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Kansas Center for Community Economic Development  
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## Population Projections for Grant County 1995 to 2010

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# Population Projections for Grant County: 1995 to 2010

## Introduction

The Unified School District 214 (USD 214) contacted the Kansas Center for Community Economic Development (KCCED) at the University of Kansas in January 1997 to discuss the possibility of developing population projections for Grant County. Population projections were requested for the years 2000, 2005, and 2010, by age and sex. These projections will be used to help the USD 214 plan for school expansions.

A comparison of recent population estimates by the U.S. Census to historical Decennial Census data suggests that recent population growth for Grant County is part of an historical pattern of population fluctuation (see Figure 1). This population pattern also suggests that future population levels for Grant County may be higher than what was projected by the State of Kansas in 1992.<sup>1</sup> Therefore, KCCED agreed to develop new projections for Grant County based on an established method that would include population trends, migration patterns, births and deaths specific to Grant County. The following report discusses the results of KCCED's efforts, which includes the methodology employed and the projection results.

## Methodology

The KCCED population projections for Grant County were calculated using the Standard Cohort Survival method. This method projects a future population based upon a known present population and information on births, deaths, and migration. This method allows for the projection of a total population as well as age-sex structure projections. Age-sex structure is important information for a school district to have in planning for the future. For example, a large number of females entering child-bearing age would have a significant impact on the number of births. This, in turn, impacts future planning for schools.

The basic cohort survival method is:

$$P_1 = P_0 + B - D + NM$$

Where:

- P<sub>1</sub> = Population at the end of the time period
- P<sub>0</sub> = Population at the beginning of the period
- B = Births during the period
- D = Deaths during the period
- NM = Net Migration during the period

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<sup>1</sup> Floerchinger, Teresa D., *Kansas Population Projections 1995-2030*, Kansas Division of the Budget, September 1992.

The lack of annual data regarding age and sex populations at the county level requires that some special assumptions be made in projecting the population for Grant County. The following assumptions were made for the Grant County projections:

- *Grant County was assumed to have the same projected birth rates as those published for the State of Kansas and the same projected survival rates as those published for the United States.*<sup>2</sup>
- *The county's recent surges in employment are reflected by net migration figures in recent years (Table 1), and so past net migration patterns for Grant County were used to continue into the future. The average annual rate since 1991 of 1.02 percent was used.*<sup>3</sup>

## Results

Population projections for Grant County from 1995 to 2010 are given in Table 2, which breaks down the results by female, male, and total. KCCED's total population projection for 1995 is 7,482. The U.S. Census estimates the 1995 population for Grant County at 7,837. This difference is a result of KCCED's using data in ten-year and five-year intervals suitable for long-term projections through 2010. The KCCED projection for 1995 is 252 people more than the State's projection. For 2010, KCCED's projection is 8,501, which is 1,300 people more than projected by the State (Table 2).

The largest part of the Grant County population was below forty years old in 1990. That population is projected to remain strong through 2010, with large populations below fourteen years of age from 1995 through 2010. The largest population per age cohort of school-age children was that of 5 to 9 years of age in 1990, and it is projected to remain the largest population per cohort through the year 2010 when they will be 25 to 29 years old. Younger cohorts are projected to remain strong with a steady increase in children under 5 years of age through the year 2010 (Table 3). The total population is

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<sup>2</sup> The known population (1990) is aged forward in five-year increments, multiplying each sex and age cohort by its respective projected national survival rate for that time period. Births (those in the table at "less than 5 years of age" for a given projection date) were calculated by multiplying projected fertility rates by the number of women of child bearing age (10 to 49 years old) during that time. The projected births are then aged forward in five-year increments and multiplied by the survival rate.

<sup>3</sup> Migration data must be considered as carefully as possible, and should not be assumed to be zero. Unfortunately, migration data are fairly difficult to obtain. There is a lack of data reporting accurate migration patterns at the county level. Net Migration estimates (such as for 1980 to 1990) are available at the county level by decade but not annually and not for individual sex and age cohorts.

