ESTACADA SCHOOL DISTRICT
ENROLLMENT FORECAST
2009-10 TO 2013-14

Portland State UNIVERSITY

Population Research Center

MARCH, 2009

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ENROLLMENT FORECAST UPDATE
2009-10 TO 2013-14

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EXECUTIVE SUMMARY

This report presents the results of a demographic study for the Estacada School District (ESD) conducted by the Portland State University Population Research Center (PRC). The study includes analysis of population, housing and enrollment trends affecting the District in recent years and forecasts of district-wide and individual school enrollments for the 2009-10 to 2013-14 school years.

ESD enrolled 2,139 students in Fall 2008, 16 students (0.8 percent) **more** than the 20 year historic low enrollment of Fall 2007, but 151 students (6.6 percent) **less** than the Fall 2003 enrollment. Furthermore, district-wide enrollment in 2008-09 was 289 students (12 percent) below its 1995-96 peak. The long term trend is primarily related to a decline in births due to lower fertility rates and a loss of young adult population. Other factors such as private schools, home schooling, and charter schools in other districts may also play a role. The most recent information available shows that about 10 percent of ESD school age residents attend private schools and six percent are home schooled.

The ESD enrollment forecasts prepared four years ago included a "status quo" scenario and an "increased housing" scenario. Both scenarios predicted enrollment losses, but losses were more severe under the "status quo" forecast. Actual enrollment losses were very close to those expected under the "increased housing" forecast, even though there was less new housing built than anticipated under that scenario.

The current forecasts included in this study indicate that the District will continue to lose enrollment over the next five years, but at a slower rate than in the past. Total K-12 enrollment is forecast to decline next year by 24 students (1.1 percent). Small declines ranging from 11 to 37 students are also forecasted for each of the following four years. Overall, for the five year forecast period, K-12 enrollment is 117 students (5.5 percent) lower in 2013-14 than in 2008-09. Table 1 contains ESD recent and forecasted enrollments for one year and five year intervals.

Table 1

Historic and Forecast Enrollment
Estacada School District

One Year Trend

	Actual		Forecast
	2007-08	**2008-09**	**2009-10**
Grades K-6	1,028	1,037	1,014
Change		*9*	*-23*
		0.9%	*-2.2%*
Grades 7-8	356	350	364
Change		*-6*	*14*
		-1.7%	*4.0%*
Grades 9-12	739	752	737
Change		*13*	*-15*
		1.8%	*-2.0%*
Total	**2,123**	**2,139**	**2,115**
Change		***16***	***-24***
		0.8%	***-1.1%***

Five Year Trend

	Actual		Forecast
	2003-04	**2008-09**	**2013-14**
Grades K-6	1,115	1,037	960
Change		*-78*	*-77*
		-7%	*-7%*
Grades 7-8	380	350	326
Change		*-30*	*-24*
		-8%	*-7%*
Grades 9-12	795	752	736
Change		*-43*	*-16*
		-5%	*-2%*
Total	**2,290**	**2,139**	**2,022**
Change		***-151***	***-117***
		-7%	***-5%***

Population Research Center, PSU. February 2009

Enrollment Growth Related to New Housing Development

The in-migration that typically fuels the Portland region's population growth has likely already slowed due to the current recession, and is not expected to recover in the next year or two as job losses continue to mount and the region's unemployment rate exceeds the U.S. rate. Therefore, we expect very little new housing development in the ESD in 2009 or 2010. There is adequate residential land within the City of Estacada for new residential development, so when the housing market does rebound, Estacada is poised to capture a share of the region's demand. The timing and magnitude of the rebound is uncertain at this time, so this study does not include an "increased housing" enrollment forecast scenario. However, detailed information provided in this report about the number of ESD students living in newer homes may be used to supplement the enrollment forecast if there is an increase in new development.

We identified 350 single family housing units built within the ESD over the eight years from 2000 to 2007, and found 166 ESD students residing in these new homes in Fall 2008, an average of 0.47 students per new home. The section of this report called "Housing Development and Student Generation" starting on page 29 includes tables showing the average number of ESD students per new home by location (inside and outside the City of Estacada), and by number of bedrooms in the home. Although there are 166 ESD students living in the housing added since 2000, overall District enrollment is 173 students less than it was in 2000-01, implying that the number of students living in homes built before 2000 has declined by more than 300 during the period.

INTRODUCTION

In Fall 2008 the Estacada School District (ESD) requested that the Portland State University Population Research Center (PRC) prepare enrollment forecasts for use in the District's planning. This study includes analysis of population, housing and enrollment trends affecting the District in recent years and forecasts of district-wide and individual school enrollments for the 2009-10 to 2013-14 school years. Information sources include the U.S. Census Bureau, birth data from the Oregon Center for Health Statistics, geographic shape files from Clackamas County and Metro, county population forecasts from the Oregon Office of Economic Analysis, employment trends and forecasts from the Oregon Employment Department, and housing development data from the City and County.

The District serves the City of Estacada and portions of unincorporated Clackamas County, notably the Eagle Creek and Barton communities. It covers more than 750 square miles of rural Oregon countryside in the Clackamas River area and includes considerable portions of the Mt. Hood National Forest. At the time of the 2000 Census, 18 percent of the District's population resided within the City of Estacada, while 82 percent of its population lived in the unincorporated areas.

Following this introduction are sections presenting recent population, housing, and enrollment trends within the District, and estimates of the average number of students living in recently built homes. Next are the results of the district-wide enrollment forecasts and individual school forecasts, and a description of the methodology used to produce them. The final section contains a brief discussion of the nature and accuracy of forecasts, and the Appendix contains a one page profile for each of the District's schools. Each profile includes the school's enrollment history and forecasts, and housing trends within its attendance area.

We would like to acknowledge (in alphabetical order) the help of the following individuals who contributed to the study by answering questions, providing local insight, or providing data:

- Judith Barmack, retired consultant
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- Ken Wheeler, Clackamas County Geographic Information Systems

POPULATION AND HOUSING TRENDS, 1990 to 2008

Between 1990 and 2000, total population within the ESD grew by six percent, from 12,291 persons to 12,974. In comparison, Clackamas County grew by 21 percent and the Portland metropolitan area grew by 27 percent. Although the area served by the ESD grew at a relatively slow rate, the population of the City of Estacada itself grew by 17 percent, adding about 350 residents during the decade. As a result of the faster growth within Estacada, city population as a share of the District's total grew from 16 percent in 1990 to 18 percent in 2000. Table 2 shows that average annual growth rates have been lower in the 2000s than in the 1990s for Clackamas County and the Portland area, but the City of Estacada's growth rate has accelerated and outpaced regional growth rates.

Table 2
City and Region Population, 1990, 2000, and 2008

				Avg. Annual Growth Rate	
	1990	**2000**	**2008**	**1990-2000**	**2000-2008**
City of Estacada	2,016	2,371	2,820	*1.6%*	*2.1%*
ESD Unincorporated	10,275	10,603	N/A	*0.3%*	
ESD Total	12,291	12,974	N/A	*0.5%*	
Clackamas County	278,850	338,391	376,660	*2.0%*	*1.3%*
Portland-Vancouver-Beaverton MSA*	1,523,741	1,927,881	2,191,785	*2.4%*	*1.6%*

