BEAVERTON SCHOOL DISTRICT 48

POPULATION AND ENROLLMENT FORECAST, 2000 TO 2020:

RESULTS AND DOCUMENTATION

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FOREWORD AND ACKNOWLEDGEMENTS

This report presents the results of a study conducted by the Center for Population Research and Census (CPRC) to address the long-range planning needs of the Beaverton School District. While the CPRC was completely independent in choosing the data sources and developing the methodology of the study, it was our pleasure to work in cooperation with the Metro Data Resource Center. This collaborative arrangement facilitated the exchange of ideas and prompted rigorous testing of the assumptions used in the study. We would like to thank the administration of the District and Dr. Steven Ladd in particular for encouraging and supporting this cooperation.

We thank the Beaverton School District staff (Joy-Gay Pahl, Lenore Carlson, Susan Witt) for the timely assistance with the past enrollments and other relevant data, as well as the Metro Data Resource Center staff (Dennis Yee, Sonny Conder, Karen Larson) for their willingness to discuss their methodology and data sources. We also thank our graduate research assistants (Svetlana Karasyova and Carlos Vilalta) who have assisted on this project.

EXECUTIVE SUMMARY

The long-term forecast was developed using patterns of migration, fertility and mortality that are most likely to occur between 1998 and 2020. In addition to the most likely scenario, or the medium growth forecast, two other scenarios - for higher and for lower growth trends - were derived. The medium-growth forecast establishes that the following changes in the enrollment of the Beaverton School District will take place providing that the assumptions about components of population change will hold true across the forecast horizon.

I.   Between 2000 and 2005

➢ Total K-12 enrollment is expected to grow by almost 12 percent, from about 32,400 students to 36,160[1].

➢ Enrollment in grades K-5 is expected to increase the least: by 6.5 percent, from almost 15,800 students to over 16,800.

➢ Enrollment in grades 6-8 is likely to grow the most: by almost 18 percent, from over 7,400 students to nearly 8,800.

➢ Enrollment in grades 9-12 is expected to increase by over 15 percent, from 9,200 students to 10,600.

II.   Between 2005 and 2010

➢ Total K-12 enrollment is expected to grow a little slower than in the previous period - by 9 percent, from 36,200 students to almost 39,400.

➢ Enrollment in grades K-5 is expected to increase by almost 6 percent, from 16,800 students to 17,800.

➢ Enrollment in grades 6-8 is likely to grow a bit slower, at almost 14 percent, from 8,800 students to 9,900.

➢ Enrollment in grades 9-12 is expected to increase by almost 10 percent, from almost 10,600 students to 11,600.

III.   Between 2010 and 2020

➢ During this decade total K-12 enrollment is expected to grow by 16 percent, from 39,400 students to about 45,600.

➢ Enrollment in grades K-5 is expected to increase the least: by about 13 percent, from 17,800 students to 20,100.

➢ Enrollment in grades 6-8 will see a growth of 18 percent, from 9,900 students to 11,700.

➢ Enrollment in grades 9-12 is expected to increase the most: by over 18 percent, from 11,600 students to 13,800.

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[1] Excluding special education students.

INTRODUCTION

This report provides annual enrollment forecasts by grade level for the Beaverton School District from 1999 till 2020. In addition to the "expected" future enrollments that will result from the most likely population patterns, two additional scenarios – for low and for high growth trends – are presented. The report shows forecasts of the total and school age population of the District for 2000, 2005, 2010, 2015, and 2020.

The report starts with the description of methodology used in the development of the population and enrollment forecasts. Next, it presents the results of the study by grade levels and individual grades. Finally, it discusses the assumptions used in the study and circumstances that may change the assumptions and therefore affect the prediction ability of the forecasts. The Appendix provides the forecasts of population and school age children, major assumptions, and other relevant data.

METHODS AND DATA

The forces influencing population and enrollment changes are many, and it is impossible to account for all of them in a single study. This study utilizes a method commonly used and well respected in the forecasting practice, called "cohort-component method". It models future populations and school enrollments as outcomes of the life events that occur in real populations over time. These events are comprised of births, deaths, and relocations (migrations) into or out of the area. Thus the District population would grow when births outnumber deaths and more people move into the District than leave it. These events occur more often in certain age groups, or cohorts, than in others; for example, people tend to move around the most when they are in their 20s and elderly have lower chances than people in their 40s to survive over the next 5 years. Applying appropriate age- and gender-specific rates of birth,

death and migration to the existing population cohorts of the District would produce its future population including the school age kids. Most of these kids would attend the area's public schools, however some of them would not be "captured" by the system: they would attend private schools, be home-schooled or attend schools outside of the local school district. To address this phenomenon, capture rates would have to be applied to derive figures of future public school enrollment.

Clearly, the cohort-component method depends on the availability of accurate data on age and gender composition of the District's population. The most precise information about population structure of an area is usually provided by the most recent Census of Population; the farther away from this known census population the forecast moves, the less certain its predictions become. The model is also sensitive to the rates of life events that are applied to the known population cohorts. These rates are usually derived from the known data such as one provided by the Census, and then they are modified to account for the most recent trends as well as the likely future ones. Examples of such trends that may affect the future population of an area include the recent tendency among women of childbearing ages to delay having their first child, or a predisposition of young men (ages 20 to 24) to be more mobile than women in the same age cohort. After a decision is made about the plausibility of these trends to evolve in the study area, a set of assumptions is developed to address likely changes in the initial rates of life events. Since the existing population structure defines future population composition of the area, the method works best in the short and medium range.

It is important to understand that in developing the model's assumptions, the cohort-component method does not explicitly account for such events as a construction or relocation of a new high-tech plant, or likely future land use patterns in the area. However it reflects possibilities of such changes by increasing or decreasing future migration rates.

The CPRC utilized the cohort-component method outline above to develop the enrollment forecast for the

District. The population data that the study used came from the 1990 Census of Population; the Oregon Health Department provided information on fertility and mortality; and the Beaverton School District (BSD) furnished past and current enrollment data. The initial population of the Beaverton School District was derived from 1990 Census of Population. The census block-level data by age and sex was allocated into the District's boundaries using Geographic Information Systems (GIS); the allocation was required since the BSD boundaries did not match the boundaries of the 1990 census units such as census blocks. The 1990 population data was organized into five-year cohorts, such as 0 to 4 years, 5 to 9 years, and so on. Each of these cohorts was then "survived", or aged into the next cohort by the year 1995. "Surviving" of the cohorts is accomplished by applying cohort- and sex-specific survival rates; these rates represent the proportion of population in each younger cohort that would survive during a given time period (such as 5 years between 1990 and 1995) to become the next older cohort. This process is repeated for each five-year interval between 1990 and 2020.

During each five-year interval, a certain number of live births occurs to the women in childbearing ages. To calculate the number of newly born residents of the District, age-specific fertility rates were applied to the numbers of women in childbearing cohorts (15 to 19, 20 to 24 and so on till 49 years old). Fertility rates indicate how many children women in a given age group are likely to have during each five-year period. Once born, the children become subjects to survival rates and are "moved" through the system like all other cohorts.

The most difficult part is an estimate of the in- and out-migration for the area. In reality, since little reliable data is available to study in- and out-migration, one works with net migration rates, or the balance between in- and out-migration. Net migration can be calculated if one knows the population at the beginning and the end of the interval as well as the number of births and deaths over that period. Net migration is positive when more people move into the area than leave it and negative if the opposite is true. Net migration rates used in the cohort-component model can be interpreted as the number of people

who are added to (or subtracted from) a given cohort per each 100 persons due to migration over a given period of time (in our case, five years). The initial net migration rates for the cohort-component method were derived from the 1980 and 1990 population cohorts of the District, and births and deaths that occurred during in 1980-90. Since migration patterns changed significantly in the early 90s, the net migration rates were modified, or "calibrated", to accommodate these changes (see below). The net migration rates used to forecast the District's population in 2000-2020 were further modified to reflect most likely future migration patterns. Our study showed that migration is and will remain the major force behind the rates of population and enrollment growth in the District.

