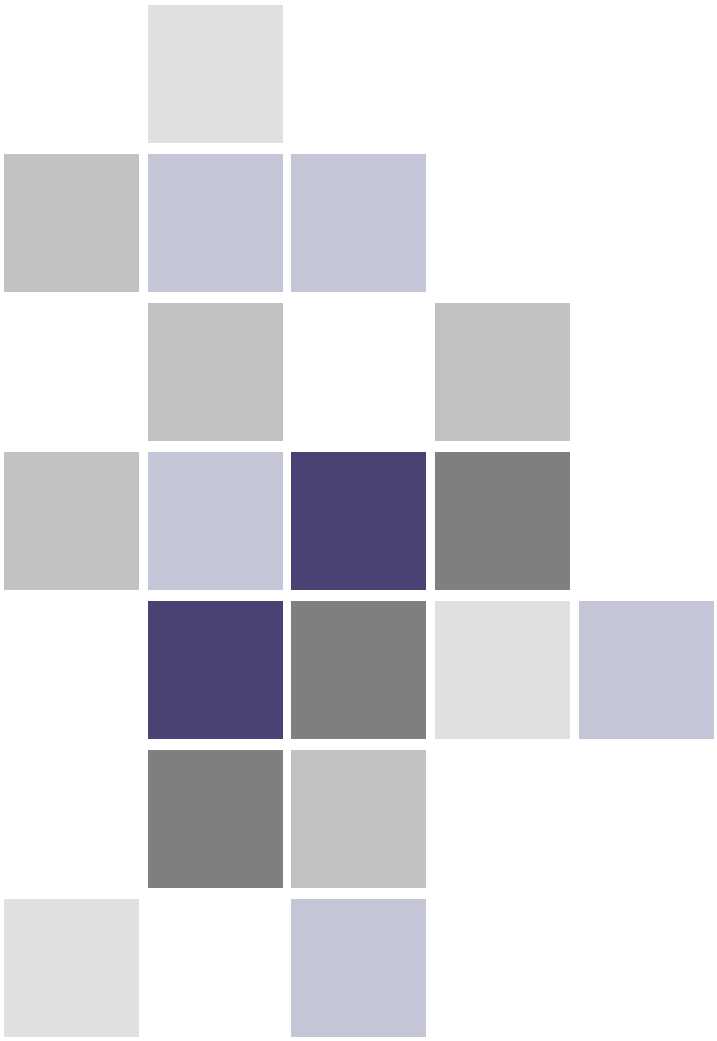
MGT CONSULTING GROUP

WENTZVILLE SCHOOL DISTRICT

DEMOGRAPHICS, ENROLLMENT, CAPACITY, AND UTILIZATION STUDY

Final Report

May 21, 2019



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EXECUTIVE SUMMARY

The overall population of Wentzville School District has grown steadily in recent years. From 2010 to 2017, the population has grown 17.1%, or from 82,893 to 97,036. All age groups experienced increases. The school-age population has increased 21.5%. Although the population of females of child-bearing age has decreased slightly, the future school-age population (under 5) has increased.

Wentzville School District has been and continues to be predominantly White. In 2017, the district was 90% White. While Hispanics or Latinos only account for 3% of the population, there was 28% growth from 2010 to 2017. Only 2.9% of the district's population is foreign born.

Unemployment in the district is low at 3.3% and the average median household income in the district was $80,324 in 2017. Owner-occupied homes account for 82.2% of all occupied homes.

Wentzville School District K-12 enrollment has increased from 12,125 students in 2009-10 to 16,802 in 2018-19, or 38.57%. The grade band that experienced the most growth is the 9-12 grade band that grew 49.39%. Population growth in the area has fueled the enrollment growth. Further growth is expected with new housing development occurring in the northwest area of the district.

Enrollment is expected to increase 27% over the next ten years, reaching about 22,000 students.

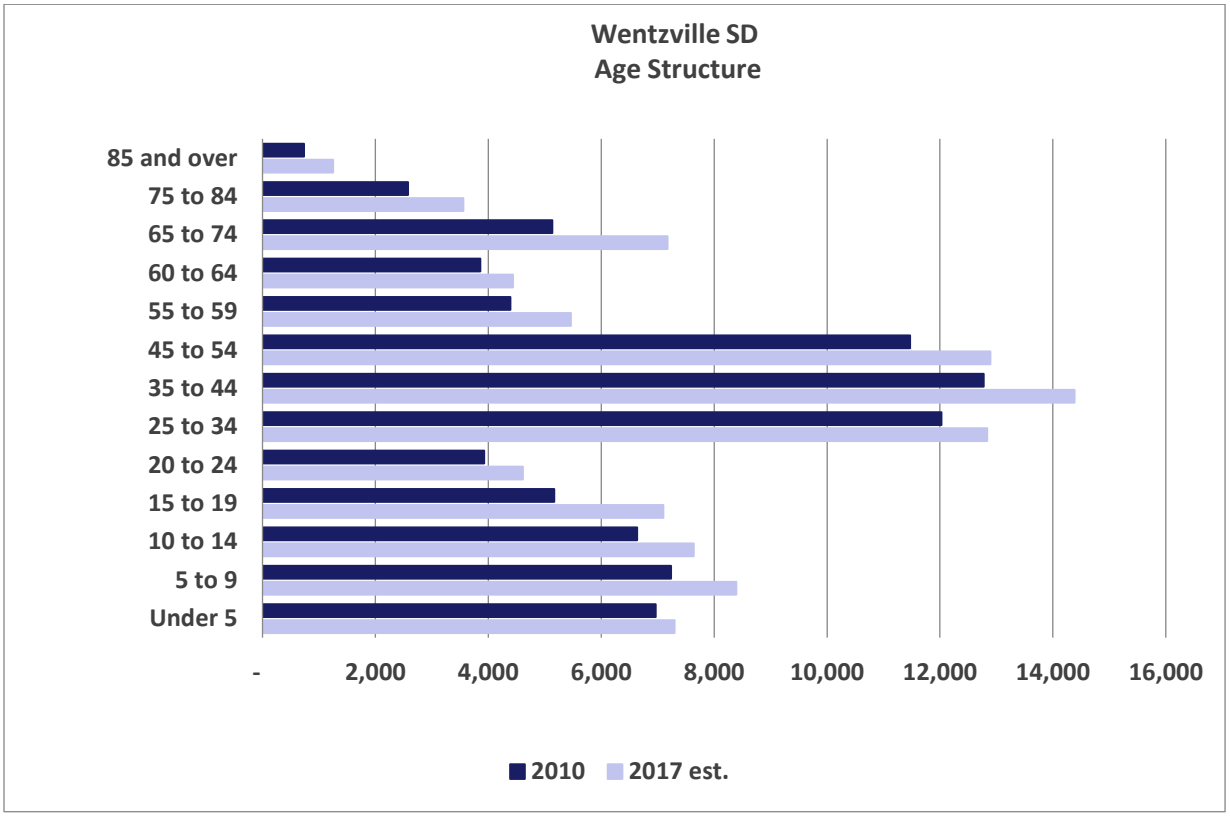
Without any additional capacity (including the new elementary school scheduled to open for the 2020-2021 school year) the elementary school grade band is expected to be 126% utilized by the end of the next decade. Taking into account the additional capacity from the new elementary school, the projected 2028-2029 utilization at the elementary school grade band is 116%, which means that the district will need to add more elementary school capacity to accommodate the forecasted enrollment increase. However, the projected utilization will change if the district decides to move 6th grade back to the middle schools. In that event, the elementary school over-utilization will be alleviated and the need for more capacity reduced.

