Kentucky State Data Center

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Population Projections Evaluated

In the 1995 edition of *How Many Kentuckians*, two series of population projections, moderate growth and high growth, were released. Both series were produced by a cohort-component method, but they differed on assumptions of future migration and longevity. Moreover, the high growth series had been calibrated to 1991–94 postcensal population estimates.

KSDC researcher Tom Sawyer has examined the short-term accuracy of the two 1996 population projections by comparing them to estimates produced by the Census Bureau. These estimates were derived from vital statistics, Internal Revenue Service tax records, and Social Security Administration records — information concurrent to the estimate year. In contrast, the projections were based on assumptions of future fertility, survivorship, and migration. An evaluation was made for each county by examining the percent differences between the estimate and respective projections. These differences were analyzed by selected county groupings.

As expected, Tom found that overall the high growth series was more accurate than the moderate growth series. The mean percent error (MPE) across all 120 counties was 0.1 percent for the high growth series, compared to -3.9 percent for the moderate growth series. However, the moderate growth series was the more accurate projection for 20 counties. A table of results, presented on pages two and three, enables those who use the forecasts to assess their accuracy for specific counties. Other findings included:

- In the high growth series, 31 counties were within ±0.5 percent error. However, over half (67 counties) were over projected. Only 13 counties were over projected in the moderate growth series.
- The accuracy of projections varied by population size. Moderate growth series projections were least accurate for counties under 10,000 population (-4.9 MPE) and most accurate for counties over 50,000 (-2.7 MPE). In the high growth series, small population counties were the least accurate and generally under projected (-0.5 MPE).
- Counties experiencing rapid population growth (15 percent or more

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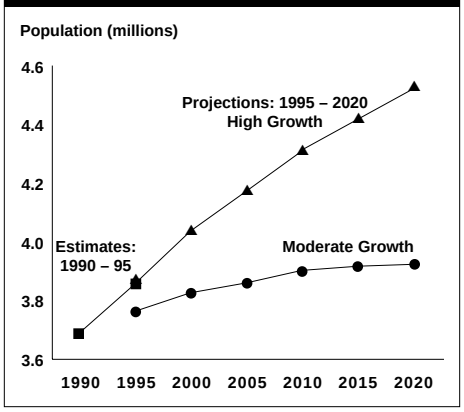
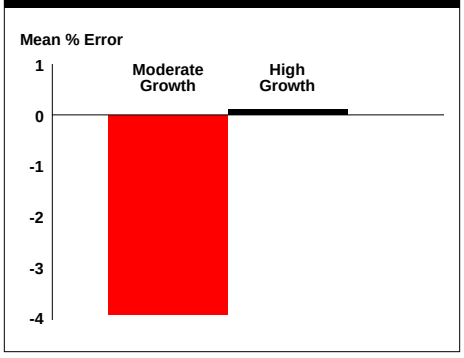
Kentucky's Population 1990–2020



Kentucky's Population 1996 County Projections vs Estimates



This is how we REALLY do our forecasts!

Kentucky State Data Center

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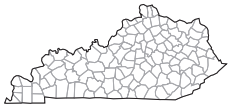

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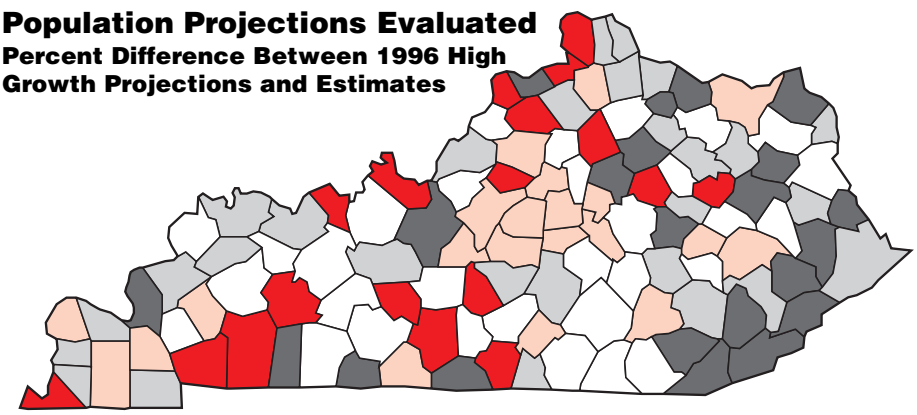
1996 Population Projections Evaluated

