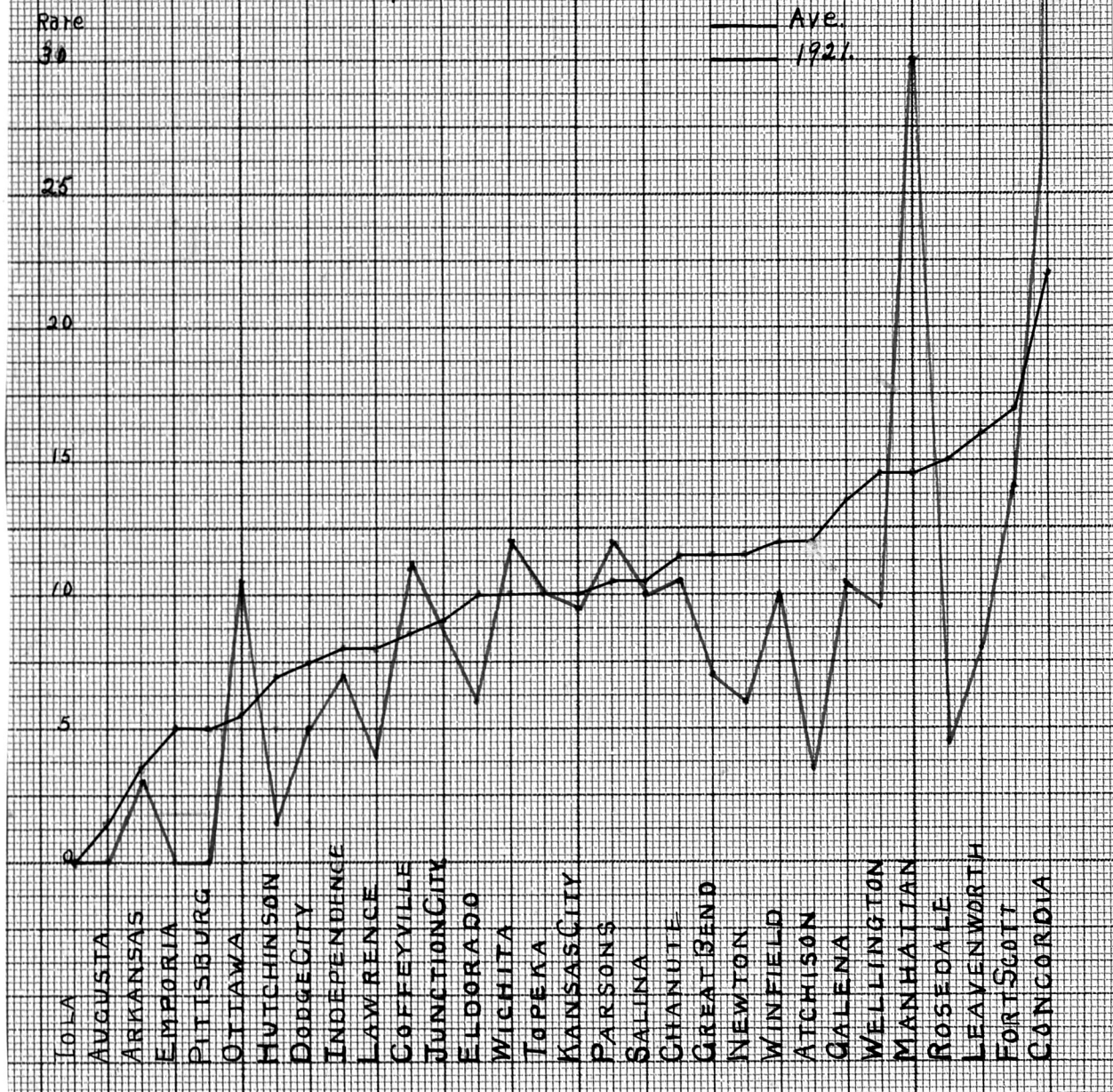
¹Maternal Mortality in United States and Certain other Foreign Countries, Children's Bureau Publication No.19, P.10.

²Eleventh Biennial Report Kansas State Board of Health, P. 221.