The middle school grade band does not have the same utilization pressure. Currently, this grade band is comfortably utilized at 82%. However, there will be a need to balance enrollment among the middle schools, and additional middle school capacity may be needed by the end of the next decade. The need for additional middle school capacity will be more immediate if the district decides to move 6th grade back to the middle schools.

The high school grade band will be significantly over-utilized in the next couple of years. In the absence of new capacity, this grade band is projected to be 131% utilized by 2028-2029. The new 1,700 capacity high school scheduled to open for the 2021-2022 school year will alleviate the over-utilization at the high school grade band for most of the next ten years.

POPULATION

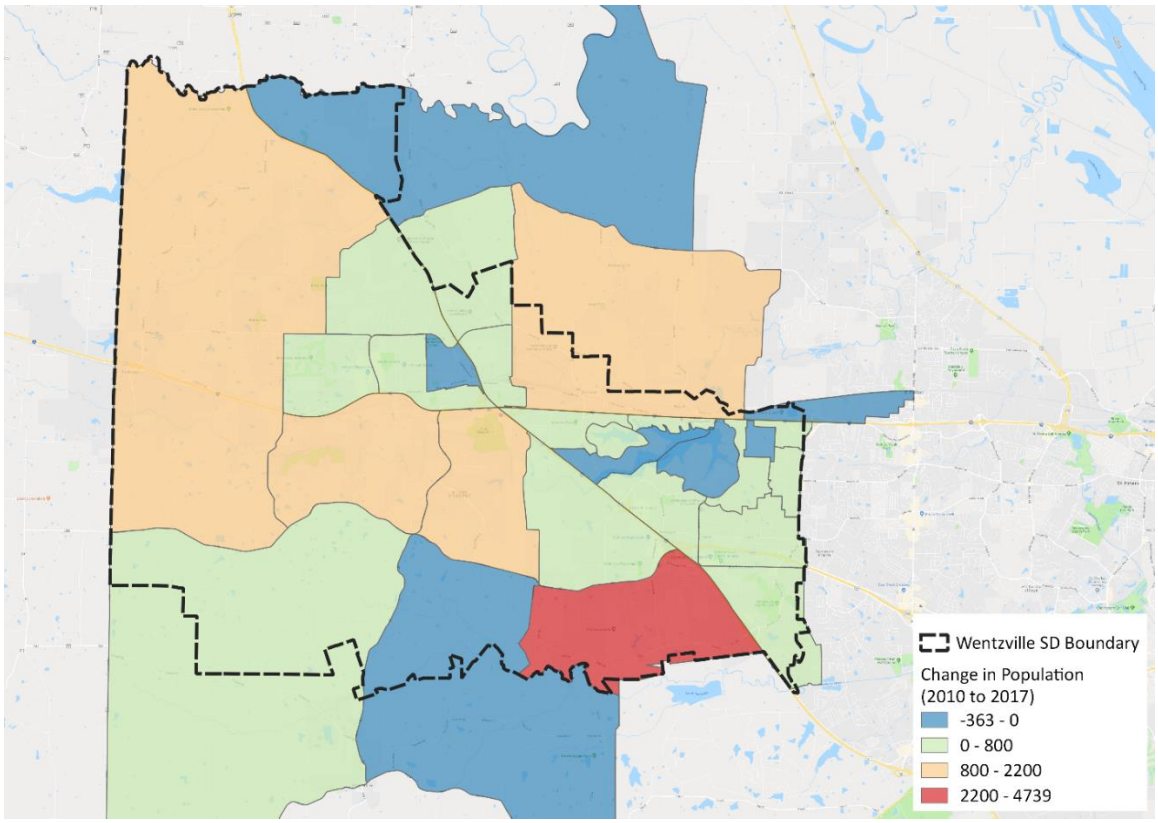
AGE STRUCTURE



Source: U.S. Census Bureau, 2019.

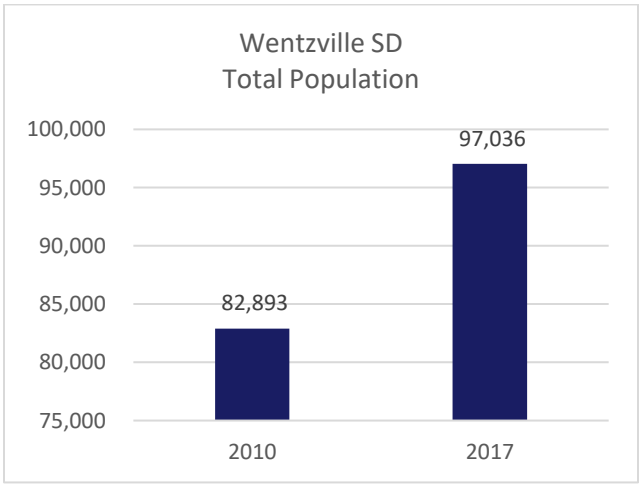
The Wentzville School District is growing at all ages.

OVERALL POPULATION



Source: U.S. Census Bureau, 2019.

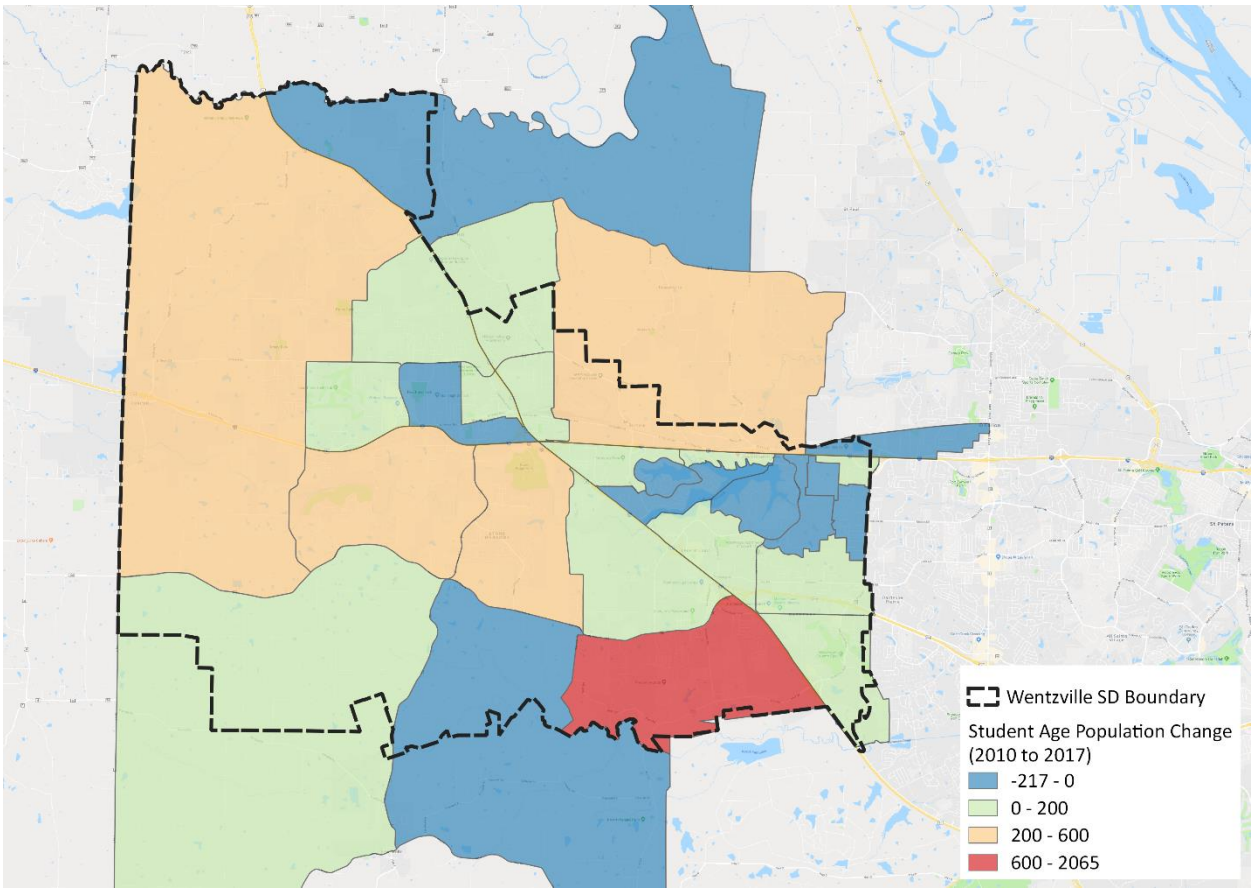
The total population of the Wentzville School District area has grown 17.1% from 2010 to 2017[1], or from 82,893 to 97,036. The southeast and far western portions of the district grew. Areas of population decline were spread throughout the district.