It is apparent that the longer the time span of the forecast, the more difficult it is to make a decision about the rates and assumptions. Thus, it is crucial to have some more recent data that would allow to test, or calibrate, the assumptions used in the model. The District's historical enrollment helped us to calibrate and adjust original migration rates so that a better fit between actual and predicted enrollment figures could be achieved.

RESULTS

As shown in the Table 1, each growth scenario predicts that the Beaverton School District enrollment will steadily increase over the forecast horizon. The major factor influencing this growth is high in-migration (and low out-migration) associated with anticipated continued expansion of jobs in and around the District. Some in-migrants will come to the District with school age or younger children, while others will move in and will start their families.

Table 1. Enrollment Forecast: Three Growth Scenarios.

Year	Medium Growth				Low Growth				High Growth			
	K-5	6-8	9-12	Total	K-5	6-8	9-12	Total	K-5	6-8	9-12	Total
1998	15,117	7,081	8,639	30,837	15,117	7,081	8,639	30,837	15,117	7,081	8,639	30,837
2000	15,780	7,446	9,180	32,406	15,717	7,443	9,164	32,325	15,932	7,630	8,936	32,498
2005	16,811	8,755	10,593	36,160	16,549	8,442	10,449	35,439	17,552	8,941	10,625	37,118
2010	17,810	9,936	11,631	39,378	17,447	9,436	11,153	38,035	18,741	10,277	11,883	40,901
2015	18,884	10,857	12,855	42,596	18,488	9,965	12,034	40,487	20,089	11,181	13,484	44,754
2020	20,116	11,716	13,772	45,605	19,416	10,705	12,513	42,633	21,658	11,878	14,645	48,180

The difference between each scenario is in the average annual growth rates and, subsequently, the numbers of additional students attending the schools. Thus, the medium-growth scenario anticipates an annual growth rate of 1.8% between 1998 and 2020, which will add almost 15,000 new students. The low-growth scenario is based on a growth rate of 1.5% annually and about 12,000 more students by the year 2020, while for the high-growth forecast these numbers are, respectively, 2.0% and 17,300.

According to the medium-growth forecast, the District will add about 1,600 students during the period of 1998-2000. About 660 of them will be elementary school students, about 370 will be middle school students, and over 500 will be students attending high schools. During this period middle school enrollment will see the highest growth rate (3.3% annually), elementary schools will experience the lowest (1.3% annually).

During the next ten years annual growth will slow down according to all three scenarios, although at a different pace. Growth in 2000-2005 will be faster than in 2005-2010 (2.2% versus 1.7% for the medium growth option). If the growth occurs at a medium speed, it is expected to add almost 7,000 new students to the K-12 enrollment during the next decade: over 3,700 students between the years 2000 and 2005, and 3,200 more students during 2005-2010. The faster growth scenario will increase the K-12 enrollment in

2000-2005 by 4,600 students and in 2005-2010 by almost 3,800 students to the total of 8,400 students. The slower growth will "only" add another 3,100 kids by the year 2005 and 2,600 new students during 2005-2010, totaling 5,700 additional students by the year 2010.

Assessing each grade level separately, one can anticipate the following patterns of change in the years 2000-2010. Grades K-6 will grow by 2,000 students (the upper limit – about 2,800 kids, the lower limit – about 1,700 kids). Middle schools are likely to see almost 2,500 additional students (with a maximum of 2,600 and a minimum of about 2,000 new kids). High school enrollment will grow by 2,500 more students in the year 2010 in the moderate growth forecast (the low growth option anticipates about 2,000 more students, and the high-growth option – 3,000).

The following decade, 2010 to 2020, will experience further decrease in the growth rates, which will result in somewhat lower absolute numbers of enrollment growth than in the previous decade. Overall, about 6,200 more students will attend the BSD schools in the year 2020 than in the year 2010 according to the moderate-growth forecast. In case of a lower growth this number will be 4,600, while under high-growth option it will reach 7,300.

While slowing overall, the decade of 2010-2020 will see fastest growth in the middle- and high-school enrollments as large 2000-2010 elementary school cohorts become older, and the District succeeds in attracting, or "capturing", slightly more of its eligible teenagers. Under moderate growth scenario enrollment in K-6 is expected to grow at 1.2% annually or by total of 2,300 students (about 2,000 the least, almost 3,000 the most). The enrollment in the grades 6-8 will increase by 1.7% annually to add almost 1,800 new students. The high school enrollment, while increasing at the same annual rate, will see 2,100 more students by the year 2020.

DEALING WITH UNKNOWN FUTURE: ASSUMPTIONS

Should the future population composition and related probabilities of demographic events change significantly, they will unquestionably affect this CPRC forecast. Yet some components of population change are less sensitive to changes than others.

Survival rates that reflect chances of a given cohort to live till the next five-year period change very little over time, especially for the young ages. Almost 100% of school-age kids will survive to be included into the next cohort. The model uses the survival rates provided by the Oregon Health Division. Since the rates are unlikely to change during the projection period, 1995 rates for Oregon were utilized in the model for each forecasting period. It is unlikely that changes in mortality will affect our school enrollment forecast for the years 1999 to 2020.

Fertility rates tend to change more with time but still are rather stable. The model uses the 1990 fertility rates for the Washington county which are slightly modified starting in the year 2000: they are expected to decline for women in age groups 15-19 and 20-24, and to increase in age groups 25 through 44. These modifications reflect a tendency to postpone the birth of the first child and a declining fertility among whites non-Hispanic women that has been noted nationally; however this trend will be somewhat offset due to a considerable share of Hispanic population in the District. If a greater proportion of in-migration were to include couples with higher fertility, this would lead to more students that we are forecasting.

Of all assumptions, migration rates tend to be least certain, yet even they have some likely upper and lower limits and are subject to a time lag. While migration rates were tested and produced a close fit with actual enrollment changes for 1990-1995 and 1995-1998, a longer forecast horizon provides more chances for the rates to change in response to a number of factors. Such factors could include a recession, be it global or national, that would increase out-migration and halt in-migration, or an accelerated

economic growth similar to one that took place in most part of the 90s and brought in many new residents. Other relevant factors could include changes in the tax laws in Oregon or elsewhere affecting the profitability of high-tech and other industries, modifications of the land use laws and zoning, changes in immigration laws, increasing or deteriorating quality of life in the District relatively to other areas. However in the absence of such major changes – an assumption reflected in the medium-growth scenario – the migration rates utilized are reasonably reliable, at least till the year 2010.

Capture rates do not influence population components directly, but reflect how attractive public education is for families. The three forecasts developed by the CPRC reflect slightly different capture rates depending on share of home schooling and proportion of children drawn to private schools.

CONCLUSIONS

This study considers a wide range of factors that might affect the District's enrollment between 1999 and 2020. As a result, three scenarios of population and enrollment changes were developed. Under any of the three scenarios, the school-age population living in the Beaverton School District will increase. Assuming the medium growth scenario, school enrollments will increase by almost 670 students annually, albeit the annual rate of growth will slacken over time, from a current annual rate of 2.5% to about 1.4% in 2015-20.