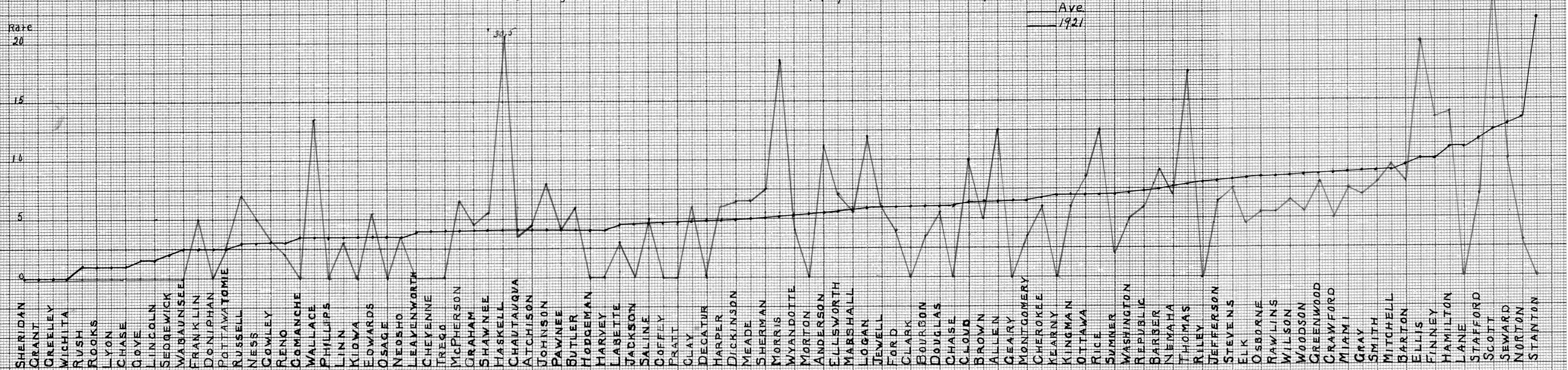
of Haskell with one death. There were no deaths reported from puerperal septicemia in one city and in twenty counties during the five years.

What improvement was made in 1921? Puerperal septicemia was not reported from sixty counties and sixteen cities, but the number of deaths from this cause was 116 while the average yearly number for the five years was 104.

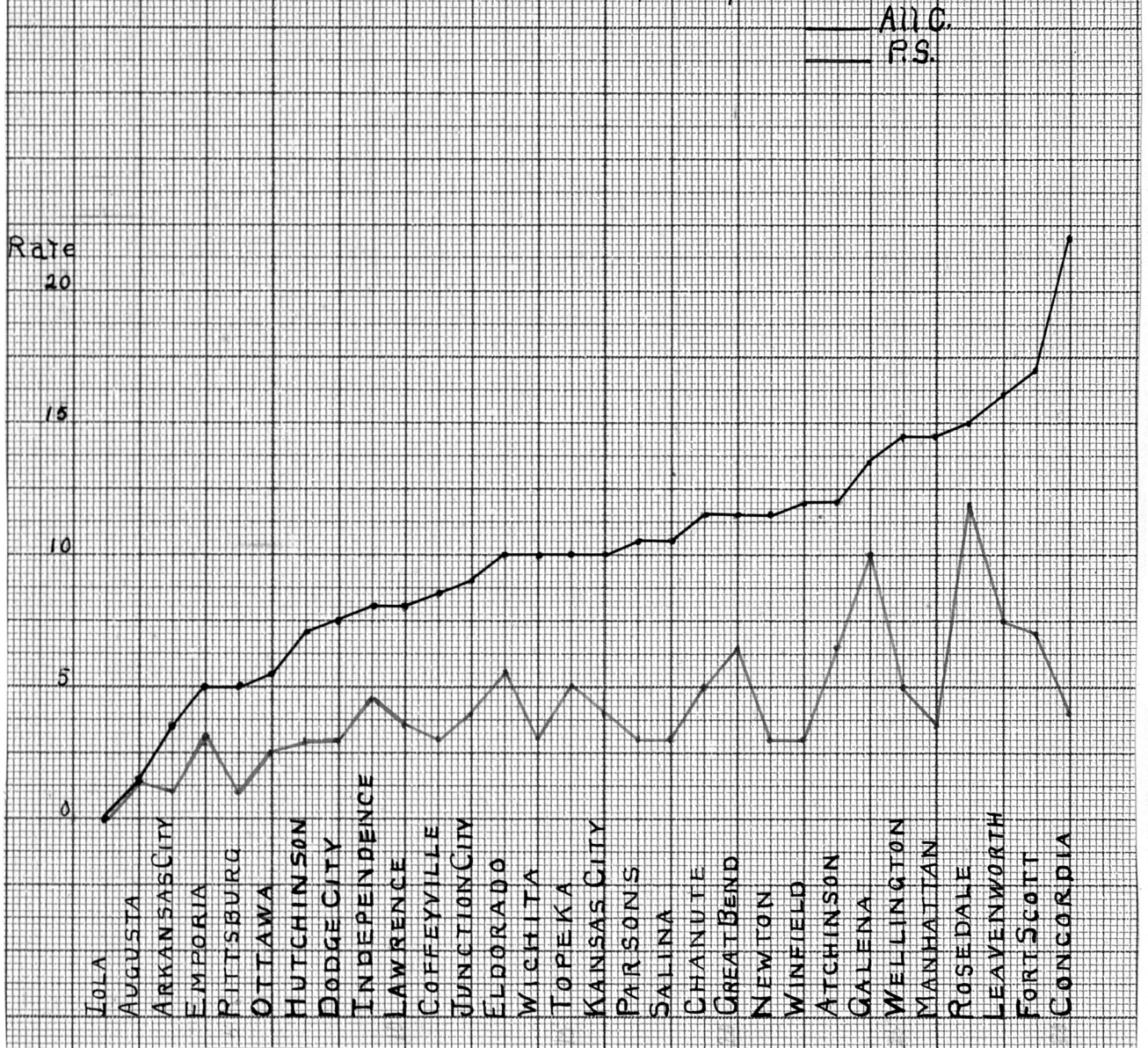
Graph XVII Average Maternal Mortality Rates from All Causes for the Cities in Kansas for the Years 1918-1921 and the Rate for 1921.