Source: U.S. Census Bureau, 2019.

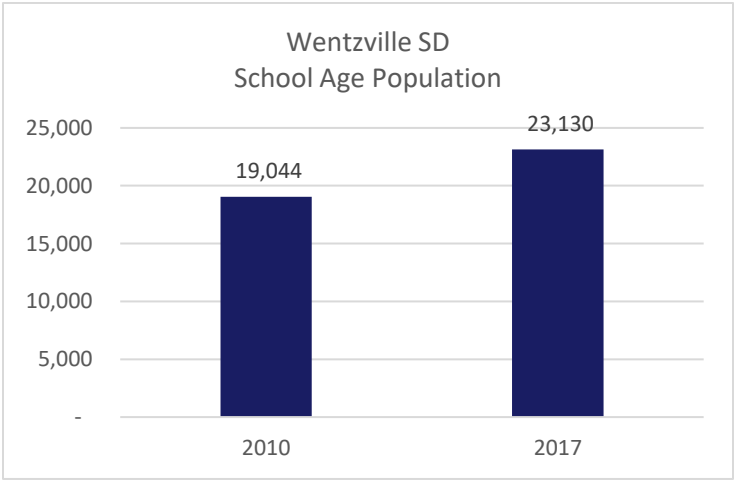
[11] The data is drawn from all block groups that contain a part of the Wentzville School District boundary.

SCHOOL-AGE POPULATION



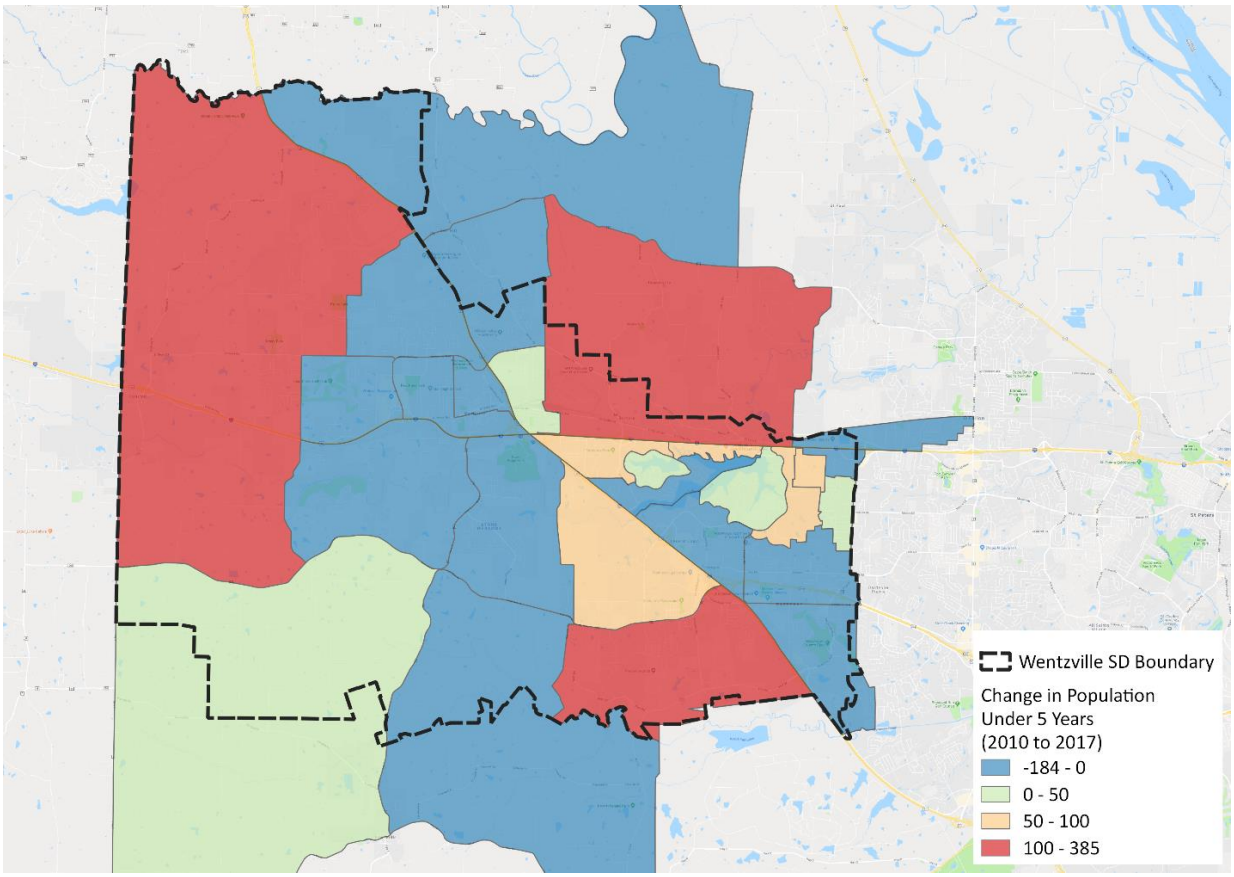
Source: U.S. Census Bureau, 2019

The school-age population (ages 5-19) has increased 21.5% from 2010 to 2017. Areas of increase were spread throughout the district. The western and southern parts of the district had areas of decline in school-age population.