	Estimate	Projection		Difference		% Difference	
		Moderate	High	Moderate	High	Moderate	High
Kentucky	**3,891,438**	**3,778,147**	**3,905,518**	**-113,291**	**14,080**	**-2.9**	**0.4**
Adair	16,460	15,579	16,436	-881	-24	-5.4	-0.1
Allen	15,844	15,225	15,681	-619	-163	-3.9	-1.0
Anderson	17,734	16,235	17,609	-1,499	-125	-8.5	-0.7
Ballard	8,252	7,682	8,164	-570	-88	-6.9	-1.1
Barren	36,255	34,047	35,567	-2,208	-688	-6.1	-1.9
Bath	10,143	9,672	10,255	-471	112	-4.6	1.1
Bell	30,193	31,125	30,749	932	556	3.1	1.8
Boone	72,926	66,326	71,569	-6,600	-1,357	-9.1	-1.9
Bourbon	19,199	19,714	19,588	515	389	2.7	2.0
Boyd	50,263	49,759	50,830	-504	567	-1.0	1.1
Boyle	26,945	25,726	26,746	-1,219	-199	-4.5	-0.7
Bracken	8,237	8,033	8,357	-204	120	-2.5	1.5
Breathitt	15,640	15,783	15,481	143	-159	0.9	-1.0
Breckinridge	16,901	16,234	16,866	-667	-35	-3.9	-0.2
Bullitt	57,161	52,063	57,284	-5,098	123	-8.9	0.2
Butler	11,701	11,494	11,739	-207	38	-1.8	0.3
Caldwell	13,290	13,257	13,180	-33	-110	-0.2	-0.8
Calloway	32,579	31,304	32,769	-1,275	190	-3.9	0.6
Campbell	87,233	85,447	88,087	-1,786	854	-2.0	1.0
Carlisle	5,309	5,173	5,379	-136	70	-2.6	1.3
Carroll	9,516	9,440	9,829	-76	313	-0.8	3.3
Carter	26,328	24,301	26,380	-2,027	52	-7.7	0.2
Casey	14,512	14,075	14,716	-437	204	-3.0	1.4
Christian	73,160	71,716	68,386	-1,444	-4,774	-2.0	-6.5
Clark	31,604	30,231	30,960	-1,373	-644	-4.3	-2.0
Clay	22,736	21,810	23,064	-926	328	-4.1	1.4
Clinton	9,269	9,153	9,358	-116	89	-1.3	1.0
Crittenden	9,400	9,361	9,544	-39	144	-0.4	1.5
Cumberland	6,977	6,666	6,830	-311	-147	-4.5	-2.1
Daviess	90,818	88,420	91,428	-2,398	610	-2.6	0.7
Edmonson	11,076	11,084	10,757	8	-319	0.1	-2.9
Elliott	6,584	6,865	6,796	281	212	4.3	3.2
Estill	15,494	14,787	15,767	-707	273	-4.6	1.8
Fayette	239,942	237,583	245,765	-2,359	5,823	-1.0	2.4