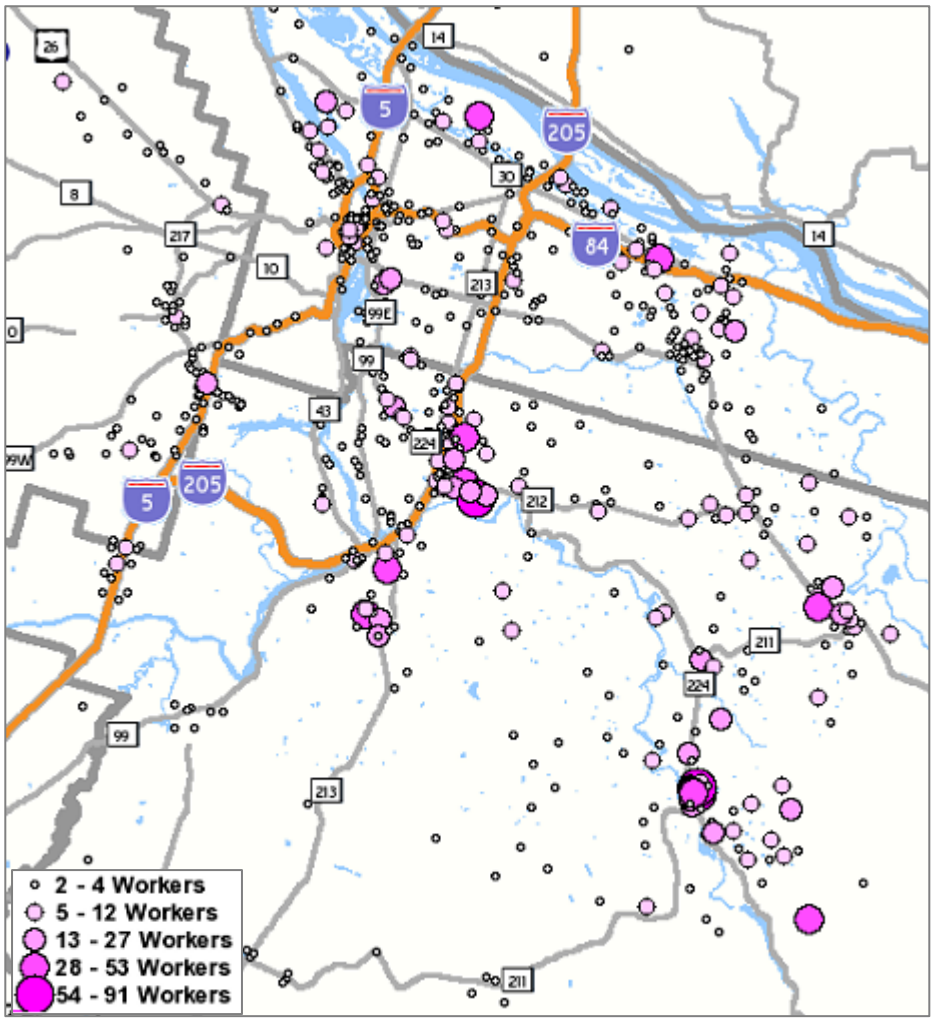
**Note: Portland-Vancouver-Beaverton MSA consists of Clackamas, Columbia, Multnomah, Washington, Yamhill (OR) and Clark and Skamania (WA) Counties.*

Sources: U.S. Census Bureau, 1990 and 2000 censuses; Portland State University Population Research Center, 2008 certfied estimates.

The District is part of the Portland metropolitan area labor market and most residents commute outside of the District to work, so population growth in the area depends to a great extent on the strength of the metro area's economy. Recent data show that only 15 percent of ESD workers have primary jobs within the District itself, including nine percent who work in the City of Estacada. Another 34 percent worked elsewhere in Clackamas County, and most of the rest worked in Multnomah (33 percent), Washington (eight percent), or Marion (three percent) counties. Map 1 shows concentrations of ESD

residents working in Estacada, Sandy, Oregon City, Gresham, Central Portland, industrial areas near the Portland airport, and locations near Clackamas Town Center and the I-205 & Oregon 212 interchange.[1] Table 3 from the same data source reports the number and share of all workers by place of work.

Map 1
Place of Work of Estacada S.D. Residents, 2006



[1]U.S. Census Bureau, LED Origin-Destination Database (2nd quarter 2006). Commute shed report for residents of Estacada School District. Includes workers at firms covered by unemployment insurance (excludes most agricultural jobs and self-employment). Report and map created on line at http://lehdmap3.did.census.gov/themap3/.

Table 3
Where ESD Residents Are Employed

Job Located Within*	Workers	Share
Clackamas County	2,342	*49%*
Estacada School District	708	*15%*
City of Estacada	413	*9%*
Multnomah County	1,610	*33%*
City of Portland	1,221	*25%*
Washington County	409	*8%*
Marion County	166	*3%*
Clark County (WA)	61	*1%*
All other locations	224	*5%*
Total Primary Jobs	**4,812**	***100%***

**Note: Indentation indicates that the area is also included wihin the area above it. For example, workers in the City of Estacada are also counted in the Estacada School District. Portions of the City of Portland are outside of Multnomah County, but few jobs are located in those areas.*

Source: US Census Bureau, LED Origin-Destination Data Base (2nd Quarter 2006). Jobs covered by unemployment insurance, generally excluding federal government, agricultural, self-employed and domestic workers. Includes at most one (primary) job per resident.

Between 2004 and 2007 Clackamas County added 12,200 jobs, nine percent over the three year period.[2] Near the end of 2007, the Oregon Employment Department summarized the County's robust employment growth:

> "Clackamas is the metro's fastest growing county, fueled by an expanding population and strength in trade and professional and business services. Its manufacturing sector has bucked national and state trends by adding hundreds of jobs, thanks in part to ongoing demand in aerospace- and defense-related industries. As measured by nonfarm jobs, Clackamas represents 15 percent of Portland's economy and has accounted for nearly 30 percent of its recent job growth."[3]

In hindsight, we know that employment in the U.S. and in Clackamas County was near its peak at about the time this statement was published. Since then, the County has lost 5,100 jobs (3.5 percent between January 2008 and January 2009), according to the Oregon Employment Department's most recent statistics. The Portland metropolitan area's unemployment rate rose from 5.2 percent in January 2008 (slightly below the U.S.

[2]"Current Employment by Industry," Oregon Employment Department, OLMIS. Average annual non-farm employment in Clackamas County was 135,900 in 2004 and 148,100 in 2007. January employment was 147,200 in 2008 and 142,100 in 2009.
[3]"Portland Metro Area: A Look at Recent Job Growth," Oregon Employment Department, OLMIS, December 20, 2007.

rate) to 9.8 percent in January 2009 (more than a percentage point above the U.S. rate). Typically, when the Portland area's unemployment rate is higher than the U.S. rate, population growth slows as a result of fewer people moving to the region.

Locally, employment gains have been made at the Estacada Industrial Park, which has developed in the last five years and now includes 12 locally owned companies employing more than 100 people.[4] However, regional job losses in manufacturing and retail, as well as losses in the construction and real estate sectors will likely result in fewer jobs available for the District's current or potential residents.

Population by Age Group

Table 4 shows population by age group for 1990 and 2000. Although the highest growth rates were for the oldest residents 85 and over and for adults age 45 to 59, the school age population also increased. The five percent increase in residents age 5 to 17 was similar to the overall six percent population increase. However, notice the growth in the age 10 to 17 population and loss in population under age 10. The losses paralleled the elementary enrollment losses of the late 1990s, and foreshadowed further ESD enrollment losses in the 2000s.

The declining population of young children is related to the large decrease in population age 25 to 39. Age 65 to 69 was the other age group that lost population in the decade. Nationwide, the age groups 25 to 34 and 65 to 69 also shrank in the U.S. between 1990 and 2000 because the cohort age 25 to 34 in 2000 was born during the late 1960s and early 1970s "baby bust" that followed the "baby boom," and those 65 to 69 were born during the depression era of the early 1930s, when births also fell from previous levels. The 30 to 34 and 65 to 69 year old populations also declined in Oregon between 1990 and 2000. To some extent, District declines in these age groups reflect these nationwide and statewide trends. However, the ESD's total population growth was much slower than the state and national growth, and its relative loss of young adult population was much greater.

[4]"Success of Estacada Industrial Park spurs talk of new urban renewal area." Daily Journal of Commerce. November 26, 2008.