Graph XIX. Average Maternal Mortality Rate, from All Causes by Counties in Kansas for the Years 1919-1921 and the Rate for 1921.



Graph XX Average Maternal Mortality Rate from All Causes and from Puerperal Septicaemia in the Cities of Kansas for the Years 1918-1921.

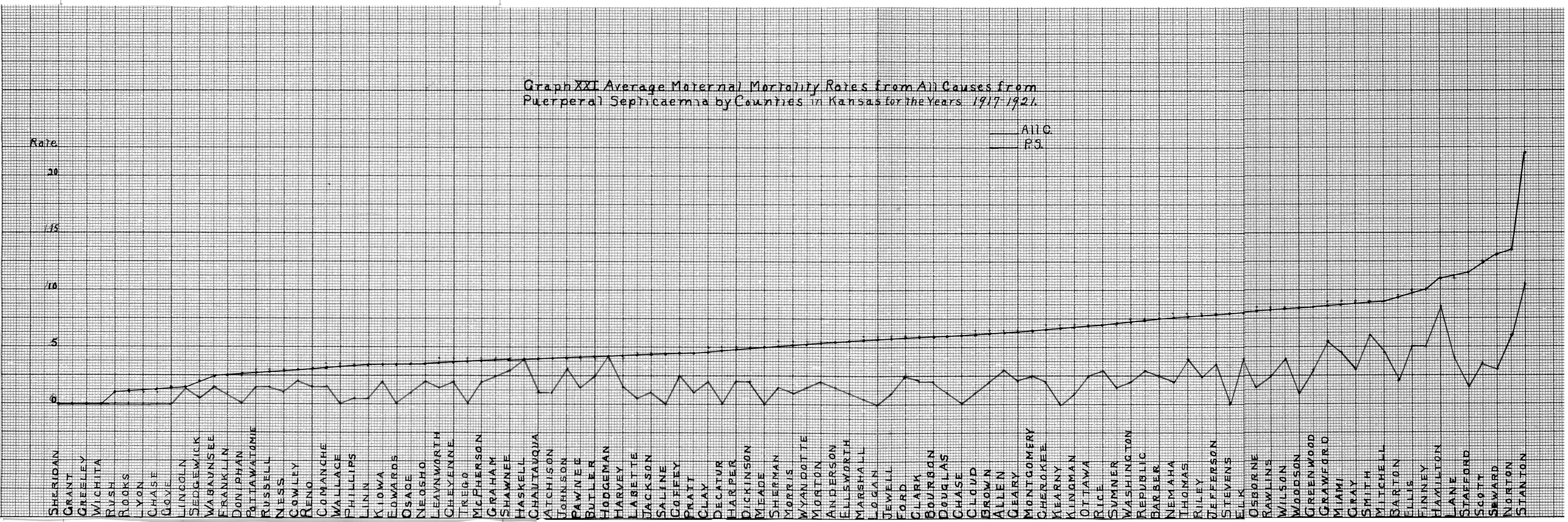


Graph XXI Average Maternal Mortality Rates from All Causes from Puerperal Septicaemia by Counties in Kansas for the Years 1917-1921.

