



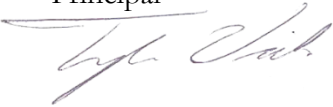
MEMORANDUM


To: Ms. Kathy Ludwig
Superintendent
West Linn-Wilsonville School District

Date: October 31, 2018

From: Tyler Vick
Principal

Project: F1580.01.01


Jerry Oelerich
Data Analyst



RE: Enrollment Forecasts Report – West Linn-Wilsonville School District

At your request, FLO Analytics (FLO) conducted demographic and geographic analysis to assist the West Linn-Wilsonville School District (District) in understanding enrollment trends and to produce forecasts of future student enrollment. The analysis was completed through three main tasks: 1) Student Enrollment Assessment 2) Land Use Analysis 3) Projected Student Enrollment Distribution Analysis. These forecasts provide the number of students by individual grade and grade group that will be residing in each of the District's elementary, middle, and high school attendance areas, as well as attending each of the District's elementary, middle, and high schools at the beginning of the 2019–20 through 2028–29 school years.

The forecasts included in this memo are based on October 1, 2017 enrollment, and were prepared prior to realization of—and were not informed by—actual October 1, 2018 enrollment. Originally, in a September 24, 2018 memo, FLO provided the District with forecasts for the 2018–19 through 2027–28 school years, with 2017–18 as the base year. This memo includes those same forecasts for the 2019–20 through 2027–28 school years, with 2028–29 forecasts added at District request to support specific capital facilities planning needs. The original 2018–19 forecasts have been replaced with actual October 1st, 2018 enrollment numbers.

Note that all housing development information included in the Land Use Analysis summary below, which informed the enrollment forecasts, was current as of October 2017.

SUMMARY FINDINGS

Student Enrollment Assessment:

- FLO's analysis occurred within the boundaries of the District (Figure 1). Individual students were mapped and geocoded to the parcel-level. Figure 2 shows the distribution of students across the District.

Land Use Analysis:

- Of students enrolled in District schools in 2018–19, 83% reside in single-family (SF) housing, 16% in multi-family (MF) housing, and 2% in housing that FLO is unable to immediately classify as SF or MF. Development data compiled by FLO indicates that the MF percentage is likely to increase over the projection range.
- FLO conducted in-person or phone interviews with planners from Clackamas County and the municipalities of West Linn, Wilsonville, and Tualatin to discuss foreseeable residential growth within the District throughout the projection range. Zoning and key development data acquired through these meetings for West Linn are presented in Figure 3 and 4, which Figure 4 showing the locations of expected SF and MF developments. Figures 5 and 6 show the same for Wilsonville. More detailed information from these meetings, as well as assumptions made by FLO staff, are available within the GeoPlanner web application, as well as upon request.
- The most notable areas of residential development include Frog Pond and Villebois, both located within Wilsonville.
- Frog Pond will consist of three areas, built in three general phases, with a planned total capacity of approximately 1,800 units, based on information gathered during the spring and summer of 2018. Frog Pond West, located north of Boeckman Rd. and west of Stafford Rd., is currently under construction and planned to accommodate approximately 575 units. Frog Pond East, located north of Advance Rd. and east of Stafford Rd., is currently within an urban reserve area and is planned to accommodate approximately 760 units. Frog Pond South, located south of Advance Rd and east of Meridian Creek Middle School, is currently within an urban reserve area and is planned to accommodate approximately 475 units. Construction on East is anticipated to begin within the 10-year forecast horizon, after completion of West. We do not anticipate construction on South to begin until after 2028.
- Villebois, located in west-central Wilsonville, has a planned capacity of 2,151 units. Construction is ongoing and is approximately 65% built-out. Approximately 806 units remain to be built.
- West Linn does not possess any similarly large developments. Rather, there are a number of small to medium-sized areas of unincorporated County that may be annexed by the City of West Linn. These areas have capacities that range from two to sixty units. The City also

currently has no plans to expand the UGB with intent to develop urban reserve in the near future.

5-year Enrollment Forecasts Summary:

- Between the 2018–19 and 2023–24 school years, overall District building attendance enrollment (headcount) is projected to increase from 9,832 to 10,758 or by 9.4%.
- The District is projected to capture 88.1% of the projected District population of all school-age children (12,072 children). The grade and attendance-level capture rates used were informed by known 2017 student data. Note that out-of-District students accounted for 4.5% of enrollment in 2018–19; due to recent policy changes regarding inter-district transfers, we project this percentage will fall to 0.5% by 2028–29.
- Included in these projections is an increase in grades:
 - K–5 enrollment from 4,242 to 4,658 (9.8% gain)
 - 6–8 enrollment from 2,391 to 2,570 (7.5% gain)
 - 9–12 enrollment from 3,199 to 3,530 (10.3% gain)
- Both these and the 10-year building attendance forecasts exclude preschool (PS) and Three Rivers Charter students.