APPENDIX

BEAVERTON SCHOOL DISTRICT POPULATION AND ENROLLMENT
FORECAST, 2000 TO 2020:
DETAILED RESULTS AND ASSUMPTIONS

Beaverton School District Enrollment Projections, 2000 - 2020

Medium Enrollment Forecast

	1990	1995	1998	2000	2005	2010	2015	2020
K-12 Enrollment	24,536	28,771	30,837	32,406	36,160	39,378	42,596	45,605
		1990-95	1995-98	1998-2000	2000-05	2005-10	2010-15	2015-20
Annual Growth Rate		3.2%	2.3%	2.5%	2.2%	1.7%	1.6%	1.4%

Low Enrollment Forecast

	1990	1995	1998	2000	2005	2010	2015	2020
K-12 Enrollment	24,536	28,771	30,837	32,325	35,439	38,035	40,487	42,633
		1990-95	1995-98	1998-2000	2000-05	2005-10	2010-15	2015-20
Annual Growth Rate		3.2%	2.3%	2.4%	1.9%	1.4%	1.3%	1.0%

High Enrollment Forecast

	1990	1995	1998	2000	2005	2010	2015	2020
K-12 Enrollment	24,536	28,771	30,837	32,498	37,118	40,901	44,754	48,180
		1990-95	1995-98	1998-2000	2000-05	2005-10	2010-15	2015-20
Annual Growth Rate		3.2%	2.3%	2.7%	2.7%	2.0%	1.8%	1.5%

K-12 Enrollment Forecast:
Three Growth Scenarios
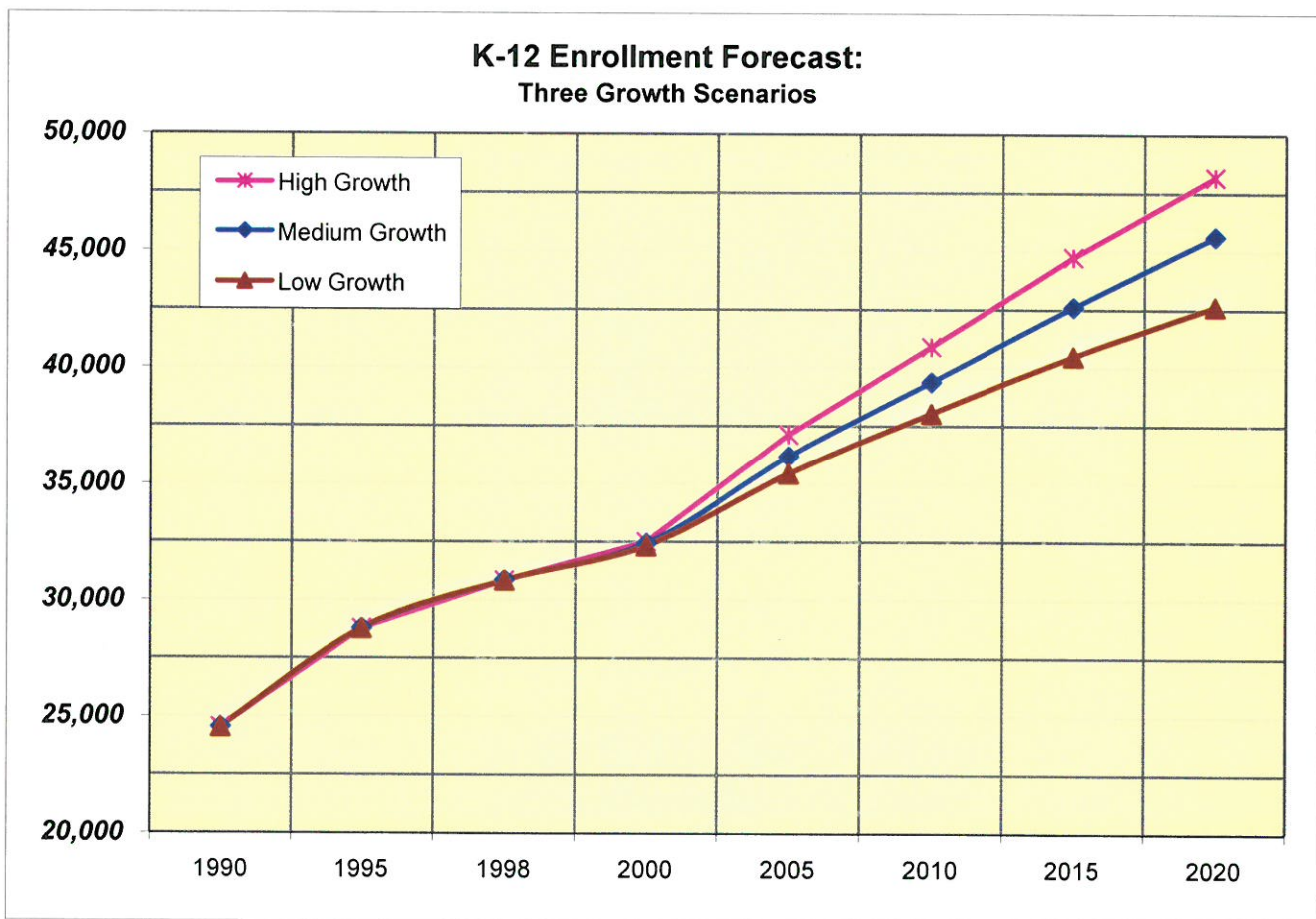
Beaverton School District Enrollment Projections, 2000 - 2020

Medium-Growth Enrollment Forecast

	1990	1995	1998	2000	2005	2010	2015	2020
K-5	12,069	14,103	15,117	15,780	16,811	17,810	18,884	20,116
6-8	5,490	6,871	7,081	7,446	8,755	9,936	10,857	11,716
9-12	6,977	7,797	8,639	9,180	10,593	11,631	12,855	13,772
Total	24,536	28,771	30,837	32,406	36,160	39,378	42,596	45,605

Low-Growth Enrollment Forecast

	1990	1995	1998	2000	2005	2010	2015	2020
K-5	12,069	14,103	15,117	15,717	16,549	17,447	18,488	19,416
6-8	5,490	6,871	7,081	7,443	8,442	9,436	9,965	10,705
9-12	6,977	7,797	8,639	9,164	10,449	11,153	12,034	12,513
Total	24,536	28,771	30,837	32,325	35,439	38,035	40,487	42,633

High-Growth Enrollment Forecast

	1990	1995	1998	2000	2005	2010	2015	2020
K-5	12,069	14,103	15,117	15,932	17,552	18,741	20,089	21,658
6-8	5,490	6,871	7,081	7,630	8,941	10,277	11,181	11,878
9-12	6,977	7,797	8,639	8,936	10,625	11,883	13,484	14,645
Total	24,536	28,771	30,837	32,498	37,118	40,901	44,754	48,180