Table 4

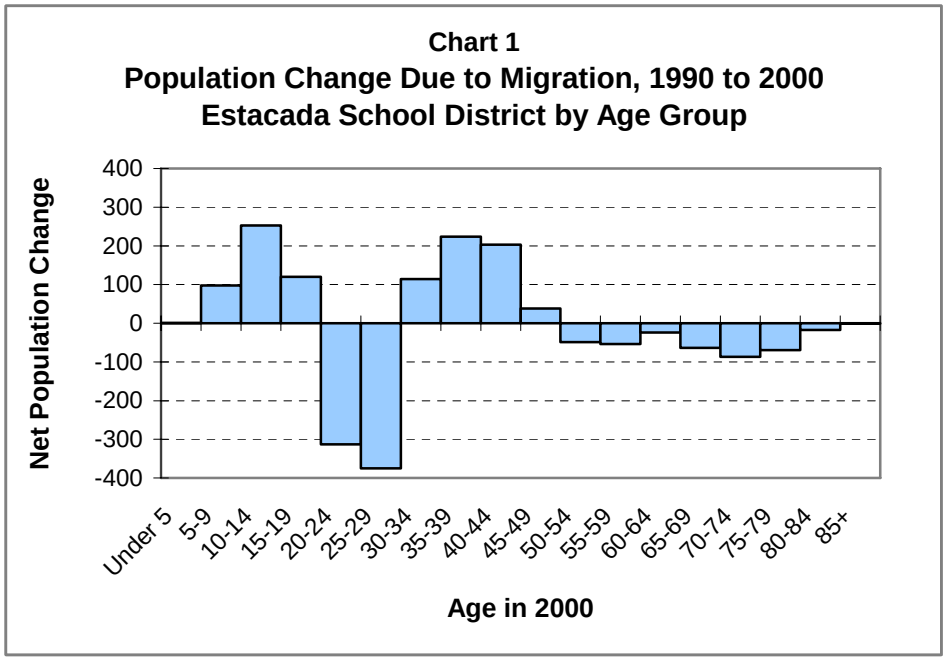
Population by Age Group
Estacada School District, 1990 and 2000

	1990	2000	1990 to 2000 Change	
			Number	Percent
Under Age 5	888	751	-137	*-15%*
Age 5 to 9	1,017	913	-104	*-10%*
Age 10 to 14	985	1,139	154	*16%*
Age 15 to 17	614	690	76	*12%*
Age 18 to 19	390	444	54	*14%*
Age 20 to 24	652	665	13	*2%*
Age 25 to 29	803	619	-184	*-23%*
Age 30 to 34	1,057	758	-299	*-28%*
Age 35 to 39	1,155	1,014	-141	*-12%*
Age 40 to 44	1,056	1,239	183	*17%*
Age 45 to 49	894	1,166	272	*30%*
Age 50 to 54	604	975	371	*61%*
Age 55 to 59	520	799	279	*54%*
Age 60 to 64	460	535	75	*16%*
Age 65 to 69	444	395	-49	*-11%*
Age 70 to 74	290	294	4	*1%*
Age 75 to 79	235	262	27	*11%*
Age 80 to 84	147	165	18	*12%*
Age 85 and over	80	151	71	*89%*
Total Population	**12,291**	**12,974**	**683**	***6%***
Total age 5 to 17	2,616	2,742	126	*5%*
share age 5 to 17	*21.3%*	*21.1%*		

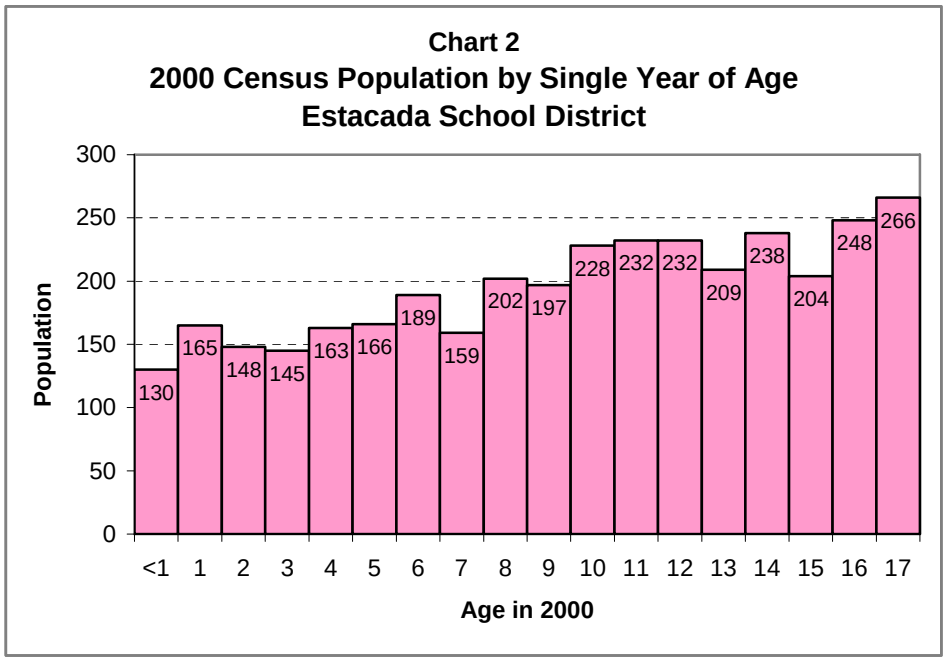
Source: U.S. Census Bureau, 1990 and 2000 Censuses; data aggregated to ESD boundary by Portland State University Population Research Center.

By "surviving" the 1990 population and 1990s births (estimating the population in each age group that would survive to the year 2000) and comparing the "survived" population to actual 2000 population counts by age group, we are able to estimate net migration by age cohort. Chart 1 shows estimated population change due to migration between 1990 and 2000 for each age group. For example, for the cohort age 20 to 24 in 2000, about 300 more people moved out of the ESD than into it during the 1990s. Conversely, about 200 more people who were age 40 to 44 in 2000 moved into the district than out of it during the 1990s. Net losses due to migration for the age groups between 20 and 29 and gains for ages 30 to 44 are typical for areas outside of urban centers, as young people move away for college and other opportunities, while slightly older adults settle in the area for home ownership or lifestyle choices. The lack of large retirement facilities

located within the District boundaries is likely reflected in the net out-migration of persons in each age group 50 and older.



Based on the 2000 population data by age group shown in Table 4, there were 67 percent more ESD residents age 35 to 49 than age 20 to 34. Because the City of Estacada and the surrounding rural areas are family oriented, with no college and predominately owner-occupied single family homes, there may always be fewer young adults. But the gap in recent years has been more extreme due to the contrast between the baby boom (now in their late 40s to early 60s) and baby bust (now in their 30s) populations in the county and state overall. The age of children is closely related to the age of their parents, as younger adults have young children and older adults are more likely to have teenagers or adult children. Chart 2 shows the single year population for children under age 18 in the ESD in 2000. The stair step pattern shows the extreme difference in population between the population of younger and older children in the District.



Births and Fertility Rates

The average number of births each year to residents of the ESD has been 15 percent less during the 2000s than during the 1990s, due to declining fertility rates and declining population of women in prime childbearing ages — 20s and 30s. Table 5 reports the number of ESD births each year from 1990 to 2007. Later, the "Enrollment Forecasts" section examines the relationship between births, migration, and subsequent school enrollments.

Fertility rates for the ESD in 2000 are shown in Chart 3. State of Oregon's fertility rates are also included. Rates are calculated for each age group by dividing the average annual number of births in the three year period around each census (1989 to 1991 and 1999 to 2001) by the female population counted in the census. For example, there were an average of 38 births per year to mothers age 20 to 24 in 1999 to 2001 and a population of 273 women age 20 to 24 counted in the 2000 Census. So the fertility rate in 2000 for women age 20 to 24 was 38/273 = 0.139 births per female, or 139 per thousand. For women in each age group under age 30, fertility rates in the ESD fell between 1990 and 2000. For women in each age group 30 and over, fertility rates increased. These trends paralleled the changes that occurred between 1990 and 2000 in Oregon and Clackamas

Table 5
Annual Births, 1990 to 2007
Estacada School District

Year	Births
1990	175
1991	158
1992	152
1993	163
1994	157
1995	165
1996	147
1997	138
1998	159
1999	138
2000	145
2001	133
2002	145
2003	134
2004	131
2005	125
2006	118
2007	120

Source: PSU-PRC estimates using Oregon Center for Health Statistics published zip code data and individual birth records.