Fleming	13,161	12,374	13,211	-787	50	-6.0	0.4
Floyd	43,744	43,056	44,708	-688	964	-1.6	2.2
Franklin	46,410	45,056	46,325	-1,354	-85	-2.9	-0.2
Fulton	7,794	8,117	7,377	323	-417	4.1	-5.4
Gallatin	6,409	5,956	6,304	-453	-105	-7.1	-1.6
Garrard	13,251	12,256	13,071	-995	-180	-7.5	-1.4
Grant	19,269	17,875	19,013	-1,394	-256	-7.2	-1.3
Graves	35,601	33,652	35,142	-1,949	-459	-5.5	-1.3
Grayson	22,910	21,439	23,255	-1,471	345	-6.4	1.5
Green	10,582	10,167	10,380	-415	-202	-3.9	-1.9
Greenup	37,183	36,717	37,936	-466	753	-1.3	2.0
Hancock	8,750	8,082	8,347	-668	-403	-7.6	-4.6
Hardin	89,404	93,197	92,397	3,793	2,993	4.2	3.3
Harlan	35,411	35,984	36,273	573	862	1.6	2.4
Harrison	17,170	17,061	17,210	-109	40	-0.6	0.2
Hart	16,328	15,017	16,400	-1,311	72	-8.0	0.4
Henderson	44,444	44,248	44,904	-196	460	-0.4	1.0
Henry	14,581	13,197	14,246	-1,384	-335	-9.5	-2.3
Hickman	5,306	5,421	5,354	115	48	2.2	0.9
Hopkins	46,545	46,316	46,768	-229	223	-0.5	0.5
Jackson	12,832	12,184	12,926	-648	94	-5.0	0.7
Jefferson	673,040	664,828	677,036	-8,212	3,996	-1.2	0.6
Jessamine	35,426	33,503	35,149	-1,923	-277	-5.4	-0.8
Johnson	24,147	23,203	24,458	-944	311	-3.9	1.3
Kenton	145,597	146,550	146,777	953	1,180	0.7	0.8
Knott	18,214	18,261	18,839	47	625	0.3	3.4
Knox	31,514	29,910	32,070	-1,604	556	-5.1	1.8
Larue	12,760	11,676	12,576	-1,084	-184	-8.5	-1.4
Laurel	49,185	46,408	48,865	-2,777	-320	-5.6	-0.7
Lawrence	15,468	14,188	15,544	-1,280	76	-8.3	0.5
Lee	7,906	7,397	7,860	-509	-46	-6.4	-0.6
Leslie	13,523	13,693	14,189	170	666	1.3	4.9
Letcher	26,744	26,553	27,600	-191	856	-0.7	3.2
Lewis	13,516	12,818	13,412	-698	-104	-5.2	-0.8
Lincoln	21,781	21,153	21,751	-628	-30	-2.9	-0.1
Livingston	9,290	9,044	9,486	-246	196	-2.6	2.1
Logan	25,902	24,851	26,006	-1,051	104	-4.1	0.4

