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Forest Grove School District: Enrollment Forecast 2019-20 to 2028-29: Based on October 2018 Enrollments

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FOREST GROVE SCHOOL DISTRICT
ENROLLMENT FORECASTS
2019-20 to 2028-29

Based on October 2018 Enrollments

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EXECUTIVE SUMMARY

This report presents forecasts of district-wide and individual school enrollments for the Forest Grove School District (FGSD) for the 10 year period between 2019-20 and 2028-29. Three district-wide forecast scenarios correspond to population forecasts incorporating different assumptions about growth within the District, with the primary differences being the contribution of net migration to the District's population and age distribution. Individual school forecasts consistent with the middle series are also presented for the 10 year period.

Population, Employment, and Housing Trends

- The number of births to FGSD residents averaged 527 annually between 2000 and 2009, but only 474 between 2010 and 2017.
- The Oregon Employment Department estimates that the MSA's seasonally adjusted unemployment rate held steady at 3.8 percent in March 2019; the same as the nation and lower than Oregon (4.4 percent).[1]
- In the five year period from 2014 to 2018 building permits were issued for about 1,000 new housing units within FGSD. Several hundred more homes are slated in new subdivisions that have gained approval.

Enrollment Trends

- After three years of K-12 enrollment growth beginning in 2014-15, losses resumed in 2017-18 and 2018-19. The 2018-19 enrollment of 6,010 students was 213 students (3.4 percent) below the peak nine years earlier.
- Fall 2018 elementary (K-4th grade) enrollment of 2,236 was the smallest since 2012-13, and was 141 students (5.9 percent) lower than the District's all-time high 10 years earlier, in 2008-09. The fall 2018 kindergarten class was the smallest since 2000-01.

[1] "Employment in the Portland Metro Area: March 2019," May 2, 2019. Oregon Employment Department. https://www.qualityinfo.org/documents/10182/73818/Employment+in+Portland+Metro+Area?

- Fall 2018 5th-8th grade enrollment of 1,890 was just one student less than its peak in 2010-11, and represented a modest increase of 63 students (three percent) from 2008-09.

- High school (9th-12th grade) enrollment in fall 2018 of 1,884 was 144 students (7.1 percent) lower than its all-time high (2,028 students in 2009-10), and 18 students lower than one year earlier in fall 2017.

District-wide Enrollment Forecast: Middle Series

- In the middle series K-12 enrollment is expected to increase by nearly 300 students (five percent) in the next 10 years.

- District-wide K-4th grade enrollment is relatively stable throughout the first five years of the forecast and then begins to grow, resulting in nearly 100 more K-4 students (four percent) by 2028-29.

- Upper elementary (grades 5-6) and middle school (grades 7-8) enrollments remain within two to three percent of their 2018-19 totals throughout the 10 year period.

- High school enrollments grow consistently in the first five years before declining slightly, adding 182 students (10 percent) over the 10 year period.

District-wide Enrollment Forecast: Low Series

- In the low series K-12 enrollment is expected to decrease by around 100 students (two percent) in the next 10 years.

- K-4th grade enrollment declines through the first five years of the forecast before increasing slightly, losing 55 students (two percent) by 2028-29.

- Upper elementary grade enrollments fluctuate but experience more decline than growth, losing 70 students (seven percent) in 10 years. Middle school enrollments follow a similar pattern, fluctuating and ultimately losing 53 students (six percent) overall.

- High school enrollments increase in the first five years before declining slightly in the latter half of the forecast period, leading to a net gain of 84 students (four percent).

District-wide Enrollment Forecast: High Series

- In the high series K-12 enrollment is expected to increase by 663 students (11 percent in the next 10 years.

- K-4thgrades add 218 students (10 percent), 5th-6thgrades add 61 students (six percent), and 7th-8th grades add 80 students (eight percent).

- Due to rapid growth in the early half of the timeframe, high school enrollments increase by over 300 students, or 16 percent

Table 1 summarizes historic and forecast K-12 enrollments by five year intervals under the three scenarios. Chart 1 depicts the District's 10 year K-12 enrollment history and the three K-12 forecast scenarios. Table 2 details the *Middle Series* forecast by grade level groups. More details of the forecasts are presented in the "Enrollment Forecasts" section and in Appendix A.

Table 1
Historic and Forecast Enrollment
Forest Grove School District

	LOW		MIDDLE		HIGH	
School Year	Enroll-ment[1]	5 year growth	Enroll-ment[1]	5 year growth	Enroll-ment[1]	5 year growth
2008-09	6,185		6,185		6,185	
2013-14	5,921	-264	5,921	-264	5,921	-264
2018-19	6,010	89	6,010	89	6,010	89
2023-24 (fcst.)	5,987	-23	6,205	195	6,420	410
2028-29 (fcst.)	5,916	-71	6,293	88	6,673	253
AAEG[2], 2018-19 to 2028-29	*-0.2%*		*0.5%*		*1.1%*	

1. Includes Forest Grove Community School.

2. Average Annual Enrollment Growth.

Source: Historic enrollment, Forest Grove School District; Enrollment forecasts, Population Research Center, PSU. May 2019.

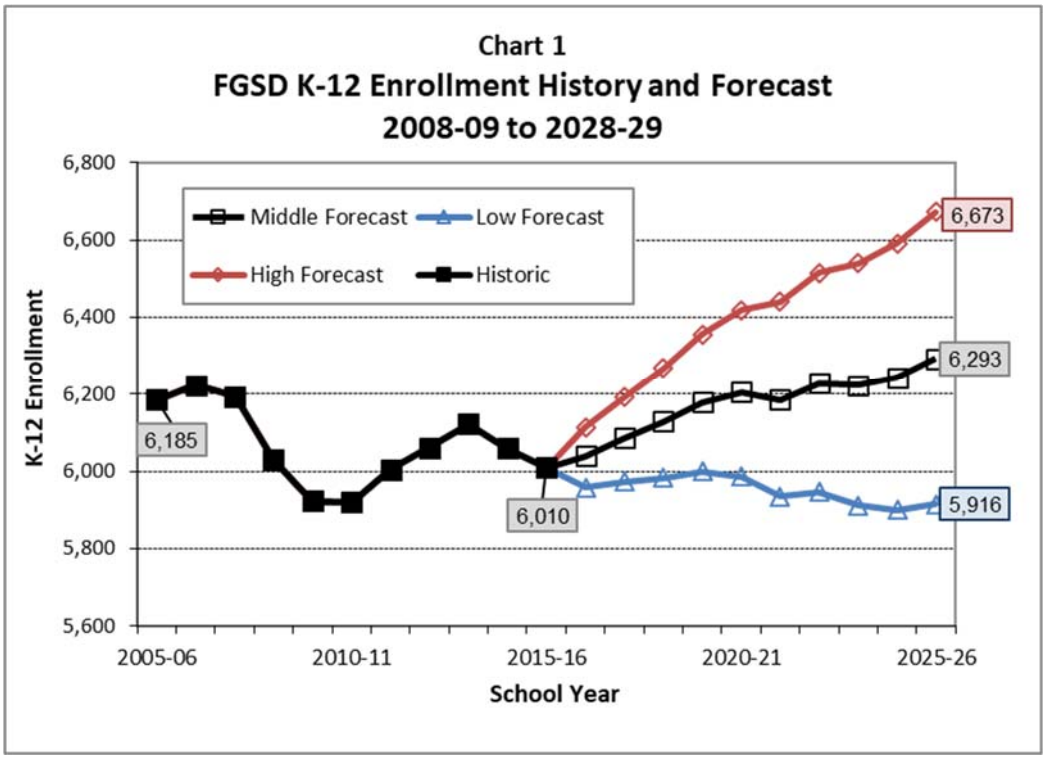


Table 2

Historic and Middle Series Forecast Enrollment

Forest Grove School District

	Actual			Forecast	
	2008-09	**2013-14**	**2018-19**	**2023-24**	**2028-29**
Grades K-4	2,377	2,261	2,236	2,249	2,331
5 year change		*-116*	*-25*	*13*	*82*
		-4.9%	*-1.1%*	*0.6%*	*3.6%*
Grades 5-6	898	885	941	930	937
5 year change		*-13*	*56*	*-11*	*7*
		-1.4%	*6.3%*	*-1.2%*	*0.8%*
Grades 7-8	929	904	949	950	959
5 year change		*-25*	*45*	*1*	*9*
		-2.7%	*5.0%*	*0.1%*	*0.9%*
Grades 9-12	1,981	1,871	1,884	2,076	2,066
5 year change		*-110*	*13*	*192*	*-10*
		-5.6%	*0.7%*	*10.2%*	*-0.5%*
Total	**6,185**	**5,921**	**6,010**	**6,205**	**6,293**
5 year change		***-264***	***89***	***195***	***88***
		-4.3%	***1.5%***	***3.2%***	***1.4%***

Includes Forest Grove Community School.

Actual: Forest Grove School District; Forecast: Population Research Center, PSU, May 2019.

INTRODUCTION

This report presents the results of a demographic study conducted by the Portland State University Population Research Center (PRC) for the Forest Grove School District (FGSD). Information sources include historic enrollment by grade and school, the U.S. Census Bureau 2000 and 2010 censuses and 2013-2017 American Community Survey, birth data from the Oregon Center for Health Statistics, city and county population estimates produced by PRC, and residential development data from the cities of Cornelius and Forest Grove.

The FGSD serves the City of Forest Grove, most of the City of Cornelius and portions of unincorporated Washington County, notably the Gales Creek and Dilley communities.[2] The entire District is within Washington County and its western boundary follows the county's western boundary in the Coast Mountain Range.

Following this introduction are sections presenting recent population, employment, housing, and enrollment trends. Next are the results of district-wide enrollment forecasts under low, middle, and high scenarios, individual school forecasts consistent with the middle scenario, and descriptions of the methodology used to produce them. All forecasts are presented annually for the period between 2019-20 and 2028-29. The final section contains a brief discussion of the accuracy of previous forecasts. Appendix A contains details of the three district-wide forecasts and Appendix B is a profile containing a summary of population, housing, social and economic estimates from the Census Bureau's American Community Survey.

[2] The eastern edge of the City of Cornelius is served by the Hillsboro School District. In the 2000 Census, 7,492 of the City's 9,652 residents (78 percent) were within the FGSD boundary. In the 2010 Census, 8,452 of the City's 11,869 residents (71 percent) were within the FGSD boundary.

POPULATION, EMPLOYMENT, AND HOUSING TRENDS

Between 2000 and 2010, total population within the FGSD grew by 12.9 percent, from 30,220 persons to 34,131. This growth rate was slightly lower than the Portland metropolitan area's 15 percent growth and Washington County's 19 percent growth in the decade. Although estimates for FGSD total population are unavailable through the first eight years of the current decade, the City of Forest Grove, which accounted for 86 percent of FGSD's growth in the previous decade, has experienced growth of 16 percent, or roughly 3,000 people. In comparison, between 2010 and 2018 the metro area and Washington County grew by 11 percent and 15 percent, respectively. Table 2 includes 2000 and 2010 Census counts and PRC's 2018 estimates for the cities, county, and region.

Table 3

City and Region Population, 2000, 2010, and 2018

				Avg. Annual Growth Rate	
	2000	2010	2018	2000-2010	2010-2018
City of Forest Grove[1]	17,708	21,083	24,387	*1.76%*	*1.78%*
City of Cornelius[2]	9,652	11,869	11,935	*2.1%*	*0.1%*
FGSD Portion[3]	7,492	8,452	N/A	*1.2%*	*N/A*
FGSD Unincorporated	5,020	4,596	N/A	*-0.9%*	*N/A*
Forest Grove S.D.	30,220	34,131	N/A	*1.2%*	*N/A*
Washington County	445,342	529,710	606,280	*1.8%*	*1.6%*
Portland-Vancouver-Hillsboro MSA[4]	1,927,881	2,226,009	2,477,620	*1.4%*	*1.3%*

1. Population of the entire city of Forest Grove. Population growth includes the annexation of 256 residents between 2000 and 2010, and 262 residents between 2010 and 2018.