Enrollment Forecast by Grade Level: Three Growth Scenarios

Medium-Growth Enrollment Forecast by Grade

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
K	2,526	2,571	2,583	2,596	2,608	2,621	2,633	2,663	2,692	2,722	2,752	2,783	2,817	2,852	2,887	2,923	2,959	2,994	3,029	3,065	3,101	
1	2,483	2,585	2,696	2,708	2,719	2,731	2,742	2,764	2,785	2,807	2,829	2,851	2,877	2,904	2,930	2,957	2,985	3,019	3,054	3,089	3,125	
2	2,610	2,557	2,716	2,734	2,752	2,770	2,788	2,809	2,830	2,851	2,873	2,894	2,919	2,944	2,969	2,995	3,021	3,056	3,092	3,129	3,166	
3	2,672	2,649	2,556	2,729	2,761	2,793	2,826	2,854	2,883	2,912	2,941	2,970	3,001	3,032	3,063	3,095	3,127	3,166	3,206	3,246	3,286	
4	2,628	2,681	2,641	2,569	2,764	2,818	2,874	2,915	2,957	3,000	3,043	3,087	3,128	3,170	3,213	3,256	3,299	3,345	3,390	3,437	3,483	
5	2,649	2,637	2,708	2,692	2,641	2,866	2,918	3,001	3,056	3,111	3,168	3,225	3,277	3,330	3,383	3,438	3,493	3,544	3,596	3,649	3,703	
6	2,378	2,665	2,698	2,787	2,786	2,750	3,001	3,063	3,125	3,189	3,254	3,320	3,378	3,437	3,496	3,557	3,619	3,675	3,731	3,788	3,847	
7	2,387	2,386	2,730	2,769	2,867	2,872	2,830	3,062	3,128	3,197	3,266	3,339	3,398	3,460	3,522	3,586	3,651	3,707	3,765	3,823	3,882	
8	2,371	2,365	2,437	2,784	2,820	2,914	2,914	2,842	3,066	3,136	3,206	3,279	3,338	3,399	3,460	3,523	3,587	3,641	3,697	3,753	3,810	
9	2,329	2,399	2,435	2,465	2,800	2,821	2,899	2,868	2,800	3,024	3,096	3,169	3,226	3,283	3,341	3,401	3,461	3,511	3,562	3,613	3,665	
10	2,366	2,361	2,414	2,450	2,468	2,791	2,798	2,864	2,837	2,774	3,001	3,076	3,130	3,185	3,242	3,299	3,357	3,403	3,450	3,497	3,545	
11	2,294	2,321	2,292	2,344	2,378	2,397	2,711	2,720	2,784	2,759	2,698	2,919	2,971	3,024	3,078	3,132	3,189	3,232	3,276	3,321	3,366	
12	2,035	2,109	2,112	2,087	2,135	2,167	2,185	2,473	2,483	2,543	2,521	2,467	2,650	2,698	2,747	2,797	2,848	2,887	2,927	2,967	3,007	
K-5	15,567	15,790	15,902	16,027	16,245	16,599	16,811	17,006	17,203	17,403	17,605	17,810	18,020	18,232	18,447	18,664	18,881	19,124	19,367	19,614	19,864	
6-8	7,136	7,416	7,865	8,340	8,472	8,535	8,755	8,967	9,320	9,521	9,726	9,938	10,114	10,295	10,479	10,666	10,857	11,023	11,193	11,365	11,539	
9-12	9,025	9,180	9,254	9,345	9,782	10,176	10,593	10,925	10,904	11,100	11,316	11,631	11,977	12,190	12,408	12,630	12,855	13,033	13,214	13,398	13,584	
Total	31,728	32,406	33,021	33,713	34,499	35,310	36,160	36,897	37,428	38,024	38,647	39,379	40,111	40,717	41,333	41,960	42,596	43,181	43,775	44,376	44,986	

Grade-Progression Ratios for the Medium-Growth Scenario

	99/98	00/99	01/00	02/01	03/02	04/03	05/04	06/05	07/06	08/07	09/08	10/09	11/10	12/11	13/12	14/13	15/14	16/15	17/16	18/17	19/18	20/19
01/K	1.056	1.063	1.049	1.048	1.048	1.047	1.046	1.050	1.046	1.043	1.039	1.036	1.034	1.031	1.027	1.024	1.021	1.020	1.020	1.020	1.020	1.019
02/01	1.027	1.030	1.012	1.014	1.016	1.019	1.021	1.024	1.024	1.024	1.023	1.023	1.024	1.023	1.023	1.022	1.021	1.024	1.024	1.025	1.025	1.025
03/02	1.016	1.015	1.000	1.005	1.010	1.015	1.020	1.024	1.026	1.029	1.031	1.034	1.037	1.039	1.040	1.042	1.044	1.048	1.049	1.050	1.050	1.051
04/03	1.008	1.003	0.997	1.005	1.013	1.021	1.029	1.032	1.036	1.041	1.045	1.050	1.053	1.056	1.060	1.063	1.066	1.070	1.071	1.072	1.073	1.074
05/04	1.008	1.004	1.010	1.019	1.028	1.037	1.046	1.044	1.048	1.052	1.056	1.060	1.062	1.064	1.067	1.070	1.073	1.074	1.075	1.076	1.077	1.079
06/05	1.008	1.006	1.023	1.029	1.035	1.041	1.047	1.039	1.041	1.043	1.046	1.048	1.047	1.049	1.050	1.052	1.053	1.052	1.053	1.053	1.054	1.055
07/06	1.003	1.004	1.024	1.026	1.029	1.031	1.033	1.020	1.022	1.023	1.024	1.026	1.024	1.024	1.025	1.026	1.026	1.024	1.024	1.025	1.025	1.025
08/07	1.000	1.003	1.022	1.020	1.018	1.016	1.015	1.001	1.002	1.002	1.003	1.004	1.000	1.000	1.000	1.000	1.000	0.997	0.997	0.997	0.997	0.996
09/08	1.000	1.007	1.017	1.011	1.006	1.000	0.995	0.984	0.985	0.986	0.987	0.988	0.984	0.983	0.983	0.983	0.983	0.979	0.978	0.977	0.977	0.976
10/09	1.006	1.014	1.011	1.006	1.001	0.997	0.992	0.988	0.989	0.991	0.992	0.994	0.988	0.988	0.987	0.987	0.987	0.983	0.982	0.982	0.981	0.980
11/10	0.981	0.981	0.971	0.971	0.971	0.971	0.971	0.972	0.972	0.972	0.973	0.973	0.966	0.966	0.966	0.966	0.966	0.963	0.963	0.963	0.963	0.963
12/11	0.920	0.919	0.910	0.911	0.911	0.911	0.911	0.912	0.913	0.913	0.914	0.914	0.908	0.908	0.909	0.909	0.909	0.906	0.906	0.906	0.906	0.906

Each GPR is equal to the enrollment in next grade and year (i.e., 1st grade in 1999) divided by the enrollment of the previous grade and year (K in 1998).

Beaverton School District Enrollment Projections, 2000 - 2020

Low-Growth Enrollment Forecast by Grade

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
K	2,506	2,516	2,557	2,569	2,580	2,591	2,603	2,630	2,658	2,686	2,714	2,742	2,781	2,821	2,861	2,902	2,913	2,970	2,997	3,024	3,051	
1	2,482	2,661	2,674	2,687	2,700	2,714	2,727	2,747	2,767	2,787	2,808	2,828	2,863	2,897	2,932	2,967	3,003	3,027	3,050	3,074	3,098	
2	2,607	2,553	2,696	2,714	2,733	2,752	2,771	2,791	2,810	2,830	2,849	2,869	2,901	2,932	2,964	2,997	3,029	3,053	3,077	3,101	3,125	
3	2,669	2,614	2,552	2,704	2,733	2,762	2,792	2,817	2,843	2,869	2,895	2,921	2,953	2,984	3,017	3,049	3,082	3,110	3,138	3,166	3,195	
4	2,626	2,677	2,630	2,552	2,719	2,764	2,808	2,845	2,882	2,919	2,957	2,995	3,029	3,062	3,096	3,131	3,166	3,201	3,237	3,274	3,311	
5	2,648	2,635	2,692	2,661	2,598	2,785	2,848	2,894	2,942	2,991	3,040	3,090	3,124	3,159	3,194	3,229	3,265	3,309	3,354	3,400	3,446	
6	2,377	2,665	2,679	2,748	2,729	2,675	2,880	2,934	2,988	3,043	3,100	3,157	3,191	3,225	3,260	3,295	3,331	3,380	3,431	3,482	3,533	
7	2,386	2,385	2,710	2,729	2,804	2,789	2,740	2,929	2,986	3,045	3,104	3,165	3,199	3,234	3,269	3,305	3,340	3,390	3,440	3,492	3,543	
8	2,370	2,393	2,420	2,747	2,765	2,839	2,822	2,747	2,937	2,995	3,054	3,114	3,149	3,185	3,221	3,257	3,294	3,339	3,384	3,430	3,476	
9	2,327	2,385	2,422	2,442	2,764	2,774	2,840	2,800	2,725	2,913	2,969	3,027	3,064	3,102	3,141	3,180	3,220	3,252	3,285	3,319	3,352	
10	2,364	2,356	2,405	2,436	2,451	2,768	2,772	2,822	2,782	2,708	2,894	2,950	2,990	3,031	3,072	3,113	3,155	3,177	3,200	3,222	3,244	
11	2,293	2,317	2,282	2,329	2,359	2,374	2,681	2,677	2,726	2,688	2,617	2,799	2,836	2,875	2,913	2,953	2,993	3,014	3,035	3,056	3,077	
12	2,033	2,106	2,104	2,073	2,115	2,143	2,156	2,429	2,427	2,473	2,440	2,377	2,526	2,561	2,595	2,630	2,666	2,684	2,703	2,722	2,741	
K-5	15,538	15,717	15,801	15,888	16,064	16,368	16,549	16,724	16,902	17,081	17,263	17,447	17,650	17,856	18,064	18,275	18,498	18,670	18,853	19,039	19,226	
6-8	7,133	7,443	7,809	8,224	8,297	8,303	8,412	8,610	8,911	9,083	9,258	9,436	9,539	9,644	9,750	9,857	9,965	10,109	10,255	10,403	10,553	
9-12	9,017	9,161	9,212	9,280	9,690	10,059	10,449	10,728	10,660	10,782	10,921	11,153	11,417	11,568	11,721	11,876	12,034	12,128	12,223	12,319	12,415	
Total	31,688	32,325	32,823	33,392	34,052	34,731	35,439	36,062	36,473	36,946	37,442	38,035	38,607	39,068	39,536	40,008	40,497	40,907	41,331	41,760	42,194	