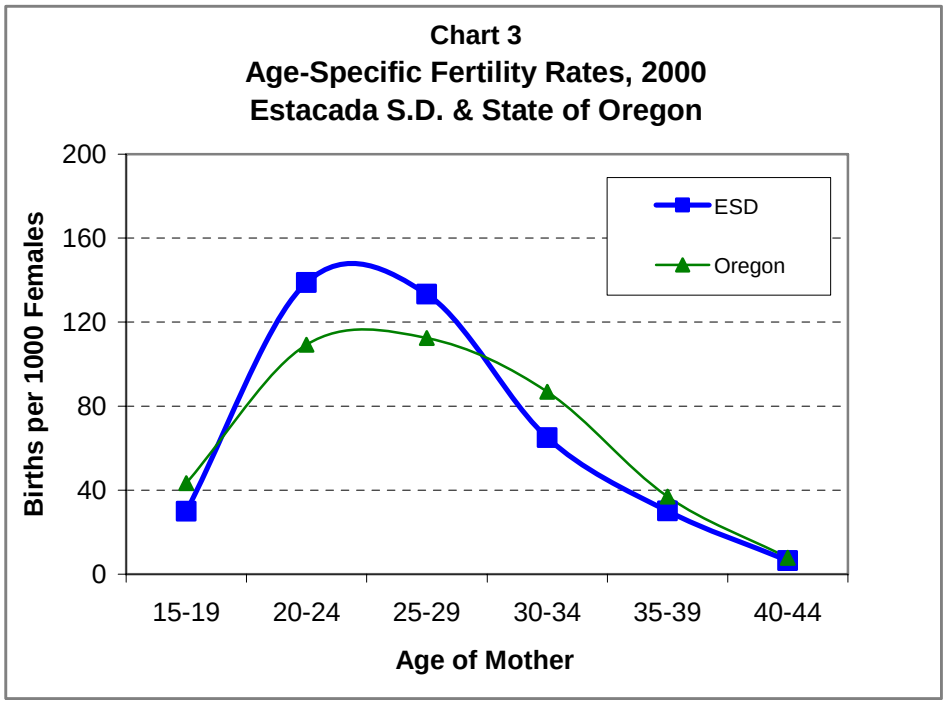
County rates. However, Chart 3 shows that, in the year 2000, ESD age-specific fertility rates for women age 20 to 29 remained higher than comparable rates for the State of Oregon, and fertility rates for women age 30 to 39 remained lower than the state rates.

Since 2000, fertility rates have continued to increase for women age 30 and over in the U.S. and in Oregon. Preliminary 2006 data for the U.S. indicates that birth rates for women in their 30s were higher than at any time since 1964. In 2004 and 2005, rates for women under age 25 reached the lowest levels ever reported, but they increased slightly in 2006.[5]

Another common measure of fertility is the Total Fertility Rate (TFR). This is an estimate of the number of children that would be born to the average women during her

[5] *Births: Preliminary data for 2006.* National vital statistics reports; vol 56 no 7. National Center for Health Statistics. 2007 and *Births: Final data for 2005.* National vital statistics reports; vol 56 no 6. National Center for Health Statistics. 2007. Rates were lowest for women age 20 to 24 in 2004 and for women age 15 to 19 in 2005.

child-bearing years, based on age-specific fertility rates observed at a given time. The TFR for the District was 2.02 in 2000, down from 2.11 in 1990. The Clackamas County and State of Oregon TFRs also fell between 1990 and 2000. The County rates were 2.07 in 1990 and 2.02 in 2000, and the State rates were 2.06 in 1990 and 1.98 in 2000.



Housing Growth and Characteristics

During the 1990s, the number of housing units within the District's boundaries increased by about 180. The smaller increase of about 150 households (occupied housing units) is related to a slightly higher number of vacant or seasonal homes in 2000 compared with 1990. Of greater relevance to school enrollments is the stagnation in the number of households with at least one child under the age of 18. In net terms, all of the increase in the number of ESD households between 1990 and 2000 was accounted for by households without children under 18. As a result, the share of ESD households with children fell from 41 percent in 1990 to 40 percent in 2000. Still, the share remained higher than the Portland metro area's 35 percent share. The average number of persons per household increased from 2.79 in 1990 to 2.84 in 2000. These housing figures from the decennial censuses are presented in Table 6.

Table 6
Estacada School District
Housing and Household Characteristics, 1990 and 2000

	1990	2000	1990 to 2000 Change	
			Number	Percent
Housing Units	4,583	4,762	179	*4%*
Households	4,346	4,495	149	*3%*
Households with children under 18 *share of total*	1,778 *41%*	1,777 *40%*	-1	*0%*
Households with no children under 18 *share of total*	2,568 *59%*	2,718 *60%*	150	*6%*
Household Population	12,112	12,756	644	*5%*
Persons per Household	2.79	2.84	0.05	*2%*

Source: U.S. Census Bureau, 1990 and 2000 Censuses; data aggregated to ESD boundary by Portland State University Population Research Center.

Table 7 shows the number of housing units authorized in the City of Estacada each year since 1996. A downturn in the number of housing units permitted in Oregon and the U.S. began in 2006.[6] In contrast, in the City of Estacada in 2007, 46 single family homes were

Table 7
Housing Units Authorized by Building Permits

	City of Estacada	
Year Permit Issued	Single Family	Multiple Family
1996	8	24
1997	6	3
1998	9	0
1999	2	0
2000	0	0
2001	5	0
2002	2	0
2003	2	0
2004	9	0
2005	12	0
2006	7	0
2007	46	0
2008 (preliminary)	13	0

Source: U.S. Census Bureau, Residential Construction Branch. Data available online at http://censtats.census.gov/bldg/bldgprmt.shtml.

[6]U.S. Census Bureau, Residential Construction Branch. Data available for the U.S. and states at http://www.census.gov/const/www/C40/table2.html, and for counties and cities at http://censtats.census.gov/bldg/bldgprmt.shtml.

permitted, more than in the previous 8 years combined. In 2008, residential construction began to slow again, reflecting the slow demand for new homes in the nation and locally.

Tax assessor data provided by the Clackamas County Geographic Information Systems (GIS) Department and spatially aligned with the District's boundaries indicate that 350 new single family homes were built within the District between 2000 and 2007. The City of Estacada accounts for 28 percent of the homes built since 2000, while the Clackamas County unincorporated area accounts for nearly all of the rest. A small portion of the new City of Damascus is within the ESD, and one new home was built there. Homes that are demolished or removed are not subtracted from the number of new homes, so the *net* change in the District's housing stock may be lower than the number of new homes, particularly in the rural portions of the District where some new homes are replacing previously existing homes. Table 8 shows the annual number of homes built within the ESD by jurisdiction.

Table 8
Estacada School District
New Single Family Homes By Jurisdiction

	Year Built								2000-07
Jurisdiction	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**Total**
City of Estacada		9	8	11	11	9	11	38	97
City of Damascus						1			1
Unincorporated	16	20	12	37	42	35	46	44	252
District Total	**16**	**29**	**20**	**48**	**53**	**45**	**57**	**82**	**350**

Source: Compiled by Population Research Center, PSU. Based on year built, building class, and land class codes from county tax assessors information, provided by Clackamas County GIS, January 2009.

Table 9 compiles the same new single family housing data by elementary attendance area. Current attendance areas (established in 2002) are used for all years in the table. For the entire eight year period, the number of new homes is relatively balanced between the three elementary areas. In 2007, when development spiked in newer subdivisions within the City of Estacada, over half of all new homes were built in the River Mill attendance area.

Table 9
Estacada School District
New Single Family Homes By Elementary Attendance Area

	Year Built								2000-07
Elementary Area	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**Total**
Clackamas River	6	11	4	6	18	17	21	23	106
Eagle Creek	8	10	7	24	18	20	21	11	119
River Mill	2	8	9	18	17	8	15	48	125
District Total	**16**	**29**	**20**	**48**	**53**	**45**	**57**	**82**	**350**

Source: Compiled by Population Research Center, PSU. Based on year built, building class, and land class codes from county tax assessors information, provided by Clackamas County GIS, January 2009.

When the previous demographic study and enrollment forecast was completed four years ago in February 2005, it appeared that Estacada was on the verge of a boom in housing development. Several subdivisions had recently been approved by the Estacada Planning Commission, and others had been submitted or proposed, accounting for several hundred new building lots. The cost of residential land was soaring due to peaking demand in areas closer to Portland such as Happy Valley and Oregon City, and more than 150 homes were being built each year in the City of Sandy. In spite of relatively long commutes and limited local commercial services, Estacada was a logical next frontier in residential development, and remains so. The gradual increase in new housing within the District this decade and the spike in the City of Estacada in 2007 shows that some of the expected housing growth did come to fruition. However, with the current slow demand for homes and large inventory in the Portland region, development in Estacada has stalled.