2. Population of the entire city of Cornelius. Population growth includes the annexation of 2 residents between 2000 and 2010.

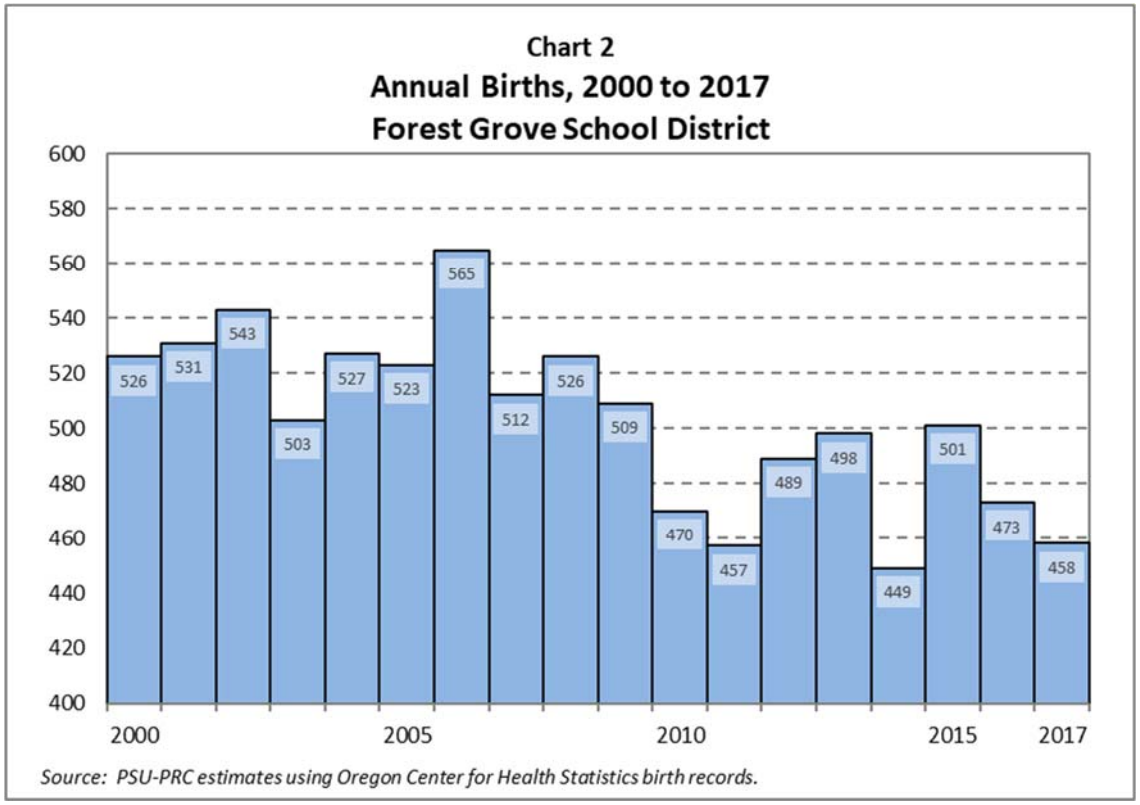
3. The City of Cornelius is shared between Forest Grove School District and Hillsboro School District.

4. Portland-Vancouver-Hillsboro MSA consists of Clackamas, Columbia, Multnomah, Washington, Yamhill (OR) and Clark and Skamania (WA) Counties.

Sources: U.S. Census Bureau, 2000 and 2010. Census data aggregated to FGSD boundary by PSU Population Research Center; Portland State University Population Research Center, July 1, 2018 estimates; State of Washington Office of Financial Management April 1, 2018 estimates.

Births

The number of births to women residing within the District peaked in 2006, one year before the 2007 peak in births for the U.S. and Oregon. Births averaged 527 annually between 2000 and 2009, but only 474 between 2010 and 2017. Chart 2 illustrates this decline, showing 18 years of historic births. In calendar year 2017 FGSD births were close to the lowest of the century, statewide births were the lowest since 1995, and U.S. births were the lowest since 1987.[3] In the "Enrollment Forecasts" section of this report we will examine the relationship between births, migration, and subsequent school enrollments.



Employment

Population growth in the FGSD depends to a great extent on the strength of the Portland-Vancouver-Hillsboro Metropolitan Statistical Area (MSA) economy. Although there are 0.66 jobs

[3] "Births: Final Data for 2017." National Vital Statistics Report, Volume 67, Number 8, National Center for Health Statistics; *Oregon Vital Statistics Annual Report 2017 Volume 1*, Oregon Health Authority, Center for Health Statistics.

in FGSD for every employed resident, recent data show that nearly four out of five residents commute outside of the District to work. About 67 percent of employed FGSD residents have a Washington County workplace, while 16 percent work in Multnomah County and 5 percent in Clackamas County. Among cities in the region, the City of Hillsboro is the leading workplace destination for employed FGSD residents at 24 percent, followed by the cities of Portland (15 percent), Forest Grove (15 percent), Beaverton (7 percent), and Cornelius (4 percent).[4]

The MSA lost over 64,000 jobs (6 percent) between 2008 and 2010, causing in-migration to slow to a trickle. By 2013 employment totals had slowly recovered to their pre-recession peak level and the MSA added another 151,000 jobs (14 percent) between 2013 and 2018.[5] The Oregon Employment Department estimates that the MSA's seasonally adjusted unemployment rate held steady at 3.8 percent in March 2019; the same as the nation and lower than Oregon (4.4 percent).[6]

The Oregon Employment Department prepared 10 year employment projections in June 2018.[7] Following are highlights for the Portland area:

> Employment in the Portland tri-county area (Multnomah, Washington, and Clackamas counties) is projected to grow by 12.7 percent from 2017 to 2027, faster than the statewide average of 12 percent. Healthcare support occupations will grow the fastest in this region, with an increase of 21.4 percent, followed by computer and mathematical occupations, with an increase of 19.6 percent. Production occupations have the slowest growth rate at 4.6 percent, followed by office and administrative support occupations at 6.8 percent.[8]

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[4] U.S. Census Bureau, LED Origin-Destination Database (2015). Commute shed report for residents of FGSD. Includes workers at firms covered by unemployment insurance (excludes most agricultural jobs and self-employed. https://onthemap.ces.census.gov/.

[5] "Current Employment Estimates," Oregon Employment Department. https://www.qualityinfo.org/ed-ceest. Retrieved on January 7, 2019. Average annual non-farm employment in the Portland-Vancouver-Hillsboro MSA was 1,043,900 in 2008, 979,700 in 2010, 1,045,100 in 2013, and 1,196,100 in 2018.

[6] "Employment in the Portland Metro Area: March 2019," May 2, 2019. Oregon Employment Department.
https://www.qualityinfo.org/documents/10182/73818/Employment+in+Portland+Metro+Area?

[7] Projections are available at https://www.qualityinfo.org/projections.

[8] "Health Care, Computer Occupations Lead Portland Tri-County Employment Projections" State of Oregon Employment Department, September 6, 2018.

The Oregon Employment Department estimates that non-seasonally adjusted unemployment rates in March 2019 were 4.1 percent in Forest Grove and 4.6 percent in Cornelius, the two highest rates among Washington County's cities.[9]

Housing

Table 4 presents housing and household characteristics for FGSD compiled from the decennial censuses of 1990, 2000, and 2010. There were large increases in the number of housing units and households (occupied housing units) in the 1990s and 2000s. The share of FGSD households with children was relatively constant, but the average number of persons per household increased each decade.

Table 4
Forest Grove School District
Housing and Household Characteristics, 1990, 2000, and 2010

				10 year Change	
	1990	2000	2010	'90-'00	'00-'10
Housing Units	8,833	10,870	12,148	2,037	1,278
Households	8,552	10,323	11,447	1,771	1,124
Households with children < 18	3,426	4,123	4,473	697	350
share of total	*40%*	*40%*	*39%*		
Households with no children < 18	5,126	6,200	6,974	1,074	774
share of total	*60%*	*60%*	*61%*		
Household Population	23,394	29,143	32,971	5,749	3,828
Persons per Household	2.74	2.82	2.88	0.09	0.06

Source: U.S. Census Bureau, 1990, 2000, and 2010 Censuses; data aggregated to FGSD boundary by Portland State University Population Research Center.

Residential building permit activity between 2000-2018 within the City of Forest Grove and the City of Cornelius is presented in Table 5. Between 2000 and 2007, both cities experienced a boom in housing development. Nearly 1,500 units were permitted during this time, 80 percent of which were single-family homes; a main generator of student population growth.

[9] Washington County Economic Indicators, April 2019 (March Data). Oregon Employment Department. Retrieved at https://www.qualityinfo.org/documents/10182/96541/Washington+County+Economic+Indicators?

Following the Great Recession, development slowed in both cities. After averaging 127 units per year between 2001 and 2007, the city of Forest Grove permitted 82 annually on average between 2008 and 2011. Residential development stalled for an even longer period in Cornelius. After averaging 69 housing units permitted between 2001 and 2007, the annual average dropped to 5 permitted units from 2008 to 2016. Multi-family development in both jurisdictions largely disappeared in the years following the recession.

As development has recovered to pre-recession levels, the rate of permitted housing has increased in Forest Grove as well as the proportion of multi-family housing. Since 2012, an average of 180 units have been permitted annually, over one third of which are multi-family. Residential development has also been on the rise in Cornelius.

Table 5

Housing Units Authorized by Building Permits

	City of Forest Grove		City of Cornelius	
Year Permit Issued	Single Family	Multiple Family	Single Family	Multiple Family
2000	86	4	14	0
2001	121	77	7	17
2002	113	10	78	14
2003	91	10	43	0
2004	115	10	75	53
2005	91	26	117	3
2006	65	29	52	0
2007	122	7	27	0
2008	93	2	17	0
2009	62	0	11	0
2010	91	4	7	0
2011	76	0	1	0
2012	90	72	2	0
2013	189	4	3	0
2014	110	26	2	0
2015	112	12	2	0
2016	73	78	3	0
2017	86	152	2	45
2018	168	90	34	2

Source: City of Forest Grove (2016-2018 data only); U.S. Census Bureau, Residential Construction Branch. Data available at https://www.census.gov/construction/bps/

Table 6 details FGSD residential building permits by elementary school attendance area between 2014 and 2018. Large subdivisions have been developed in several distinct areas on the north side of the City of Forest Grove, resulting in significant housing growth in three of the FGSD's six elementary areas. In the 2014 to 2015 period Fern Hill saw the greatest number of single family permits, while Dilley had about two thirds of the District's 2016 and 2017 single family permits. In 2018, development was concentrated in Harvey Clarke due to the large Silverstone development.

Most of the multiple family units permitted in the past five years are within two large developments, the 78 unit Jesse Quinn Apartments (Harvey Clarke) permitted in 2016 and the 194 unit Forestplace Apartments (Fern Hill) permitted in 2017 and 2018.

Table 6

New Housing Units Authorized by Building Permits

2014 to 2018 by Attendance Area

Single Family Units

Elementary Area	2014	2015	2016	2017	2018	Total
Cornelius	1	3	2	1	4	**11**
Dilley	25	39	65	64	14	**207**
Echo Shaw	1		1	2	16	**20**
Fern Hill	43	56	9		27	**135**
Harvey Clarke	53	9	6	34	130	**232**
Joseph Gale		6	3	3	3	**15**
District Total	**123**	**113**	**86**	**104**	**194**	**620**

Multiple Family Units

Elementary Area	2014	2015	2016	2017	2018	Total
Cornelius					4	**4**
Dilley						**0**
Echo Shaw						**0**
Fern Hill	22	8		116	83	**229**
Harvey Clarke			78		6	**84**
Joseph Gale	4			36	4	**44**
District Total	**26**	**8**	**78**	**152**	**97**	**361**

Sources: Individual records from Construction Monitor, Inc., and City of Forest Grove, processed and geocoded by PSU-PRC.