Grade-Progression Ratios for the Low-Growth Scenario

	99/98	00/99	01/00	02/01	03/02	04/03	05/04	06/05	07/06	08/07	09/08	10/09	11/10	12/11	13/12	14/13	15/14	16/15	17/16	18/17	19/18	20/19
01/K	1.055	1.062	1.050	1.051	1.051	1.052	1.052	1.055	1.052	1.049	1.045	1.042	1.044	1.042	1.039	1.037	1.035	1.029	1.027	1.026	1.025	1.023
02/01	1.026	1.029	1.013	1.015	1.017	1.019	1.021	1.023	1.023	1.023	1.022	1.022	1.025	1.024	1.023	1.022	1.021	1.017	1.017	1.017	1.016	1.016
03/02	1.015	1.014	0.999	1.003	1.007	1.011	1.014	1.017	1.019	1.021	1.023	1.025	1.029	1.029	1.029	1.029	1.029	1.027	1.028	1.029	1.030	1.031
04/03	1.007	1.003	0.995	1.000	1.006	1.011	1.017	1.019	1.023	1.027	1.031	1.035	1.037	1.037	1.038	1.038	1.038	1.039	1.041	1.043	1.046	1.048
05/04	1.008	1.004	1.006	1.012	1.018	1.024	1.030	1.031	1.034	1.038	1.041	1.045	1.043	1.043	1.043	1.043	1.043	1.045	1.048	1.050	1.053	1.055
06/05	1.008	1.006	1.016	1.021	1.025	1.030	1.034	1.030	1.032	1.034	1.036	1.038	1.033	1.032	1.032	1.032	1.031	1.035	1.037	1.038	1.039	1.041
07/06	1.003	1.003	1.017	1.019	1.020	1.022	1.024	1.017	1.018	1.019	1.020	1.021	1.013	1.013	1.014	1.014	1.014	1.018	1.018	1.018	1.018	1.018
08/07	0.999	1.003	1.015	1.014	1.013	1.012	1.012	1.003	1.003	1.003	1.003	1.003	0.995	0.995	0.996	0.996	0.997	0.999	0.998	0.997	0.996	0.994
09/08	0.999	1.006	1.012	1.009	1.006	1.003	1.001	0.992	0.992	0.992	0.991	0.991	0.984	0.985	0.986	0.987	0.988	0.987	0.984	0.981	0.977	0.974
10/09	1.005	1.013	1.008	1.006	1.004	1.001	0.999	0.994	0.994	0.994	0.994	0.994	0.988	0.989	0.990	0.991	0.992	0.987	0.984	0.981	0.978	0.975
11/10	0.980	0.980	0.969	0.969	0.969	0.969	0.969	0.966	0.966	0.966	0.967	0.967	0.961	0.961	0.961	0.961	0.961	0.955	0.955	0.955	0.955	0.955
12/11	0.919	0.919	0.908	0.908	0.908	0.908	0.908	0.906	0.907	0.907	0.908	0.908	0.903	0.903	0.903	0.903	0.903	0.897	0.897	0.897	0.897	0.897

Each GPR is equal to the enrollment in next grade and year (i.e.,1st grade in 1999) divided by the enrollment of the previous grade and year (K in 1998).

Beaverton School District Projections by CPRC
2/11/99

Beaverton School District Enrollment Projections, 2000 - 2020

High-Growth Enrollment Forecast by Grade

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
K	2,521	2,505	2,604	2,644	2,685	2,726	2,768	2,799	2,830	2,862	2,893	2,926	2,971	3,018	3,065	3,112	3,161	3,213	3,267	3,321	3,376	*(illegible)*
1	2,476	2,670	2,712	2,755	2,799	2,843	2,888	2,914	2,940	2,966	2,992	3,019	3,058	3,098	3,138	3,179	3,220	3,274	3,328	3,383	3,439	*(illegible)*
2	2,612	2,553	2,737	2,784	2,832	2,881	2,931	2,959	2,986	3,013	3,041	3,069	3,107	3,145	3,183	3,222	3,261	3,313	3,366	3,421	3,475	*(illegible)*
3	2,687	2,671	2,593	2,786	2,841	2,897	2,954	2,990	3,025	3,062	3,099	3,136	3,177	3,218	3,260	3,302	3,345	3,396	3,448	3,501	3,554	*(illegible)*
4	2,662	2,740	2,712	2,641	2,847	2,912	2,979	3,028	3,078	3,129	3,181	3,233	3,280	3,328	3,377	3,426	3,476	3,525	3,575	3,625	3,676	*(illegible)*
5	2,699	2,733	2,814	2,795	2,731	2,953	3,031	3,094	3,158	3,223	3,289	3,357	3,410	3,462	3,516	3,571	3,626	3,672	3,719	3,766	3,814	*(illegible)*
6	2,418	2,708	2,813	2,903	2,891	2,832	3,070	3,141	3,214	3,289	3,365	3,444	3,499	3,555	3,612	3,670	3,729	3,772	3,817	3,862	3,908	*(illegible)*
7	2,410	2,450	2,817	2,866	2,963	2,954	2,898	3,129	3,207	3,286	3,368	3,452	3,510	3,569	3,629	3,690	3,753	3,797	3,842	3,888	3,934	*(illegible)*
8	2,371	2,412	2,462	2,831	2,882	2,980	2,973	2,902	3,136	3,215	3,297	3,381	3,443	3,505	3,569	3,634	3,700	3,747	3,795	3,844	3,893	*(illegible)*
9	2,288	2,332	2,380	2,430	2,795	2,846	2,943	2,923	2,856	3,087	3,168	3,251	3,319	3,389	3,460	3,533	3,607	3,661	3,717	3,773	3,830	*(illegible)*
10	2,313	2,254	2,303	2,352	2,402	2,765	2,817	2,903	2,885	2,822	3,054	3,137	3,212	3,289	3,367	3,448	3,530	3,591	3,652	3,715	3,779	*(illegible)*
11	2,284	2,259	2,204	2,252	2,300	2,350	2,706	2,744	2,828	2,812	2,750	2,977	3,048	3,122	3,197	3,274	3,352	3,410	3,469	3,529	3,589	*(illegible)*
12	2,026	2,091	2,072	2,023	2,068	2,113	2,160	2,476	2,512	2,590	2,575	2,519	2,719	2,785	2,854	2,923	2,995	3,046	3,099	3,152	3,207	*(illegible)*
K-5	15,658	15,932	16,173	16,406	16,735	17,213	17,552	17,783	18,017	18,255	18,496	18,741	19,003	19,269	19,538	19,812	20,089	20,393	20,702	21,016	21,335	*(illegible)*
6-8	7,199	7,630	8,091	8,601	8,735	8,766	8,941	9,173	9,557	9,791	10,031	10,277	10,451	10,629	10,810	10,994	11,181	11,317	11,455	11,594	11,735	*(illegible)*
9-12	8,912	8,936	8,959	9,056	9,566	10,074	10,625	11,046	11,082	11,311	11,547	11,893	12,298	12,584	12,877	13,177	13,481	13,709	13,937	14,169	14,405	*(illegible)*
Total	31,769	32,498	33,223	34,063	35,036	36,054	37,118	38,002	38,656	39,356	40,074	40,901	41,752	42,482	43,226	43,983	44,754	45,419	46,094	46,779	47,474	*(illegible)*