In an effort to tailor migration calculations to Grant County at a five-year level, average net migration for Grant County was calculated for the time period 1986 through 1995. One must assume that the rate of migration in the past will continue into the future. Seeing that there has been a trend since 1981 toward positive net migration, KCCED has used the average annual net migration experienced by the county since 1986, a rate of 1.0173 percent, to adjust the net migration rates for total population in Grant County used by the State in their 1992 projections. The projected net migration figures were apportioned among the sex and age cohorts by a ratio of the age cohort population of a given year to the total population of that year.

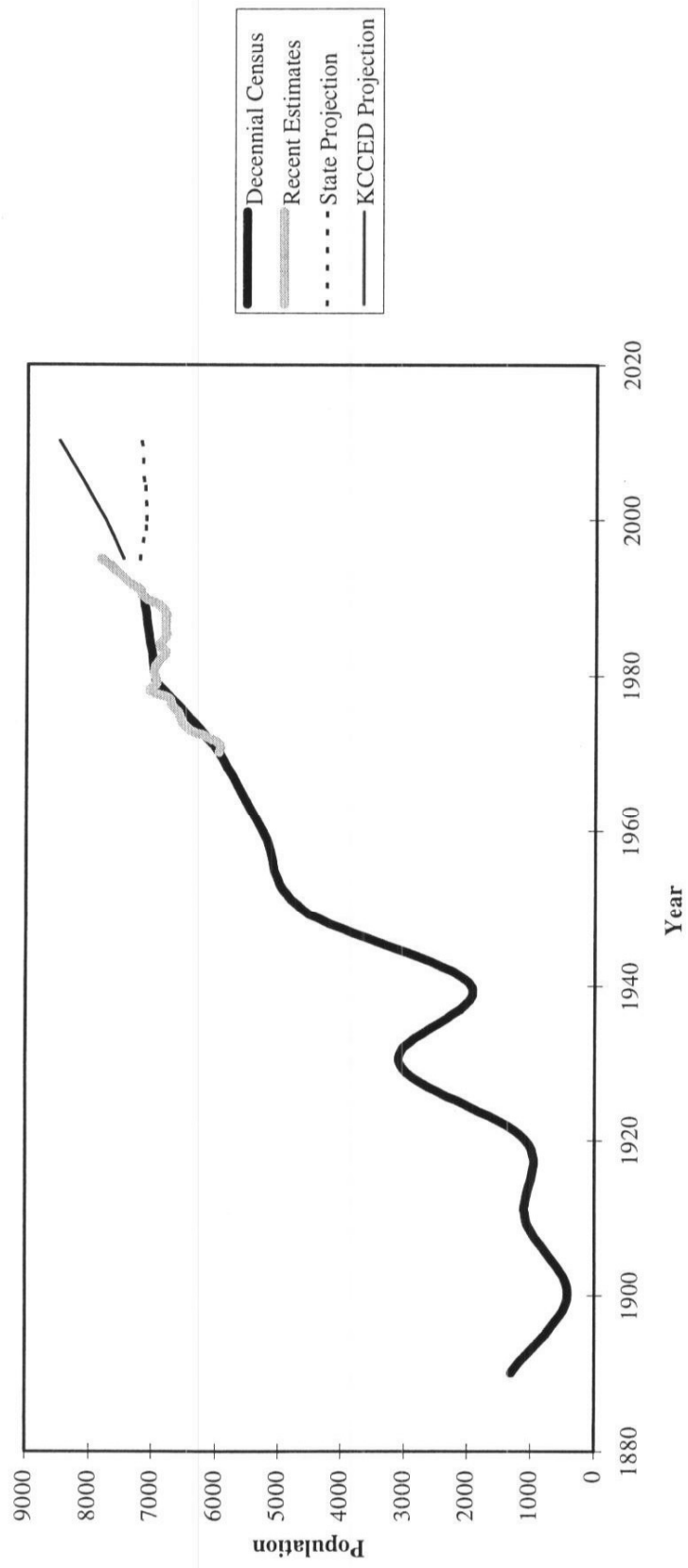
projected to increase between 295 and 375 people every five years from 1995 through 2010 (Table 4).