Table 10 summarizes recent subdivision activity within the District, including developments in which homes have been completed (section A) and three categories of residential land with approved subdivisions that are not yet built (sections B, C, and D). Currently, there is little or no development activity underway. Some of these potential developments may have their preliminary approval expire, properties may change hands, and specific plans may change, but the table illustrates the potential for several hundred new homes to be built within Estacada after market conditions improve.

Table 10

Housing Development Approved 2001-2008, Estacada School District

Elementary Area	Subdivision Name	Status	Lots/ Units
	A. Platted, homes built		
RMES	Cazadero Heights, Phases 1-3	66+ homes built	71
RMES	Regan Hill Heights, Phase 1	24+ homes built	50
CRES	Estacada Ridge Estates	6+ homes built	9
RMES	Westland Townhomes	completely built	13
ECES	Eagle Country Estates (unincorporated)	4 homes built	6
RMES	Straightline Estates (now marketed as Byrd's Nest)	12 homes built	21
CRES	Caden Crest	9 homes built	18
	B. Platted, all lots vacant		
RMES	Cascadia Ridge, Phase 1	platted, vacant	17
RMES	Cascadia Ridge, Phase 2	platted, vacant	56
	C. Granted preliminary approval and subsequent extensions		
CRES	Devey Estates (#2004-2)	infrastructure in, extension until Oct. 2010	6
CRES/RMES	Byrd's Nest	extension until Feb '10	30
CRES	Oakview	extension until April '09	37
CRES	La Collina (#2005-3)	extension until July '09	42
RMES	Cascadia Ridge, remaining phases	extension until May '09	89
	D. Granted preliminary approval, future development likely to differ from original plan		
RMES	Hilands, Phase 1 (#2005-4)		5
CRES	Hilands, Phase 2 (#2006-2)		11
RMES	Regan Hill Heights, remaining phases		93
RMES	Campanella Estates		265
RMES	#2007-1		5

Sources: Compiled by Population Research Center, PSU from information from City of Estacada. The number of units sometimes changes between initial approval and final construction, and may include previously existing homes, so unit counts in this table may differ slightly from those published elsewhere.

The impact of future housing development on school enrollment will depend on the number of new homes and the share of those homes that are occupied by families with children. The section of this report titled "Housing Development and Student Generation" presents data on the average number of ESD students in the District's new housing units, quantifying the actual relationship between housing and school enrollment.

ENROLLMENT TRENDS

After reaching a peak of over 2,400 students in the mid-1990s, K-12 enrollment in the Estacada School District fell to a 20 year low of 2,123 in Fall 2007. Enrollment growth of 16 students brought the total to 2,139 in Fall 2008.

The steepest declines in elementary enrollment have occurred since the 1999-2000 school year. Junior High enrollment subsequently began to decline after the 2002-03 school year, and Senior High enrollment peaked in the 2003-04 school year. The chronological pattern suggests that the relative size of the age cohorts progressing through the grade levels, rather than out-migration, is the main cause of the enrollment losses. The Fall 1997 kindergarten class (now in high school) was the smallest of the 1990s, and none of the kindergarten classes entering since Fall 2000 have been as large as those that entered between 1991 and 1996.

The enduring pattern of small classes entering the District has resulted in enrollment losses at all levels in the past five years, including 78 fewer K-6th grade students (7.0 percent), 30 fewer 7th-8th grade students (7.9 percent), and 43 fewer 9th-12th grade students (5.4 percent) in 2008-09 compared with 2003-04.

On the next page, Table 11 summarizes the enrollment history for the District by grade level annually from 2003-04 to 2008-09.

Table 11
Estacada School District
Enrollment History, 2003-04 to 2008-09

	Historic Enrollment					
Grade	**2003-04**	**2004-05**	**2005-06**	**2006-07**	**2007-08**	**2008-09**
K	151	132	130	146	136	137
1	136	160	148	141	137	123
2	151	151	153	145	146	144
3	146	154	159	162	163	140
4	179	145	162	169	149	166
5	177	181	147	152	139	155
6	175	180	172	155	157	172
7	192	199	183	175	166	180
8	188	183	190	186	190	170
9	222	192	193	189	190	199
10	191	216	189	202	180	184
11	192	173	195	187	176	181
12	190	171	171	197	193	188
UE[1]	0	0	0	1	1	0
Total[2]	**2,290**	**2,237**	**2,192**	**2,207**	**2,123**	**2,139**
One Year Change:		*-53 (-2.3%)*	*-45 (-2.0%)*	*15 (0.7%)*	*-84 (-3.8%)*	*16 (0.8%)*
Five Year Change:						*-151 (-6.6%)*
K-6	**1,115**	**1,103**	**1,071**	**1,071**	**1,028**	**1,037**
One Year Change:		*-12 (-1.1%)*	*-32 (-2.9%)*	*0 (0.0%)*	*-43 (-4.0%)*	*9 (0.9%)*
Five Year Change:						*-78 (-7.0%)*
7-8	**380**	**382**	**373**	**361**	**356**	**350**
One Year Change:		*2 (0.5%)*	*-9 (-2.4%)*	*-12 (-3.2%)*	*-5 (-1.4%)*	*-6 (-1.7%)*
Five Year Change:						*-30 (-7.9%)*
9-12	**795**	**752**	**748**	**775**	**739**	**752**
One Year Change:		*-43 (-5.4%)*	*-4 (-0.5%)*	*27 (3.6%)*	*-36 (-4.6%)*	*13 (1.8%)*
Five Year Change:						*-43 (-5.4%)*

1. "UE" is ungraded elementary; included in grade K-6 totals.

2. Does not include enrollment at Estacada Alternative High School.

Source: Estacada School District

Private School Enrollment, Home School, and Inter-District Transfers

According to the Oregon Department of Education's (ODE's) lists of private schools and other sources, there are no private schools in Estacada serving elementary or secondary grades. Private schools nearest to the ESD are in Boring, Damascus, and Molalla. It is likely that some ESD residents attend these and other private schools. The best estimate of private school enrollment for ESD residents comes from the 2000 Census: responses on the "long form" indicate that just under than 300 ESD residents attended private

schools in 2000, a **10 percent** share of all K-12 residents who were enrolled in public or private schools.[7] At that time, the share of ESD residents attending private schools was about the same as the private school share for the rest of Clackamas County. Although the ESD's private school share was relatively low, it increased from seven percent in 1990 to 10 percent in 2000.

Another difference between public school enrollment and total school age population can be attributed to home schooling. Home schooled children age 7 to 18 living in the District are required to register with the Clackamas Educational Service District (CESD), though the statistics kept by the CESD are not precise because students who move out of the area are not required to drop their registration. Students who enroll in public schools after being registered as home schooled are dropped from the home school registry. Currently (February 2009), there are 143 ESD residents registered. The current number of registered home school students represents about **six percent** of ESD's 1st to 12th grade population.

Private schools and home schooling help to explain the difference between the number of school-age children living in the District and the number attending District schools. Both represent "outflow" from the District. That is, children eligible but not attending District schools. The other "outflow" consists of District residents who attend public schools in other school districts. There is also a related "inflow" of residents from other districts. Under state rules, families must request and be granted an inter-district transfer from their resident district and the transfer must also be approved by the district that they want to attend. Table 12 shows that there are relatively few transfers into or out of the ESD each year, so inter-district transfer agreements have almost no impact on the District's enrollment.

[7] U.S. Census Bureau, 2000 Census, Summary File 3, Table P36.

Table 12
Inter-District Transfers

October 2003	K-6	7-8	9-12	Total
Into Estacada S.D.				0
Out of Estacada S.D.	5		2	7
Net	**-5**	**0**	**-2**	**-7**
October 2004				
Into Estacada S.D.	3		1	4
Out of Estacada S.D.	9	3	12	24
Net	**-6**	**-3**	**-11**	**-20**
October 2005				
Into Estacada S.D.	3	1	8	12
Out of Estacada S.D.		2	10	12
Net	**3**	**-1**	**-2**	**0**
October 2006				
Into Estacada S.D.	7	3	4	14
Out of Estacada S.D.	1		11	12
Net	**6**	**3**	**-7**	**2**
October 2007				
Into Estacada S.D.	4	1	2	7
Out of Estacada S.D.	6		3	9
Net	**-2**	**1**	**-1**	**-2**
October 2008				
Into Estacada S.D.	2	1		3
Out of Estacada S.D.	3		3	6
Net	**-1**	**1**	**-3**	**-3**

Source: Estacada School District

Hispanic Enrollment Growth

One of the factors that has prevented ESD enrollment from falling even further is the District's growing Hispanic population. Since 2000-01, Hispanic enrollment has grown by 138 students while the number of non-Hispanic students has decreased by over 300 students. Even so, the ESD's 12 percent Hispanic enrollment share remains lower than the State of Oregon's 17 percent share.