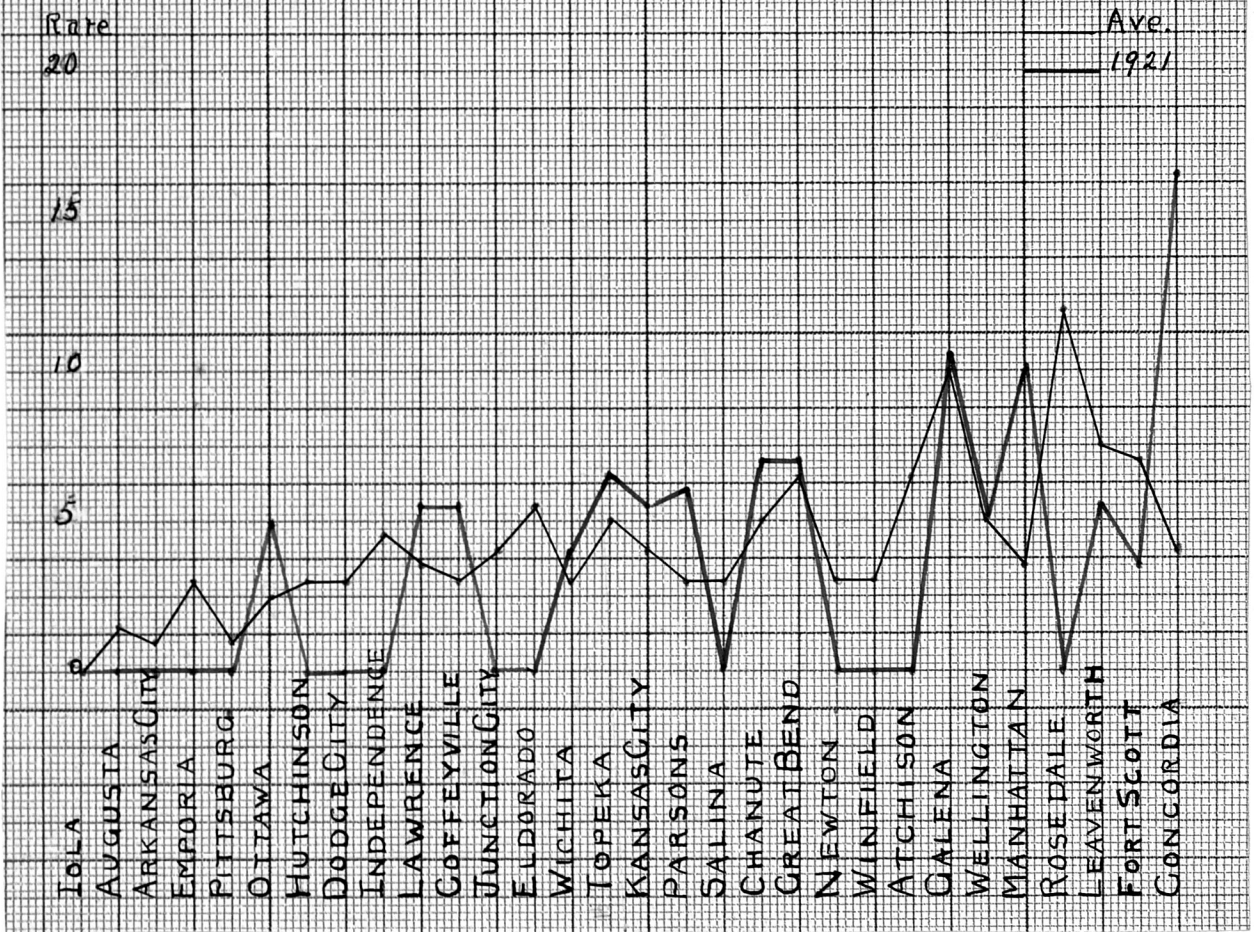
Rate
 20
 15
 10
 5
 0

— All C.
 — P.S.