10-year Enrollment Forecasts Summary:

- Between the 2023–24 and 2028–29 school years, overall District enrollment (headcount) is projected to increase from 10,758 to 11,424 or by 6.2%.
- The District is projected to capture 88.2% of the projected District population of school-age children (12,885 children).
- Included in these forecasts is an increase in grades:
 - K–5 enrollment from 4,658 to 4,791 (2.9% gain)
 - 6–8 enrollment from 2,570 to 2,774 (7.9% gain)
 - 9–12 enrollment from 3,530 to 3,859 (9.3% gain)
- Over the 10-year range, these 2028–29 forecasts represent an increase over 2018–19 counts by 16.2% for overall District enrollment, 12.9% for grades K–5, 16.0% for grades 6–8, and 20.6% for grades 9–12.

Annual District-Wide Building Attendance Enrollment Forecasts by Grade Group:

- Figure 7 shows the total annual District building attendance enrollment projections through the 2028–29 horizon for low, medium (preferred), and high-growth scenarios. Figure 8 shows the enrollment projections broken down by grade group for the medium growth series.

- Figures 9–11 provides elementary, middle, and high school building attendance enrollment projections through 2028–29, respectively, for low, medium, and high-growth scenarios.

Detailed Attendance Area Residence-Based Forecasts:

- Figures 12–14 detail projected change over the next ten years in the number of district students residing in each attendance area for elementary, middle, and high, respectively. Note that our forecasts are produced at a significantly more granular level—that of Census block group, of which there are 28 in the District. For future boundary scenario modeling (or other) work, these more granular projections are available upon request, and can be accurately aggregated to current or future attendance area boundaries.
- Figures 15–17 provide annual forecasts by attendance area and grade of District students residing in each attendance area for elementary, middle, and high, respectively. Figure 18 provides District grade totals (and includes both residence-based and building attendance totals by grade group).

Detailed Building Attendance Forecasts:

- Figures 19–21 detail projected change over the next ten years in the number of District students attending elementary, middle, and high school buildings, respectively.
- Figures 22–24 provide annual forecasts by building and grade of District students attending each elementary, middle, and high school building, respectively.
- Building attendance forecasts are derived from the attendance area residence forecasts using an analysis of the rates of intra-district transfer for specific grades, as well as rates of out of district student enrollment. For this forecast set, the October 1, 2017 student information system (SIS) was used as the basis for this analysis, as it provides the address (which we geocoded to the parcel-level) and attending building for each student.

Helpful Notes on Using Forecasts:

- The two fundamental types of student enrollment forecasts are building/program attendance (i.e., the number of students expected to attend school at a specific building), and residence-based (i.e., the number of students expected to reside within a certain region, whether it be the District as a whole, or individual attendance areas). This report contains both residence-based and building/program attendance forecasts.
- Residence-based forecasts are generally more accurate than building attendance forecasts, as they are not subject to variability linked to student choices (e.g., intra-district transfers), movement of program locations, constraints on intra-district transfers imposed by building capacities, etc.
- Residence-based forecasts are rooted in student location, and therefore, with the proper granularity, can be re-allocated to different boundaries besides the current attendance areas.

This, coupled with their increased accuracy over building attendance forecasts, makes them more suitable for boundary scenario modeling.

- In district-wide totals, building attendance forecasts will always be greater than residence-based ones, as by definition, only the building attendance forecasts include out-of-district students.
- Finally, when comparing building attendance and residence-based forecasts for an individual school, it is important to recognize that the two can sometimes vary quite considerably. In some cases the building attendance is higher than the count of students residing in the corresponding attendance area, while at other times it is lower.
- In addition to traditional attendance areas, the District possesses choice zones at the elementary (Boeckman Creek - Stafford) and middle school (Athey Creek - Rosemont Ridge and Meridian Creek - Athey Creek) levels. Students living within these areas have the ability to choose which of elementary or middle school they would like to attend. Choice zones are by design less restrictive than the typical application process for intra-district transfers, and therefore, are less predictable. Although historic data on enrollment patterns helps anticipate future choice, the nature of choice zones adds a considerable degree of uncertainty when forecasting future decisions made by students living with choice zones.
- Upon District request, Figures 25-29 were created to provide more detailed information on factors influencing forecasting:
 - Figure 25: District-Wide Birth Factors
 - Figure 26: Student Yield Factors Used
 - Figures 27-29: Enrollment Patterns (Elementary, Middle, and High School)

ENROLLMENT FORECASTS METHODOLOGY

EXTERNAL DATA SOURCES

In addition to historic enrollment and housing development data provided by the District, FLO used the following external data sources to inform our student enrollment forecasts:

Enrollment Forecasting:

- US Census and American Community Survey
- Esri 2017/2022 US Demographics
- Historic October Enrollment provided by the District
- Oregon Department of Education (ODE) October Enrollment
- Oregon Health Authority (OHA) birth data