International migration and higher fertility rates among foreign-born Latinas play a role in the Hispanic enrollment growth, but the most important factor is the age distribution of adults. Among non-Hispanics in Oregon, there are currently many more adults in their

40s and 50s than in their 20s and 30s, a result of the baby boom and baby bust cycle that the U.S. experienced. Their children are older on average, and each graduating 12th grade class has been replaced by a smaller incoming kindergarten class. Conversely, the Hispanic population currently includes more adults in their 20s and 30s than in their 40s and 50s, with younger children and fewer teenagers. In the late 1990s, Hispanic population growth contributed mostly to enrollment growth in elementary grades — in 2000-01, 72 percent of ESD's Hispanic students were in grades K-6. Now that the Hispanic population is more established in the community, the largest Hispanic enrollment growth has been at the high school level, and the age distribution of Hispanic students is almost identical to that of non-Hispanic students.

Table 13 on the next page reports Hispanic K-12 enrollment by school level in four year intervals for the years 2000-01, 2004-05, and 2008-09.

Enrollment Trends at Individual Schools: Elementary Schools

Enrollment losses the past two years at Clackamas River Elementary School are partly due to bigger 6th grade classes being replaced by much smaller kindergarten classes. The 60 student loss between 2006-07 and 2008-09 is composed of a loss of 33 students due to the size of outgoing 6th grade classes relative to incoming kindergarten classes and a net loss of 27 students leaving from other grade levels. Eagle Creek Elementary School experienced a significant 84 student enrollment loss between 2004-05 and 2007-08, but rebounded by 24 students in 2008-09.

In contrast to the two elementary schools with net losses over the past five years, River Mill Elementary School has gained students — 44 in the three year period between 2005-06 and 2008-09. Kindergarten classes at RMES in the three most recent years have been consistently larger than in the three previous years, and the school has also gained students at other grade levels. Some of the growth is due to the new housing in the RMES attendance area. Among RMES' 365 students in Fall 2008, at least 36 (one in ten) live in homes built since 2004. Fewer students at the other elementary schools live in new homes. Approximately 18 ECES students and 22 CRES students reside in homes built since 2004.

Enrollment Trends at Individual Schools: Secondary Schools

For the most part, enrollments at the Junior High School and High School have not experienced huge year-to-year changes, nor have their enrollments been falling consistently. Their enrollments largely depend on the sizes of classes advancing from the previous instructional level. However, both have experienced net losses over the past five years. Estacada Junior High School enrolled 30 fewer students and Estacada High School enrolled 43 fewer students in 2008-09 compared with 2003-04. The high school trends tabulated in this report do not include students at Estacada Alternative High School.

Total enrollments at each of the District's schools from 2003-04 to 2008-09 are shown in Table 14 on the next page. Enrollment change is also shown for the five year period.

HOUSING DEVELOPMENT AND STUDENT GENERATION

For school districts with potential for housing growth, understanding the existing demographics of the district is not enough. The impact of new residential development on school enrollment is a common concern yet, without detailed analysis, community members and school officials go uninformed. Residential development, such as new subdivisions, typically contributes to enrollment growth at local schools. But the size of that contribution is often smaller than most people realize. For example, the average number of students generated by each new home is often lower than expected. Potential gains can vary widely – depending on characteristics, such as the type and size, of the housing being developed. Meanwhile, demographic trends in *existing* homes can offset (or exacerbate) potential gains, as long-time residents age, including their children. This section covers these issues, presenting estimates of the number of students generated by new housing ("student generation") within the ESD. This information informs the enrollment forecasts, but it also can be used by District staff on an *ad hoc* basis – to estimate the number of potential students generated by new housing once proposed or approved.

We estimated the Fall 2008 number of students per housing unit built between 2000 and 2007 in a geographic information system (GIS), matching student addresses with tax lots and their associated attributes. Attribute data from the Clackamas County tax assessor's office allowed us to determine whether each tax lot included a home, the year that the home was built, the type of home, and the lot size. Student records contain no personally identifiable data such as names or birth dates, and the information is reported only in aggregate or summary form, such as in the tables in this section.

For the District, the average number of K-12 students per recently built single family housing unit was 0.47, just under one student for every two homes. This rate is similar to

rates we have calculated in recent studies for other area school districts.[8] New homes within the City of Estacada have slightly more students per home (0.54) than those in the District's unincorporated area (0.45). Table 15 summarizes these results.

Table 15
Average Number of ESD Students per New Home, Fall 2008
Single Family Homes Built 2000 to 2007 by Jurisdiction

	Grade Level			
Jurisdiction	**K-5**	**6-8**	**9-12**	**K-12**
Homes built 2000 to 2007 -- ESD	0.28	0.06	0.13	**0.47**
City of Estacada	*0.32*	*0.07*	*0.14*	***0.54***
Clackamas County Unincorporated	*0.27*	*0.05*	*0.13*	***0.45***

Source: Data compiled by PSU-PRC, using geographic shape files and tax lot attribute data from Clackamas County GIS. Housing unit counts were determined by PSU-PRC using the attribute data. Includes single family and manufactured homes on individual taxlots; does not include apartment units or homes in manufactured home parks.

Because the tax assessor's data includes information about the number of bedrooms for homes in Clackamas County, we were able to compare student generation from new homes by the number of bedrooms in the home. Table 16 and Chart 4 illustrate that family sizes are larger in homes with more bedrooms. New homes with one or two bedrooms average very few ESD students per home, whereas ESD homes with four or more bedrooms average nearly one student per home. Although the highest rates are for homes with four or more bedrooms, most students live in three bedroom homes, because they are the most common. Among the homes built between 2000 and 2007 for which the number of bedrooms is known, 10 percent have one or two bedrooms, 71 percent have three bedrooms and 19 percent have four or more bedrooms.

[8]For example, 0.45 in the Oregon City School District, 0.57 in the Canby School District, and 0.50 in the Molalla River School District.

Table 16

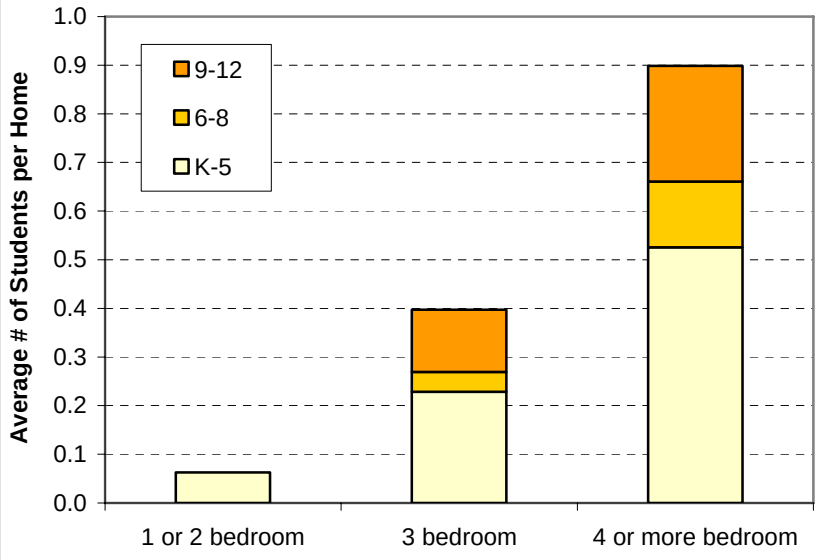
Average Number of ESD Students per New Home, Fall 2008
Single Family Homes Built 2000 to 2007 by Number of Bedrooms

	Grade Level			
Number of Bedrooms	**K-5**	**6-8**	**9-12**	**K-12**
Homes built 2000 to 2007 -- ESD	0.28	0.06	0.13	**0.47**
One or two bedroom homes	*0.06*	*0.00*	*0.00*	***0.06***
Three bedroom homes	*0.23*	*0.04*	*0.13*	***0.40***
Four or more bedroom homes	*0.53*	*0.14*	*0.24*	***0.90***

Source: Data compiled by PSU-PRC, using geographic shape files and tax lot attribute data from Clackamas County GIS. Housing unit counts were determined by PSU-PRC using the attribute data. Includes single family and manufactured homes on individual taxlots; does not include apartment units or homes in manufactured home parks.

