2006 Population Estimates for Utah

Methods Documentation

May 2007

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Demographic and Economic Analysis
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Overview

Utah's population reached 2,615,129 persons in 2006, according to the Utah Population Estimates Committee. This 2.7 percent increase from 2005 equals growth of 67,740 persons, approximately the population of St. George, Utah. With the national population increasing by an estimated 1.0 percent during 2006, the pace of population growth in Utah is almost three times the nation's. Utah's population ranks 34th, as it has for almost two decades, and the U.S. Census Bureau continues to rank Utah as one of the nation's fastest growing states. From July 2005 to July 2006, Utah had the 6th largest growth rate in the nation.[1] Compared to the rest of the country, Utah's population growth is characterized by a high birth rate and low death rate.

The state's growth during 2006 was composed of a record high 52,368 births, less a record high 13,358 deaths. At 39,010, natural increase, defined as births minus deaths, was also record high. Net migration during 2006 of 28,730 was very large by historical standards, but over 10,000 less than the 40,647 post-World War II record set in 2005. Indicators such as employment, wages, income, and sales demonstrated that Utah's economy grew very rapidly during 2006. Likewise, demographic indicators such as school enrollment, LDS Church membership, tax exemptions, building permits, and utility connections suggest population growth was strong, due to both record natural increase and high net migration.

This paper presents the official population estimate for the state, multi-county districts, (MCDs) and the counties, and discusses the method used to develop the estimates. The 2006 estimates and the historical context of Utah's population growth are discussed. Details are provided on the components of population change, as well as the methods used to prepare these estimates. The final section describes the estimates prepared and the methods used by the U.S. Census Bureau to produce population estimates.

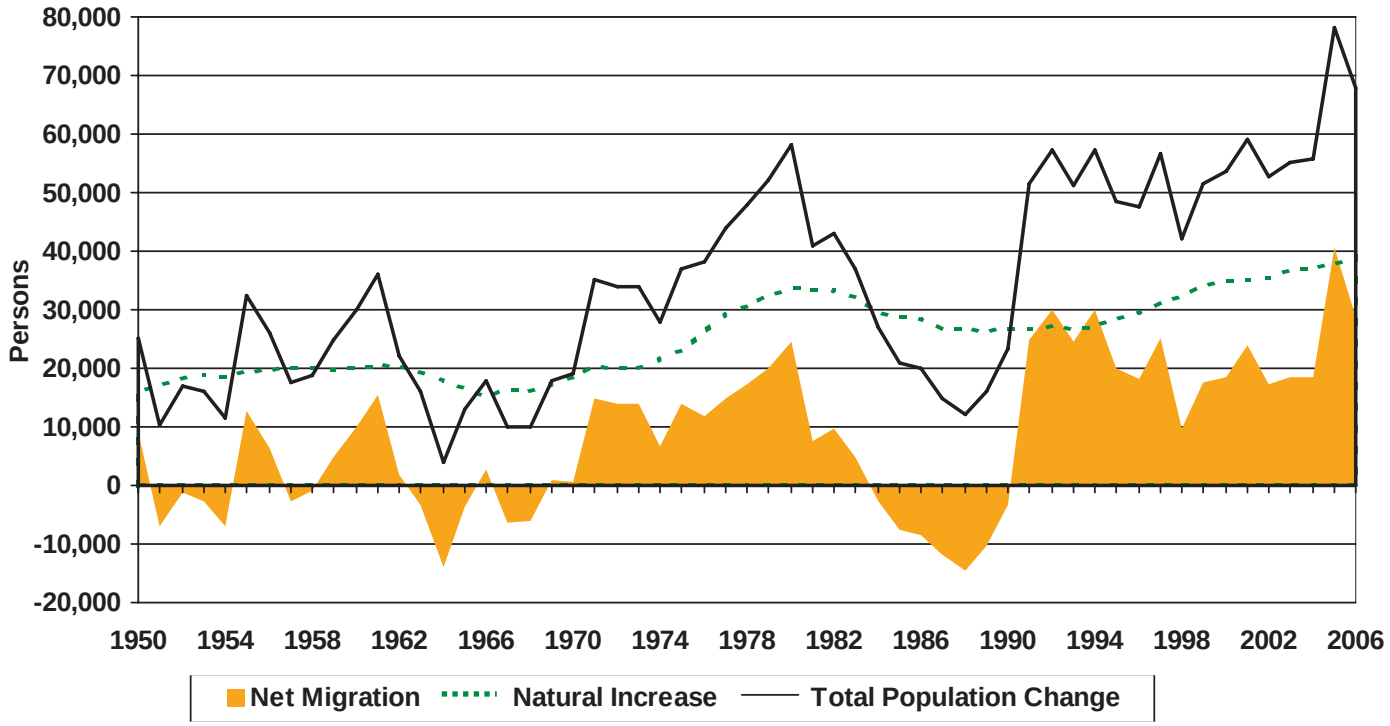
2006 Estimates

As Figure 1 and Table 1 show, Utah has now experienced 16 consecutive years of net in-migration. The 2006 level of 28,730 more people moving into the state than out is down from the post-war record 40,647 observed during 2005, but is still the third largest amount of migration. During the past 16 years, the number of people moving into the state is estimated to exceed the number moving out by nearly 370,000, which is about 90,000 more people than live in Davis County. Even with this large net in-migration, about 60 percent of Utah's population growth since 1990 has come from natural increase. Since 1990 natural increase is almost 520,000, while total population growth is almost 890,000.

As is shown in Figure 2 and Table 2, the most rapid growth in Utah occurred in counties within or adjacent to the northern metropolitan region, and in counties in the southwest portion of the state.

1 This is based on U.S. Census Bureau national and state population estimates, online: www.census.gov/popest/states/NST-ann-est.html

Figure 1
State of Utah Components of Population Change



Source: Utah Population Estimates Committee

Table 1
Utah Population Estimates and Components of Population Change

Year	July 1st Population	Percent Change	Population Change	Net Migration	Net Migration as a Percent of Previous Year's Population	Natural Increase	Fiscal Year Births	Fiscal Year Deaths
1960	900,000			10,047	1.1%	20,053	26,011	5,958
1961	936,000	4.0%	36,000	15,371	1.7%	20,629	26,560	5,931
1962	958,000	2.4%	22,000	1,817	0.2%	20,183	26,431	6,248
1963	974,000	1.7%	16,000	-3,317	-0.3%	19,317	25,648	6,331
1964	978,000	0.4%	4,000	-13,863	-1.4%	17,863	24,461	6,598
1965	991,000	1.3%	13,000	-3,553	-0.4%	16,553	23,082	6,529
1966	1,009,000	1.8%	18,000	2,810	0.3%	15,190	21,953	6,763
1967	1,019,000	1.0%	10,000	-6,350	-0.6%	16,350	23,030	6,680
1968	1,029,000	1.0%	10,000	-6,029	-0.6%	16,029	22,743	6,714
1969	1,047,000	1.7%	18,000	798	0.1%	17,202	24,033	6,831
1970	1,066,000	1.8%	19,000	612	0.1%	18,388	25,281	6,893
1971	1,101,150	3.3%	35,150	14,966	1.4%	20,184	27,400	7,216
1972	1,135,100	3.1%	33,950	14,046	1.3%	19,904	27,146	7,242
1973	1,168,950	3.0%	33,850	13,810	1.2%	20,040	27,562	7,522
1974	1,196,950	2.4%	28,000	6,621	0.6%	21,379	28,876	7,497
1975	1,233,900	3.1%	36,950	13,897	1.2%	23,053	30,566	7,513
1976	1,272,050	3.1%	38,150	11,761	1.0%	26,389	33,773	7,384
1977	1,315,950	3.5%	43,900	14,824	1.2%	29,076	36,707	7,631
1978	1,363,750	3.6%	47,800	17,220	1.3%	30,580	38,289	7,709
1979	1,415,950	3.8%	52,200	19,868	1.5%	32,332	40,216	7,884
1980	1,474,000	4.1%	58,050	24,536	1.7%	33,514	41,645	8,131
1981	1,515,000	2.8%	41,000	7,612	0.5%	33,388	41,509	8,121
1982	1,558,000	2.8%	43,000	9,662	0.6%	33,338	41,773	8,435
1983	1,595,000	2.4%	37,000	4,914	0.3%	32,086	40,555	8,469
1984	1,622,000	1.7%	27,000	-2,793	-0.2%	29,793	38,643	8,850
1985	1,643,000	1.3%	21,000	-7,714	-0.5%	28,714	37,664	8,950
1986	1,663,000	1.2%	20,000	-8,408	-0.5%	28,408	37,309	8,901
1987	1,678,000	0.9%	15,000	-11,713	-0.7%	26,713	35,631	8,918
1988	1,690,000	0.7%	12,000	-14,557	-0.9%	26,557	35,809	9,252
1989	1,706,000	0.9%	16,000	-10,355	-0.6%	26,355	35,439	9,084
1990	1,729,227	1.4%	23,227	-3,480	-0.2%	26,707	35,830	9,123
1991	1,780,870	3.0%	51,643	24,878	1.4%	26,765	36,194	9,429
1992	1,838,149	3.2%	57,279	30,042	1.7%	27,237	36,796	9,559
1993	1,889,393	2.8%	51,244	24,561	1.3%	26,683	36,738	10,055
1994	1,946,721	3.0%	57,328	30,116	1.6%	27,212	37,623	10,411
1995	1,995,228	2.5%	48,507	20,024	1.0%	28,483	39,064	10,581
1996	2,042,893	2.4%	47,665	18,171	0.9%	29,494	40,495	11,001
1997	2,099,409	2.8%	56,516	25,253	1.2%	31,263	42,512	11,249
1998	2,141,632	2.0%	42,223	9,745	0.5%	32,478	44,126	11,648
1999	2,193,014	2.4%	51,382	17,584	0.8%	33,798	45,434	11,636
2000	2,246,553	2.4%	53,539	18,612	0.8%	34,927	46,880	11,953
2001	2,305,652	2.6%	59,099	23,848	1.1%	35,251	47,688	12,437
2002	2,358,330	2.3%	52,678	17,299	0.8%	35,379	48,041	12,662
2003	2,413,618	2.3%	55,288	18,568	0.8%	36,720	49,518	12,798
2004	2,469,230	2.3%	55,612	18,367	0.8%	37,245	50,527	13,282
2005	2,547,389	3.2%	78,159	40,647	1.6%	37,512	50,431	12,919
2006	2,615,129	2.7%	67,740	28,730	1.1%	39,010	52,368	13,358