- SHERIDAN
- GRANT
- GREELEY
- WICHITA
- RUSH
- ROOKS
- LYON
- CHASE
- GOVE
- LINCOLN
- SEDEWICK
- WABAUWSEE
- FRANKLIN
- DONIPHAN
- POTTAWATOMIE
- RUSSELL
- NESS
- COWLEY
- RENO
- COMANCHE
- WALLACE
- PHILLIPS
- LINN
- KIOWA
- EDWARDS
- OSAGE
- NEOSHO
- LEAVNORTH
- CHEYENNE
- TREGO
- MCPHERSON
- GRAHAM
- SHAWNEE
- HASKELL
- CHAUTAUQUA
- ATCHISON
- JOHNSON
- PAWNEE
- BUTLER
- HODGEMAN
- HARVEY
- LABETTE
- JACKSON
- SALINE
- COFFEY
- PRATT
- CLAY
- DECATUR
- HARPER
- DICKINSON
- MEADE
- SHERMAN
- MORRIS
- WYANDOTTE
- MORTON
- ANDERSON
- ELLSWORTH
- MARSHALL
- LOGAN
- JEWELL
- FORD
- CLARK
- BOURBON
- DOUGLAS
- CHASE
- CLOUD
- BROWN
- ALLEN
- GEARY
- MONTGOMERY
- CHEROKEE
- KEARNY
- KINGMAN
- OTTAWA
- RICE
- SUMNER
- WASHINGTON
- REPUBLIC
- BARBER
- NEMAHA
- THOMAS
- RILEY
- JEFFERSON
- STEVENS
- ELK
- OSBORNE
- RAWLINS
- WILSON
- WOODSON
- GREENWOOD
- CRAWFORD
- MIAMI
- GRAY
- SMITH
- MITCHELL
- BARTON
- ELLIS
- FINNEY
- HAMILTON
- LANE
- STAFFORD
- SCOTT
- SEWARD
- NORTON
- STANTON



Graph XXI. Average Maternal Mortality Rate for Puerperal Septicaemia in the Cities of Kansas for the Years 1918-1921 and the Rate for 1921.



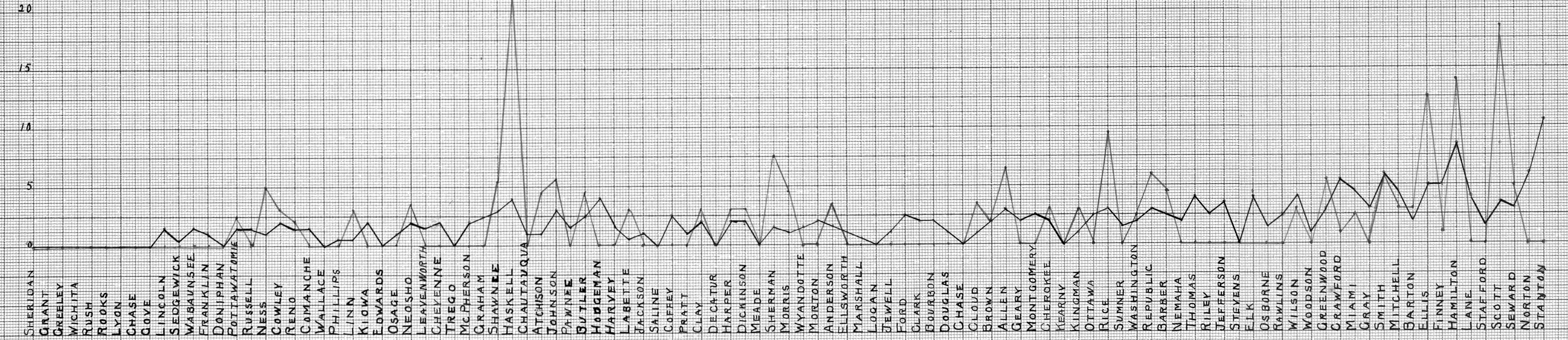
Graph XXIII. Average Maternal Mortality Rate for Puerperal Septicaemia by Counties in Kansas for Years 1917-1921 and the Rate for 1921.