1996 Population Projections Evaluated

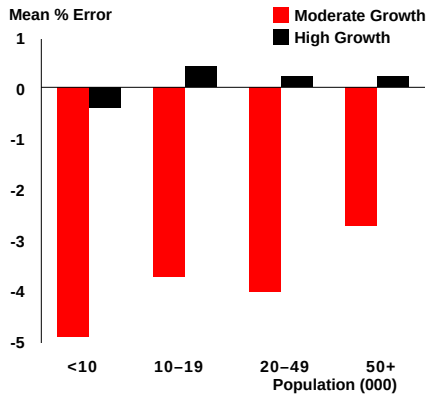
	Estimate	Projection		Difference		% Difference	
		Moderate	High	Moderate	High	Moderate	High
Lyon	7,849	6,740	7,813	-1,109	-36	-14.1	-0.5
McCracken	64,940	64,000	65,560	-940	620	-1.4	1.0
McCreary	16,583	16,075	16,578	-508	-5	-3.1	0.0
McLean	9,756	9,501	9,756	-255	0	-2.6	0.0
Madison	64,297	62,001	64,024	-2,296	-273	-3.6	-0.4
Magoffin	13,804	13,171	13,853	-633	49	-4.6	0.4
Marion	17,001	16,241	16,747	-760	-254	-4.5	-1.5
Marshall	29,683	28,305	29,450	-1,378	-233	-4.6	-0.8
Martin	12,658	12,569	13,136	-89	478	-0.7	3.8
Mason	16,891	16,515	17,485	-376	594	-2.2	3.5
Meade	27,522	25,888	26,986	-1,634	-536	-5.9	-1.9
Menifee	5,483	5,135	5,338	-348	-145	-6.3	-2.6
Mercer	20,412	19,413	20,203	-999	-209	-4.9	-1.0
Metcalfe	9,369	8,865	9,359	-504	-10	-5.4	-0.1
Monroe	11,314	11,179	11,720	-135	406	-1.2	3.6
Montgomery	20,492	19,686	20,577	-806	85	-3.9	0.4
Morgan	13,420	11,700	13,642	-1,720	222	-12.8	1.7
Muhlenberg	31,857	31,271	31,281	-586	-576	-1.8	-1.8
Nelson	34,332	31,443	33,996	-2,889	-336	-8.4	-1.0
Nicholas	6,942	6,629	7,011	-313	69	-4.5	1.0
Ohio	21,826	21,104	21,767	-722	-59	-3.3	-0.3
Oldham	42,287	39,670	42,391	-2,617	104	-6.2	0.2
Owen	9,905	9,419	10,035	-486	130	-4.9	1.3
Owsley	5,481	4,846	5,485	-635	4	-11.6	0.1
Pendleton	13,757	13,310	13,967	-447	210	-3.2	1.5
Perry	31,199	30,061	31,576	-1,138	377	-3.6	1.2
Pike	73,389	71,360	73,947	-2,029	558	-2.8	0.8
Powell	12,409	12,190	12,591	-219	182	-1.8	1.5
Pulaski	55,065	52,032	55,276	-3,033	211	-5.5	0.4
Robertson	2,209	2,127	2,262	-82	53	-3.7	2.4
Rockcastle	15,627	15,419	15,672	-208	45	-1.3	0.3
Rowan	21,768	21,102	22,049	-666	281	-3.1	1.3
Russell	16,401	15,578	16,250	-823	-151	-5.0	-0.9
Scott	28,565	25,465	27,749	-3,100	-816	-10.9	-2.9
Shelby	28,227	26,410	27,897	-1,817	-330	-6.4	-1.2
Simpson	16,084	15,704	16,340	-380	256	-2.4	1.6
Spencer	8,649	7,624	7,966	-1,025	-683	-11.9	-7.9
Taylor	22,712	21,387	22,931	-1,325	219	-5.8	1.0
Todd	11,225	10,917	11,419	-308	194	-2.7	1.7
Trigg	11,857	11,237	11,606	-620	-251	-5.2	-2.1
Trimble	7,246	6,166	6,927	-1,080	-319	-14.9	-4.4
Union	16,508	16,317	16,559	-191	51	-1.2	0.3
Warren	85,545	81,548	85,258	-3,997	-287	-4.7	-0.3
Washington	10,815	10,490	10,664	-325	-151	-3.0	-1.4
Wayne	18,703	17,836	18,634	-867	-69	-4.6	-0.4
Webster	13,524	13,685	13,611	161	87	1.2	0.6
Whitley	35,668	33,684	35,723	-1,984	55	-5.6	0.2
Wolfe	7,363	6,520	7,350	-843	-13	-11.4	-0.2
Woodford	22,040	21,834	22,018	-206	-22	-0.9	-0.1

Population Projections Evaluated
Percent Difference Between 1996 High Growth Projections and Estimates