Chart 4

ESD Students per New Home*, Fall 2008



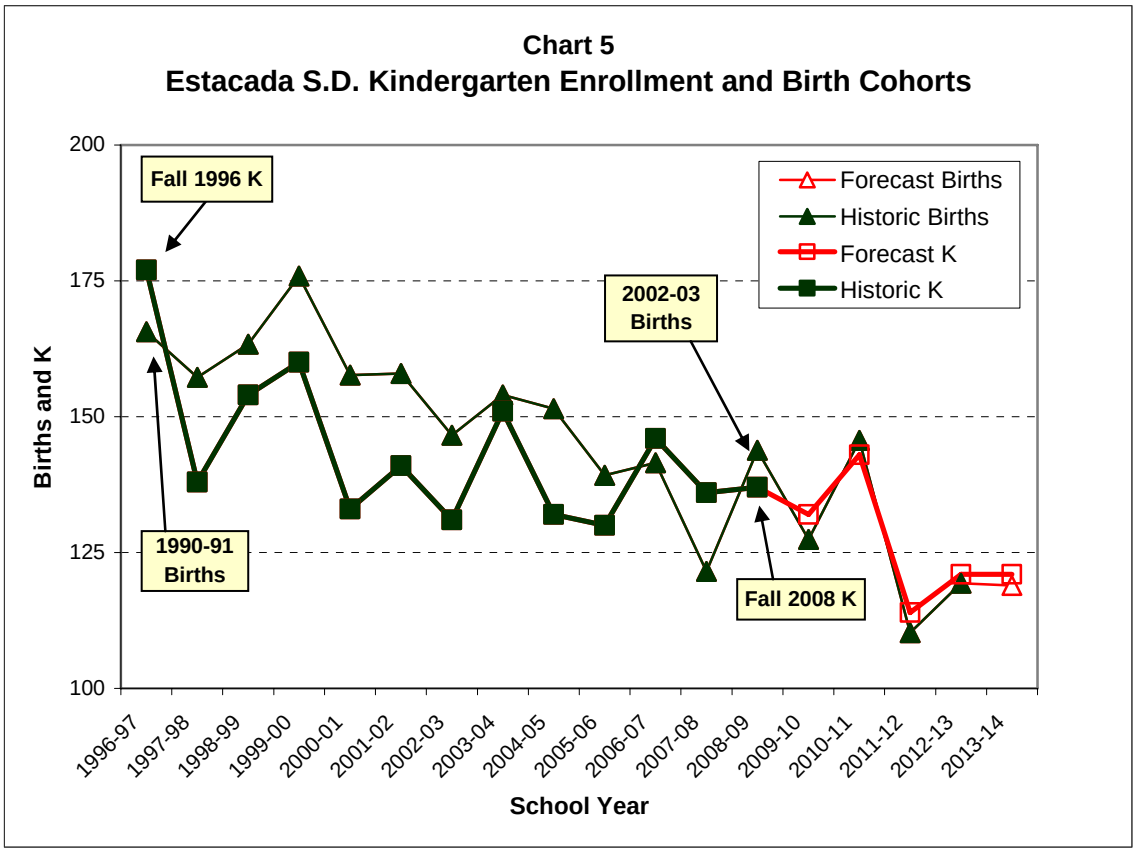
**Single Family Homes built 2000 to 2007*

ENROLLMENT FORECASTS

District-wide Enrollment Forecast — Methods and Data

These enrollment forecasts rely on input from three general sources of information: *births*, recent *enrollment history*, and *housing development* data.

Births to women residing within the District were estimated for the years 1990 to 2007, using location-specific birth records obtained through a data use agreement with the Oregon Center for Health Statistics. This data provides a closer fit than the annual data published by zip code, both spatially and chronologically, as births can be grouped by school attendance area and by kindergarten cohort (September to August). Chart 5 shows the correspondence between births and kindergarten enrollment. The number of students enrolled in ESD kindergarten classes in the past decade has fluctuated, but a downward



trend similar to the trend in births to District residents is evident in the chart. The chart also shows that the number of kindergarten students is often close to or greater than the number of births five years earlier. This shows that the ESD gains young children due to migration, given that some kindergarten-age ESD residents are not enrolled in ESD kindergartens (they attend private schools or are home schooled). Many children move into and out of the district between birth and age five, so the size of the kindergarten class can not be predicted precisely from birth trends. But for nine of the past 12 years the direction of change in kindergarten enrollment has matched the direction of change in birth cohorts. During the period, the number of ESD kindergarten students has remained within 15 percent above or below the corresponding number of births. Because the number of births increased slightly between 2002-03 and 2003-04, an increase in kindergarten enrollment is forecasted for Fall 2009. The steep decrease in kindergarten forecasted for Fall 2010 corresponds to the low birth total in 2004-05.

Several years of recent ESD *enrollment history* were evaluated to develop initial grade progression rates (GPRs) for the forecast. The GPR is the ratio of enrollment in a specific grade in one year to the enrollment of the same age cohort in the previous year; for example, the number of students enrolled in second grade this year divided by the number of students enrolled in first grade last year. Depending on the school district, rates for some grades are typically high because new students enter the District from private schools at particular grades. It is common to see higher GPRs for the K-1st and 8th-9th grade transitions. In grades 10, 11, or 12, low GPRs can indicate that students are leaving high school or being retained at lower grade levels. But for most elementary grades, if net migration is zero and students are not held back for academic reasons, one can expect GPRs very close to 1.00.

In 2007-08, when the District had its largest enrollment loss, many grades had lower than usual GPRs. This year, the GPRs were, on average, higher than long term trends, indicating net in-migration to the District. Sometimes the annual variation can be explained by factors such as economic cycles or new housing, but in a District with a relatively small population, the movement of several families with children into or out of the District in a given year can impact GPRs in a way that is impossible to predict.

Average GPRs calculated over a longer period are more representative of typical mobility trends. Table 17 compares average rates from the five year forecast with rates for each of the past two years. In general, the forecast GPRs are similar to the historic averages, with the exception of grades 11 and 12, which are higher. The higher rates for 11th and 12th grade are based on enrollment data from the most recent three years that suggest more students are remaining in high school than in previous years.

Table 17

Grade Progression Rates* Estacada S.D., Historic and Forecast

Grade Transition	2003-04 to 2008-09 Historic (5 year average)	2008-09 to 2013-14 Forecast (5 year average)
K-1	1.02	1.03
1-2	1.03	1.02
2-3	1.04	1.04
3-4	1.01	1.02
4-5	0.97	0.99
5-6	1.06	1.05
6-7	1.08	1.07
7-8	1.01	1.01
8-9	1.03	1.03
9-10	0.98	0.98
10-11	0.93	0.97
11-12	1.00	1.04

**Ratio of enrollment in an individual grade to enrollment in the previous grade the previous year.*

The link between *housing development* and school enrollment is less certain than the link between births and kindergarten or the progression from one grade to the next, and more judgment is required to integrate housing data into the forecast. Because the population in Oregon and the U.S. has aged and fertility rates have declined, fewer households include young children, reducing the impact of housing growth on school enrollment growth.

The "Population and Housing Trends" section of this report illustrated the potential housing growth that could occur on existing residentially zoned land within the City of

Estacada. In addition to the land on which subdivisions gained preliminary approval, there have been several recent annexations and zone changes that have added more residential capacity within the City's boundaries. This differentiates Estacada from other nearby cities that may be less able to accommodate large scale development in the short or mid- term. Specifically, Canby, Oregon City, and Sandy have future residential land within their Urban Growth Boundaries (UGBs) but limited residential land within their city boundaries, and require voter approval for annexations; Damascus has a large land area but must complete its comprehensive plan and extend sewer infrastructure; Molalla has a deficit of residential land within its UGB based on its 2027 population projection. These cities may have other advantages, and their residential capacities may not be an issue in the current slow growth environment. However, when the housing market does rebound, Estacada is poised to capture a share of the region's demand.