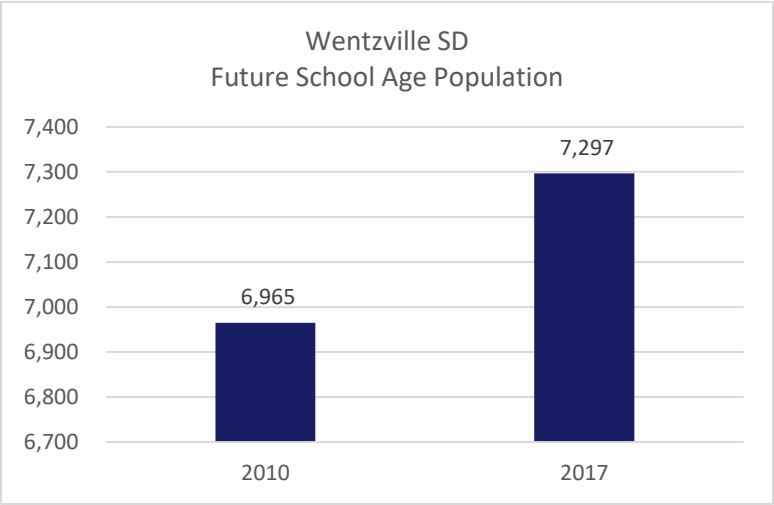
Source: U.S. Census Bureau, 2019

FUTURE SCHOOL-AGE POPULATION



Source: U.S. Census Bureau, 2019

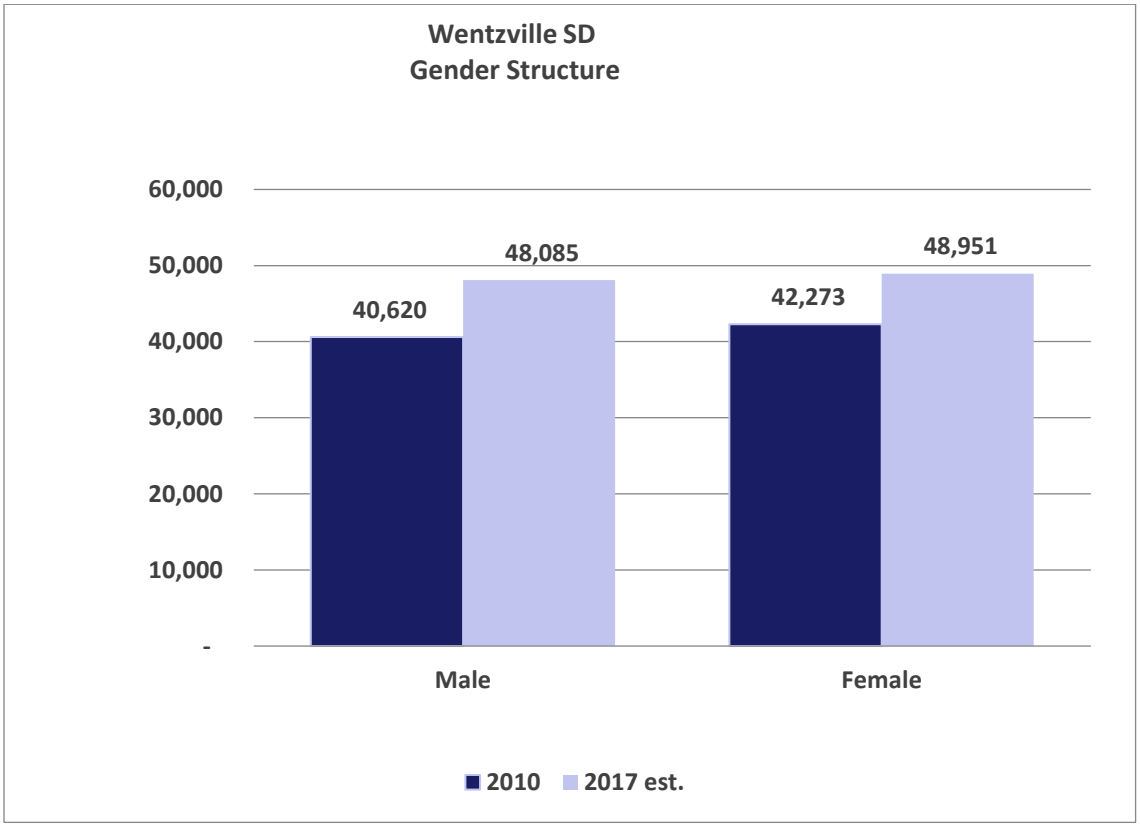
The future school-age population (under age 5) increased 4.8% from 2010 to 2017. The increase was in the southeast, northeast and the northwest areas of the district. Areas of decrease were in the central portion of the district.



Source: U.S. Census Bureau, 2019.

GENDER

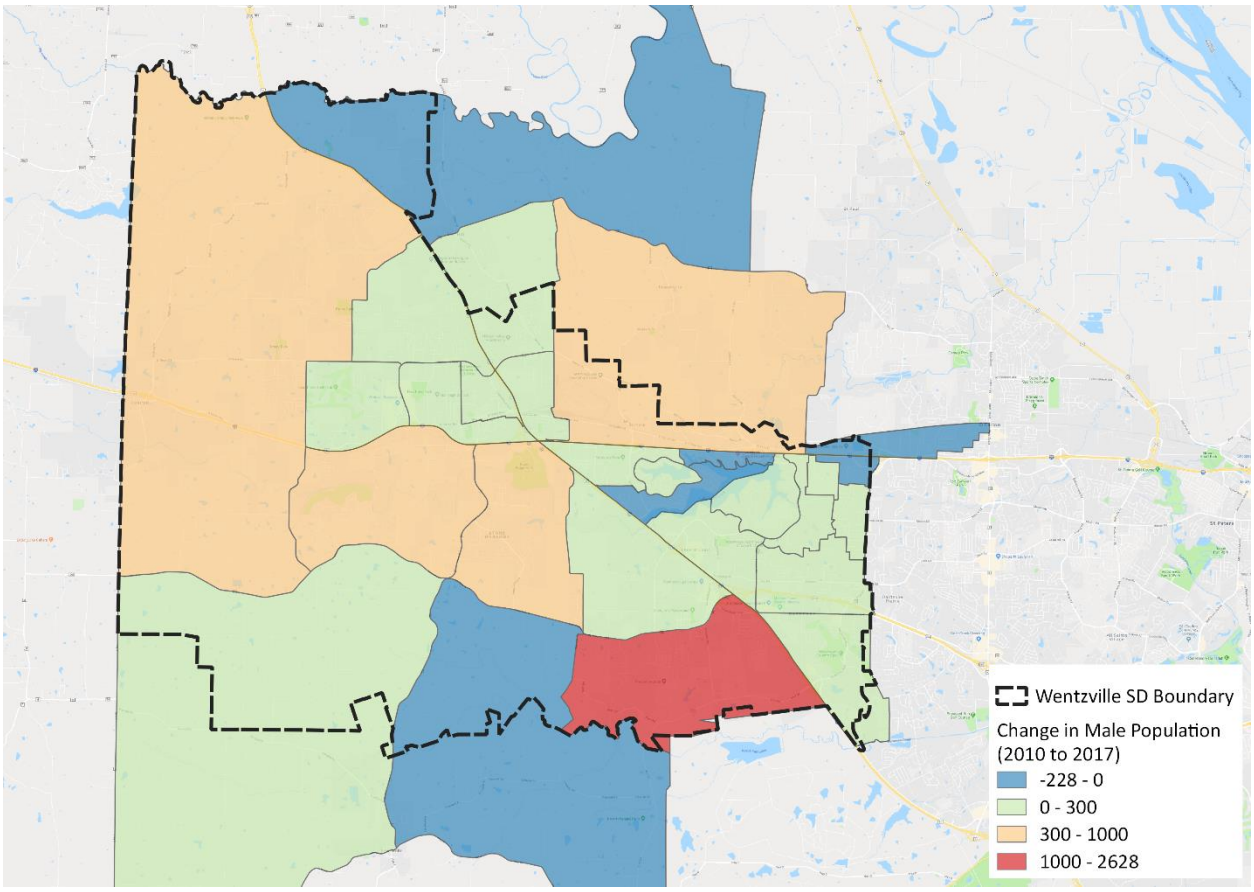
GENDER STRUCTURE



Source: U.S. Census Bureau, 2019.