-7.9 to -1.6% | -1.5 to -0.6% | -0.5 to +0.5% | 0.6 to 1.5% | 1.6 to 4.9%

Projections vs Estimates by County Size, 1996



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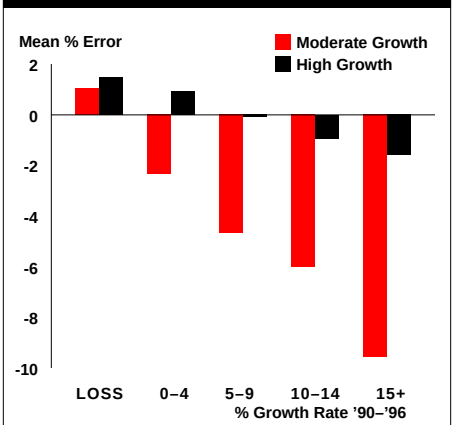
from 1990 – 96) were the most difficult to project in both series (-1.6 MPE in the high and -9.6 MPE in the moderate). Counties losing population were generally over projected in both series.

KSDC population projections will be monitored to assess their accuracy relative to other data series and revised as needed. At present, the high growth series is recommended because it tracks more consistently with Census Bureau estimates. Short-term trends, however, may not be a precise measure of the long-term accuracy of projections.

Projections vs Estimates by County Growth Rate, 1996



What's New and Informative

Preparing for Census 2000

The Census Bureau recently released its Plan for Census 2000. This report details the methodologies and costs associated with the 2000 Decennial Census.

Although scientific sampling has been criticized, the National Academy of Science concluded that it is the only way to conduct a more accurate census. The Census Bureau estimates that more than 4 million people were not counted in the 1990 decennial census.

"Census 2000 must seek to count everyone, not just those who are easy to find. It is clear that there is only one way to get the most accurate count of this country's population, and that is through the limited use of scientific sampling," said Census Bureau Director, Dr. Martha Farnsworth Riche.

One-stop shopping for statistics

Official federal statistics are now much easier and faster to find, thanks to a new World Wide Web site unveiled by the Clinton administration.

FedStats uses the Internet's powerful link and search capabilities to navigate publicly available statistics from over 70 federal agencies. Now, Internet users can find the information they need without having to know which agency produces the data.

"FedStats takes advantage of Internet technology to make federal statistics more accessible," said Sally Katzen, administrator of the Office of Management and Budget's Office and Regulatory Affairs. "Today, a high school student with a modem in Boise, Idaho, has better access to federal statistics than top officials in Washington had five years ago."

FedStats' major features include:

- An "A to Z" index providing direct access to detailed data listings in 275 categories.
- A keyword search capability enabling users to search Web sites linked to FedStats.
- An "Agencies" heading allowing users to link to the Web sites of federal statistical agencies or select from a menu of predetermined keywords for those agencies.
- A "Regional Statistics" heading offering data broken down to state or county levels.

State housing estimates released

The new state estimates cover number of housing units, households by age of householder, and persons per household for 1990 – 1996. Tables are available from the Public Information Office as *Estimates of Housing Units and Households of States: 1990 and 1996* (PPL-73).

Three in ten households maintained by women

There were 29.2 million households maintained by women with no husband present in 1996, according to tabulations released by the Census Bureau. The report, *Household and Family Characteristics: March 1996 (Update),* (P20-495), provides 1996 data on the demographic characteristics of our nation's households and families by race and Hispanic origin.

Highlights include:

- Married couples with their own children under age 18 accounted for 25 percent of all households.
- The average household size was 2.7 persons.
- Thirty-two percent of all family groups with children were single parent situations.
- Persons living alone made up 25 percent of all households.

A copy of the tables (PPL-66) can be obtained from the Census Bureau's Public Information Office.

Data are from the March 1996 Current Population Survey. As in all surveys, the data are subject to sampling variability and other sources of error.

Where to find it on the Web

FedStats: www.fedstats.gov
Housing Estimates: www.census.gov/population/www/estimates/housing.html
Household, Family Data: www.census.gov/population/www/socdemo/hh-fam.html

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