Note: Before 1995, the Utah Population Estimates Committee rounded its population estimates

Source: Utah Population Estimates Committee

For 2006, the following counties had the highest population growth rates:

Washington	6.1%	Utah	4.2%
Wasatch	5.3%	Juab	3.8%
Iron	4.9%	Uintah	3.2%
Morgan	4.4%	Davis	3.0%
Tooele	4.3%	Rich	2.9%

For 2006, the following counties had the highest population increases:

Utah	19,352	Tooele	2,242
Salt Lake	18,089	Weber	2,186
Davis	8,269	Cache	2,107
Washington	7,772	Iron	2,027

While the overall state population and the population of 27 counties in the state increased in 2006, Emery County and Daggett County experienced population loss during 2006.

Expanding Urban Area

Interestingly, the populations in Wasatch, Morgan, Tooele, Utah, Davis and Juab counties continue to expand quite rapidly. This growth illuminates the degree to which the Wasatch Front and Back are becoming increasingly more urbanized. The semi-rural counties surrounding the Wasatch Front urban area are growing faster than the urban core. Although Utah County continues to be one of the fastest growing counties in the state, much of this growth reflects the urbanization of previously semi-rural parts of the county.

To a large extent, the growth in the counties on the urban periphery results from the expansion of the Wasatch Front urban area. People in these counties are in close proximity to urban services, but are still able to enjoy many of the desirable characteristics found in a rural or suburban setting. While these peripheral areas will retain their rural character for the foreseeable future, their growth will be increasingly tied to the urban core. The growth in these outlying areas is often referred to as a "donut effect," and this phenomenon is clearly visible in Figure 2.

County Highlights

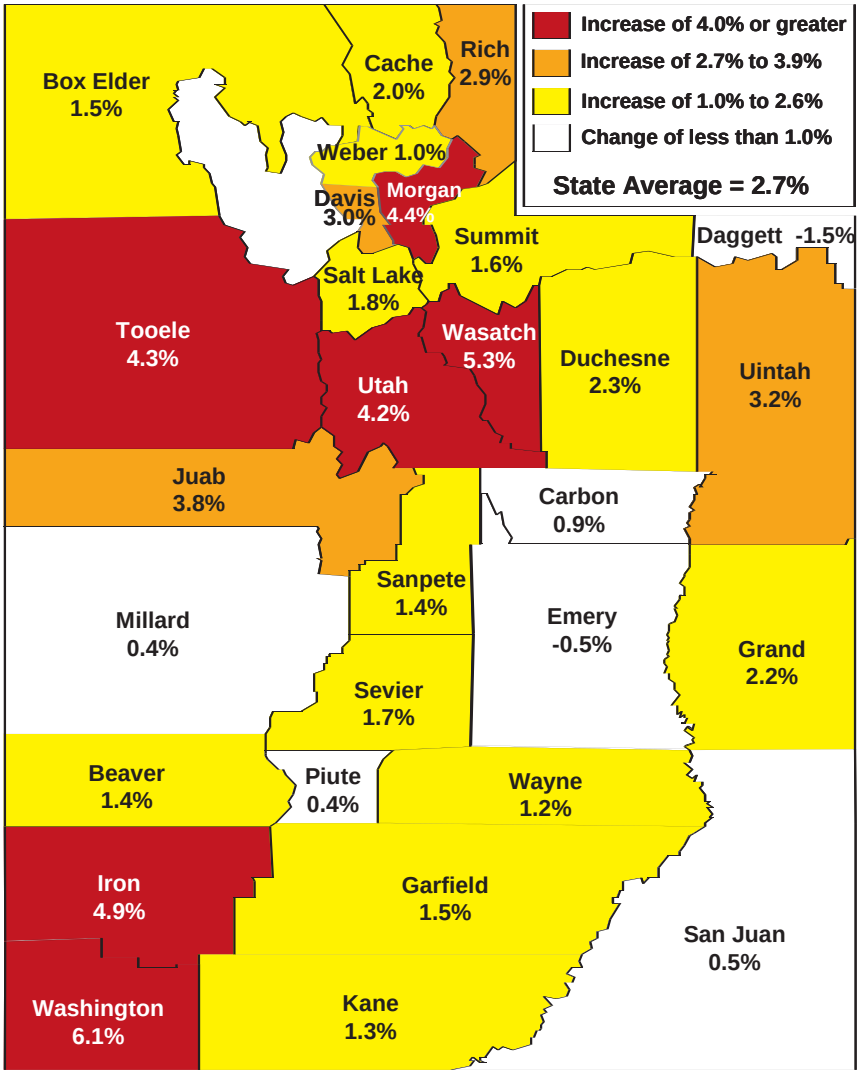
Washington County. For the third year in a row, Washington County was the fastest growing county in the state with a growth rate of 6.1% in 2006. At this rate, Washington County grew more than twice as fast as the state average of 2.7%. Estimated net in-migration to the county of approximately 6,000 people accounted for one-fifth of the state's migration.

Utah County. The population in Utah County, estimated at approximately 475,400, increased at a more rapid rate than the state. It was the state's second largest county and the sixth fastest growing county during 2006. With an estimated 9,600 more people moving in than moving out, Utah County ranked first among the counties for net migration.

Salt Lake County. Almost 40% of the state resides in Salt Lake County, with a 2006 population of nearly 1 million. Strong housing construction was tied to net migration of about 4,500. Natural increase of 13,500 combined to give Salt Lake County the largest amount of growth, almost 19,000 new residents, of any county.

Uintah County. Spurred by rising energy prices, there has been a natural gas drilling boom in Uintah County. Mining employment on the drilling rigs has increased by about 1,500 jobs since

Figure 2
Utah Population Growth Rates by County: 2005 to 2006



Source: Utah Population Estimates Committee

Table 2
Components of Population Change in Utah by County and Multi-County District