Several of the developments summarized in Table 7 have been completed or are mostly complete, including the Casey West, Poplar Commons, and Pacific Crossing 3 and 4 subdivisions, and the Jesse Quinn, Cedar Manor, and Forestplace Apartments. Several other large

developments are in various phases of development, notably Gales Creek Terrace, where grading and utility work is underway, River West, where several homes have been completed and sold, and the largest development, Laurel Woods, where homes in the first phase are under construction.

Table 7
Recent and Current Residential Developments
Forest Grove School District, April 2019

Year*	Elementary Area	Development Name	Jurisdiction	Lots/ Units
2014	Fern Hill	Casey West	City of Forest Grove	65
	Harvey Clarke	Silverstone	City of Forest Grove	204
	Joseph Gale	Gales Creek Terrace	City of Forest Grove	197
2015	Cornelius	Holladay Crossing	City of Cornelius	17
	Dilley	Green Grove Co-Housing	City of Forest Grove	21
	Joseph Gale	Poplar Commons	City of Forest Grove	9
2016	Cornelius	Laurel Woods**	City of Cornelius	325
	Dilley	Pacific Crossing 3 and 4	City of Forest Grove	98
	Echo Shaw	River West	City of Cornelius	64
	Harvey Clarke	Jesse Quinn Apartments***	City of Forest Grove	78
	Joseph Gale	Cedar Manor Apartments***	City of Forest Grove	28
2017	Cornelius	Davis Apartments***	City of Cornelius	8
	Fern Hill	Forestplace Apartments***	City of Forest Grove	194
	Harvey Clarke	Smith Orchard	City of Forest Grove	8
2018	Cornelius	Council Creek Terrace	City of Cornelius	56
	Fern Hill	Hawthorne Gardens	City of Forest Grove	29
	Fern Hill	Sunset Crossing II	City of Forest Grove	33
	Harvey Clarke	The Meadows at Silverstone	City of Forest Grove	44
	Harvey Clarke	Kidd Court	City of Forest Grove	7
2019	Cornelius	Cedar Terrace II Single Family	City of Cornelius	13
	Cornelius	Cedar Terrace II Apartments***	City of Cornelius	21

**Note: "Year" is the latter of initial submission or most recent extension. Approval, final plat, construction and occupancy may be in later years.*

*** First 5 phases of Laurel Woods include 325 homes in FGSD; remainder of development is in Hillsboro S.D.*

**** Apartment development. Others are single family subdivisions.*

Sources: Compiled by Population Research Center, PSU; primary information from City planning departments. The number of lots sometimes changes between initial approval and final plat, so lot counts in this table may differ slightly from those published elsewhere.

ENROLLMENT TRENDS

Following more than 20 consecutive years of enrollment growth, FGSD K-12 enrollment peaked at 6,223 in 2009-10. Over a four year period ending in 2013-14, K-12 enrollment declined by 302 students (4.9 percent) from the 2009-10 peak. Three years of enrollment growth beginning in 2014-15 amounted to a 202 student increase before enrollment losses resumed in the most recent years, 2017-18 and 2018-19. The 2018-19 enrollment of 6,010 students was 213 students (3.4 percent) below the peak nine years earlier.

Fall 2018 elementary (K-4th grade) enrollment of 2,236 was the smallest since 2012-13, and was 141 students (5.9 percent) lower than the District's all-time high 10 years earlier, in 2008-09. The largest one year K-4 loss (86 students) in the period occurred between 2017-18 and 2018-19, entirely attributable to an incoming kindergarten class of 416 students replacing an outgoing fourth grade class of 507 students. The magnitude of the decline in K-4th grade enrollment was unusual, as the fall 2018 kindergarten class was the smallest since 2000-01, while the 2017-18 fourth grade class was the largest in District history.

In contrast to elementary grades, district-wide total enrollment in upper elementary and middle school (5th-8th grade) has not experienced significant loss. The fall 2018 5th-8th grade total of 1,890 was just one student less than its peak in 2010-11, and represented a modest increase of 63 students (three percent) from 2008-09. One year growth of four students in grades 5-6 and 50 students in grades 7-8 occurred between fall 2017 and fall 2018.

High school (9th-12th grade) enrollment in fall 2018 of 1,884 was 144 students (7.1 percent) lower than its all-time high (2,028 students in 2009-10), and 18 students lower than one year earlier in fall 2017.

Table 8 summarizes the enrollment history for the District by grade level annually for the past 10 years, from 2008-09 to 2018-19.

Table 8

Forest Grove School District, Enrollment History, 2008-09 to 2018-19*

Grade	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19
K	446	427	428	433	431	452	435	422	474	442	416
1	493	452	455	451	454	447	505	476	443	463	451
2	482	501	450	450	457	464	446	507	464	439	467
3	475	480	494	427	451	444	474	451	511	471	435
4	481	475	480	479	425	454	479	490	466	507	467
5	455	482	472	470	451	430	456	463	484	447	488
6	443	456	487	469	460	455	441	448	495	490	453
7	470	454	466	477	445	459	454	449	441	455	496
8	459	468	466	449	470	445	452	444	455	444	453
9	503	507	516	454	462	475	475	483	485	477	467
10	488	506	486	499	444	467	477	458	488	468	473
11	555	514	482	457	477	433	460	471	455	491	465
12	435	501	511	515	496	496	451	499	462	466	479
Total	**6,185**	**6,223**	**6,193**	**6,030**	**5,923**	**5,921**	**6,005**	**6,061**	**6,123**	**6,060**	**6,010**
Annual change		*38*	*-30*	*-163*	*-107*	*-2*	*84*	*56*	*62*	*-63*	*-50*
		0.6%	*-0.5%*	*-2.6%*	*-1.8%*	*0.0%*	*1.4%*	*0.9%*	*1.0%*	*-1.0%*	*-0.8%*
K-4	2,377	2,335	2,307	2,240	2,218	2,261	2,339	2,346	2,358	2,322	2,236
5-6	898	938	959	939	911	885	897	911	979	937	941
7-8	929	922	932	926	915	904	906	893	896	899	949
9-12	1,981	2,028	1,995	1,925	1,879	1,871	1,863	1,911	1,890	1,902	1,884

	2008-09 to 2013-14		2013-14 to 2018-19		2008-09 to 2018-19	
	5 yr. chg.	**Pct.**	**5 yr. chg.**	**Pct.**	**10 yr. chg.**	**Pct.**
K-4	-116	*-5%*	-25	*-1%*	-141	*-6%*
5-6	-13	*-1%*	56	*6%*	43	*5%*
7-8	-25	*-3%*	45	*5%*	20	*2%*
9-12	-110	*-6%*	13	*1%*	-97	*-5%*
Total	**-264**	***-4%***	**89**	***2%***	**-175**	***-3%***

**Note: Includes Forest Grove Community School.*

Source: Forest Grove School District

Private and Home School Enrollment and District "Capture Rate"

The Census Bureau's American Community Survey (ACS) provides an estimate of private school enrollment among FGSD residents based on a question about school enrollment by level and by type (public or private). The current ACS estimate from surveys conducted between 2013 and 2017 is that 470 FGSD K-12th grade students were enrolled in private schools, a 6.5 percent share of all K-12th grade students, with a margin of error of plus or minus 2.8 percent.[10]

Another difference between FGSD enrollment and child population can be attributed to home schooling. Home schooled students living in the District are required to register with the Northwest Regional Educational Service District (NWRESD), though the statistics kept by the NWRESD are not precise because students who move out of the area might not drop their registration. Students who enroll in public schools after having been registered as home schooled are supposed to be dropped from the home school registry. Each year from 2013-14 to 2016-17 there were between 166 and 178 FGSD residents registered as home schooled, averaging 171 per year. However, this number jumped to 288 students in 2017-18, the latest year available.[11] The recent increase was not exclusive to FGSD; other Washington County districts experienced similar increases, perhaps due to changes in record keeping. Even at the higher level, the 288 students account for less than five percent of FGSD 1st-12th grade residents.

Under Oregon's traditional inter-district transfer (IDT) rules, students who want to attend a public school outside of their resident district have to gain approval from their home district and the district that they want to attend, and that approval must be renewed each year. Beginning in the 2012-13 school year, Oregon adopted a new Open Enrollment policy under which students could transfer without approval of their home district to a district that designates available spaces at its schools. Once the student was admitted to the new district, they did not need to reapply annually. The open enrollment statute contained a sunset provision, effective July 1, 2019. Therefore,

[10] U.S. Census Bureau 2013-2017 American Community Survey, Table S1401. The margin of error of the numeric estimate at the 90 percent confidence level is plus or minus 202; the margin of error of the share is plus or minus 2.8 percent.

[11] Northwest Regional Education Service District, *2017-18 Annual Report*.

districts will not enroll new students through open enrollment in 2019-20.[12] Table 9 displays these flows for the six most recent school years. Each year there have been more outgoing students than incoming students under both IDTs and Open Enrollment.

Table 9
Transfers and Open Enrollment

	Into FGSD		Out of FGSD		Net
	Inter-District Transfers	Open Enrollment	Inter-District Transfers	Open Enrollment	
2013-14					
K-4	17	1	37	27	-46
5-8	2	0	29	30	-57
9-12	13	3	36	22	-42
Total	**32**	**4**	**102**	**79**	**-145**
2014-15					
K-4	14	5	14	31	-26
5-8	2	0	12	39	-49
9-12	13	3	21	27	-32
Total	**29**	**8**	**47**	**97**	**-107**
2015-16					
K-4	0	0	4	33	-37
5-8	0	0	6	20	-26
9-12	3	7	14	25	-29
Total	**3**	**7**	**24**	**78**	**-92**
2016-17					
K-4	5	5	21	42	-53
5-8	2	5	17	24	-34
9-12	5	10	16	31	-32
Total	**12**	**20**	**54**	**97**	**-119**
2017-18					
K-4	3	10	14	17	-18
5-8	1	1	6	9	-13
9-12	4	8	7	4	1
Total	**8**	**19**	**27**	**30**	**-30**
2018-19					
K-4	0	2	15	32	-45
5-8	2	1	10	14	-21
9-12	2	8	9	22	-21
Total	**4**	**11**	**34**	**68**	**-87**

Source: Forest Grove School District

[12] The Oregon Department of Education has more information about transfers between districts at https://www.oregon.gov/ode/schools-and-districts/Pages/transfers-between-districts.aspx

For purposes of forecasting enrollment, the ratios of kindergarten and first grade public school enrollment to overall population in the corresponding ages are very important. These ratios are called "capture rates." Once a student is enrolled in the public schools in first grade, it is very likely that they will continue to be enrolled in subsequent grades, unless their family moves out of the District. Comparing FGSD kindergarten and 1st grade enrollment in 1999-00 and 2000-01 to the 2000 Census and in 2009-10 and 2010-11 to the 2010 Census reveals little or no change in the District's "capture rates." In both periods, FGSD enrollment accounted for about 83 to 84 percent of the kindergarten-age population and 83 to 86 percent of the 1st grade age population. That means that about 16-17 percent of kindergarten-age children and 14-17 percent of first grade age children were not enrolled in FGSD schools. These children include students who were enrolled in private schools or charter schools, net transfers to and from other public school districts, home schooled students, or children not yet attending school, since school is not compulsory until age six. Beginning in 2015-16, when full-day kindergarten was implemented, the kindergarten capture increased, and is now on par with the 1st grade capture rate.

Neighboring Districts

Table 10 compares several facts about FGSD demographics and enrollment trends to three neighboring Washington County school districts (Beaverton, Hillsboro, and Tigard-Tualatin). All four districts gained enrollment in the 2000s, with FGSD experiencing the greatest rate of growth. Growth has slowed in all four districts since 2010, with FGSD, HSD, and TTSD experiencing small losses over the eight year period. All four districts had similar school-age population shares. Compared with the other three districts FGSD has higher Latino and rural population shares, while having lower median household income and median home values.