Grade-Progression Ratios for the High-Growth Scenario

	99/98	00/99	01/00	02/01	03/02	04/03	05/04	06/05	07/06	08/07	09/08	10/09	11/10	12/11	13/12	14/13	15/14	16/15	17/16	18/17	19/18	20/19
01/K	1.053	1.059	1.057	1.058	1.058	1.059	1.059	1.053	1.050	1.048	1.046	1.043	1.045	1.043	1.040	1.037	1.035	1.036	1.036	1.036	1.035	1.035
02/01	1.028	1.031	1.025	1.027	1.028	1.030	1.031	1.024	1.025	1.025	1.025	1.026	1.029	1.028	1.027	1.027	1.026	1.029	1.028	1.028	1.027	1.027
03/02	1.022	1.023	1.016	1.018	1.020	1.023	1.025	1.020	1.023	1.025	1.028	1.031	1.035	1.036	1.037	1.037	1.038	1.041	1.041	1.040	1.039	1.038
04/03	1.021	1.020	1.015	1.019	1.022	1.025	1.028	1.025	1.030	1.034	1.039	1.043	1.046	1.048	1.049	1.051	1.053	1.054	1.053	1.051	1.050	1.049
05/04	1.027	1.027	1.027	1.031	1.034	1.037	1.041	1.039	1.043	1.047	1.051	1.056	1.055	1.056	1.057	1.057	1.058	1.056	1.055	1.054	1.052	1.051
06/05	1.025	1.026	1.029	1.032	1.034	1.037	1.039	1.036	1.039	1.042	1.044	1.047	1.042	1.043	1.043	1.044	1.044	1.040	1.039	1.039	1.038	1.037
07/06	1.013	1.013	1.018	1.019	1.021	1.022	1.023	1.019	1.021	1.022	1.024	1.026	1.019	1.020	1.021	1.022	1.023	1.019	1.019	1.019	1.019	1.019
08/07	1.000	1.001	1.005	1.005	1.005	1.006	1.006	1.001	1.002	1.003	1.003	1.004	0.997	0.999	1.000	1.001	1.003	0.999	0.999	1.000	1.001	1.002
09/08	0.982	0.984	0.987	0.987	0.987	0.987	0.988	0.983	0.984	0.985	0.985	0.986	0.982	0.984	0.987	0.990	0.993	0.990	0.992	0.994	0.996	0.999
10/09	0.984	0.985	0.988	0.988	0.989	0.989	0.990	0.986	0.987	0.988	0.989	0.990	0.988	0.991	0.994	0.996	0.999	0.996	0.998	1.000	1.002	1.004
11/10	0.977	0.976	0.978	0.978	0.978	0.978	0.978	0.974	0.974	0.975	0.975	0.975	0.972	0.972	0.972	0.972	0.972	0.966	0.966	0.966	0.966	0.966
12/11	0.916	0.916	0.917	0.918	0.918	0.919	0.919	0.915	0.915	0.916	0.916	0.916	0.913	0.914	0.914	0.915	0.915	0.909	0.909	0.909	0.909	0.909

Each GPR is equal to the enrollment in next grade and year (i.e., 1st grade in 1999) divided by the enrollment of the previous grade and year (K in 1998).

Beaverton School District Enrollment Projections, 2000 - 2020
Assumptions Used in Developing the Forecasts

A) Common to All Three Growth Scenarios
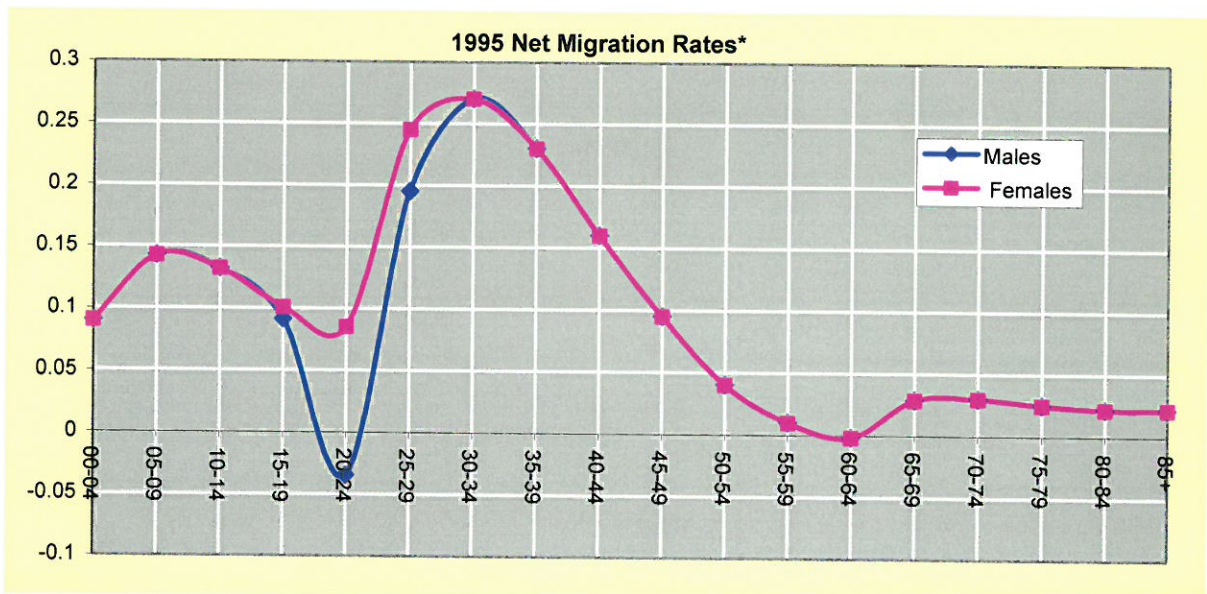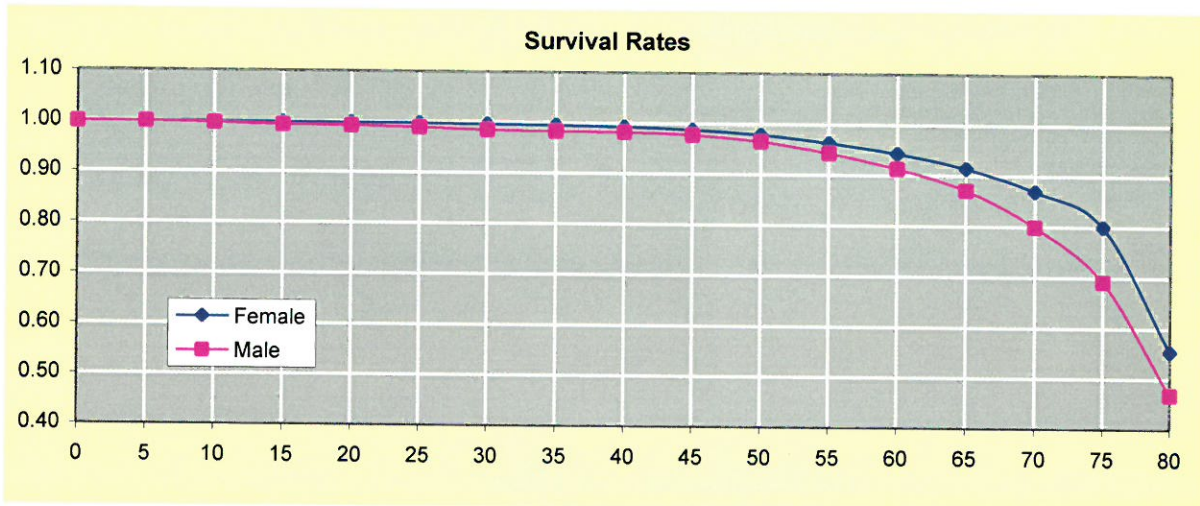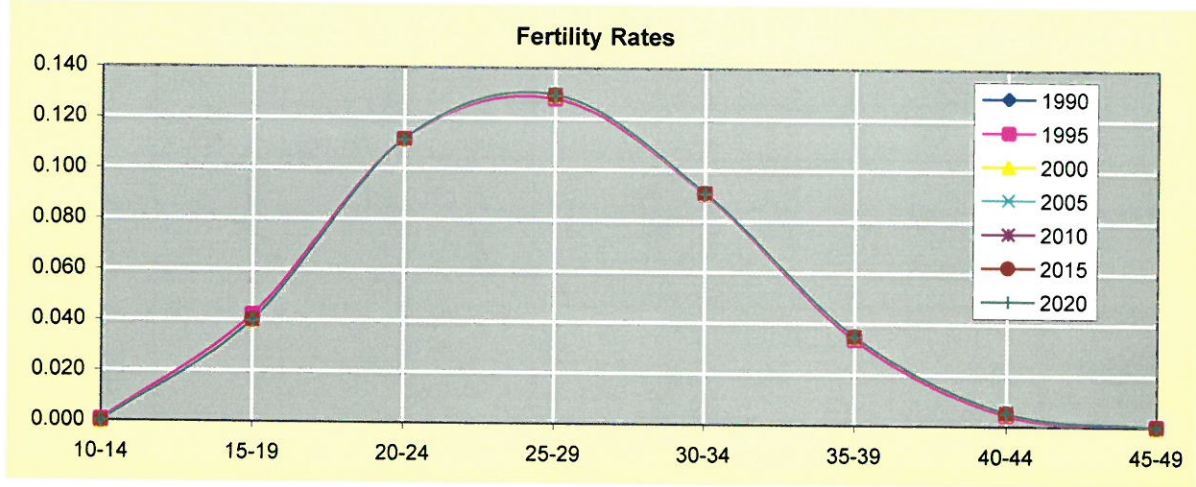
Fertility Rates