- Portland State University Population Research Center (PSU PRC) annual July 1 population estimates
- PSU PRC Oregon Population Forecast Program (OPFP) county and urban growth boundary forecasts
- Davis Demographics 2013-2017 Enrollment Forecast Reports

Student Enrollment Assessment and Land Use Analysis:

- Student addresses and attribute data from the District's October 1, 2017 student information system (SIS)
- School attendance area boundaries provided by the District
- Clackamas County Parcels
- 2017 Statewide Urban Growth Boundaries and City Limits from Oregon Geospatial Enterprise Office's Oregon Spatial Data Library
- Development data compiled by the District
- FLO-conducted interviews with planners from Clackamas County and the municipalities of West Linn, Wilsonville, and Tualatin

INITIAL STEPS

Our first step in preparing enrollment forecasts is to perform a detailed assessment of the geographic distribution of District students, as well as historic enrollment trends (i.e., last five years). The results of this preliminary analysis feed into our enrollment forecasts, which use a combination of the demographic cohort-component model to forecast population for the District by age and sex, and the enrollment rate method, which advances each age cohort through successive grade levels. In the former, the components of population change are births, deaths, and migration (which includes a detailed analysis of expected housing development and resulting student yields).

USE OF ENROLLMENT RATE METHOD

In terms of linking historic enrollment trends to future enrollment forecasts, the enrollment rate method is first used to look at the percent of five-year-olds living in the District boundary in the 2017–18 school year that enrolled in K at District schools. This is referred to as the K enrollment (or “capture”) rate. Separate enrollment rates are computed in a similar manner for each of the other age/grade cohorts present in 2017–18 (i.e., 1st through 12th grades). These cohort-specific enrollment rates modified based on certain assumptions (e.g., drop-out rates in high school), are the primary basis for determining the rate at which each given cohort will be enrolled in the future, and can be thought of as a means of calibrating the future enrollment forecasts. For example, the 2017–

18 3rd grade enrollment rate of 8-year-olds heavily informs the 8th grade capture rate of the projected 13-year-old District population in 2022–23, and so forth.

Note that following calculations applying capture rates to available school-age children, a 3-year average of grade progression ratios (e.g., ratio of 2nd graders for a given year to 1st graders in the year prior) is enforced at the District level.

PROJECTING NET MIGRATION

Another way historic enrollment data are used is by leveraging knowledge of the geographic distribution of the 2017–18 student population to calculate enrollment rates at the sub-District level. To do this, FLO divided the District into 12 regions (corresponding to Census tracts), each with a sufficient number of students at each grade level to permit statistical calculations. These sub-District, cohort-specific enrollment rates were applied as a baseline to new District school-age children projected to be added due to net in-migration over the next five years. Note that the future migration rate and population projections used, which were largely informed by Esri’s 2017/2022 US Demographics, were prepared at an even finer geographic resolution (Census block groups), and at units that are generally socioeconomically distinct from each other.

The Esri 2017/2022 US Demographics dataset is prepared using recent growth trends derived from US Census and state/local sources such as OFM, and account for regional land use and comprehensive plans, publicly available development data (i.e., permits), housing inventory, and US Postal Service carrier route additions to track growth. Prior to use, FLO reviews these data and confirm proper assumptions and incorporation of local data sources, particularly with respect to any publicly available vacant lands and comprehensive plan data, making modifications as warranted based on our detailed review of local data. In particular, FLO performs a very detailed analysis to incorporate expected housing development and associated student yields.

The benefit of this approach is that the geographic analysis performed allowed for a granular forecasting of how many of the eligible new children in the District over the next five years will enroll in District schools, which is expected to be more accurate than simply using District-level rates to predict capture. This is key, as migration often plays a larger role in future enrollment levels than any other factor—more so than gradual changes in birth rate, for example—but can vary greatly within a region.

At the end of each 5-year window, the attendance area numbers are modified as needed to ensure they are consistent with District-wide numbers, which are computed using only District-wide population and historic enrollment numbers. In this way, the District-wide numbers are used to “control” the attendance area-level numbers.

LONGER-TERM FORECASTS (10-YEAR)

Our 10-year forecasts assume similar Census tract-level migration patterns between 2023–24 and 2028–29 as were applied between 2018–19 and 2023–24, only scaled back proportionately as the slowing in District total population growth, as well as quantities of buildable land within district boundaries and the relative rates at which those spaces are expected to be built out (e.g., as ascertained from review of all known development data).

2017–22 births, which inform K classes beginning with the 2022–23 school, were projected based on a review of historic OHA zip code birth data throughout the District, forecasted population of females of child-bearing age throughout the District, and county and state trends in fertility (declining).

In terms of capture rate, the grade-specific rates computed from the 2017–18 student enrollment assessment are used. Also, as with the shorter-term projections, a 3-year average of grade progression ratios are enforced at the District level.

FIGURES