Table 10
Selected School Districts
Demographic and Enrollment Highlights, 2000 to 2018

	Forest Grove	Beaverton	Hillsboro	Tigard-Tualatin
Enrollment growth, **2000-01 to 2010-11**	17%	11%	14%	8%
Enrollment growth, **2010-11 to 2018-19**	-3%	4%	-1%	-1%
Latino enrollment, **2018-19**	54%	25%	37%	27%
Population growth, **2000 to 2010**	13%	18%	20%	16%
Population under age 5, **2000**	7.9%	7.6%	8.7%	7.1%
Population under age 5, **2010**	7.1%	7.1%	7.8%	6.9%
Population age 5 to 17, **2000**	20%	18%	20%	18%
Population age 5 to 17, **2010**	20%	18%	19%	18%
Population rural, **2010**	11.5%	0.4%	10.4%	0.1%
Median Household Income **2013-17***	$57,569	$75,572	$77,181	$66,506
Median Household Income - MOE	+/-3,944	+/-1,408	+/-1,612	+/-2,425
Median Value of Home **2013-17***	$247,200	$355,400	$287,600	$343,000
Median Value of Home - MOE	+/-6,728	+/-4,045	+/-4,017	+/-5,490

Data assembled by PSU Population Research Center (PRC) from several sources: U.S. Census Bureau; enrollment reports from PRC; OR Dept. of Education; U.S. Dept. of Education.

** U.S. Census Bureau, 2013-17 American Community Survey (ACS) 5 Year Estimates. Table B19013, Median Household Income; Table B25077, Median Value of Owner-Occupied Housing Units. In 2017 inflation adjusted dollars. ACS data needs to be interpreted along with margins of error (MOE).*

Enrollment at Individual Schools

While district-wide K-4th grade totals experienced negligible decline between 2013-14 and 2018-19 (26 students), K-4th grade enrollments changed significantly at three of the district's six elementary schools. This was largely due to boundary changes in 2015-16 and again in 2018-19. As a result, substantial shifts in enrollment occurred over the past six years at Cornelius (102 fewer students), Fern Hill (113 fewer students), and Joseph Gale (176 additional students). Of the K-4 schools that did not experience boundary changes, enrollment did not fluctuate greatly and rather reflected the district-wide trend of growth up to 2016-17 before declining in the last couple years.

Echo Shaw Elementary expanded to include 5th grade in 2015-16 and 6th grade in 2016-17. Tom McCall Upper Elementary continued to enroll the majority of 5th and 6th grade students but had 55 fewer students overall in 2018-19 compared to 2013-14.

In contrast with other grade levels, 7th and 8th grade are served by just one District-run school, Neil Armstrong, and enrollment has not seen the decline that other grade levels have experienced. Enrollment in 7th-8th grades was relatively stable for several years until a 40 student (five percent) increase in 2018-19. This was due to the incoming 7th grade cohort (469 students) being 10 percent larger than the average 7th grade enrollment over the past five years.

Including students counted at the Community Alternative Learning Center (CALC), the 9-12 enrollment totals have fluctuated in recent years but experienced only a slight overall growth of one percent between 2013-14 and 2018-19. Enrollments in 2015-16 and 2017-18 eclipsed the 1,900 student mark, but dropped back down to 1,884 in 2018-19, the lowest number since 2014-15. Over this period, Forest Grove High School gained 48 students while CALC lost 35.

Individual school enrollment trends are shown in Table 11.

Table 11

Enrollment History for Individual Schools, 2013-14 to 2018-19

	Historic Enrollment						Change 2013-14 to 2018-19	
School	**2013-14**	**2014-15**	**2015-16**	**2016-17**	**2017-18**	**2018-19**	**Number**	**Percent**
Cornelius	463	442	324	296	287	361	-102	*-22%*
Dilley	251	271	257	264	256	250	-1	*0%*
Echo Shaw	293	327	324	324	316	305	12	*4%*
Fern Hill	370	358	352	349	379	257	-113	*-31%*
Harvey Clarke	476	497	508	499	492	478	2	*0%*
Joseph Gale	313	350	487	530	497	489	176	*56%*
Elementary Totals (K-4)	**2,166**	**2,245**	**2,252**	**2,262**	**2,227**	**2,140**	**-26**	***-1%***
Echo Shaw Elementary (5-6)	0	0	51	111	108	109	109	*NA*
Tom McCall Upper Elem. (5-6)	833	844	808	814	775	778	-55	*-7%*
Upper Elementary Totals (5-6)	**833**	**844**	**859**	**925**	**883**	**887**	**54**	***6%***
Neil Armstrong MS (7-8)	**852**	**853**	**841**	**842**	**845**	**895**	**43**	***5%***
Forest Grove HS	1,777	1,791	1,848	1,831	1,849	1,825	48	*3%*
C.A.L.C.	94	72	63	59	53	59	-35	*-37%*
High School Totals (9-12)	**1,871**	**1,863**	**1,911**	**1,890**	**1,902**	**1,884**	**13**	***1%***
District-run Subtotal	**5,722**	**5,805**	**5,863**	**5,919**	**5,857**	**5,806**	**84**	***1%***
F.G. Community School (1-8)	199	200	198	204	203	204	5	*3%*
Total Enrollment	**5,921**	**6,005**	**6,061**	**6,123**	**6,060**	**6,010**	**89**	***2%***

Source: Forest Grove School District

ENROLLMENT FORECASTS

District-wide Long-range Forecast Methodology

To ensure that enrollment forecasts are consistent with the dynamics of likely population growth within the District, we combine the grade progression enrollment model with a demographic cohort-component model used to forecast population for the District by age and sex. The components of population change are births, deaths, and migration. Using age-specific fertility rates, age-sex specific mortality rates, age-sex specific migration rates, estimates of recent net migration levels, and forecasts of future migration levels, each component is applied to the base year population in a manner that simulates the actual dynamics of population change. In addition to the middle series, or most likely, population and enrollment forecasts, we also prepared high and low series forecasts with alternative assumptions about future net migration.

The 2000 and 2010 Census results were used as a baseline for the population forecasts. By "surviving" the 2000 population and 2000s births (estimating the population in each age group that would survive to the year 2010) and comparing the "survived" population to the actual 2010 population by age group, we were able to estimate the overall level of net migration between 2000 and 2010 as well as net migration by gender and age cohort. The net migration data was used to develop initial net migration rates, which were used as a baseline for rates used to forecast net migration for the 2010 to 2030 period.

We estimated the number of births to women residing within the District each year from 1999 to 2017, using data from the Oregon Department of Human Services, Center for Health Statistics. Detailed information including the age of mothers is used to calculate fertility rates by age group for both 2000 and 2010.

The total fertility rate (TFR) is an estimate of the number of children that would be born to the average woman during her child-bearing years based on age- specific fertility rates observed at a given time. The TFR for FGSD decreased from 2.24 in 2000 to 2.04 in 2010. Based on national trends and FGSD births observed through 2017, we adjusted age-specific fertility rates, lowering the rates for women under 30. These adjustments result in a decrease in TFR to 1.90 by 2017; they remain constant through the forecast horizon. The same set of future fertility rates were

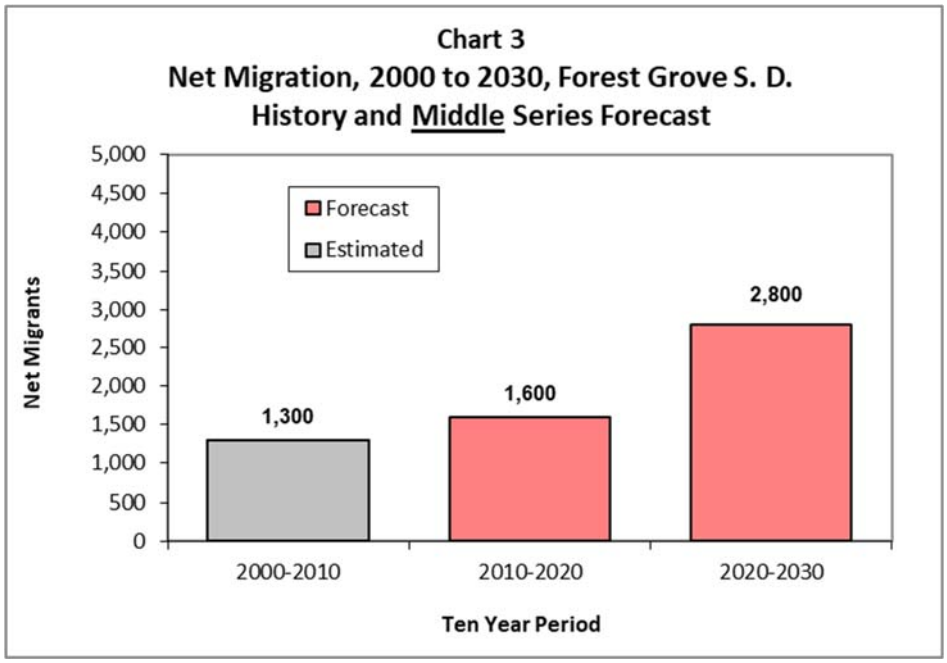
used in all three forecast scenarios, but the number of births varies slightly between scenarios due to differences in the populations of women in child-bearing ages.

School enrollment is linked to the population forecast in two ways. First, the kindergarten and first grade enrollments at the time of the most recent census (the 2009-10 school year) are compared to the population at the appropriate ages counted in the census. The "capture rate," or ratio of enrollment to population, is an estimate of the share of area children who are enrolled in FGSD schools. Assumptions for capture rates based on census data are used to bring new kindergarten and first grade students into the District's enrollment. We estimate that the kindergarten capture rate is close to 0.84, indicating that 16 percent of FGSD kindergarten age residents may be enrolled in private or charter schools, or home schooled.

The other way that historic population and enrollment are linked is through migration. Annual changes in school enrollment by cohort closely follow trends in the net migration of children in the District's population. Once the students are in first grade, a set of baseline grade progression rates (GPRs) are used to move students from one grade to the next. Grade progression rates are the ratio of enrollment in an individual grade to enrollment in the previous grade the previous year. Baseline rates, usually 1.00 for elementary grades, represent a scenario under which there is no change due to migration. Enrollment change beyond the baseline is added (or subtracted, if appropriate) at each grade level depending on the migration levels of the overall population by single years of age.

District-wide Population Forecast

According to the Census, from 2000 to 2010 the FGSD population grew by nearly 13 percent. This district-wide population increase was due to a combination of net in-migration (people moving in compared to moving out) and natural increase (more births than deaths). However, natural increase has contributed progressively less and less each year to population growth due to an aging population and lower fertility. Concurrently, the rate of net in-migration has increased and is expected to continue to rise during the forecast period. Chart 3 shows the 2000 to 2010 estimates and 2010 to 2030 forecasts of FGSD population growth attributable to net migration under the middle series forecast scenario. Forecasts of net migration under the high and low scenarios are presented as charts in Appendix A.



The 2010 population for the FGSD was 34,131, an increase of 3,913 persons from the 2000 Census. The middle series forecast for 2020 population in the FGSD is 37,516, an increase of 10 percent from the 2010 Census. The 2030 population forecast is 41,575, an 11 percent (about 4,000 person) increase from 2020. Much of this is due to the increasing net in-migration depicted in Chart 3.

School-age population (5 to 17) increased by 775 persons between 2000 and 2010. Because the thirteen percent increase in school age population was about the same as the increase in total population, the school age population share of total population was stable at about 20 percent. Between 2010 and 2020 school age population is expected to decline by 5 percent, resulting in a lower share of 17.5 percent in 2020. While the school age population is expected to grow by 9 percent between 2020 and 2030, the share of the total population is again expected to decline, to 17.3 percent. The most rapid growth is among the late 60s and older cohorts as the "baby boom" generation ages. These middle series forecasts are shown in Table 12. The high and low series population forecasts by age group are included in Appendix A.