Rate

— Ave.
— 1921

- SHERIDAN
- GRANT
- GREELEY
- WICHITA
- RUSH
- ROOKS
- LYON
- CHASE
- GOVE
- LINCOLN
- SEDEGWICK
- WABAWNEE
- FRANKLIN
- DONIPHAN
- POTTAWATOMIE
- RUSSELL
- NESS
- COWLEY
- RENO
- CAMANCHE
- WALLACE
- PHILLIPS
- LINN
- KIOWA
- EDWARDS
- OSAGE
- NEOSHO
- LEAVENWORTH
- CHEYENNE
- TREGO
- MCPHERSON
- GRAHAM
- SHAWNEE
- HASKELL
- CHAUTAUQUA
- ATCHISON
- JOHNSON
- PAWNEE
- BUTLER
- HODGEMAN
- HARVEY
- LABETTE
- JACKSON
- SALINE
- COFFEY
- PRATT
- CLAY
- DECATUR
- HARPER
- DICKINSON
- MEADE
- SHERMAN
- MORRIS
- WYANDOTTE
- MORTON
- ANDERSON
- ELLSWORTH
- MARSHALL
- LOGAN
- JEWELL
- FORD
- CLARK
- BOURBON
- DOUGLAS
- CHASE
- CLOUD
- BROWN
- ALLEN
- GEARY
- MONTGOMERY
- CHEROKEE
- KEARNY
- KINGMAN
- OTTAWA
- RICE
- SUMNER
- WASHINGTON
- REPUBLIC
- BARBER
- NEMAHA
- THOMAS
- RILEY
- JEFFERSON
- STEVENS
- ELK
- OSBORNE
- RAWLINS
- WILSON
- WOODSON
- GREENWOOD
- CRAWFORD
- MIAMI
- GRAY
- SMITH
- MITCHELL
- BARTON
- ELLIS
- FINNEY
- HAMILTON
- LANE
- STAFFORD
- SCOTT
- SEWARD
- NORTON
- STANTON

21.5



CONCLUSIONS

INFANT MORTALITY

There are many factors which influence the infant mortality rate of a country. The principal ones are poverty, ignorance, venereal disease, and lack of medical and nursing care.

Where there is poverty there is usually poor housing and the result is a great many deaths from diseases of the respiratory tract. This is especially true of our cities. A study made in Waterbury, Connecticut, in regard to the location and number of persons per room showed that housing had a decided influence on the infant mortality rate in that city¹.

When it was necessary for the mother to work outside the home, "Such employment away from home usually necessitated artificial feeding and was accompanied by an infant mortality rate higher than that accompanying low earnings of the father."²

¹"Save the Youngest." Children's Bureau Publication No. 61, P. 14.

²"Infant Mortality Manchester, New Hampshire." Children's Bureau Publication No. 20.

Ignorance is not necessarily connected with poverty, but where the mother is poor and ignorant she cannot get the proper care for herself or for her child. "According to many authorities at least one-half of those babies who die in the first month perish needlessly; others put very much higher the proportion of those who might have been saved. We can cut it down by good prenatal care."¹

Our death rate from diarrhoea has been reduced but there are still a great number of deaths from this cause. "There is still need for wide spread education of mothers in the feeding and general hygienic care of their babies. Many babies whose deaths are classed under gastrointestinal diseases actually died from neglect or from the mother's ignorance of the proper care and feeding. The importance of breast feeding should be impressed upon the mother."²

In a study made in Manchester, New Hampshire, it was found that "artificial feeding was accompanied by a higher infant mortality rate than breast feeding."³ In a similar study made of a rural county in Kansas the Chil-

¹"Save the Youngest," Children's Bureau Publication No. 61, P. 6.

²Ibid. P. 8.

³"Infant Mortality Manchester, New Hampshire," Children's Bureau Publication No. 20, P. 118.

dren's Bureau found there was a low infant mortality rate and that a high percentage of babies was breast fed. "Since breast feeding, especially in the early months, is proved and acknowledged to be an important factor in protecting a baby's chance of life, this fact of the unusual prevalence of breast feeding probably accounts, in part at least, for the low death rate among this group of country babies."¹

There does not seem to be an explanation for the excess of males born nor for the fact that they have a higher death rate but, "On the average, the male weighs more at birth and has a larger head. This might account for a part of the mortality the first month of life but cannot possibly explain the apparent greater susceptibility of the male infant to disease of the digestive system."²

Just why there is such a variation in the infant mortality rates in the counties of a rural state like Kansas statistics do not tell. There must be specific reasons. Many of the western counties of the State have only a few births and one death makes a high rate. Another factor is that the five years covered were the years in which the in-

¹"Maternity and Infant Care," Children's Bureau Publication No. 26, P. 42.