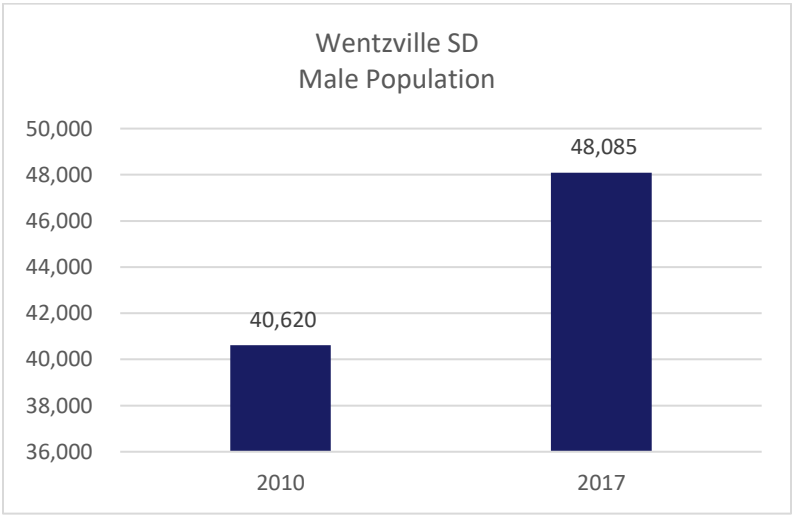
There are more women than men in the Wentzville School District. Both male and female populations increased from 2010 to 2017.

MALE POPULATION



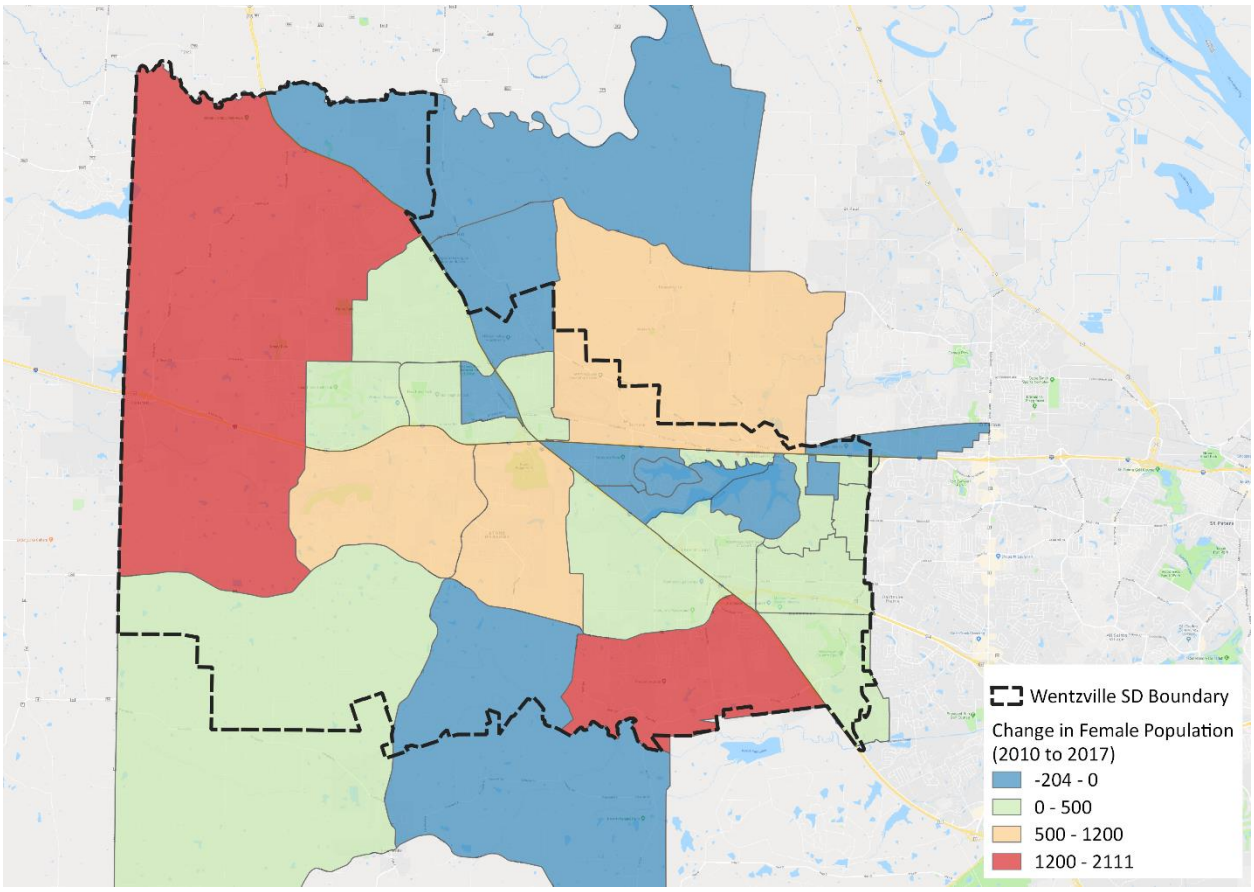
Source: U.S. Census Bureau, 2019.

The male population increased 18.4% from 2010 to 2017. The areas of increase and decrease were well distributed across the district.



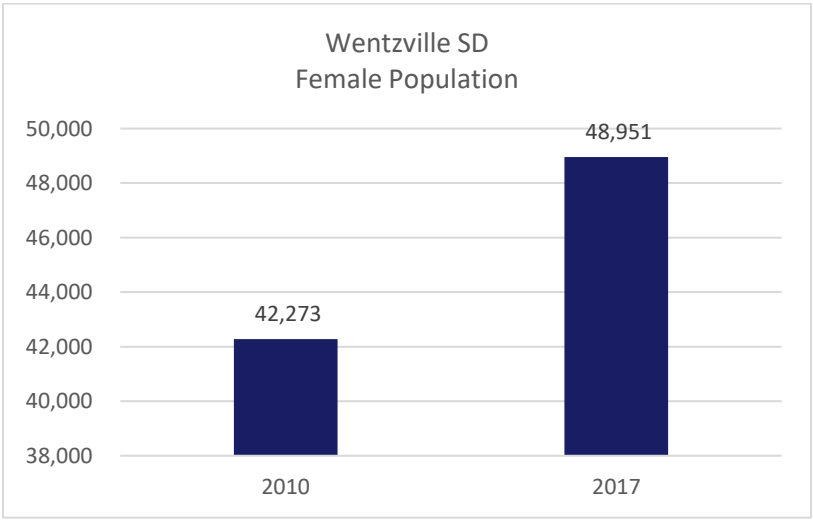
Source: U.S. Census Bureau, 2019.