Table 12

Population by Age Group, Middle Series Forecast

Forest Grove School District, 2000 to 2030

	2000 Census	2010 Census	2020 Forecast	2030 Forecast	2010 to 2030 Change	
					Number	Percent
Under Age 5	2,385	2,421	2,399	2,681	260	*11%*
Age 5 to 9	2,491	2,622	2,428	2,766	144	*5%*
Age 10 to 14	2,316	2,616	2,536	2,759	143	*5%*
Age 15 to 17	1,323	1,667	1,616	1,661	-6	*0%*
Age 18 to 19	1,172	1,321	1,503	1,316	-5	*0%*
Age 20 to 24	2,439	2,668	2,952	3,024	356	*13%*
Age 25 to 29	2,181	2,165	2,605	2,879	714	*33%*
Age 30 to 34	2,171	2,142	2,374	2,793	651	*30%*
Age 35 to 39	2,297	2,219	2,221	2,668	449	*20%*
Age 40 to 44	2,209	2,311	2,317	2,577	266	*12%*
Age 45 to 49	1,912	2,288	2,268	2,221	-67	*-3%*
Age 50 to 54	1,701	2,277	2,377	2,422	145	*6%*
Age 55 to 59	1,191	1,884	2,258	2,250	366	*19%*
Age 60 to 64	913	1,623	2,175	2,278	655	*40%*
Age 65 to 69	749	1,122	1,763	2,103	981	*87%*
Age 70 to 74	706	805	1,430	1,896	1,091	*136%*
Age 75 to 79	729	641	944	1,409	768	*120%*
Age 80 to 84	592	557	614	1,038	481	*86%*
Age 85 and over	741	782	736	834	52	*7%*
Total Population	**30,218**	**34,131**	**37,516**	**41,575**	**7,444**	***22%***
Total age 5 to 17	6,130	6,905	6,580	7,186	281	*4%*
share age 5 to 17	*20.3%*	*20.2%*	*17.5%*	*17.3%*		

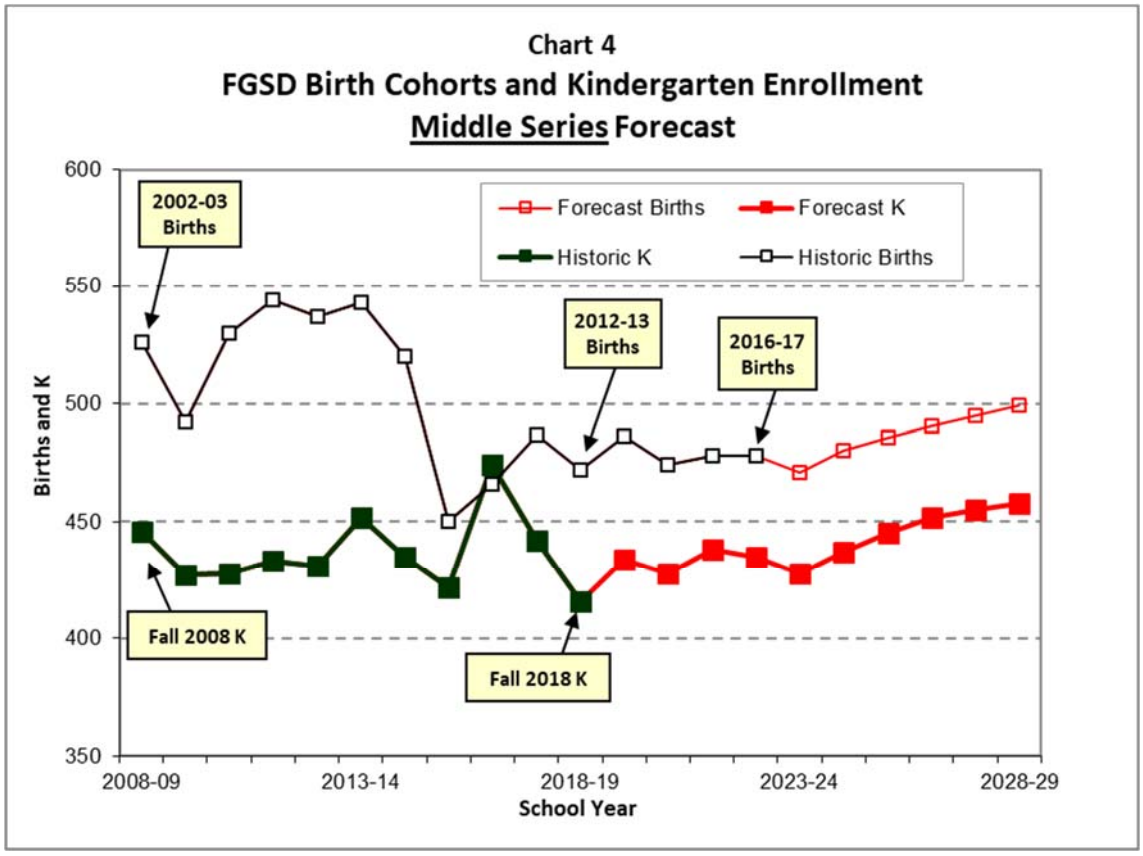
		2000-2010	2010-2020	2020-2030
Population Change		**3,913**	**3,385**	**4,060**
Percent		*13%*	*10%*	*11%*
Average Annual		*1.2%*	*0.9%*	*1.0%*

Source: U.S. Census Bureau, 2000 and 2010 Censuses; data aggregated to FGSD boundary by Portland State University Population Research Center. PSU-PRC Forecasts, 2020 and 2030.

District-wide Enrollment Forecast

Chart 4 compares the historic and forecast number of births in the District with the historic and middle series forecast number of FGSD kindergarten students. Births are compiled by kindergarten cohorts (September to August). The difference between lagged births and FGSD kindergarten enrollment represents a combination of net migration and the kindergarten capture rate; many children move into and out of the District between birth and age five and not all District residents attend FGSD kindergartens. For example, the Fall 2016 kindergarten enrollment (477)

was higher than the number of births (474) in 2010-11 corresponding to the cohort. Beginning in fall 2015 the gap between kindergarten enrollment and previous births to FGSD residents has narrowed significantly. In the four years from fall 2015 to fall 2018 the ratio of kindergarten to corresponding births has averaged 0.94, compared with an average of 0.82 in the five years from fall 2010 to fall 2014. Part of the difference may be attributable to renewed in-migration as the region recovered from the recession, but the most obvious difference is the increased appeal of public kindergarten classes after full-day kindergarten was implemented in 2015. In the *Middle Series Forecast*, the gap is expected to average 0.91. In Appendix A, Charts A3 and A4 depict births and kindergarten under the *Low* and *High* forecast scenarios.



In the *middle series* forecast, overall K-12 enrollment is expected to increase by nearly 300 students (five percent) in the next 10 years. K-12 enrollment grows steadily, at a relatively slow pace averaging 0.5 percent annually. District-wide K-4th grade enrollment is relatively stable throughout the first five years of the forecast and then begins to grow, resulting in nearly 100 more K-4 students (four percent) over the 10 year forecast. Upper elementary (grades 5-6) and middle school (grades 7-8) enrollments fluctuate depending on the size of incoming and outgoing

cohorts but remain within two to three percent of their 2018-19 totals. Throughout the 10 year forecast period upper elementary enrollment doesn't exceed 964 (2019-20) or fall below 921 (2020-21), while middle school enrollment doesn't exceed 981 (2021-22) or fall below 937 (2022-23). In contrast the other grades, high school enrollments grow consistently in the first five years before declining slightly, adding 182 students (10 percent) over the ten-year period.

The *low series* forecast depicts a scenario with less growth due to net migration. Overall K-12 enrollment is expected to decrease by around 100 students (two percent) in the next 10 years. K-12 enrollment declines in 2019-20, increases slightly for the next three years, but then slowly declines during the latter half of the forecast. K-4th grade enrollment consistently declines through the first five years of the forecast before increasing slightly, losing 55 students (two percent) by 2028-29. Upper elementary grade enrollments fluctuate but experience more decline than growth, losing 70 students (seven percent) in 10 years. Middle school enrollments follow a similar pattern, fluctuating and ultimately losing 53 students (six percent) overall. High school enrollments increase in the first five years before declining slightly in the latter half of the forecast period, leading to a net gain of 84 students (four percent).

The *high series* forecast includes net migration consistently near the higher levels observed in the early to mid-2000s. Over the entire 10 year period, K-12 enrollment is expected to increase by 663 students (11 percent). While all school levels experience growth, certain enrollments increase at a faster rate. K-4th, 5th-6th, and 7th-8th grade enrollments grow by 10 percent, six percent, and eight percent, respectively. Due to rapid growth in the early half of the timeframe, high school enrollments increase by over 300 students, or 16 percent.

Table 13 contains annual district-wide forecasts by school level under the three scenarios for the District. Detailed annual forecasts by individual grades are included in Appendix A.

Table 13
Forest Grove S.D., Enrollment Forecasts by School Level, 2019-20 to 2028-29

		LOW SERIES FORECAST						FORECAST CHANGE		
Grade	Actual 2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2028-29	2018-19 to 2023-24	2023-24 to 2028-29	2018-19 to 2028-29
K-4	2,236	2,195	2,195	2,167	2,141	2,138	2,181	-98	43	-55
5-6	941	948	902	916	944	901	871	-40	-30	-70
6-8	949	938	937	957	911	926	896	-23	-30	-53
9-12	1,884	1,878	1,939	1,944	2,003	2,022	1,968	138	-54	84
Total	**6,010**	**5,959**	**5,973**	**5,984**	**5,999**	**5,987**	**5,916**	**-23**	**-71**	**-94**
Annual change		*-51*	*14*	*11*	*15*	*-12*	*-14*			
		-0.8%	*0.2%*	*0.2%*	*0.3%*	*-0.2%*	*-0.2%*			

		MIDDLE SERIES FORECAST						FORECAST CHANGE		
Grade	Actual 2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2028-29	2018-19 to 2023-24	2023-24 to 2028-29	2018-19 to 2028-29
K-4	2,236	2,233	2,250	2,241	2,236	2,249	2,331	13	82	95
5-6	941	964	921	933	962	930	937	-11	7	-4
6-8	949	949	954	981	937	950	959	1	9	10
9-12	1,884	1,894	1,961	1,974	2,044	2,076	2,066	192	-10	182
Total	**6,010**	**6,040**	**6,086**	**6,129**	**6,179**	**6,205**	**6,293**	**195**	**88**	**283**
Annual change		*30*	*46*	*43*	*50*	*26*	*18*			
		0.5%	*0.8%*	*0.7%*	*0.8%*	*0.4%*	*0.3%*			

		HIGH SERIES FORECAST						FORECAST CHANGE		
Grade	Actual 2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2028-29	2018-19 to 2023-24	2023-24 to 2028-29	2018-19 to 2028-29
K-4	2,236	2,269	2,301	2,307	2,318	2,343	2,454	107	111	218
5-6	941	975	936	955	990	965	1,002	24	37	61
6-8	949	957	970	1,004	964	985	1,029	36	44	80
9-12	1,884	1,914	1,985	2,002	2,085	2,127	2,188	243	61	304
Total	**6,010**	**6,115**	**6,192**	**6,268**	**6,357**	**6,420**	**6,673**	**410**	**253**	**663**
Annual change		*105*	*77*	*76*	*89*	*63*	*51*			
		1.7%	*1.3%*	*1.2%*	*1.4%*	*1.0%*	*0.8%*			

Population Research Center, Portland State University, May 2019.

Individual School Forecasts

Forecasts for individual schools are consistent with the middle series district-wide growth forecast, under a scenario in which current boundaries and grade configurations remain constant. School districts may respond to future enrollment change in various ways that might alter the status quo, such as changing attendance area boundaries or grade configurations, opening or closing schools, and policy or program changes. If new charter or private schools open, enrollment at District-run schools may be affected. However, the individual school forecasts depict what future enrollments might be under current conditions.

The methodology for the individual school forecasts relies on unique sets of GPRs for each school. New kindergarten classes were forecast each year based on recent trends and birth cohorts within elementary attendance areas. Subsequent grades were forecast using GPRs based initially on recent rates and adjusted based on expected levels of housing growth. The final forecasts for individual schools are controlled to match the district-wide forecasts.