County/District	July 1 Population 2005	July 1 Population 2006	Population Change 2005-06 Numerical	Population Change 2005-06 Percent	Components of Change 2005-06: Births	Deaths	Natural Increase	Net Migration
Beaver	6,341	6,428	87	1.4%	87	63	24	63
Box Elder	45,304	45,987	683	1.5%	917	282	635	48
Cache	103,564	105,671	2,107	2.0%	2,399	420	1,979	128
Carbon	19,338	19,504	166	0.9%	268	163	105	61
Daggett	963	949	-14	-1.5%	11	5	6	-20
Davis	278,278	286,547	8,269	3.0%	5,934	1,281	4,653	3,616
Duchesne	15,237	15,585	348	2.3%	327	110	217	131
Emery	10,491	10,438	-53	-0.5%	182	76	106	-159
Garfield	4,703	4,772	69	1.5%	75	35	40	29
Grand	8,826	9,024	198	2.2%	100	61	39	159
Iron	41,397	43,424	2,027	4.9%	939	232	707	1,320
Juab	8,974	9,315	341	3.8%	192	65	127	214
Kane	6,211	6,294	83	1.3%	89	51	38	45
Millard	13,171	13,230	59	0.4%	176	102	74	-15
Morgan	8,516	8,888	372	4.4%	134	28	106	266
Piute	1,368	1,373	5	0.4%	15	19	-4	9
Rich	2,062	2,121	59	2.9%	37	16	21	38
Salt Lake	978,285	996,374	18,089	1.8%	18,798	5,217	13,581	4,508
San Juan	14,571	14,647	76	0.5%	196	71	125	-49
Sanpete	25,454	25,799	345	1.4%	424	167	257	88
Sevier	19,649	19,984	335	1.7%	365	170	195	140
Summit	36,283	36,871	588	1.6%	528	116	412	176
Tooele	52,133	54,375	2,242	4.3%	1,105	247	858	1,384
Uintah	26,883	27,747	864	3.2%	596	162	434	430
Utah	456,073	475,425	19,352	4.2%	11,467	1,728	9,739	9,613
Wasatch	19,999	21,053	1,054	5.3%	359	97	262	792
Washington	127,127	134,899	7,772	6.1%	2,660	902	1,758	6,014
Wayne	2,504	2,535	31	1.2%	36	20	16	15
Weber	213,684	215,870	2,186	1.0%	3,952	1,452	2,500	-314
Bear River	150,930	153,779	2,849	1.9%	3,353	718	2,635	214
Wasatch Front	1,530,896	1,562,054	31,158	2.0%	29,923	8,225	21,698	9,460
Mountainland	512,355	533,349	20,994	4.1%	12,354	1,941	10,413	10,581
Six County	71,120	72,236	1,116	1.6%	1,208	543	665	451
Five County	185,779	195,817	10,038	5.4%	3,850	1,283	2,567	7,471
Uintah Basin	43,083	44,281	1,198	2.8%	934	277	657	541
Southeast	53,226	53,613	387	0.7%	746	371	375	12
State of Utah	2,547,389	2,615,129	67,740	2.7%	52,368	13,358	39,010	28,730

Source: Utah Population Estimates Committee

the early 2000s. This economic expansion generated net migration of 430 during 2006, with a resulting growth rate of 3.2%.

Historical Context

Utah's population reached 1 million during 1966 and 2 million during 1996, 30 years later. Table 3 presents the population estimates for the state, the MCDs, and the counties since 1940 for selected years. During this period, the state's fastest growth occurred during the 1970s, when the population increased at a 3.3 percent average annual rate. During the 1940s and 1950s, the state's population increased about 2.5 percent per year, which contrasts with the 1960s and 1980s, when the population increased less than 2.0 percent per year. At 2.7 percent per year, the 1990s growth rates represent a return to the relatively high rates of growth seen during the 1940s and 1950s, although they are still substantially below the growth of the 1970s. With growth averaging 2.6% per year, the 2000s are on track to repeat the growth of the 1990s.

Reflecting the fact that it has almost half of Utah's population, Salt Lake County's growth pattern most closely mirrors the state. As with the state as a whole, Salt Lake County experienced fairly rapid growth during the 1940s, 2.7 percent per year, even more rapid growth during the 1950s, 3.3 percent per year, a slowdown

Table 3
Population Estimates for Utah by County and Multi-County District

	July 1 Population Estimates									Average Annual Growth Rates for the Period							
County/District	1940	1950	1960	1970	1980	1990	2000	2005	2006	1940s	1950s	1960s	1970s	1980s	1990s	2000-06	2005-06
Beaver	4,900	4,800	4,300	3,850	4,400	4,800	6,023	6,341	6,428	-0.2%	-1.1%	-1.1%	1.3%	0.9%	2.3%	1.1%	1.4%
Box Elder	18,900	19,800	25,500	28,150	33,500	36,500	42,860	45,304	45,987	0.5%	2.6%	1.0%	1.8%	0.9%	1.6%	1.2%	1.5%
Cache	29,900	33,600	36,100	42,550	57,700	70,500	91,897	103,564	105,671	1.2%	0.7%	1.7%	3.1%	2.0%	2.7%	2.4%	2.0%
Carbon	18,700	24,800	21,200	15,750	22,400	20,200	20,396	19,338	19,504	2.9%	-1.6%	-2.9%	3.6%	-1.0%	0.1%	-0.7%	0.9%
Daggett	600	400	1,200	650	750	700	933	963	949	-4.0%	11.6%	-5.9%	1.4%	-0.7%	2.9%	0.3%	-1.5%
Davis	15,500	31,200	65,600	99,600	148,000	188,000	240,204	278,278	286,547	7.2%	7.7%	4.3%	4.0%	2.4%	2.5%	3.0%	3.0%
Duchesne	8,700	8,100	7,200	7,400	12,700	12,600	14,397	15,237	15,585	-0.7%	-1.2%	0.3%	5.5%	-0.1%	1.3%	1.3%	2.3%
Emery	7,000	6,300	5,500	5,150	11,600	10,300	10,782	10,491	10,438	-1.0%	-1.3%	-0.7%	8.5%	-1.2%	0.5%	-0.5%	-0.5%
Garfield	5,300	4,100	3,500	3,150	3,700	3,950	4,763	4,703	4,772	-2.5%	-1.6%	-1.0%	1.6%	0.7%	1.9%	0.0%	1.5%
Grand	2,200	1,900	6,400	6,600	8,250	6,600	8,537	8,826	9,024	-1.5%	12.9%	0.3%	2.3%	-2.2%	2.6%	0.9%	2.2%
Iron	8,400	9,700	10,900	12,300	17,500	20,900	34,079	41,397	43,424	1.4%	1.2%	1.2%	3.6%	1.8%	5.0%	4.1%	4.9%
Juab	7,400	5,900	4,500	4,600	5,550	5,800	8,310	8,974	9,315	-2.2%	-2.7%	0.2%	1.9%	0.4%	3.7%	1.9%	3.8%
Kane	2,600	2,300	2,700	2,450	4,050	5,150	6,037	6,211	6,294	-1.2%	1.6%	-1.0%	5.2%	2.4%	1.6%	0.7%	1.3%
Millard	9,700	9,300	7,900	7,050	9,050	11,300	12,461	13,171	13,230	-0.4%	-1.6%	-1.1%	2.5%	2.2%	1.0%	1.0%	0.4%
Morgan	2,600	2,500	2,800	4,050	4,950	5,550	7,181	8,516	8,888	-0.4%	1.1%	3.8%	2.0%	1.2%	2.6%	3.6%	4.4%
Piute	2,200	1,900	1,400	1,150	1,350	1,250	1,436	1,368	1,373	-1.5%	-3.0%	-1.9%	1.6%	-0.8%	1.4%	-0.7%	0.4%
Rich	2,000	1,700	1,700	1,600	2,150	1,750	1,955	2,062	2,121	-1.6%	0.0%	-0.6%	3.0%	-2.0%	1.1%	1.4%	2.9%
Salt Lake	213,700	279,000	387,800	461,500	625,000	728,000	902,777	978,285	996,374	2.7%	3.3%	1.8%	3.1%	1.5%	2.2%	1.7%	1.8%
San Juan	4,600	5,300	8,900	9,700	12,400	12,600	14,360	14,571	14,647	1.4%	5.3%	0.9%	2.5%	0.2%	1.3%	0.3%	0.5%
Sanpete	15,900	13,800	11,100	11,000	14,800	16,300	22,846	25,454	25,799	-1.4%	-2.2%	-0.1%	3.0%	1.0%	3.4%	2.0%	1.4%
Sevier	12,300	12,000	10,600	10,150	14,900	15,400	18,938	19,649	19,984	-0.2%	-1.2%	-0.4%	3.9%	0.3%	2.1%	0.9%	1.7%
Summit	8,600	6,700	5,700	5,900	10,400	15,700	30,048	36,283	36,871	-2.5%	-1.6%	0.3%	5.8%	4.2%	6.7%	3.5%	1.6%
Tooele	8,800	15,000	18,000	21,600	26,200	26,700	41,549	52,133	54,375	5.5%	1.8%	1.8%	1.9%	0.2%	4.5%	4.6%	4.3%
Uintah	10,000	10,300	11,700	12,800	20,700	22,200	25,297	26,883	27,747	0.3%	1.3%	0.9%	4.9%	0.7%	1.3%	1.6%	3.2%
Utah	56,900	83,000	108,300	139,300	220,000	266,000	371,894	456,073	475,425	3.8%	2.7%	2.5%	4.7%	1.9%	3.4%	4.2%	4.2%
Wasatch	5,800	5,500	5,300	5,950	8,650	10,100	15,433	19,999	21,053	-0.5%	-0.4%	1.2%	3.8%	1.6%	4.3%	5.3%	5.3%
Washington	9,200	9,800	10,400	13,900	26,400	49,100	91,104	127,127	134,899	0.6%	0.6%	2.9%	6.6%	6.4%	6.4%	6.8%	6.1%
Wayne	2,300	2,200	1,700	1,450	1,950	2,150	2,515	2,504	2,535	-0.4%	-2.5%	-1.6%	3.0%	1.0%	1.6%	0.1%	1.2%
Weber	57,100	85,000	112,100	126,700	145,000	159,000	197,541	213,684	215,870	4.1%	2.8%	1.2%	1.4%	0.9%	2.2%	1.5%	1.0%
Bear River	50,800	55,100	63,300	72,300	93,350	108,750	136,712	150,930	153,779	0.8%	1.4%	1.3%	2.6%	1.5%	2.3%	2.0%	1.9%
Wasatch Front	297,700	412,700	586,300	713,450	949,150	1,107,250	1,389,252	1,530,896	1,562,054	3.3%	3.6%	2.0%	2.9%	1.6%	2.3%	2.0%	2.0%
Mountainland	71,300	95,200	119,300	151,150	239,050	291,800	417,375	512,355	533,349	2.9%	2.3%	2.4%	4.7%	2.0%	3.6%	4.2%	4.1%
Six County	49,800	45,100	37,200	35,400	47,600	52,200	66,506	71,120	72,236	-1.0%	-1.9%	-0.5%	3.0%	0.9%	2.5%	1.4%	1.6%
Five County	30,400	30,700	31,800	35,650	56,050	83,900	142,006	185,779	195,817	0.1%	0.4%	1.1%	4.6%	4.1%	5.4%	5.5%	5.4%
Uintah Basin	19,300	18,800	20,100	20,850	34,150	35,500	40,627	43,083	44,281	-0.3%	0.7%	0.4%	5.1%	0.4%	1.4%	1.4%	2.8%
Southeast	32,500	38,300	42,000	37,200	54,650	49,700	54,075	53,226	53,613	1.7%	0.9%	-1.2%	3.9%	-0.9%	0.8%	-0.1%	0.7%
State of Utah	552,000	696,000	900,000	1,066,000	1,474,000	1,729,000	2,246,553	2,547,389	2,615,129	2.3%	2.6%	1.7%	3.3%	1.6%	2.7%	2.6%	2.7%