### **Conclusion**

Caution must be taken in interpreting these results. Particular age groups, namely those people between the ages of 18 and 35 tend to be very mobile. For example, a certain segment of the population should be expected to leave Grant County to receive post-secondary education. That segment of the population would be lower than projected, and the number of births attributed to them would be lower as well. This outmigration is reflected by these projections. On the other hand, we have assumed that employment in Grant County will remain strong, and so it is fair to suggest that there will be in-migration. This positive net migration also is reflected in the projected population totals.

Keeping in mind the limitations in data availability and the assumptions made, the KCCED population projections appear reasonable. They are higher than the State's 1992 projections, which projected a more stagnant population for Grant County. However, based on recent net migration rates and employment growth for Grant County, it is reasonable to assume that the county's population will continue to grow as projected by KCCED.

**Figure 1**  
 Decennial Census Counts: 1900 - 1990  
 Population Estimates: 1970 - 1995  
 State and KCCED Projections: 1995 - 2010  
 Grant County



**Table 1**  
Employment Growth Rates and Net Migration: 1981 - 1995

<u>Year</u>	<u>Employment Growth Rate</u>	<u>Population</u>	<u>Net Migration</u>	<u>Average Annual Net Migration (5-year intervals)</u>
1981	1.14 %	6,900	-2.62 %	
1982	-2.81	6,800	-2.84	
1983	-2.64	6,900	-0.51	
1984	-0.23	6,800	-2.91	
1985	3.24	6,800	-1.38	-2.05 %
1986	-3.29	6,800	-1.63	
1987	-1.43	6,800	-1.10	
1988	1.09	6,900	0.26	
1989	1.07	6,900	-1.13	
1990	11.11	7,159	2.54	-0.21
1991	1.74	7,216	-0.56	
1992	-2.48	7,414	1.66	
1993	8.50	7,529	0.34	
1994	2.13	7,676	0.86	
1995	2.08	7,837	0.79	0.62

Employment data: The University of Kansas, Kansas Center for Community Economic Development, "Kansas County Profile for Grant, 1997," Kansas Department of Human Resources, Labor Market Information Services. Population data: U.S. Bureau of the Census Estimates. KCCED/IPPBR calculations.

**Table 2**  
Comparison of State's 1992 Projections with  
KCCED's 1997 Projections for Grant County

<u>Year</u>	<u>KCCED Projections</u>	<u>State's Projections</u>	<u>Difference</u>
1995	7,482	7,230	252
2000	7,777	7,115	662
2005	8,126	7,151	975
2010	8,501	7,201	1,300

State's Projections: Floerchinger, Teresa D., *Kansas Population Projections 1990 - 2030*, Kansas Division of the Budget, September 1992. KCCED Projections: Population Projections 1995 - 2010, KCCED/IPPBR, University of Kansas, 1997.

**Table 3 a**  
Total Population: Grant County

<b>Age Cohort</b>	<b>1990</b>	<b>1995</b>	<b>2000</b>	<b>2005</b>	<b>2010</b>
under 5 yrs.	643	542	554	615	674
5 to 9 yrs.	780	644	543	554	616
10 to 14 yrs.	689	780	642	543	555
15 to 19 yrs.	544	689	778	641	543
20 to 24 yrs.	418	541	684	774	637
25 to 29 yrs.	598	419	540	683	771
30 to 34 yrs.	585	595	416	537	679
35 to 39 yrs.	591	584	593	414	535
40 to 44 yrs.	460	586	578	588	411
45 to 49 yrs.	375	455	579	572	581
50 to 54 yrs.	297	367	445	568	561
55 to 59 yrs.	310	287	354	431	550
60 to 64 yrs.	244	293	271	336	409
65 to 69 yrs.	199	223	268	250	310
70 to 74 yrs.	160	174	195	237	222
75 to 79 yrs.	138	130	143	162	197
80 to 84 yrs.	70	102	97	108	123
85 and over	58	71	98	112	128
<b>Total</b>	<b>7,159</b>	<b>7,482</b>	<b>7,777</b>	<b>8,126</b>	<b>8,501</b>

1990 Population: U.S. Bureau of the Census, 1990 Decennial Census. Population Projections 1995 - 2010: Calculations by KCCED/IPPBR, University of Kansas, 1997.