Table 14 presents the enrollment forecasts for each school, grouped by school level (elementary, upper elementary, middle, and high). While K-4 totals are expected to grow by nearly 100 students, this is not split evenly among the schools. Harvey Clarke (56 students), Joseph Gale (29 students), Cornelius (23 students), and Fern Hill (15 students), are collectively expected to grow by 123 students over the forecast. Concurrently, small losses are forecast at Echo Shaw (K-4 grades) and Dilley.

Tom McCall Upper Elementary, Echo Shaw (5^{th}-6^{th} grades), and Neil Armstrong Middle School are expected to experience negligible change over the forecast. However, Tom McCall and Neil Armstrong do fluctuate during the middle years of the forecast. Between Fall 2020 and Fall 2022, Neil Armstrong gains 27 students before losing 44 students. Similarly, Tom McCall is expected to change substantially in the first five years of the forecast including a 51 student in 2020-21 and a 35 student gain in 2022-23.

Forest Grove High School adds 182 students during the 10 year period, a gain of 10 percent. C.A.L.C. is held constant at 59 students throughout the forecast period.

Table 14

Enrollment Forecasts for Individual Schools, 2019-20 to 2028-29

	Actual	Forecast										Change 2018-19 to 2028-29	
School	**2018-19**	**2019-20**	**2020-21**	**2021-22**	**2022-23**	**2023-24**	**2024-25**	**2025-26**	**2026-27**	**2027-28**	**2028-29**	**Number**	**Percent**
Cornelius	361	375	379	384	355	363	367	371	376	379	384	23	*6%*
Dilley	250	249	246	238	236	243	241	243	242	244	245	-5	*-2%*
Echo Shaw Elementary (K-4)	305	290	283	284	283	279	279	278	279	280	282	-23	*-8%*
Fern Hill	257	236	240	246	254	261	262	264	266	268	272	15	*6%*
Harvey Clarke	478	486	494	486	499	506	507	513	518	525	534	56	*12%*
Joseph Gale	489	501	512	507	513	501	498	502	503	508	518	29	*6%*
Elementary Totals (K-4)	**2,140**	**2,137**	**2,154**	**2,145**	**2,140**	**2,153**	**2,154**	**2,171**	**2,184**	**2,204**	**2,235**	**95**	***4%***
Echo Shaw Elementary (5-6)	109	119	127	113	107	110	107	105	106	105	104	-5	***-5%***
Tom McCall Upper Elem. (5-6)	778	791	740	766	801	766	763	779	782	790	779	1	***0%***
Upper Elementary Totals (5-6)	**887**	**910**	**867**	**879**	**908**	**876**	**870**	**884**	**888**	**895**	**883**	**-4**	***0%***
Neil Armstrong MS (7-8)	**895**	**895**	**900**	**927**	**883**	**896**	**925**	**892**	**887**	**901**	**905**	**10**	***1%***
Forest Grove HS	1,825	1,835	1,902	1,915	1,985	2,017	1,974	2,018	2,002	1,981	2,007	182	*10%*
C.A.L.C.	59	59	59	59	59	59	59	59	59	59	59	0	*0%*
High School Totals (9-12)	**1,884**	**1,894**	**1,961**	**1,974**	**2,044**	**2,076**	**2,033**	**2,077**	**2,061**	**2,040**	**2,066**	**182**	***10%***
District-run subtotal	**5,806**	**5,836**	**5,882**	**5,925**	**5,975**	**6,001**	**5,982**	**6,024**	**6,020**	**6,040**	**6,089**	**283**	***5%***
F.G. Community School	204	204	204	204	204	204	204	204	204	204	204	0	*0%*
Total Enrollment	**6,010**	**6,040**	**6,086**	**6,129**	**6,179**	**6,205**	**6,186**	**6,228**	**6,224**	**6,244**	**6,293**	**283**	***5%***

Forecast: Population Research Center, Portland State University, May 2019.

FORECAST ACCURACY

In general, forecast error varies according to the size of the population being forecast and the length of the forecast horizon. The smaller the population and the longer the forecast period, the larger the error is likely to be. In particular, the school level forecasts depend on assumptions about the distribution of housing and population growth in small areas within the District, so their relative errors are likely greater than the District-wide forecast error. The forecasts should be used as only one of many tools in the planning process.

The best way to measure potential forecast error is to compare actual enrollments with previous forecasts that were conducted using similar data and methodologies. Additional context about institutional changes or unforeseen circumstances or trends may be helpful. For example, the housing crisis of the late 2000s resulted in enrollment losses in many suburban communities that had been expected to grow based on residential development plans.

Tables 15 and 16 evaluate the most recent forecasts that PRC has prepared for FGSD, three and six years ago. In Table 15, actual FGSD enrollment by grade level in fall 2018 is compared with the 2015-16 forecasts that were prepared in June 2016. As a measure of average error for grade levels and for individual school enrollments, the mean absolute percent error (MAPE) is included in the tables. Measures of forecast error for total K-12 enrollments can benefit from compensating differences among individual grades. The low series forecast was the most accurate of the three series, but the K-12 total in the low series was still 51 students (0.8 percent) higher than actual fall 2018 enrollment.

Table 16 shows that the middle series prepared six years ago was just 69 students (1.1 percent) higher than actual fall 2018 K-12 enrollment. The K-12 total was within the range of the three scenarios, as it was higher than the low series.

Table 15

Fall 2018 Enrollment Compared to Three Year Forecasts[1] by Grade Level

Grade	2018-19 Actual	Middle series forecast[1]			Low series forecast[1]			High series forecast[1]		
		Fcst.	Diff.	Error	Fcst.	Diff.	Error	Fcst.	Diff.	Error
K	416	440	24	*5.8%*	424	8	*1.9%*	456	40	*9.6%*
1	451	463	12	*2.7%*	442	-9	*-2.0%*	478	27	*6.0%*
2	467	445	-22	*-4.7%*	429	-38	*-8.1%*	460	-7	*-1.5%*
3	435	456	21	*4.8%*	439	4	*0.9%*	472	37	*8.5%*
4	467	503	36	*7.7%*	488	21	*4.5%*	519	52	*11.1%*
5	488	525	37	*7.6%*	511	23	*4.7%*	544	56	*11.5%*
6	453	472	19	*4.2%*	462	9	*2.0%*	491	38	*8.4%*
7	496	502	6	*1.2%*	493	-3	*-0.6%*	521	25	*5.0%*
8	453	478	25	*5.5%*	471	18	*4.0%*	494	41	*9.1%*
9	467	480	13	*2.8%*	471	4	*0.9%*	495	28	*6.0%*
10	473	474	1	*0.2%*	466	-7	*-1.5%*	487	14	*3.0%*
11	465	464	-1	*-0.2%*	456	-9	*-1.9%*	475	10	*2.2%*
12	479	519	40	*8.4%*	509	30	*6.3%*	532	53	*11.1%*
Total	**6,010**	**6,221**	**211**	***3.5%***	**6,061**	**51**	***0.8%***	**6,424**	**414**	***6.9%***
MAPE[2]				***4.3%***			***3.0%***			***7.1%***

1. Forecasts for 2018-19 by PSU-PRC, baseline 2015-16 enrollment, prepared June 2016.

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

Table 16

Fall 2018 Enrollment Compared to Six Year Forecasts[1] by Grade Level

Grade	2018-19 Actual	Middle series forecast[1]			Low series forecast[1]			High series forecast[1]		
		Fcst.	Diff.	Error	Fcst.	Diff.	Error	Fcst.	Diff.	Error
K	416	418	2	*0.5%*	401	-15	*-3.6%*	436	20	*4.8%*
1	451	424	-27	*-6.0%*	406	-45	*-10.0%*	445	-6	*-1.3%*
2	467	424	-43	*-9.2%*	407	-60	*-12.8%*	444	-23	*-4.9%*
3	435	435	0	*0.0%*	421	-14	*-3.2%*	454	19	*4.4%*
4	467	460	-7	*-1.5%*	447	-20	*-4.3%*	476	9	*1.9%*
5	488	481	-7	*-1.4%*	467	-21	*-4.3%*	496	8	*1.6%*
6	453	489	36	*7.9%*	475	22	*4.9%*	500	47	*10.4%*
7	496	495	-1	*-0.2%*	483	-13	*-2.6%*	503	7	*1.4%*
8	453	495	42	*9.3%*	485	32	*7.1%*	500	47	*10.4%*
9	467	506	39	*8.4%*	497	30	*6.4%*	511	44	*9.4%*
10	473	467	-6	*-1.3%*	459	-14	*-3.0%*	472	-1	*-0.2%*
11	465	483	18	*3.9%*	475	10	*2.2%*	490	25	*5.4%*
12	479	502	23	*4.8%*	492	13	*2.7%*	509	30	*6.3%*
Total	**6,010**	**6,079**	**69**	***1.1%***	**5,915**	**-95**	***-1.6%***	**6,236**	**226**	***3.8%***
MAPE[2]				***4.2%***			***5.2%***			***4.8%***

1. Forecasts for 2018-19 by PSU-PRC, baseline 2012-13 enrollment, prepared January 2013.

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

APPENDIX A

FOREST GROVE SCHOOL DISTRICT

LOW, MEDIUM, AND HIGH FORECAST SCENARIOS, 2019-20 TO 2028-29

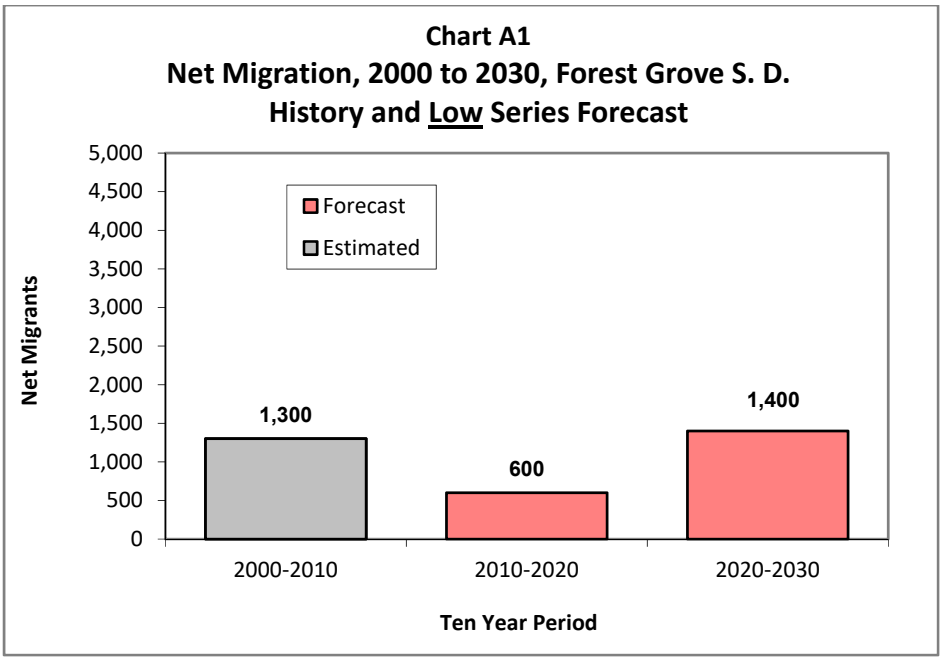


Chart A1
Net Migration, 2000 to 2030, Forest Grove S. D.
History and Low Series Forecast
Net Migrants
5,000
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
0
Forecast
Estimated
1,300
600
1,400
2000-2010
2010-2020
2020-2030
Ten Year Period