The ESD enrollment forecasts prepared four years ago included a "status quo" scenario and an "increased housing" scenario. After that forecast was prepared, there was more development than in the early 2000s, but much less than anticipated under the "increased housing" scenario. In terms of expectations of new housing, the forecasts included in this study are closer to the "status quo" because they assume that new construction has reverted to the low level of the 1990s and early 2000s, and will remain low through at least 2010. Because renewed housing growth is a possibility by 2011, modestly higher GPRs for some grades are implemented beginning in the 2011-12 school year, contributing about 30 more students to the District's K-12 enrollment by 2013-14 than if the 2009-10 and 2010-11 rates were held constant.

District-wide Enrollment Forecast — Summary

Total K-12 enrollment is forecast to decline next year, by 24 students (1.1 percent). Small declines ranging from 11 to 37 students are also forecasted for each of the following four years. Overall, for the five year forecast period, K-12 enrollment is forecasted to be 117 students (5.5 percent) less in 2013-14 than in 2008-09.

All instructional levels have a net enrollment loss in the five year forecast. Because of the long term decline in births to District residents, incoming kindergarten classes are

expected to be relatively small throughout most of the forecast period. For that reason, elementary school enrollments experience the largest decline of 77 students (7.4 percent) between 2008-09 and 2013-14.

After an initial increase of 14 students due to a large class entering 7th grade in Fall 2009, junior high school enrollment is also forecasted to decline. The net loss amounts to 24 students (6.9 percent) between 2008-09 and 2013-14.

High school enrollment is forecast to be relatively stable, with only small increases or decreases each year. This is due to the relatively large classes now in grades 4 through 8, and the expectation that the District will continue to add students at grades 7 and 9, as it has in the past. Continued success at discouraging students from dropping out will also help sustain enrollment at the high school level.

Table 18 presents figures on which these summaries are based. It includes grade level forecasts for the ESD for each year from 2009-10 to 2013-14. It also includes summaries by elementary, junior high, and high school levels (K-6, 7-8, and 9-12). Six years of historic enrollment figures facilitate comparisons between historic and forecasted enrollments (summarized by one and five year periods).

Individual School Forecasts

We prepared forecasts for individual schools under a scenario in which current boundaries and grade configurations remain constant. Program changes, school choice policies, or other decisions about individual schools and the students they serve could impact enrollment in ways that these forecasts do not anticipate. The individual school forecasts depict what future enrollments might be if today's facilities, programs, and boundaries remain unchanged.

The methodology relies on unique sets of grade progression rates for each school and the ratio of kindergarten enrollment to lagged births within each school's attendance area. New kindergarten classes were forecast each year based on recent trends and birth cohorts within elementary attendance areas. Subsequent grades were forecast using GPRs influenced by district-wide rates, historic observations at individual schools, and expected increases or decreases in the level of future housing growth. The final forecasts for individual schools are controlled to match the district-wide forecasts.

Among the District's elementary schools, continued enrollment losses are forecast at the two schools that have already lost enrollment in the last five years — Clackamas River and Eagle Creek. Each of the two schools is forecasted to lose about 40 students over the next five years. There is more uncertainty about the kindergarten class size at the school level than at the district level, so the losses may be less severe if new kindergarten classes are larger than expected. The number of kindergarten students averages about 40 per year at CRES and 42 per year at ECES over the five year forecast period. More stable enrollment is forecast at River Mill. The new homes that generated additional elementary students in the last two years may also include younger siblings yet to enroll, although few additional homes are expected to be built. RMES also gains more students due to migration each year than the other two schools. If the current economic downturn continues, and movement of families with children into the ESD slows, RMES may join CRES and ECES in showing an enrollment loss.

Migration, mobility, and school choices including private and charter schools and home schooling can influence enrollments at the secondary level as well as the elementary level, but enrollment changes at Estacada Junior High and Estacada High School depend largely on fluctuations in the size of individual classes. For example, EHS is forecast to lose 15 students next year due to a relatively small class entering 9th grade. Because the ESD only has one school at each secondary level, the junior high and high school trends described in the "District-wide Enrollment Forecast — Summary" above are also applicable to the individual schools.

Table 19 on the next page presents the enrollment forecasts for each school, grouped by school level. Profiles in the Appendix for each school include enrollment history and forecasts, school capacities, and housing development information for each school's attendance area.

FORECAST ERROR AND UNCERTAINTY

Forecasts should be understood to represent a range of outcomes even though discrete numbers are provided. Due to the nature of forecasting, there is no way to estimate a confidence interval as one might for data collected from a survey. The best way to measure potential forecast error is to compare actual enrollments with previous forecasts that were conducted using similar data and methodologies.

Table 20 compares the actual Fall 2008 ESD enrollment by grade level with the 2008-09 forecasts prepared nearly four years earlier. Although less new housing was developed than expected under the "increased housing" scenario, the 2008-09 District total in that forecast was remarkably accurate. The "increased housing" forecast of 2,118 was 21

Table 20
Fall 2008 Enrollment Compared to February 2005 Forecasts By Grade Level

		"Status Quo" forecast[1]			"Increased Housing" forecast[2]		
Grade	**Actual**	**Fcst.**	**Diff.**	**Error**	**Fcst.**	**Diff.**	**Error**
K	137	120	-17	*-12.4%*	122	-15	*-10.9%*
1	123	129	6	*4.9%*	133	10	*8.1%*
2	144	139	-5	*-3.5%*	146	2	*1.4%*
3	140	148	8	*5.7%*	154	14	*10.0%*
4	166	147	-19	*-11.4%*	154	-12	*-7.2%*
5	155	173	18	*11.6%*	179	24	*15.5%*
6	172	161	-11	*-6.4%*	167	-5	*-2.9%*
7	180	171	-9	*-5.0%*	177	-3	*-1.7%*
8	170	154	-16	*-9.4%*	160	-10	*-5.9%*
9	199	196	-3	*-1.5%*	201	2	*1.0%*
10	184	180	-4	*-2.2%*	184	0	*0.0%*
11	181	180	-1	*-0.6%*	183	2	*1.1%*
12	188	155	-33	*-17.6%*	158	-30	*-16.0%*
Total	**2,139**	**2,053**	**-86**	***-4.0%***	**2,118**	**-21**	***-1.0%***
MAPE[3]				***7.1%***			***6.3%***

1. Forecast for 2008-09 by Dr. Judith A. Barmack, baseline 2004-05 enrollment, February 2005. Assumed very little new housing would be built.

2. Forecast for 2008-09 by Dr. Judith A. Barmack, baseline 2004-05 enrollment, February 2005. Assumed that about 50 homes per year would be built within the City of Estacada.

3. Mean absolute percent error for individual grades K-12.

students less than actual enrollment — an error of only 1.0 percent four years after the base year of the forecast. The "status quo" forecast of 2,053 was 86 students less than actual enrollment — an error of 4.0 percent. For those who may be concerned about enrollment losses in the ESD, the fact that actual enrollment was higher than both forecasts is encouraging.

Table 20 includes the grade level errors from the two February 2005 forecasts. As a measure of average error for individual grade levels, we have included the mean absolute percent error (MAPE) in the table. In a small district like the ESD, percentage errors in forecasts for individual grade levels can be significantly higher than errors for the District total enrollment. We have seen how grade level enrollment has fluctuated in the past, and it will continue to fluctuate in the future. Hopefully, errors will compensate each other within grade level groups. For example, if the 1st grade forecast is too high and the 2nd grade forecast is too low, those errors would not compromise the total elementary school forecast.

In general, forecast error varies according to the size of the population being forecast. Like the grade level forecast, the average absolute error in the forecasts for individual schools will likely also be larger than the absolute error for the K-12 total. The school level forecasts depend on assumptions about the distribution of housing growth and population change in small areas within the District over a five year period, so they should be used as only one of many tools in the planning process.

Because of the uncertainties of forecasts described in this section, it is important to monitor the results and update the forecast as new information becomes available. New information may be school enrollment data, new census data, proposals for major new housing development, or land use changes that may result in housing or economic growth that differs significantly from recent and current trends.

APPENDIX

POPULATION, HOUSING, AND ENROLLMENT PROFILES FOR INDIVIDUAL SCHOOLS