²"Eleventh Biennial Report." Kansas State Board of Health, P. 241.

fluenza was prevalent and this was more severe in some localities. This may be one cause of variation.

In some of our western counties where there are no hospitals serious cases are often taken to an adjoining county. Where death occurs, this causes an increase in the rate for that county. The deaths were so few for the population one year in Wichita County that the United States Bureau of Census sent the State Statistician there to investigate. He found that there was not adequate medical aid and that difficult cases were taken out of the county for treatment.

Since the number of deaths is greatest from causes operative at birth, "if infant mortality is to be controlled the work for that purpose must begin in the prenatal period, and must include proper medical and nursing care for the mother at the time of birth."¹

¹"Save the Youngest." Children's Bureau Publication No. 61, P. 8.

MATERNAL MORTALITY

The opinion of those who have studied the situation seems to be that if our mothers had the proper care our maternal death rate would be lowered. Dr. Holmes in "The Midwives of Chicago," frankly admits that the maternal mortality in private and hospital practice has not shown any reduction in spite of knowledge and technique, and gives "meddling obstetrics" of the busy practitioner as a probable reason¹. Dr. Grace L. Meigs says; "At the root of the matter, apparently, lie two chief causes; First, general ignorance of the dangers connected with childbirth and the need of skilled care and proper hygiene in order to prevent them; Second, such difficulties related to the provision of proper obstetrical care as are characteristic of the conditions of this country."²

In a study made by the Children's Bureau of a rural county in Kansas in 1916, it was found that one-third of the mothers had some prenatal care. Of the 332 births in the rural district 95 per cent was attended by a physi-

¹Am. Jr. of Public Health, Vol. XIII, No. 2, P. 95.

²"Maternal Mortality in the United States and Certain Foreign Countries," Children's Bureau Publication No. 19, P. 24.

cian but in some cases the doctor did not arrive until after the birth of the child, "and in ten of these instances, not until an hour or more afterwards. Twelve births were attended by a midwife, three by a neighbor, and three by the father only, one was attended by both a physician and a midwife."¹

The midwife is not a great factor in our rural districts in Kansas. Midwives are not required to register in the State and the only time the name appears in the Kansas Statutes is in the birth registration law.

The work which the mother does before and after confinement may influence her health. Most of our Kansas women do not work in the fields, as was found to be true in two Wisconsin counties², but in the wheat counties they may have to cook for harvest hands and for threshing crews. Our cities have many mothers who work outside the home and this may influence their health adversely.

The Children's Bureau has suggested a unit plan for the care of mothers in a rural county which might include:

¹ "Maternity and Infant Care." Children's Bureau Publication No. 26, P. 22.

² "Maternity and Infant Care in Two Rural Counties in Wisconsin." Children's Bureau Publication No. 46.

"1. A rural nursing center at the county seat, with nurses especially equipped to discern the danger signs of pregnancy.

"2. An accessible county center for maternal and infant welfare at which mothers may obtain simple information as to the proper care of themselves during pregnancy as well as of their babies.

"3. A county maternity hospital, or beds in a general hospital, for the proper care of abnormal cases and for the care of normal cases when it is convenient for the mothers to leave their homes for confinement. Such a hospital should be accessible to all parts of the county.

"4. Skilled attendance at confinement obtainable by each woman in the county."¹

Our Division of Child Hygiene has been handicapped by a lack of funds, but through trips in the Health Car, a correspondence course in the hygiene of childbearing and the distribution of the "Kansas Mother's Manual" many mothers have been reached.

Only nine of our counties have full time health units. There is a great need for more interest in health

¹ "Maternal Mortality in the United States and Certain Foreign Countries." Children's Bureau Publication No. 19, P. 27.

in all sections of the State. The Sheppard-Towner Act created a Federal fund to be used for infant and maternal welfare. According to this Act each state receives outright a sum of \$5,000, if the legislature votes to accept the grant. In addition, the \$7,500 appropriated by the Kansas Legislature of 1923 for the maintenance of the Division of Child Hygiene would have been matched dollar for dollar. The 1923 Legislature voted not to accept the \$25,000, the amount available for the two-year period from the Sheppard-Towner Fund.