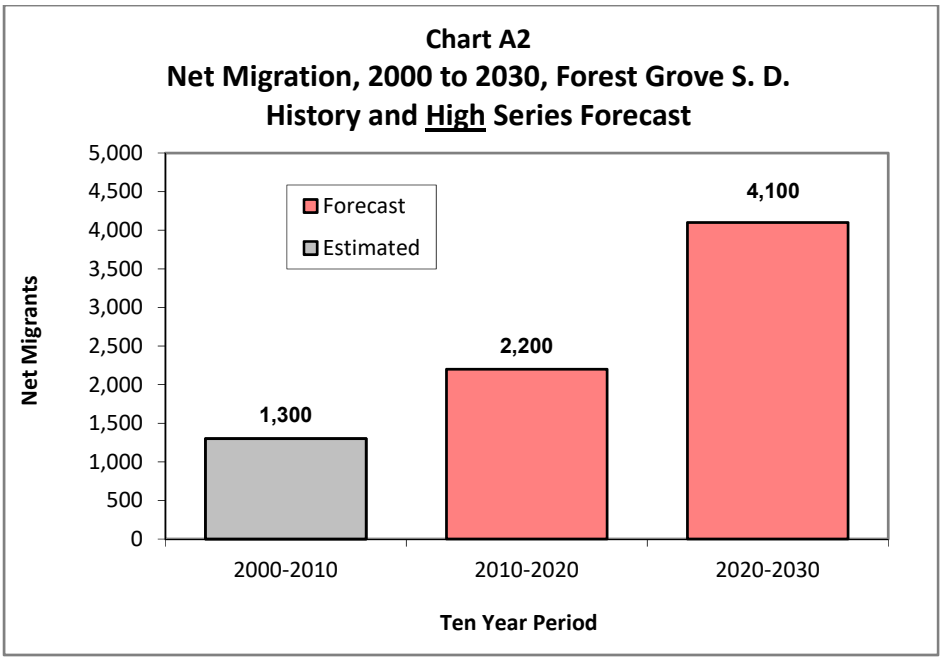


Chart A2
Net Migration, 2000 to 2030, Forest Grove S. D.
History and High Series Forecast
Net Migrants
5,000
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
0
Forecast
Estimated
1,300
2,200
4,100
2000-2010
2010-2020
2020-2030
Ten Year Period

Table A1

Population by Age Group, Low Series Forecast
Forest Grove School District, 2000 to 2030

	2000 Census	2010 Census	2020 Forecast	2030 Forecast	2010 to 2030 Change	
					Number	Percent
Under Age 5	2,385	2,421	2,338	2,444	23	*1%*
Age 5 to 9	2,491	2,622	2,338	2,557	-65	*-2%*
Age 10 to 14	2,316	2,616	2,390	2,572	-44	*-2%*
Age 15 to 17	1,323	1,667	1,496	1,549	-118	*-7%*
Age 18 to 19	1,172	1,321	1,371	1,224	-97	*-7%*
Age 20 to 24	2,439	2,668	2,904	2,719	51	*2%*
Age 25 to 29	2,181	2,165	2,560	2,508	343	*16%*
Age 30 to 34	2,171	2,142	2,337	2,626	484	*23%*
Age 35 to 39	2,297	2,219	2,175	2,532	313	*14%*
Age 40 to 44	2,209	2,311	2,271	2,464	153	*7%*
Age 45 to 49	1,912	2,288	2,235	2,130	-158	*-7%*
Age 50 to 54	1,701	2,277	2,331	2,327	50	*2%*
Age 55 to 59	1,191	1,884	2,222	2,174	290	*15%*
Age 60 to 64	913	1,623	2,140	2,198	575	*35%*
Age 65 to 69	749	1,122	1,733	2,038	916	*82%*
Age 70 to 74	706	805	1,405	1,826	1,021	*127%*
Age 75 to 79	729	641	919	1,352	711	*111%*
Age 80 to 84	592	557	590	987	430	*77%*
Age 85 and over	741	782	703	772	-10	*-1%*
Total Population	**30,218**	**34,131**	**36,458**	**39,000**	**4,869**	***14%***
Total age 5 to 17	6,130	6,905	6,224	6,678	-227	*-3%*
share age 5 to 17	*20.3%*	*20.2%*	*17.1%*	*17.1%*		

		2000-2010	2010-2020	2020-2030
Population Change		**3,913**	**2,327**	**2,542**
Percent		*13%*	*7%*	*7%*
Average Annual		*1.2%*	*0.7%*	*0.7%*

Source: U.S. Census Bureau, 2000 and 2010 Censuses; data aggregated to FGSD boundary by Portland State University Population Research Center. PSU-PRC Forecasts, 2020 and 2030.

Table A2

Population by Age Group, High Series Forecast

Forest Grove School District, 2000 to 2030

	2000 Census	2010 Census	2020 Forecast	2030 Forecast	2010 to 2030 Change	
					Number	Percent
Under Age 5	2,385	2,421	2,454	2,834	413	*17%*
Age 5 to 9	2,491	2,622	2,486	2,915	293	*11%*
Age 10 to 14	2,316	2,616	2,571	2,945	329	*13%*
Age 15 to 17	1,323	1,667	1,629	1,775	108	*6%*
Age 18 to 19	1,172	1,321	1,527	1,354	33	*3%*
Age 20 to 24	2,439	2,668	2,993	3,182	514	*19%*
Age 25 to 29	2,181	2,165	2,643	3,017	852	*39%*
Age 30 to 34	2,171	2,142	2,411	2,942	800	*37%*
Age 35 to 39	2,297	2,219	2,255	2,812	593	*27%*
Age 40 to 44	2,209	2,311	2,346	2,703	392	*17%*
Age 45 to 49	1,912	2,288	2,300	2,313	25	*1%*
Age 50 to 54	1,701	2,277	2,408	2,508	231	*10%*
Age 55 to 59	1,191	1,884	2,288	2,338	454	*24%*
Age 60 to 64	913	1,623	2,204	2,364	741	*46%*
Age 65 to 69	749	1,122	1,792	2,181	1,059	*94%*
Age 70 to 74	706	805	1,455	1,967	1,162	*144%*
Age 75 to 79	729	641	968	1,472	831	*130%*
Age 80 to 84	592	557	635	1,095	538	*97%*
Age 85 and over	741	782	762	902	120	*15%*
Total Population	**30,218**	**34,131**	**38,127**	**43,620**	**9,489**	***28%***
Total age 5 to 17	6,130	6,905	6,686	7,635	730	*11%*
share age 5 to 17	*20.3%*	*20.2%*	*17.5%*	*17.5%*		

		2000-2010	2010-2020	2020-2030
Population Change		**3,913**	**3,996**	**5,492**
Percent		*13%*	*12%*	*14%*
Average Annual		*1.2%*	*1.1%*	*1.4%*

Source: U.S. Census Bureau, 2000 and 2010 Censuses; data aggregated to FGSD boundary by Portland State University Population Research Center. PSU-PRC Forecasts, 2020 and 2030.

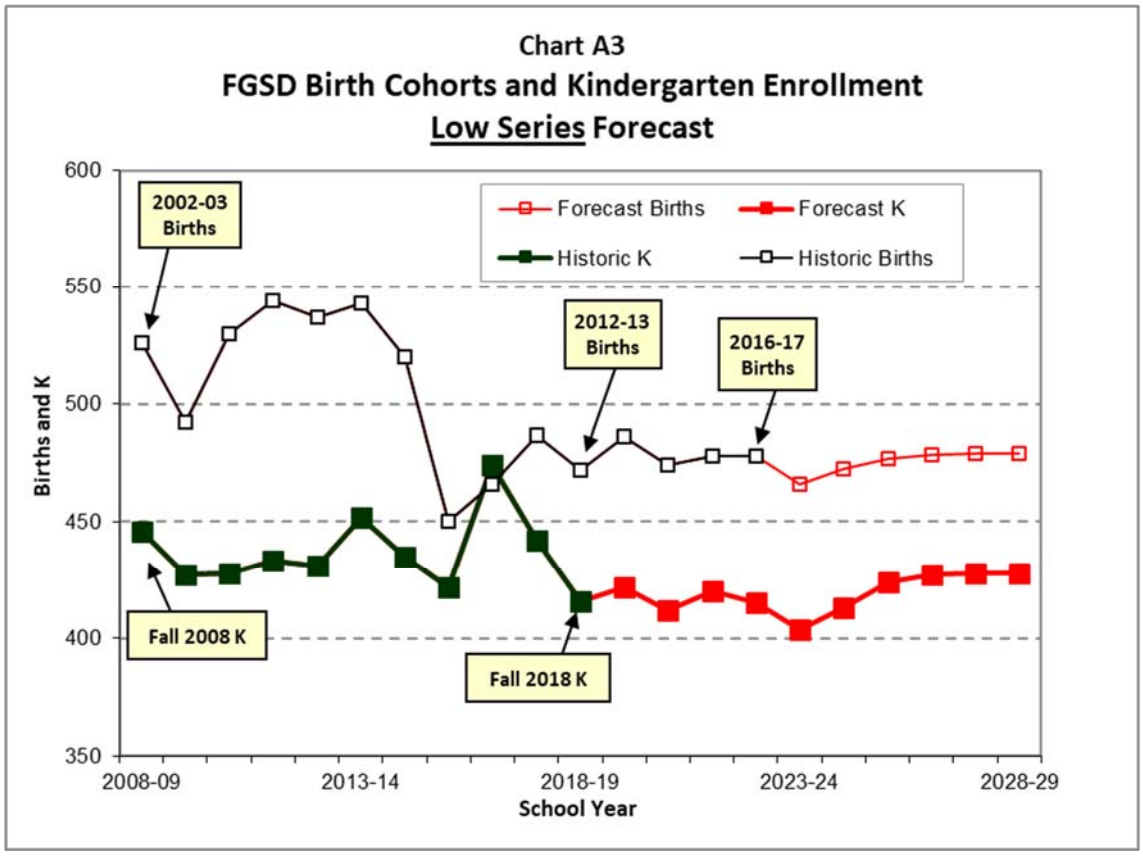


Chart A3
FGSD Birth Cohorts and Kindergarten Enrollment
Low Series Forecast
Forecast Births
Forecast K
Historic K
Historic Births
2002-03 Births
2012-13 Births
2016-17 Births
Fall 2008 K
Fall 2018 K
Births and K
School Year
600
550
500
450
400
350
2008-09
2013-14
2018-19
2023-24
2028-29

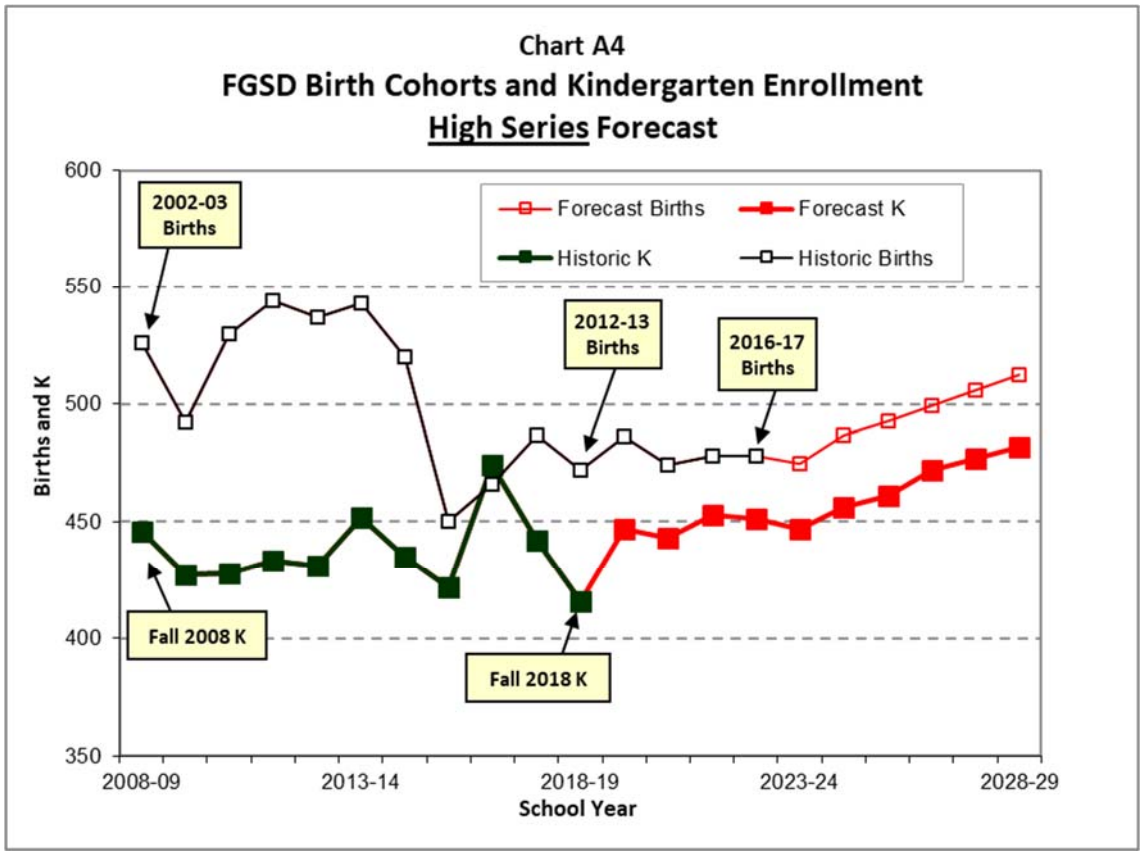


Chart A4
FGSD Birth Cohorts and Kindergarten Enrollment
High Series Forecast
Forecast Births
Forecast K
Historic K
Historic Births
2002-03 Births
2012-13 Births
2016-17 Births
Fall 2008 K
Fall 2018 K
Births and K
School Year
600
550
500
450
400
350
2008-09
2013-14
2018-19
2023-24
2028-29