Notes:
1. Before 1995, the Utah Population Estimates Committee rounded its population estimates
2. The average annual growth rate for a period is based on a discrete compounding formula which is available from The Governor's Office of Planning and Budget

Source: Utah Population Estimates Committee

in the 1960s, 1.8 percent per year, rapid growth during the 1970s, 3.1 percent per year, another slowdown in the 1980s, 1.5 percent per year, and an increase in growth during the 1990s, 2.2 percent per year. Salt Lake County deviated slightly from the state in that the growth of the 1950s was relatively more rapid compared to other periods.

A number of counties have had growth patterns substantially different from the state's. While Utah's population grew very strongly in both the 1940s and the 1950s, 12 counties actually had declining populations in both decades. Juab County's population had the greatest percentage decline during this period, about 2.5 percent per year, from 7,400 in 1940 to 4,500 in 1960. During 1996, Juab's population finally surpassed the 1940 level. In contrast to Juab, the current populations in Garfield and Piute Counties continue to be lower than in 1940. Although the 1960s and 1980s were slow growth periods for the state as a whole, some counties still grew extremely rapidly during these two decades. During the 1960s, Davis and Morgan Counties grew at more than twice the state average, 4.3 and 3.8 percent per year, respectively, while Washington and Summit Counties grew at more than twice the state average during the 1980s, 6.4 and 4.2 percent per year, respectively.

Components of Population Change

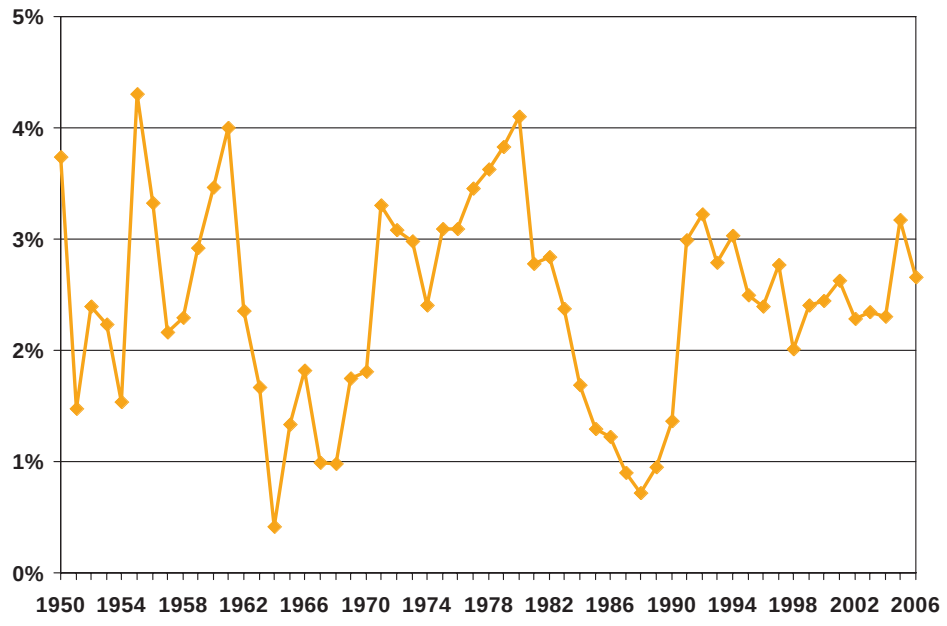
Population change is comprised of two components: natural increase and net migration. Both of these have two components as well. Natural increase is the number of births less the number of deaths. Net migration is in-migration less out-migration, or the number of people moving into a place less the number of people moving out. Table 1 and Figure 1 present the components of Utah's population change from 1960 to 2006 and from 1950 to 2006, respectively, as of July 1 each year. Table 2 presents the components of population change from 2005 to 2006 for the counties and MCDs.

Natural Increase. Natural increase is computed from records maintained by the Utah Department of Health. As presented in Table 1, natural increase in Utah during 2006 was the largest ever, 39,010, which was the difference between 52,368 births and 13,358 deaths. Both births and deaths were at record high levels during 2006. The number of births will vary as fertility changes and as the number of women in their child-bearing years changes. The number of deaths, however, tends to increase slowly and steadily.

Net Migration. Net migration is positive when in-migration exceeds out-migration and negative when out-migration exceeds in-migration. When net migration is positive, net in-migration has occurred and when net migration is negative, net out-migration has occurred. In the population estimates developed by the Utah Population Estimates Committee, net migration is not estimated directly. Rather, net migration is computed as the implied difference between estimated population change and natural increase as computed from the records maintained by the Department of Health. No attempt is made to estimate net migration directly. In addition, no attempt is made to estimate the components of net migration, in-migration and out-migration.

Thus far, the 2000s have been a period of sustained net in-migration. While, this has been a period of high absolute in-migration, migration rates (net migration as a percent of the base or previous year population) were higher during the 1970s, as well as a few years in the 1950s and 1960s. The record net migration recorded during 2005, 40,647, was at a rate of 1.6 percent, which was fifth highest since 1950.

Figure 3
Utah Population: Annual Percent Change

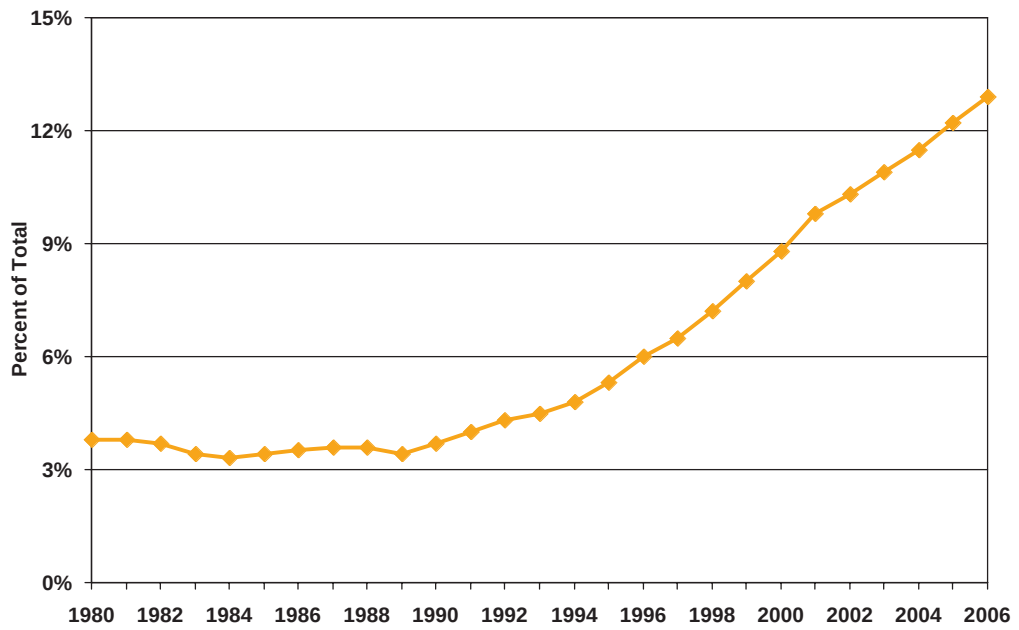


Source: Utah Population Estimates Committee

While it is not known for sure where the recent migrants came from, IRS tax return data on county to county address changes highlights some interesting points. California dominates the flow of interstate migration to and from Utah. The extended Salt Lake area has strong migration ties with the major metropolitan areas south and or west of Utah, such as Los Angeles, Phoenix, Portland, Seattle and Las Vegas.