FEMALE POPULATION



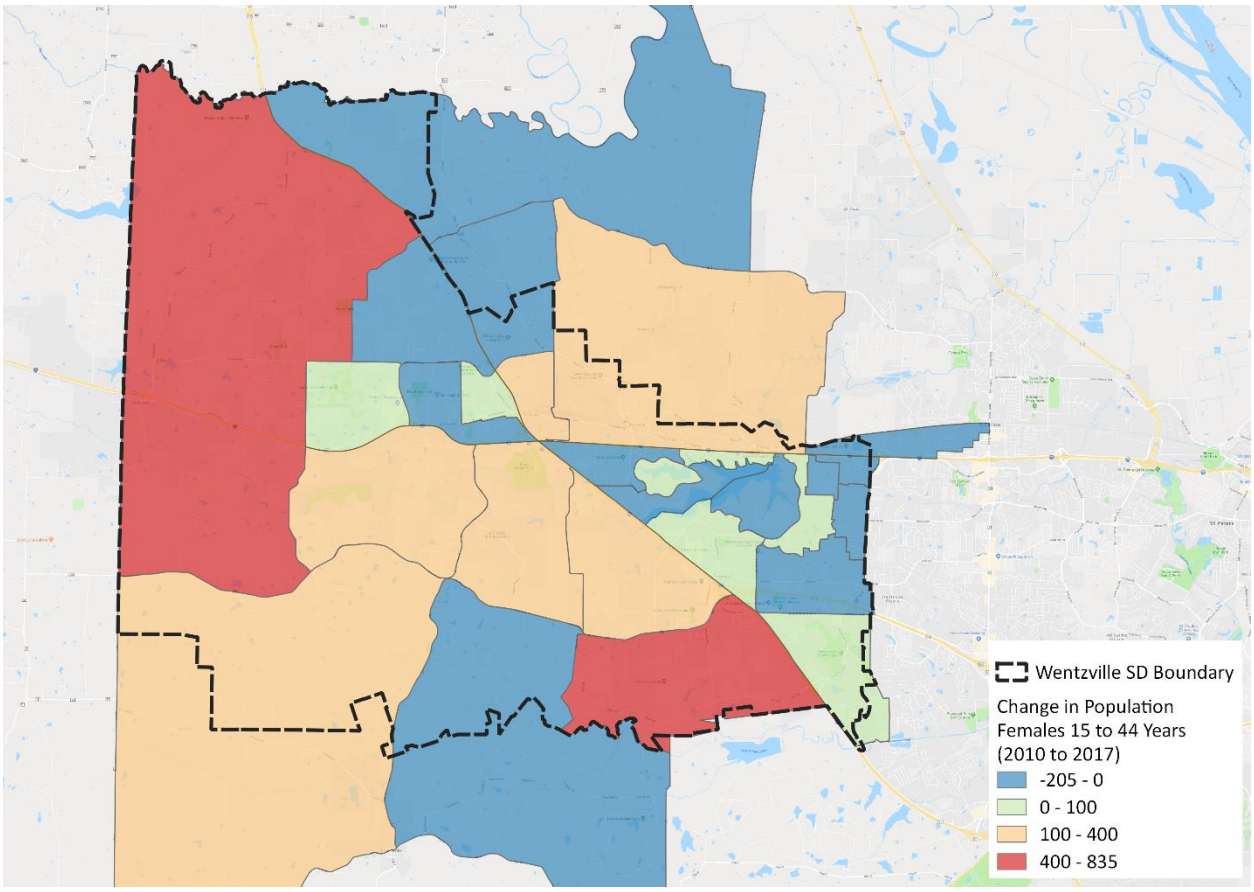
Source: U.S. Census Bureau, 2019.

The female population has decreased 15.8% between 2010 and 2017. The areas of increase were spread throughout the district.



Source: U.S. Census Bureau, 2019.

FEMALE CHILD-BEARING AGE POPULATION



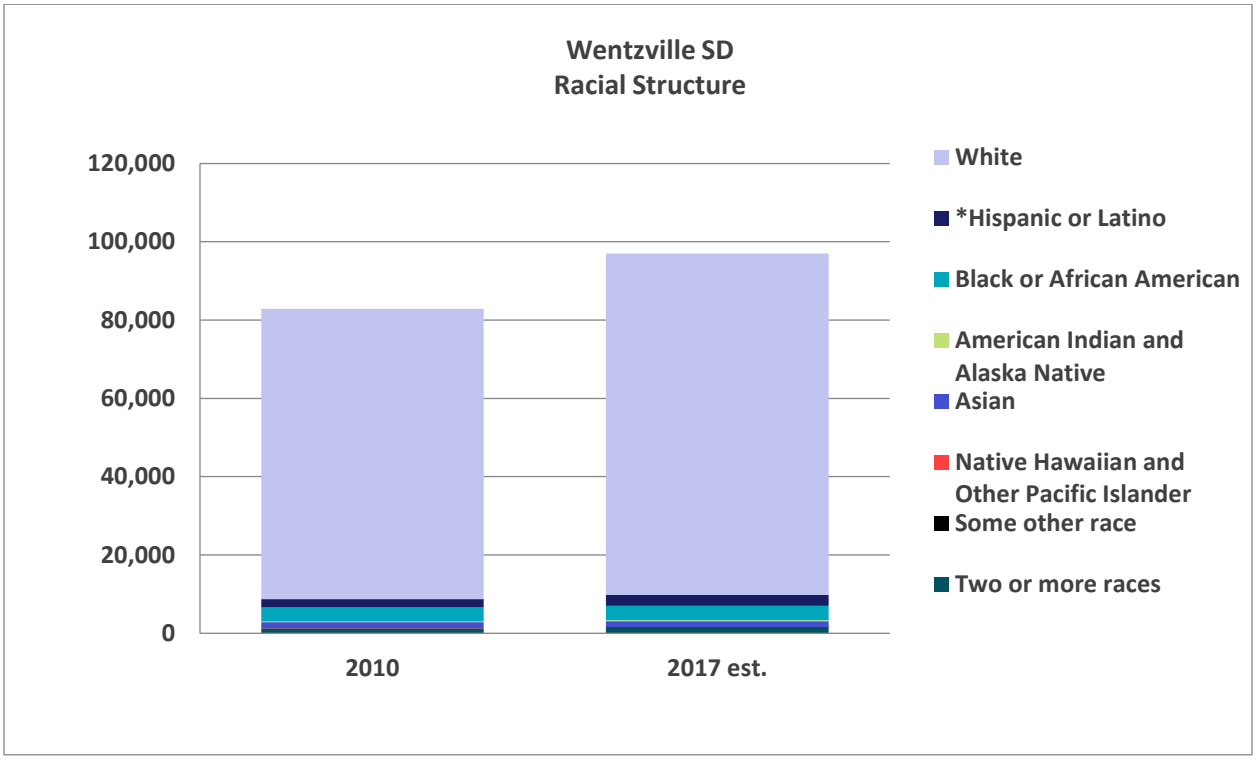
Source: U.S. Census Bureau, 2019.

After the school-age population and the future school-age population, the female child-bearing age population is the most important indicator of the potential for changes in district enrollment. The child-bearing age for females is generally from ages 15 to 44. Though a female can carry a baby to term and healthy delivery outside of that age range, the 15-44 age range is generally understood to be the age range with the greatest fertility for females.

In the Wentzville School District, the female child-bearing age population has decreased by 896, or 4.4%.