Table A3

Forest Grove S.D., Low Series Enrollment Forecasts, 2019-20 to 2028-29*

	Actual	Forecast									
Grade	**2018-19**	**2019-20**	**2020-21**	**2021-22**	**2022-23**	**2023-24**	**2024-25**	**2025-26**	**2026-27**	**2027-28**	**2028-29**
K	416	422	412	420	415	404	413	424	427	428	428
1	451	415	429	420	427	422	410	419	430	434	434
2	467	451	420	434	425	432	427	415	424	435	439
3	435	467	458	426	440	431	438	433	421	430	441
4	467	440	476	467	434	449	440	447	442	429	439
5	488	456	434	470	461	428	443	434	441	436	423
6	453	492	468	446	483	473	439	455	446	453	448
7	496	447	491	467	445	482	472	438	454	445	452
8	453	491	446	490	466	444	481	471	437	453	444
9	467	479	524	476	523	498	474	514	503	467	484
10	473	462	478	522	475	521	497	473	512	501	466
11	465	468	461	477	520	474	519	495	472	510	499
12	479	469	476	469	485	529	482	528	503	480	519
Total	**6,010**	**5,959**	**5,973**	**5,984**	**5,999**	**5,987**	**5,935**	**5,946**	**5,912**	**5,901**	**5,916**
Annual change		*-51* *-0.8%*	*14* *0.2%*	*11* *0.2%*	*15* *0.3%*	*-12* *-0.2%*	*-52* *-0.9%*	*11* *0.2%*	*-34* *-0.6%*	*-11* *-0.2%*	*15* *0.3%*
K-4	2,236	2,195	2,195	2,167	2,141	2,138	2,128	2,138	2,144	2,156	2,181
5-6	941	948	902	916	944	901	882	889	887	889	871
7-8	949	938	937	957	911	926	953	909	891	898	896
9-12	1,884	1,878	1,939	1,944	2,003	2,022	1,972	2,010	1,990	1,958	1,968

	2018-19 to 2023-24		2023-24 to 2028-29		2018-19 to 2028-29	
	5 yr. chg.	**Pct.**	**5 yr. chg.**	**Pct.**	**10 yr. chg.**	**Pct.**
K-4	-98	*-4%*	43	*2%*	-55	*-2%*
5-6	-40	*-4%*	-30	*-3%*	-70	*-7%*
7-8	-23	*-2%*	-30	*-3%*	-53	*-6%*
9-12	138	*7%*	-54	*-3%*	84	*4%*
Total	**-23**	***0%***	**-71**	***-1%***	**-94**	***-2%***

**Note: Includes Forest Grove Community School.*

Population Research Center, Portland State University, May 2019.

Table A4

Forest Grove S.D., Middle Series Enrollment Forecasts, 2019-20 to 2028-29*

	Actual	Forecast									
Grade	**2018-19**	**2019-20**	**2020-21**	**2021-22**	**2022-23**	**2023-24**	**2024-25**	**2025-26**	**2026-27**	**2027-28**	**2028-29**
K	416	434	428	438	435	428	437	445	452	455	458
1	451	425	444	437	448	444	436	446	454	461	464
2	467	456	432	451	444	455	451	443	453	461	468
3	435	471	464	440	459	452	463	459	451	461	469
4	467	447	482	475	450	470	463	474	470	462	472
5	488	464	442	477	470	445	465	458	469	465	457
6	453	500	479	456	492	485	459	480	473	484	480
7	496	453	501	480	457	493	486	460	481	474	485
8	453	496	453	501	480	457	493	486	460	481	474
9	467	483	531	485	536	514	489	528	520	493	515
10	473	466	483	531	485	536	514	489	528	520	493
11	465	472	466	483	531	485	536	514	489	528	520
12	479	473	481	475	492	541	494	546	524	499	538
Total	**6,010**	**6,040**	**6,086**	**6,129**	**6,179**	**6,205**	**6,186**	**6,228**	**6,224**	**6,244**	**6,293**
Annual change		*30* *0.5%*	*46* *0.8%*	*43* *0.7%*	*50* *0.8%*	*26* *0.4%*	*-19* *-0.3%*	*42* *0.7%*	*-4* *-0.1%*	*20* *0.3%*	*49* *0.8%*
K-4	2,236	2,233	2,250	2,241	2,236	2,249	2,250	2,267	2,280	2,300	2,331
5-6	941	964	921	933	962	930	924	938	942	949	937
7-8	949	949	954	981	937	950	979	946	941	955	959
9-12	1,884	1,894	1,961	1,974	2,044	2,076	2,033	2,077	2,061	2,040	2,066

	2018-19 to 2023-24		2023-24 to 2028-29		2018-19 to 2028-29	
	5 yr. chg.	**Pct.**	**5 yr. chg.**	**Pct.**	**10 yr. chg.**	**Pct.**
K-4	13	*1%*	82	*4%*	95	*4%*
5-6	-11	*-1%*	7	*1%*	-4	*0%*
7-8	1	*0%*	9	*1%*	10	*1%*
9-12	192	*10%*	-10	*0%*	182	*10%*
Total	**195**	***3%***	**88**	***1%***	**283**	***5%***

**Note: Includes Forest Grove Community School.*

Population Research Center, Portland State University, May 2019.

Table A5

Forest Grove S.D., High Series Enrollment Forecasts, 2019-20 to 2028-29*

	Actual	Forecast									
Grade	**2018-19**	**2019-20**	**2020-21**	**2021-22**	**2022-23**	**2023-24**	**2024-25**	**2025-26**	**2026-27**	**2027-28**	**2028-29**
K	416	447	443	453	451	447	456	461	472	477	482
1	451	435	455	454	465	462	458	467	472	483	488
2	467	460	443	464	462	474	471	467	476	481	492
3	435	476	470	452	474	472	484	481	477	486	491
4	467	451	490	484	466	488	486	498	495	491	501
5	488	468	449	488	482	464	486	484	496	493	489
6	453	507	487	467	508	501	483	506	503	516	513
7	496	457	511	491	471	512	505	487	510	507	520
8	453	500	459	513	493	473	514	507	489	512	509
9	467	488	537	493	551	529	508	552	544	525	550
10	473	470	489	538	494	552	530	509	553	545	526
11	465	477	471	490	539	495	553	531	510	554	546
12	479	479	488	481	501	551	506	565	543	521	566
Total	**6,010**	**6,115**	**6,192**	**6,268**	**6,357**	**6,420**	**6,440**	**6,515**	**6,540**	**6,591**	**6,673**
Annual change		*105* *1.7%*	*77* *1.3%*	*76* *1.2%*	*89* *1.4%*	*63* *1.0%*	*20* *0.3%*	*75* *1.2%*	*25* *0.4%*	*51* *0.8%*	*82* *1.2%*
K-4	2,236	2,269	2,301	2,307	2,318	2,343	2,355	2,374	2,392	2,418	2,454
5-6	941	975	936	955	990	965	969	990	999	1,009	1,002
7-8	949	957	970	1,004	964	985	1,019	994	999	1,019	1,029
9-12	1,884	1,914	1,985	2,002	2,085	2,127	2,097	2,157	2,150	2,145	2,188

	2018-19 to 2023-24		**2023-24 to 2028-29**		**2018-19 to 2028-29**	
	5 yr. chg.	**Pct.**	**5 yr. chg.**	**Pct.**	**10 yr. chg.**	**Pct.**
K-4	107	*5%*	111	*5%*	218	*10%*
5-6	24	*3%*	37	*4%*	61	*6%*
7-8	36	*4%*	44	*4%*	80	*8%*
9-12	243	*13%*	61	*3%*	304	*16%*
Total	**410**	***7%***	**253**	***4%***	**663**	***11%***

**Note: Includes Forest Grove Community School.*

Population Research Center, Portland State University, May 2019.

APPENDIX B

POPULATION, HOUSING, SOCIAL AND ECONOMIC PROFILE

Population, Housing, Social and Economic Profile
Forest Grove School District 15, Oregon

	2008-2012			2013-2017			Compare
	Estimate	CV *	Margin of Error (+/-)	Estimate	CV *	Margin of Error (+/-)	Statistically Different?
POPULATION							
Total population	33,076		886	37,344		707	**
Percent under 18 years	*26.6%*		*1.8%*	*26.2%*		*1.4%*	
Percent 65 years and over	*12.5%*		*1.0%*	*13.3%*		*1.0%*	
Median age (years)	34.3		1.4	34.0		1.2	
Percent white alone, non-Latino	*67.6%*		*2.9%*	*61.6%*		*2.4%*	**
HOUSING							
Total housing units	11,987		522	12,907		399	**
Occupied housing units	11,247		424	12,204		370	**
Owner occupied	7,237		386	8,108		339	**
Percent owner-occupied	*64.3%*		*2.6%*	*66.4%*		*2.4%*	
Renter occupied	4,010		336	4,096		342	
Vacant housing units***	740		264	703		240	
Vacancy rate	*6.2%*		*2.1%*	*5.4%*		*1.8%*	
Average household size	2.83		0.11	2.96		0.08	
Renter households paying more than 30 percent of household income on rent plus utilities	*61.2%*		*6.2%*	*50.3%*		*6.1%*	**
SOCIAL							
Age 25+ with a bachelor's degree or higher	*18.8%*		*2.6%*	*21.5%*		*1.8%*	
Foreign-born population	4,695		600	6,241		618	**
Percent foreign-born	*14.2%*		*1.7%*	*16.7%*		*1.6%*	**
Age 5+ language other than English at home	7,627		903	10,259		764	**
Percent language other than English	*25.0%*		*2.8%*	*29.5%*		*2.0%*	**
ECONOMIC							
Median household income (2017 dollars)	$53,192		$3,038	$57,569		$3,944	
Per capita income (2017 dollars)	$23,953		$1,525	$24,354		$1,265	
Percent of persons below poverty level	*17.8%*		*2.6%*	*12.7%*		*2.3%*	**

** Green, yellow, and red icons indicate the reliabilty of each estimate using the coefficient of variation (CV). The lower the CV, the more reliable the data. High reliability (CV <15%) is shown in green, medium reliability (CV between 15-30% - be careful) is shown in yellow, and low reliability (CV >30% - use with extreme caution) is shown in red. However, there are no absolute rules for acceptable thresholds of reliability. Users should consider the margin of error and the need for precision.*

*** Indicates that the two estimates are statistically different based on results of z-test taking into account the difference between the two estimates as well as an approximation of the standard errors of both estimates.*

**** Vacant units include those for sale or rent, those sold or rented but not yet occupied, those held for seasonal, recreational, or occasional use, as well as other vacant such as homes under renovation, settlement of an estate, or foreclosures.*

Source: U.S. Census Bureau, American Community Survey 5 year estimates. Surveys are collected over a 60 month period. Estimates represent average characteristics over the entire period. Tabulated by Population Research Center, Portland State University, with additional calculations from source data as needed.