The recent strong in-migration to Utah can be explained by a rapidly growing economy. School records suggest a strong Hispanic or Latino, possibly foreign born, element to the recent migration wave. As depicted in Figure 4, the Hispanic

Figure 4
Hispanic or Latino School Enrollment



Source: Utah Population Estimates Committee

or Latino share of enrollment, increased 0.7 percentage points from 2005 to 2006, from 12.2 percent to 12.9 percent. If this 0.7 percent is viewed as a migration rate applicable to the entire population, it implies about 18,000 migrants, or over 60 percent of estimated migration during 2006.

Utah Population Estimates Committee

The Utah Population Estimates Committee develops the official population estimates for Utah and the 29 counties in the state. Coordination and staffing of the Committee is the responsibility of the Demographic and Economic Analysis Section of the Governor's Office of Planning and Budget (GOPB). Membership includes representatives from state government, universities, and other organizations with knowledge of the data used in making population estimates. A list of members appears at the back of this report.

The Committee has a rich, enduring legacy of preparing population estimates at the state and county level.[2] This legacy stretches back a half century. For most of its history UPEC operated as an interagency committee, with select members included from outside state government. Governor Leavitt officially sanctioned the Committee and clarified its purposes and responsibilities in 1997 by issuing an Executive Order. The Committee is also recognized in state statute as the source for population estimates used in state funding formulas when U.S. Census Bureau estimates are unavailable.

UPEC first began to document its work in the Utah Business and Economic Review (UEBR) in 1957.[3] For nearly every year from 1957 until 2002, UPEC's method and results were documented in UEBR. In 2003, GOPB, UPEC and the Bureau of Economic and Business Research (BEBR), which publishes the UEBR, began to discuss the best means to document the estimates. In 2006, the three entities agreed GOPB should document the estimates with an electronic publication, available on its website.

In addition to staffing UPEC, GOPB represents the state in the Federal-State Cooperative for Population Estimates. This program, administered by the U.S. Census Bureau, facilitates the exchange of data used in making population estimates. The program also provides a forum for dialog that can improve the quality of state and county estimates made by both parties. Census Bureau population estimates by county are discussed later in this article.

Methods

Over the years, the various methods and data used by the Committee share many similarities with national standards of the time, but also included some differences. UPEC, like the Census Bureau, has always relied heavily on the component method of population estimation. This method follows the standard demographic accounting equation of:

$$P_t = P_{t-1} + B_t - D_t + M_t$$

where P = population
B = births
D = deaths
M = net migration
t = time

For example, in one widely used version of the component method, migration is estimated by comparing the actual and expected school-age population and relating this difference to the total population and total migration.[4] In Utah, this is known

2 For more information on the history and methods of the Utah Population Estimates Committee, see Governor's Office of Planning and Budget, Population Estimates: The Utah Experience (Salt Lake City, Natalie Gochnour, Chair, Utah Population Estimates Committee, Sept.1999).

3 Bureau of Economic and Business Research, University of Utah, Utah Economic and Business Review, "1957 Population, Utah Counties" (Salt Lake City: May 1957). The Committee was actually formed in 1955, when it began to organize its methods and data.

4 The U.S. Census Bureau currently uses a component method based on administrative records such as birth and death records, tax returns, and Medicare enrollment.

Table 4
Utah Population Estimates by County and Multi-County District An Average of Three Methods with Judgement in Selected Counties

			School Enrollment		LDS		IRS		Housing		Average of Four Methods		Estimate Based on Judgement in Select Counties	
County/District	July 1, 2005 Population	Natural Increase	July 1, 2006 Population	Implied Net Migration	July 1, 2006 Population	Implied Net Migration	July 1, 2006 Population	Implied Net Migration	July 1, 2006 Population	Implied Net Migration	July 1, 2006 Population	Implied Net Migration	July 1, 2006 Population	Implied Net Migration
Beaver	6,341	24	6,372	7	6,515	150	6,405	40	6,419	54	6,428	63	6,428	63
Box Elder	45,304	635	46,282	343	45,840	-99	45,838	-101	46,756	817	46,179	240	45,987	48
Cache	103,564	1,979	107,506	1,963	105,025	-518	103,519	-2,024	106,634	1,091	105,671	128	105,671	128
Carbon	19,338	105	20,152	709	19,436	-7	19,614	171	19,462	19	19,666	223	19,504	61
Daggett	963	6	930	-39	1,034	65	938	-31	978	9	970	1	949	-20
Davis	278,278	4,653	287,270	4,339	286,175	3,244	284,609	1,678	288,135	5,204	286,547	3,616	286,547	3,616
Duchesne	15,237	217	15,594	140	15,519	65	15,825	371	15,642	188	15,645	191	15,585	131
Emery	10,491	106	10,426	-171	10,451	-146	10,436	-161	10,560	-37	10,468	-129	10,438	-159
Garfield	4,703	40	4,793	50	4,760	17	4,738	-5	4,795	52	4,772	29	4,772	29
Grand	8,826	39	9,172	307	8,895	30	8,878	13	9,150	285	9,024	159	9,024	159
Iron	41,397	707	43,777	1,673	42,925	821	43,169	1,065	43,826	1,722	43,424	1,320	43,424	1,320
Juab	8,974	127	9,378	277	9,382	281	9,259	158	9,241	140	9,315	214	9,315	214
Kane	6,211	38	6,241	-8	6,364	115	6,277	28	6,633	384	6,379	130	6,294	45
Millard	13,171	74	13,192	-53	13,129	-116	13,280	35	13,320	75	13,230	-15	13,230	-15
Morgan	8,516	106	9,117	495	8,950	328	8,841	219	8,874	252	8,946	324	8,888	266
Piute	1,368	-4	1,386	22	1,380	16	1,358	-6	1,368	4	1,373	9	1,373	9
Rich	2,062	21	2,255	172	2,120	37	2,122	39	2,121	38	2,155	72	2,121	38
Salt Lake	978,285	13,581	1,002,408	10,542	988,965	-2,901	994,065	2,199	1,000,057	8,191	996,374	4,508	996,374	4,508
San Juan	14,571	125	14,925	229	14,582	-114	14,624	-72	14,734	38	14,716	20	14,647	-49
Sanpete	25,454	257	26,346	635	25,645	-66	25,841	130	25,911	200	25,936	225	25,799	88
Sevier	19,649	195	20,126	282	19,822	-22	20,035	191	19,953	109	19,984	140	19,984	140
Summit	36,283	412	37,075	380	35,987	-708	36,596	-99	37,825	1,130	36,871	176	36,871	176
Tooele	52,133	858	54,335	1,344	54,465	1,474	53,999	1,008	54,326	1,335	54,281	1,290	54,375	1,384
Uintah	26,883	434	28,092	775	27,539	222	27,590	273	27,767	450	27,747	430	27,747	430
Utah	456,073	9,739	482,480	16,668	473,757	7,945	468,876	3,064	476,588	10,776	475,425	9,613	475,425	9,613
Wasatch	19,999	262	20,952	691	20,364	103	20,997	736	21,210	949	20,881	620	21,053	792
Washington	127,127	1,758	135,756	6,871	133,188	4,303	133,585	4,700	137,067	8,182	134,899	6,014	134,899	6,014
Wayne	2,504	16	2,520	0	2,546	26	2,650	130	2,540	20	2,564	44	2,535	15
Weber	213,684	2,500	217,660	1,476	214,152	-2,032	214,775	-1,409	216,891	707	215,870	-315	215,870	-314
Bear River	150,930	2,635	156,043	2,478	152,985	-580	151,479	-2,086	155,511	1,946	154,005	440	153,779	214
Wasatch Front	1,530,896	21,698	1,570,790	18,196	1,552,707	113	1,556,289	3,695	1,568,283	15,689	1,562,017	9,423	1,562,054	9,460
Mountainland	512,355	10,413	540,507	17,739	530,108	7,340	526,469	3,701	535,623	12,855	533,177	10,409	533,349	10,581
Six County	71,120	665	72,948	1,163	71,904	119	72,423	638	72,333	548	72,402	617	72,236	451
Five County	185,779	2,567	196,939	8,593	193,752	5,406	194,174	5,828	198,740	10,394	195,901	7,555	195,817	7,471
Uintah Basin	43,083	657	44,616	876	44,092	352	44,353	613	44,387	647	44,362	622	44,281	541
Southeast	53,226	375	54,675	1,074	53,364	-237	53,552	-49	53,906	305	53,874	273	53,613	12
State of Utah	2,547,389	39,010	2,636,518	50,119	2,598,912	12,513	2,598,739	12,340	2,628,783	42,384	2,615,738	29,339	2,615,129	28,730

Note: In most counties, the estimate is the average of the estimates produced from each of the three methods. Table 5 details the procedure used to develop the estimate when the average of the three methods was not used.