Legend: 1990, 1995, 2000, 2005, 2010, 2015, 2020

Survival Rates

Legend: Female, Male

1995 Net Migration Rates*

Legend: Males, Females

* The net migration rates show the number of people per 1 current resident of the District that have migrated in or out of the area during previous 5 years.

Beaverton School District Enrollment Projections, 2000 - 2020

Assumptions Used in Developing the Forecasts (cont.)

B) Specific to Each Growth Scenario

Net Migration Rates*

Medium-Growth Enrollment Forecast

Year	Males Ages 5 to19	Males All Ages	Females Ages 5 to19	Females All Ages
1995	0.122	0.086	0.125	0.096
2000	0.088	0.052	0.091	0.062
2005	0.084	0.050	0.087	0.060
2010	0.089	0.050	0.092	0.060
2015	0.083	0.029	0.086	0.041
2020	0.092	0.023	0.095	0.035

Low-Growth Enrollment Forecast

Year	Males Ages 5 to19	Males All Ages	Females Ages 5 to19	Females All Ages
1995	0.122	0.086	0.125	0.096
2000	0.084	0.047	0.087	0.057
2005	0.090	0.044	0.093	0.054
2010	0.074	0.038	0.077	0.049
2015	0.089	0.038	0.092	0.049
2020	0.062	0.027	0.065	0.038

High-Growth Enrollment Forecast

Year	Males Ages 5 to19	Males All Ages	Females Ages 5 to19	Females All Ages
1995	0.122	0.086	0.125	0.096
2000	0.085	0.051	0.088	0.061
2005	0.087	0.063	0.091	0.073
2010	0.107	0.073	0.110	0.084
2015	0.096	0.044	0.100	0.056
2020	0.104	0.043	0.107	0.053

* The net migration rates show the number of people per 1 current resident of the District that have migrated in or out of the area during previous 5 years.

Capture Rates**

Medium-Growth Enrollment Forecast

Years	K-5	6-8	9-12	K-12
1990-95	0.89	0.89	0.84	0.87
1995-00	0.86	0.86	0.81	0.84
2000-05	0.87	0.88	0.82	0.85
2005-10	0.90	0.90	0.85	0.88
2010-15	0.92	0.92	0.87	0.90
2015-20	0.92	0.92	0.87	0.90

Low-Growth Enrollment Forecast

Years	K-5	6-8	9-12	K-12
1990-95	0.89	0.89	0.84	0.87
1995-00	0.86	0.86	0.81	0.84
2000-05	0.86	0.86	0.81	0.84
2005-10	0.89	0.89	0.84	0.87
2010-15	0.89	0.89	0.84	0.87
2015-20	0.89	0.89	0.84	0.87

High-Growth Enrollment Forecast

Years	K-5	6-8	9-12	K-12
1990-95	0.89	0.89	0.84	0.87
1995-00	0.86	0.87	0.81	0.85
2000-05	0.89	0.89	0.84	0.87
2005-10	0.90	0.90	0.85	0.88
2010-15	0.92	0.92	0.87	0.90
2015-20	0.92	0.92	0.87	0.90

** Capture rates indicate a proportion of all school-age children that would attend public schools in a given year. Capture rates decrease due to growth in home-schooling, attendance of private or out-of-District schools.

Beaverton School District Projections by CPRC
2/11/99

Assumptions Used in Developing the Forecasts (cont.)

C) Calibration of the Model: Comparing Actual and Projected Enrollment

1995 Calibration - All Grades

1995 Calibration- Grouped
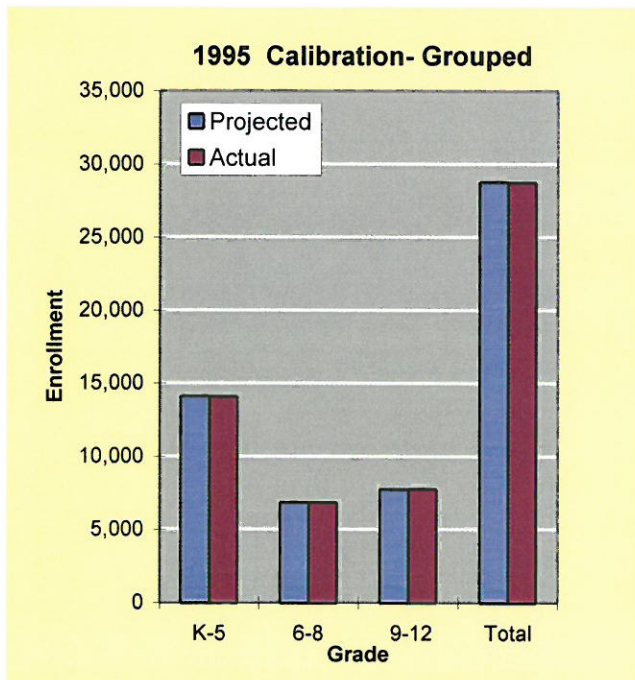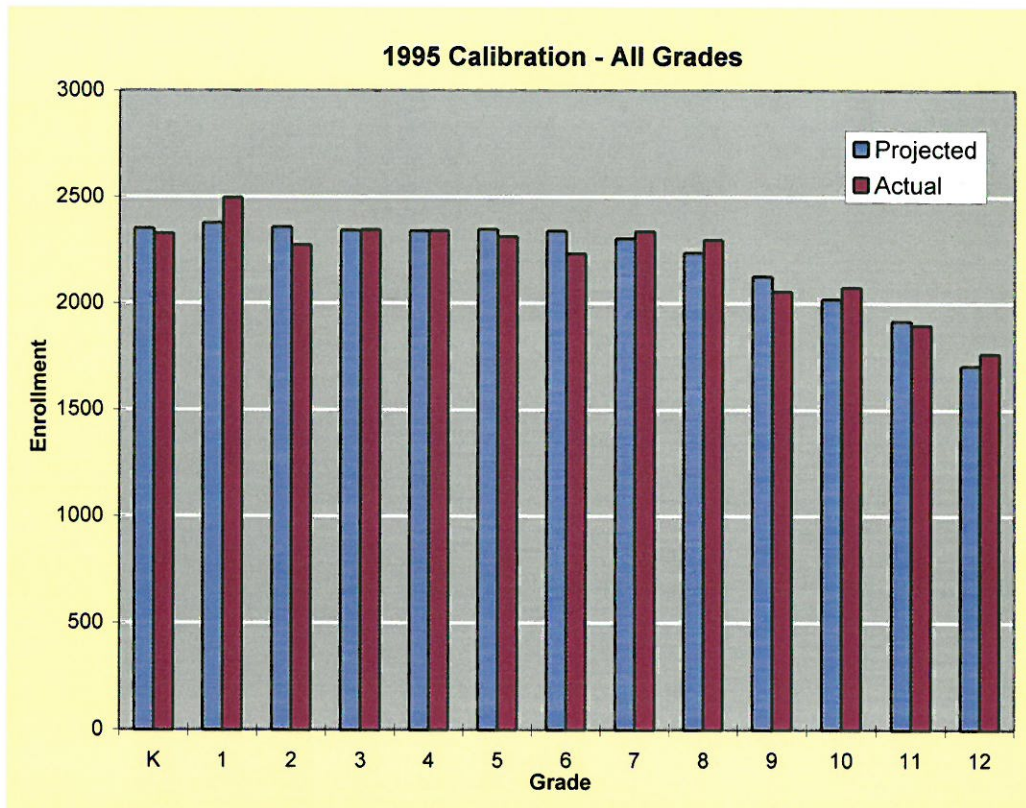
Calibration to 1995,1996,1997,1998 enrollment