RACE AND ETHNICITY

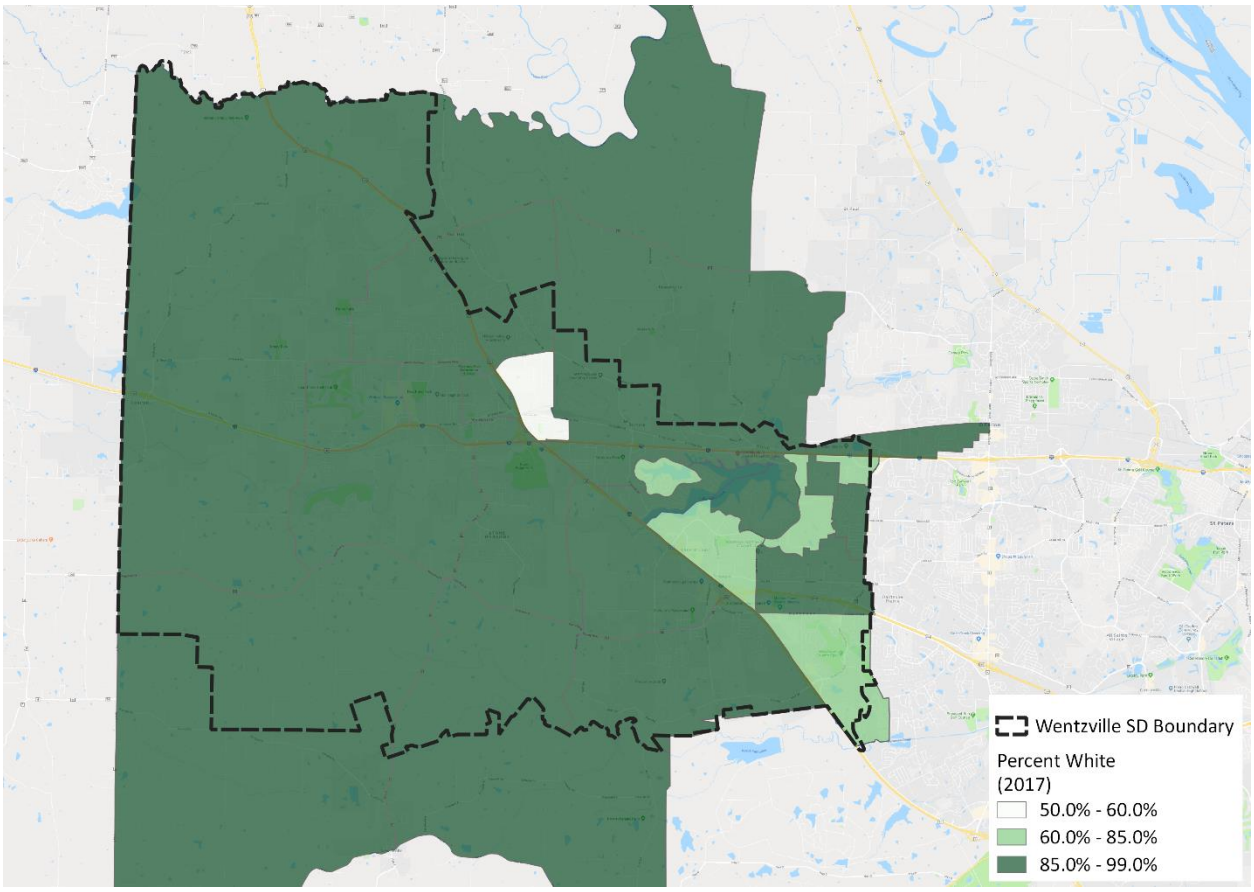
RACIAL STRUCTURE



Source: U.S. Census Bureau, 2019.

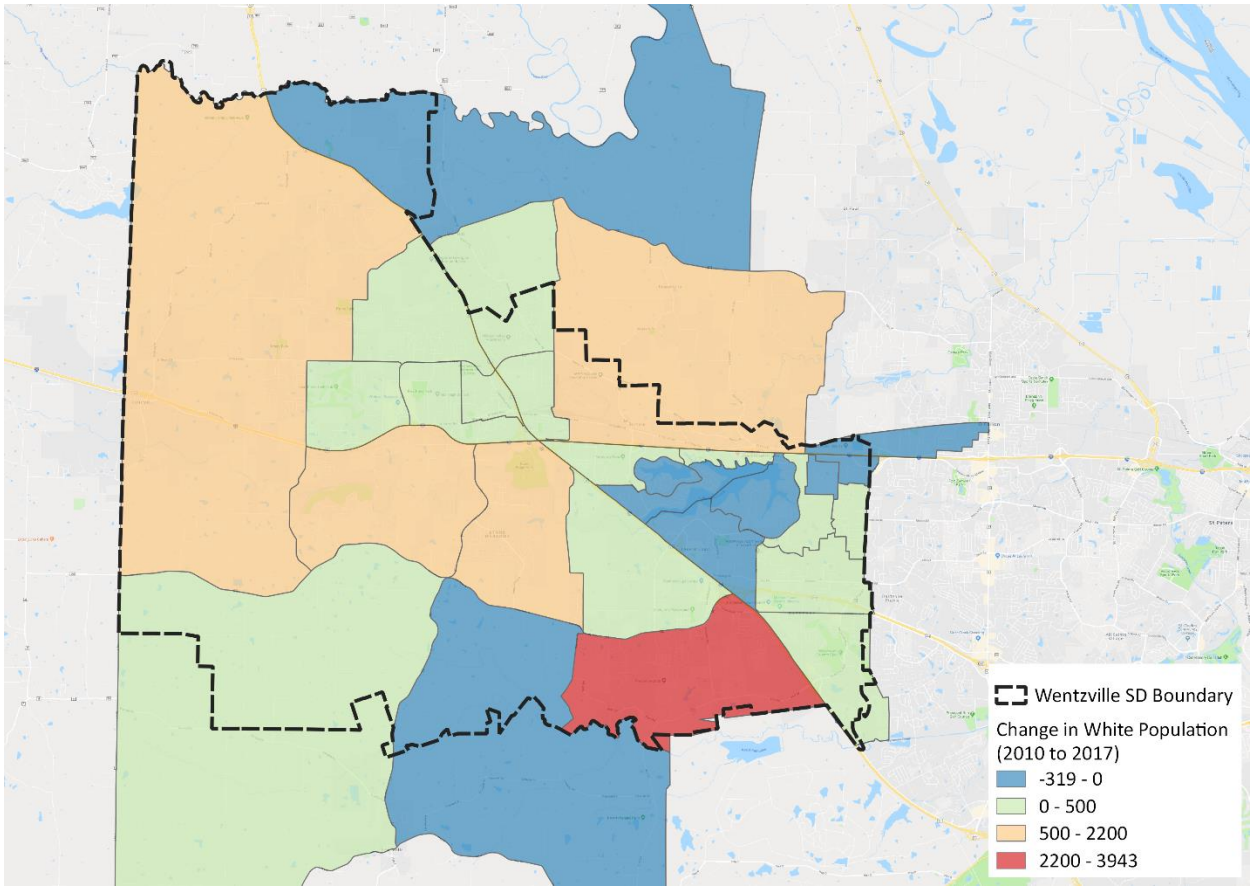
The Wentzville School District is 90% White. The White population grew 18% from 2010 to 2017. The population of two or more Races experienced the largest population change of 35% but only accounts for 2% of the overall population.

WHITE POPULATION



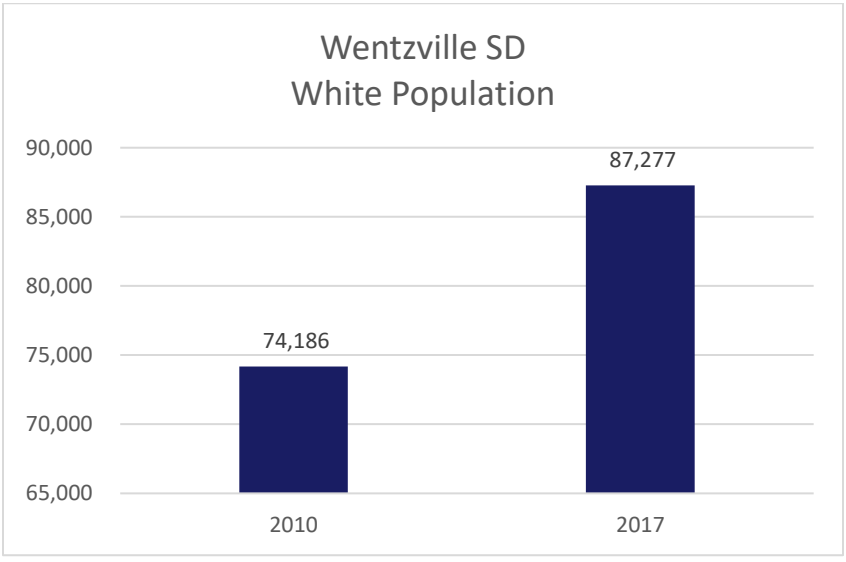
Source: U.S. Census Bureau, 2019.