Source: Utah Population Estimates Committee

as the school enrollment method and is a slightly modified version of what is commonly referred to in the literature as the component II method.[5]

UPEC develops population estimates using a combination of the component II or school enrollment method, a method based on membership in the Church of Jesus Christ of Latter Day Saints (LDS), a method based on tax return data from the Internal Revenue Service (IRS), and a method based on housing units. Table 4 presents the population estimates and implied net migration resulting from each method. For the 2006 population estimate, the methods ranked:

1.	school enrollment	2,636,518
2.	housing	2,628,783
3.	LDS	2,598,912
4.	IRS	2,598,739

UPEC's approach to considering the combination of the school enrollment, IRS, LDS, and housing methods is presented in Table 5. The Committee decided not to include the estimate generated with a particular method based on a critical value analysis known as the Q-statistic, discussed in more detail below. As presented in Table 5, UPEC used the average of the four methods in 16 of Utah's 29 counties. In the remaining 13 counties, the estimate was the average of three methods. The net effect of the outlier analysis was to reduce the state total estimate by 609 people below the average of the four methods. The particular methods used in the 13 counties where an outlier was identified are:

Tooele, Wayne, and Duchesne Counties - The IRS method was determined to be an outlier using the Q statistic and was not

5 The fundamental characteristic of the component II method is that migration of the total population is estimated based on (1) a comparison of the actual and the expected (survived) school-age population; and, (2) the historical relationship between school-age migration and total migration. There are many varieties of this fundamental method, including detailed estimation for subgroups of the population such as the population under age 65, population age 65 and over, and special military and institutional population groups. Utah's method is modified in the sense that it employs a level of detail (i.e. components) and input data (i.e. target grades and survival rate) that reflect Committee input.

Table 5
Utah Population Estimates by County and Multi-County District Outlier Analysis of Estimates Produced with Three Methods

			July 1, 2006 Population Estimate				Outlier Analysis				Estimate Based on Judgement in Select Counties	
County	July 1, 2005 Population	Natural Increase	School	LDS	IRS	Housing	School	LDS	IRS	Housing	July 1, 2006 Population	Implied Net Migration
Beaver	6,341	24	6,372	6,515	6,405	6,419	6,372	6,515	6,405	6,419	6,428	63
Box Elder	45,304	635	46,282	45,840	45,838	46,756	46,282	45,840	45,838	High	45,987	48
Cache	103,564	1,979	107,506	105,025	103,519	106,634	107,506	105,025	103,519	106,634	105,671	128
Carbon	19,338	105	20,152	19,436	19,614	19,462	High	19,436	19,614	19,462	19,504	61
Daggett	963	6	930	1,034	938	978	930	High	938	978	949	-20
Davis	278,278	4,653	287,270	286,175	284,609	288,135	287,270	286,175	284,609	288,135	286,547	3,616
Duchesne	15,237	217	15,594	15,519	15,825	15,642	15,594	15,519	High	15,642	15,585	131
Emery	10,491	106	10,426	10,451	10,436	10,560	10,426	10,451	10,436	High	10,438	-159
Garfield	4,703	40	4,793	4,760	4,738	4,795	4,793	4,760	4,738	4,795	4,772	29
Grand	8,826	39	9,172	8,895	8,878	9,150	9,172	8,895	8,878	9,150	9,024	159
Iron	41,397	707	43,777	42,925	43,169	43,826	43,777	42,925	43,169	43,826	43,424	1,320
Juab	8,974	127	9,378	9,382	9,259	9,241	9,378	9,382	9,259	9,241	9,315	214
Kane	6,211	38	6,241	6,364	6,277	6,633	6,241	6,364	6,277	High	6,294	45
Millard	13,171	74	13,192	13,129	13,280	13,320	13,192	13,129	13,280	13,320	13,230	-15
Morgan	8,516	106	9,117	8,950	8,841	8,874	High	8,950	8,841	8,874	8,888	266
Piute	1,368	-4	1,386	1,380	1,358	1,368	1,386	1,380	1,358	1,368	1,373	9
Rich	2,062	21	2,255	2,120	2,122	2,121	High	2,120	2,122	2,121	2,121	38
Salt Lake	978,285	13,581	1,002,408	988,965	994,065	1,000,057	1,002,408	988,965	994,065	1,000,057	996,374	4,508
San Juan	14,571	125	14,925	14,582	14,624	14,734	High	14,582	14,624	14,734	14,647	-49
Sanpete	25,454	257	26,346	25,645	25,841	25,911	High	25,645	25,841	25,911	25,799	88
Sevier	19,649	195	20,126	19,822	20,035	19,953	20,126	19,822	20,035	19,953	19,984	140
Summit	36,283	412	37,075	35,987	36,596	37,825	37,075	35,987	36,596	37,825	36,871	176
Tooele	52,133	858	54,335	54,465	53,999	54,326	54,335	54,465	Low	54,326	54,375	1,384
Uintah	26,883	434	28,092	27,539	27,590	27,767	28,092	27,539	27,590	27,767	27,747	430
Utah	456,073	9,739	482,480	473,757	468,876	476,588	482,480	473,757	468,876	476,588	475,425	9,613
Wasatch	19,999	262	20,952	20,364	20,997	21,210	20,952	Low	20,997	21,210	21,053	792
Washington	127,127	1,758	135,756	133,188	133,585	137,067	135,756	133,188	133,585	137,067	134,899	6,014
Wayne	2,504	16	2,520	2,546	2,650	2,540	2,520	2,546	High	2,540	2,535	15
Weber	213,684	2,500	217,660	214,152	214,775	216,891	217,660	214,152	214,775	216,891	215,870	-314
Total	2,547,389	39,010	2,636,518	2,598,912	2,598,739	2,628,783					2,615,129	28,730

Note: An estimate was classified as an outlier based on the value of the Q-statistic, described in text, and the judgment of the Utah Population Estimates Committee.

Source: Utah Population Estimates Committee

used. The school, LDS, and housing methods were used to determine the estimates.

Wasatch and Daggett Counties - The LDS method was determined to be an outlier using the Q statistic and was not used. The school, IRS, and housing methods were used to determine the estimates.

Carbon, San Juan, Sanpete, Morgan, and Rich Counties - The school method was determined to be an outlier using the Q statistic and was not used. The LDS, IRS, and housing methods were used to determine the estimates.

Box Elder, Emery, and Kane Counties - The housing method was determined to be an outlier using the Q statistic and was not used. The LDS, IRS, and school methods were used to determine the estimates.

Uintah County - The school method was determined to be an outlier using the Q statistic. After discussion about a possible lag in housing units due to the economic activity in the area, UPEC decided to use the simple four method average to determine the estimate.

Beaver County - The LDS method was determined to be an outlier using the Q statistic. After discussion about the high percentage of LDS membership in the county, UPEC decided to use the simple four method average to determine the estimate.

School Enrollment Method

The school enrollment method uses changes in school enrollment as an indicator of net migration. This method compares a county's survived enrollment (calculated by applying a survival rate of 99.98 percent to the enrollment count), in grades 1 to 8 for the year prior to the estimate year, to enrollment in grades 2 to 9 for the estimate year. The difference between these two enrollment totals is taken to be net student migration for the county. Total net migration from the school enrollment method for the county is then derived by multiplying the county's student migration estimate by the county specific total population to student ratio. This ratio is defined as the total population estimate of the county for the prior year divided by the same year's enrollment in grades 1 to 8.

Utah's implementation of the component II method is strengthened by the quality of the state's school enrollment data. Utah's public school system is unique in that it serves an unusually high percentage of the total kindergarten through 12th grade enrollment. During 2002, for instance, 96.6 percent of total enrollment in Utah in 2002 was public--second highest among states--compared with 89.9 percent nationwide.[6] In addition, the public school system encompasses a large percentage of the total population. Utah, with 20.5% of its population 5-17 years old, ranks second highest in the nation. Moreover, the public school system receives independent audits of enrollment data due to the state's equalized education funding mechanism.[7]

LDS Membership Method

The Committee's second method is called the LDS membership method. This method simply applies the growth rate in LDS membership in a particular county to the previous year's population estimate for the county. The growth in LDS membership, then, is an indicator of population growth. The membership records of the Church of Jesus Christ of Latter Day Saints (frequently called LDS or Mormons) are a data source uniquely relevant to Utah. The LDS Church graciously provides this data in aggregate form, thus enabling a count of members by county. Individual member information such as names and addresses are not provided.