**Table 3 b**  
**Female Population: Grant County**

<b>Age Cohort</b>	<b><u>1990</u></b>	<b><u>1995</u></b>	<b><u>2000</u></b>	<b><u>2005</u></b>	<b><u>2010</u></b>
under 5 yrs.	321	271	277	307	337
5 to 9 yrs.	364	321	271	277	308
10 to 14 yrs.	343	364	321	271	277
15 to 19 yrs.	275	343	363	321	272
20 to 24 yrs.	204	274	342	362	319
25 to 29 yrs.	303	205	274	342	362
30 to 34 yrs.	275	302	204	273	341
35 to 39 yrs.	296	275	302	204	273
40 to 44 yrs.	224	294	273	300	202
45 to 49 yrs.	174	222	292	271	297
50 to 54 yrs.	155	172	219	288	267
55 to 59 yrs.	159	151	167	214	281
60 to 64 yrs.	124	153	145	161	206
65 to 69 yrs.	108	116	143	137	152
70 to 74 yrs.	88	98	106	131	125
75 to 79 yrs.	86	76	85	92	115
80 to 84 yrs.	46	68	61	69	75
85 and over	38	49	70	79	91
<b>Subtotal</b>	<b>3,583</b>	<b>3,755</b>	<b>3,913</b>	<b>4,099</b>	<b>4,299</b>

1990 Population: U.S. Bureau of the Census, 1990 Decennial Census. Population Projections 1995 - 2010: Calculations by KCCED/IPPBR, University of Kansas, 1997.



**Table 3 c**  
Male Population: Grant County

<b>Age Cohort</b>	<b><u>1990</u></b>	<b><u>1995</u></b>	<b><u>2000</u></b>	<b><u>2005</u></b>	<b><u>2010</u></b>
under 5 yrs.	322	271	277	307	337
5 to 9 yrs.	416	322	271	277	308
10 to 14 yrs.	346	416	321	271	277
15 to 19 yrs.	269	346	414	321	271
20 to 24 yrs.	214	267	343	411	318
25 to 29 yrs.	295	214	266	341	409
30 to 34 yrs.	310	293	212	264	339
35 to 39 yrs.	295	309	291	211	262
40 to 44 yrs.	236	292	305	288	209
45 to 49 yrs.	201	232	287	301	284
50 to 54 yrs.	142	196	226	280	294
55 to 59 yrs.	151	136	187	217	269
60 to 64 yrs.	120	140	126	175	204
65 to 69 yrs.	91	107	125	114	158
70 to 74 yrs.	72	76	90	106	97
75 to 79 yrs.	52	55	58	69	82
80 to 84 yrs.	24	35	37	40	48
85 and over	20	22	28	33	37
<b>Subtotal</b>	<b>3,576</b>	<b>3,726</b>	<b>3,864</b>	<b>4,027</b>	<b>4,202</b>

1990 Population: U.S. Bureau of the Census, 1990 Decennial Census. Population Projections 1995 - 2010: Calculations by KCCED/IPPBR, University of Kansas, 1997.

**Table 4**  
**Projected Population Change: Grant County**

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<u>Year</u>	<u>1990- 1995</u>	<u>1995- 2000</u>	<u>2000- 2005</u>	<u>2005- 2010</u>
<b>Total</b>	323	296	349	375
<b>Female</b>	172	158	186	200
<b>Male</b>	150	138	163	175

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Calculations based on Population Projections 1995 - 2010, KCCED/IPPBR, University of Kansas, 1997.