Estimated Enrollment minus Actual Enrollment

Grade	1995	1996	1997	1998
K-5	16	-138	-65	-20
6-8	11	48	114	167
9-12	-25	-32	-111	-70
Total	3	-122	-62	77

Total Population - Medium-Growth Forecast

Age	1990	1995	2000	2005	2010	2015	2020
00-04	11,665	13,957	14,085	14,302	15,580	17,037	18,143
05-09	11,403	13,312	15,453	15,792	16,120	16,627	17,655
10-14	10,143	12,899	14,606	16,878	18,179	19,379	20,886
15-19	9,032	11,089	13,665	15,166	16,686	17,809	19,062
20-24	10,353	9,205	10,925	13,457	15,004	16,047	16,932
25-29	14,480	12,588	10,874	12,894	15,891	17,429	18,483
30-34	15,545	18,269	15,460	13,343	15,887	19,280	20,955
35-39	15,098	18,943	21,648	18,311	15,867	18,278	22,356
40-44	13,207	17,327	21,101	24,094	20,117	17,131	19,897
45-49	9,479	14,281	18,153	22,086	24,625	20,190	17,343
50-54	6,713	9,683	14,116	17,923	21,482	23,370	19,247
55-59	5,392	6,588	9,183	13,376	17,069	20,061	21,349
60-64	4,997	5,129	6,054	8,428	12,345	15,443	17,748
65-69	4,790	4,777	4,735	5,586	7,814	11,234	13,893
70-74	3,526	4,415	4,256	4,208	4,992	6,848	9,744
75-79	2,563	3,034	3,672	3,534	3,503	4,080	5,529
80-84	1,597	1,984	2,265	2,738	2,644	2,559	2,952
85+	1,300	1,561	1,843	2,128	2,530	2,638	2,613
Total	151,285	179,040	202,093	224,245	246,335	265,441	284,786

Total Population - Low-Growth Forecast

Age	1990	1995	2000	2005	2010	2015	2020
00-04	11,665	13,893	13,898	14,087	15,161	16,885	18,057
05-09	11,403	13,312	15,327	15,902	16,075	17,073	17,835
10-14	10,143	12,899	14,552	16,541	17,511	18,505	19,825
15-19	9,032	11,089	13,614	15,227	16,188	17,312	17,926
20-24	10,353	9,205	10,881	13,312	14,913	15,713	16,805
25-29	14,480	12,588	10,837	12,767	15,587	17,457	18,254
30-34	15,545	18,269	15,410	13,223	15,602	19,050	21,162
35-39	15,098	18,943	21,575	18,145	15,593	18,090	22,278
40-44	13,207	17,327	21,026	23,864	19,755	16,974	19,871
45-49	9,479	14,281	18,084	21,863	24,154	20,002	17,351
50-54	6,713	9,683	14,059	17,731	21,049	23,137	19,265
55-59	5,392	6,588	9,145	13,227	16,714	19,841	21,361
60-64	4,997	5,129	6,029	8,333	12,082	15,265	17,743
65-69	4,790	4,777	4,716	5,524	7,648	11,096	13,874
70-74	3,526	4,415	4,239	4,162	4,887	6,764	9,723
75-79	2,563	3,034	3,657	3,495	3,429	4,031	5,518
80-84	1,597	1,984	2,256	2,707	2,589	2,529	2,947
85+	1,300	1,561	1,835	2,104	2,477	2,606	2,608
Total	151,285	178,976	201,142	222,212	241,413	262,331	282,403

Total Population - High-Growth Forecast

Age	1990	1995	2000	2005	2010	2015	2020
00-04	11,665	13,957	14,085	14,649	15,946	17,592	19,133
05-09	11,403	13,312	15,314	16,284	17,009	17,815	19,285
10-14	10,143	12,899	15,071	16,955	18,827	20,022	21,309
15-19	9,032	11,089	13,215	15,048	17,016	18,726	20,394
20-24	10,353	9,205	10,925	13,211	15,262	16,619	18,364
25-29	14,480	12,588	10,874	13,057	15,929	17,956	19,472
30-34	15,545	18,269	15,460	13,505	16,412	19,563	21,945
35-39	15,098	18,943	21,648	18,541	16,395	19,127	23,072
40-44	13,207	17,327	21,101	24,415	20,828	17,943	21,199
45-49	9,479	14,281	18,153	22,399	25,556	21,212	18,520
50-54	6,713	9,683	14,116	18,191	22,336	24,631	20,639
55-59	5,392	6,588	9,183	13,581	17,766	21,184	22,979
60-64	4,997	5,129	6,054	8,560	12,859	16,327	19,146
65-69	4,790	4,777	4,735	5,670	8,134	11,881	14,991
70-74	3,526	4,415	4,256	4,272	5,194	7,238	10,517
75-79	2,563	3,034	3,672	3,587	3,645	4,310	5,965
80-84	1,597	1,984	2,265	2,779	2,752	2,704	3,183
85+	1,300	1,561	1,843	2,160	2,633	2,788	2,818
Total	151,285	179,040	201,968	226,866	254,499	277,638	302,930

Total Population: Average Annual Growth Rates by Type of Growth

	Medium	Low	High
1990-95	3.4%	3.4%	3.4%
1995-00	2.5%	2.4%	2.4%
2000-05	2.1%	2.0%	2.4%
2005-10	1.9%	1.7%	2.3%
2010-15	1.5%	1.7%	1.8%
2015-20	1.4%	1.5%	1.8%

School-Age Population: Average Annual Growth Rates by Type of Growth

	Medium	Low	High
1990-95	4.1%	4.1%	4.1%
1995-00	3.2%	3.1%	3.2%
2000-05	1.8%	1.9%	2.1%
2005-10	1.3%	0.9%	1.8%
2010-15	1.1%	1.2%	1.4%
2015-20	1.4%	1.0%	1.5%