The Committee is very fortunate to have access to the LDS membership data for estimating purposes. About 60 percent of Utah's population is included in the membership counts of the LDS Church. These counts include every member of record, including children. The counts are not limited to those who attend church regularly. Rather, they include any member assigned to a local unit (ward) regardless of a given member's involvement with the organization.

In addition to the broad coverage, the utility of the data is strengthened by its timeliness and quality. The originating file is a current file and an extract can be taken at any time. For estimation purposes, this means that there is essentially no delay or lag time between when the data are released and the reporting period. The accuracy of the data is ensured by the careful record keeping of church officials. Within the LDS faith, leaders from each ward have ecclesiastical responsibility for the individuals within those wards. Hence, there is a religious stewardship that accompanies each membership record. This improves the accuracy of the aggregate data.

Internal Revenue Service Tax Exemption Method

Since 1996, the Committee has used the Internal Revenue Service tax exemption method. This method uses the growth in exemptions as reported on tax returns filed with the IRS as an indicator of population change. The growth rate in exemptions for the previous calendar year is applied to the previous fiscal year population to estimate the current fiscal year population. The Committee developed the method in the mid-1990s after realizing that the School Enrollment and LDS Membership Methods were yielding unrealistically low population estimates during a time of significant economic expansion. Committee members felt that the estimates would be more accurate by incorporating a more economically sensitive methodology. This method is relatively accurate as long as the tax code is stable and the percent of the population filing tax returns does not vary dra-

6 Calculated from data provided by the U.S. Department of Education, National Center of Education Statistics. These calculations were published in State Fact Finder 2006: Rankings Across America, Congressional Quarterly.

7 For more detail on all of the Utah Population Estimates Committee's methods see www/governor.utah.gov/dea.

matically from year to year. A change in tax laws, for example, affected returns filed during 2003. Therefore, the Committee did not use the IRS method in making its 2004 estimates. Despite its limitations, adding the IRS method significantly increased UPEC's estimates during the 1990s, thereby improving their accuracy. Indeed, if UPEC had relied solely on the IRS method during the 1990s, it would have been just 12,000 people below the 2000 decennial census enumeration, as compared to the 82,000 it was actually under.[8]

Housing Unit Method

In 2004, the Committee added the housing unit method, which it had been testing on an experimental basis since the late 1990s. The main reason for the addition was to supplement the estimate with a viable method given the IRS method would be flawed in years with significant tax changes. Building permits have been collected from local governments by the Bureau of Economic and Business Research at the University of Utah for decades. As with LDS membership and IRS tax exemptions, housing growth is used as an indicator of population growth. The method starts with the April 1, 2000 housing enumeration from the Census and updates the estimate with building permit data. The housing stock is estimated for July 1, using the previous calendar year's permit data. This allows a six month lag for the completion of permitted housing units. A factor of 0.98 is applied to the permit data to account for units that are permitted but not completed, and to account for units that are demolished. The growth rate in the housing stock is applied to the previous year's July 1 estimate to develop the current year July 1 estimate.

Identifying Outliers with the Q-Statistic

UPEC has traditionally identified outliers among its various methods in a given county during a given estimate year and excluded the method from its consideration. Until the 1990s outliers were identified in an informal manner during Committee deliberations. Various formal techniques were used during the 1990s, but none worked well and at one point UPEC dispensed with formal outlier analysis altogether. In 2005, the Committee began using what is known as the Q-statistic or Dixon's Q.[9] Most simply, Q is the ratio of the range of methods with the outlier excluded to the initial range based on all methods. While Q can be applied as a hypothesis test assuming a probability distribution, UPEC has used it less rigidly as a means to reduce the range of the methods in a given county. Using a critical value of 0.5, UPEC has decided that identifying a specific method as an outlier among the four methods must reduce the range in the remaining three methods by 50 percent of the initial four methods. To date, the most significant use of Q was to reduce the 2005 estimate of Utah County where the population was lowered by 3,000 after excluding the school enrollment method as a high outlier. If UPEC had not eliminated school enrollment in Utah County, the state total estimate of migration would have been about 44,000, rather than the official estimate of 40,657. For the most part, however, the Committee uses Q in the smaller counties to reduce the likelihood bad data will unduly influence the estimate.

2004 Revision

After the 2000 Census, UPEC evaluated its methods and results using the enumeration as a benchmark. There were two key findings from the evaluation.

1. Public school enrollment as a share of the estimated population aged 5 to 17 increased throughout the 1990s. Since the share of students enrolled in private schools remained relatively constant, the implication was that the total population estimate was too low. In 1990, public school enrollment was 97.0 percent of the school age population. By 1998, public school enrollment had risen to 98.3 percent. If public school enrollment is rising relative to the school age population, and the private enrollment share is not increasing, then the estimate of the total population may be low.

2. Considering methods in isolation, the IRS method was most accurate. "This method was the least error method for 14 counties and, at the state level, only underestimated the population by 0.02 percent or 3,733 people."[10] Because there were no significant changes to the tax system during the 1990s, then, the IRS method provided a better indication of growth than the school enrollment method or the LDS method.

During the summer of 2004 UPEC examined the relationship between school enrollment and school age population from 2000 through 2003. Because of tax changes, the IRS data proved not to be helpful in the revision.

To diagnose whether the estimate of total population was consistent with school enrollment, a technique was developed based on the school age population to enrollment ratio. Given private schools, home schooling, and dropouts, this ratio that should be in the range of 1.05 to 1.10, and, in a given county, it shouldn't vary much. For example, in Salt Lake County the ratio was basically constant, between 1.102 and 1.105, from 2000 through 2003, suggesting the preliminary UPEC population estimate was correct. In smaller counties, with a population less than 30,000, small changes in enrollment, as few as 100 students, could change the ratio dramatically, so the ratio was judged be relatively sensitive in counties with less than 30,000 people. In counties with more than 30,000 people, if the 2003 ratio was less than 0.985 of the 2000 estimate, the estimate was identified as low. In counties with less than 30,000, a ratio less than 0.95 was required. Only

8 Pamela S. Perlich, "Revised Utah Population Estimates for the 1990s," Utah Economic and Business Review, (Salt Lake City: May/June 2001)

9 A thorough discussion of the Q-statistic is in Rorabacher, "Statistical Treatment for Rejection of Deviant Values: Critical Values of Dixon's 'Q' Parameter and Related Subrange Ratios at the 95% Confidence Level," Analytical Chemistry, 1991, volume 63, pages 139-146.

10 Pamela S. Perlich, "Revised Utah Population Estimates for the 1990s," Utah Economic and Business Review, (Salt Lake City: May/June 2001).

Daggett County had a significant increase in the ratio from 2000 to 2003.

In counties where the preliminary estimate was judged to be low, a new school age population was developed assuming the ratio of school age population to enrollment remained constant at the observed 2000 level. A revised population estimate was developed using the preliminary ratio of total population to school age population. This technique assumes the age distribution of the population is correct, but the population is too low.

The net effect of the revision was to increase the original estimate of the 2003 state population by 28,257 persons. The amount of the increase to the preliminary 2003 population estimate by county was:

Utah	12,518	Wasatch	1,147
Davis	5,484	Tooele	1,124
Washington	4,065	Millard	868
Sanpete	1,396	Morgan	406
Iron	1,249		

U.S. Census Bureau Population Estimates

The U.S. Census Bureau, Population Estimates Branch, prepares post-2000 census population estimates for states, counties and subcounty areas. These estimates use different methods and, in some cases, different base data than UPEC. Since estimates prepared by the Committee generally include more recent data, consider a variety of methods and information sources, and incorporate the informed judgment of local experts who are familiar with local indicators of population growth, they are widely used in Utah.

Estimates prepared by the U.S. Census Bureau, however, may be preferred in applications that require comparisons with other states or when state statute or federal grant applications require their use. Utah statute explicitly states that Census Bureau estimates be used in calculating the state spending limit and allocating local option sales taxes and class B and C road monies. Census Bureau estimates are also used by other federal data agencies and are currently the only statewide source of city estimates.

The estimates prepared by the Census Bureau and the Utah Population Estimates Committee have been diverging as the time

Table 6
Comparison of U.S. Census Bureau and Utah Population Estimates Committee

	Utah Population Estimates Committee			U.S. Census Bureau			Numeric Difference			Percent Difference		
County/District	2004	2005	2006	2004	2005	2006	2004	2005	2006	2004	2005	2006
Beaver	6,308	6,341	6,428	6,086	6,202	6,294	222	139	134	3.5%	2.2%	2.1%
Box Elder	44,654	45,304	45,987	45,927	46,333	47,197	-1,273	-1,029	-1,210	-2.9%	-2.3%	-2.6%
Cache	100,182	103,564	105,671	96,780	98,358	98,662	3,402	5,206	7,009	3.4%	5.0%	6.6%
Carbon	19,385	19,338	19,504	19,642	19,459	19,469	-257	-121	35	-1.3%	-0.6%	0.2%
Daggett	954	963	949	921	937	947	33	26	2	3.5%	2.7%	0.2%
Davis	268,916	278,278	286,547	261,464	268,084	276,259	7,452	10,194	10,288	2.8%	3.7%	3.6%
Duchesne	14,933	15,237	15,585	14,958	15,328	15,701	-25	-91	-116	-0.2%	-0.6%	-0.7%
Emery	10,493	10,491	10,438	10,701	10,711	10,698	-208	-220	-260	-2.0%	-2.1%	-2.5%
Garfield	4,625	4,703	4,772	4,449	4,443	4,534	176	260	238	3.8%	5.5%	5.0%
Grand	8,611	8,826	9,024	8,693	8,787	8,999	-82	39	25	-1.0%	0.4%	0.3%
Iron	38,925	41,397	43,424	36,438	38,438	40,544	2,487	2,959	2,880	6.4%	7.1%	6.6%
Juab	8,826	8,974	9,315	8,997	9,165	9,420	-171	-191	-105	-1.9%	-2.1%	-1.1%
Kane	6,056	6,211	6,294	6,114	6,232	6,532	-58	-21	-238	-1.0%	-0.3%	-3.8%
Millard	13,127	13,171	13,230	12,324	12,280	12,390	803	891	840	6.1%	6.8%	6.3%
Morgan	8,249	8,516	8,888	7,626	7,862	8,134	623	654	754	7.6%	7.7%	8.5%
Piute	1,366	1,368	1,373	1,389	1,371	1,347	-23	-3	26	-1.7%	-0.2%	1.9%
Rich	2,069	2,062	2,121	2,059	2,057	2,040	10	5	81	0.5%	0.2%	3.8%
Salt Lake	955,166	978,285	996,374	936,194	960,297	978,701	18,972	17,988	17,673	2.0%	1.8%	1.8%
San Juan	14,353	14,571	14,647	14,051	14,117	14,265	302	454	382	2.1%	3.1%	2.6%
Sanpete	25,043	25,454	25,799	23,691	23,995	24,196	1,352	1,459	1,603	5.4%	5.7%	6.2%
Sevier	19,415	19,649	19,984	19,413	19,367	19,640	2	282	344	0.0%	1.4%	1.7%
Summit	35,090	36,283	36,871	33,948	35,119	35,469	1,142	1,164	1,402	3.3%	3.2%	3.8%
Tooele	50,075	52,133	54,375	49,706	51,269	53,552	369	864	823	0.7%	1.7%	1.5%
Uintah	26,224	26,883	27,747	26,580	27,129	27,955	-356	-246	-208	-1.4%	-0.9%	-0.7%
Utah	437,627	456,073	475,425	434,114	451,855	464,760	3,513	4,218	10,665	0.8%	0.9%	2.2%
Wasatch	19,177	19,999	21,053	18,119	19,015	20,255	1,058	984	798	5.5%	4.9%	3.8%
Washington	117,316	127,127	134,899	110,476	119,188	126,312	6,840	7,939	8,587	5.8%	6.2%	6.4%
Wayne	2,518	2,504	2,535	2,468	2,454	2,544	50	50	-9	2.0%	2.0%	-0.4%
Weber	209,547	213,684	215,870	208,172	210,482	213,247	1,375	3,202	2,623	0.7%	1.5%	1.2%
Bear River	146,905	150,930	153,779	144,766	146,748	147,899	2,139	4,182	5,880	1.5%	2.8%	3.8%
Wasatch Front	1,491,953	1,530,896	1,562,054	1,463,162	1,497,994	1,529,893	28,791	32,902	32,161	1.9%	2.1%	2.1%
Mountainlands	491,894	512,355	533,349	486,181	505,989	520,484	5,713	6,366	12,865	1.2%	1.2%	2.4%
Six County	70,295	71,120	72,236	68,282	68,632	69,537	2,013	2,488	2,699	2.9%	3.5%	3.7%
Five County	173,230	185,779	195,817	163,563	174,503	184,216	9,667	11,276	11,601	5.6%	6.1%	5.9%
Uintah Basin	42,111	43,083	44,281	42,459	43,394	44,603	-348	-311	-322	-0.8%	-0.7%	-0.7%
Southeast	52,842	53,226	53,613	53,087	53,074	53,431	-245	152	182	-0.5%	0.3%	0.3%
State of Utah	2,469,230	2,547,389	2,615,129	2,421,500	2,490,334	2,550,063	47,730	57,055	65,066	1.9%	2.2%	2.5%

Source: Utah Population Estimates Committee and the U.S. Census Bureau

since the 2000 Census increases. During 2006, the Census estimate for Utah's population, 2,550,063, was about 65,000, or 2.5 percent less than UPEC's. The main differences in the two estimates are the timing of input data and the methodology used to produce the estimates. UPEC uses more current birth and death data, and draws from local data sources on school enrollment, LDS membership, and housing unit permits. The Census Bureau methods rely heavily on IRS tax return data as an indicator of domestic migration and Medicare and group quarters data.[11]

There is a fairly significant difference in the estimation process of the Census Bureau and UPEC. The Census Bureau first develops a total U.S. population estimate using national vital records and migration estimates. The national population estimate includes detail by single year of age, sex, and race. Separately from the national estimate, an estimate for each county in the nation is developed. (The Census Bureau county estimate methodology is described in more detail below.) In a typical estimate year, in a typical county, estimates at the county level are developed for the population under age 65 and 65 and over. The totals of the 3,000 plus individual county population estimates for these two age groups are used to develop control factors. These control factors are then applied to each county estimate so the total of the controlled estimates equals the national population estimates for the two age groups. The process of controlling county population estimates to a separately determined national population estimate can introduce error to the estimating process.

In contrast to the Census Bureau, UPEC examines data at the county level for its methods. The state estimate is then simply the sum of the independently produced county estimates.

The Census Bureau recently revised state population estimates for 2000 through 2005 and produced new estimates for 2006. A comparison of the Census estimates for 2004 through 2006 with UPEC's estimates is presented in Table 6. Among the counties in 2006, the largest percent difference between the Census and UPEC was 8.6 percent in Morgan County, a fast growing residential exurban area with a population of almost 10,000 according to UPEC. Of concern, the difference in two large college-oriented counties, Cache and Iron, was greater than 6.0 percent. The largest numeric difference was in Salt Lake County, where the Census estimates the 2006 population to be 978,701, which is 17,673, or 1.8 percent, less than UPEC's estimate of 996,374.

In general, the Census Bureau method tends to underestimate population in major university-influenced counties, specifically Utah, Iron, and Cache. This occurs because IRS migration data miss many student in-migrants (those who have not filed a tax return prior to attending college), but capture a large number of student out-migrants (those who now file a tax return and leave school, possibly with dependents).

U.S. Census Bureau Methods[12]

The Census Bureau "develops county population estimates with an administrative records component of population change method in which the household and group quarters population are estimated independently. State population estimates are simply the sum of all county population estimates within each state."[13] This procedure relies on federal income tax data to estimate the net inter-county migration of the resident population under 65 years old; results from the American Community Survey to estimate net foreign migration; reported resident birth and death statistics to estimate natural change; and data on Medicare enrollees to estimate the population 65 years and older. Estimates for the population living outside of households are based on the decennial census and data provided by each state. People living outside households are known as the group quarters population. This population includes military personnel living in barracks, college students living in dormitories, inmates of correctional facilities, persons living in nursing homes or assisted care facilities, and others.

Tax data for two successive years are used to determine the number of persons whose county of residence changed during the period. From this series a net migration rate is calculated and applied to the household population base under age 65. The resulting estimates of net migration are combined with independent estimates of the population 65 years and over, the group quarters population, and the other components of population change (resident births and deaths, international migration, and net movement of military barracks personnel to the civilian population) to yield an estimate of total population.

Conclusion

This article has provided a historical and current description of the significant features of population change in Utah. Utah's high birth rates, low death rates, and migration trends have been highlighted, as have the patterns of population change in 2006 among Utah's multi-county districts and counties. To make data users more familiar with how population estimates are developed in Utah, UPEC and its methods have been discussed. The population estimates prepared by the U.S. Census Bureau and the methods it uses have also been described, with a brief comparison of how the Bureau's population estimates differ from those prepared by UPEC.

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11 U.S. Census Bureau group quarters data is collected from places where people live or stay other than the usual house, apartment, or mobile home and it is collected by the state and by the Bureau.

12 More detail on the U.S. Census Bureau methodology is available in the document "State and County Total Resident Population Estimates Method: July 1, 2006," which is on the Internet at www.census.gov/popest/topics/methodology/2006_st_co_meth.html

13 Ibid., page 1.

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