The district's White population is spread throughout the district, with only a small pocket of the central area of the district where there are fewer White residents.



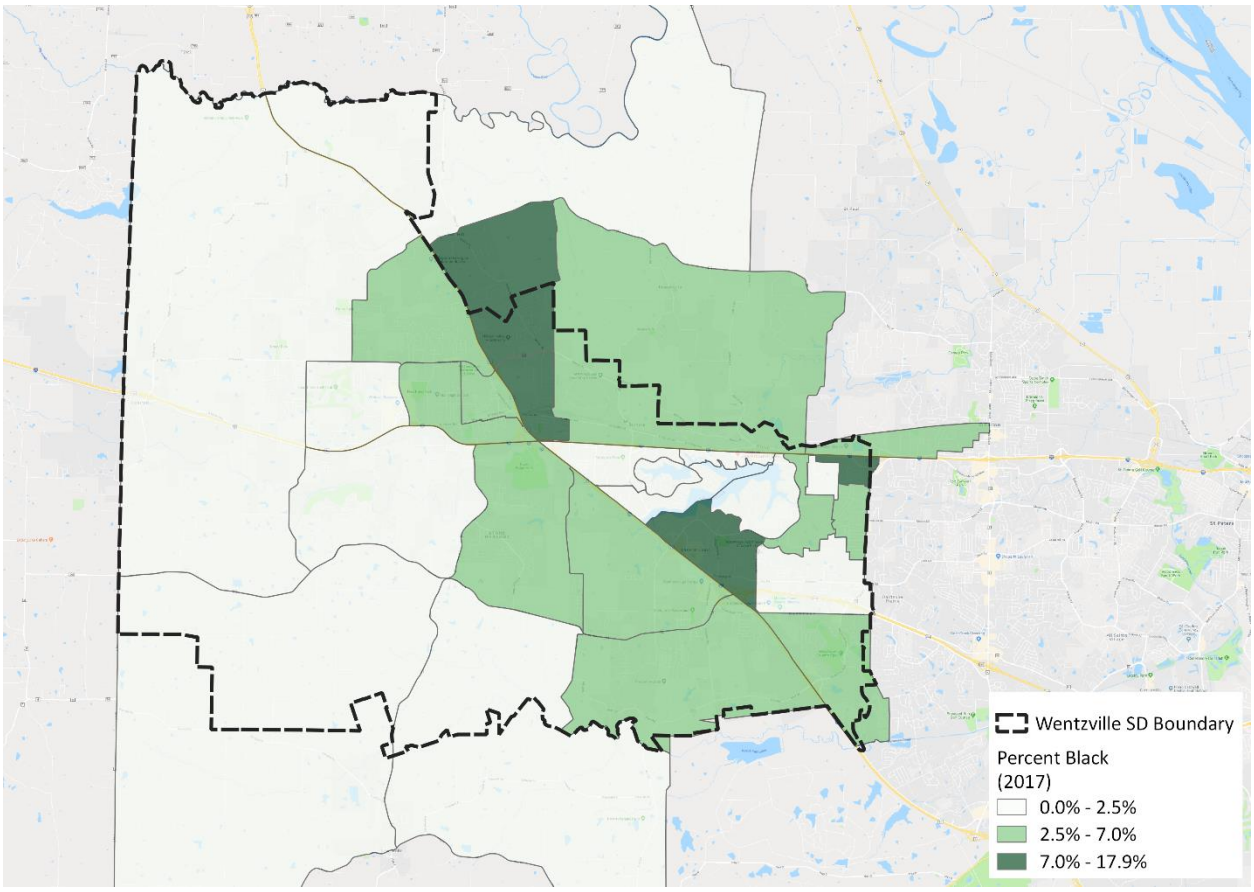
Source: U.S. Census Bureau, 2019.

There were increases in the White population spread throughout the district.



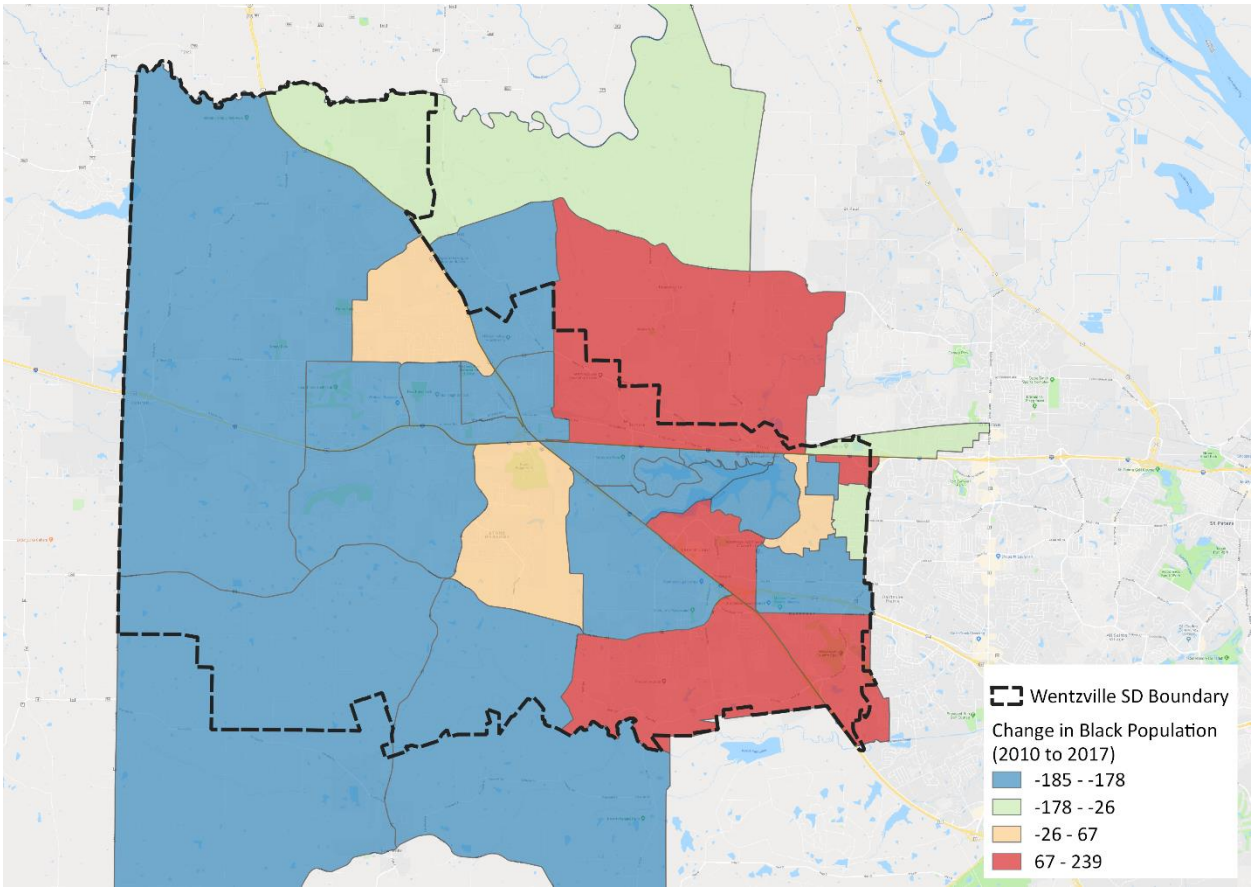
Source: U.S. Census Bureau, 2019.

BLACK POPULATION



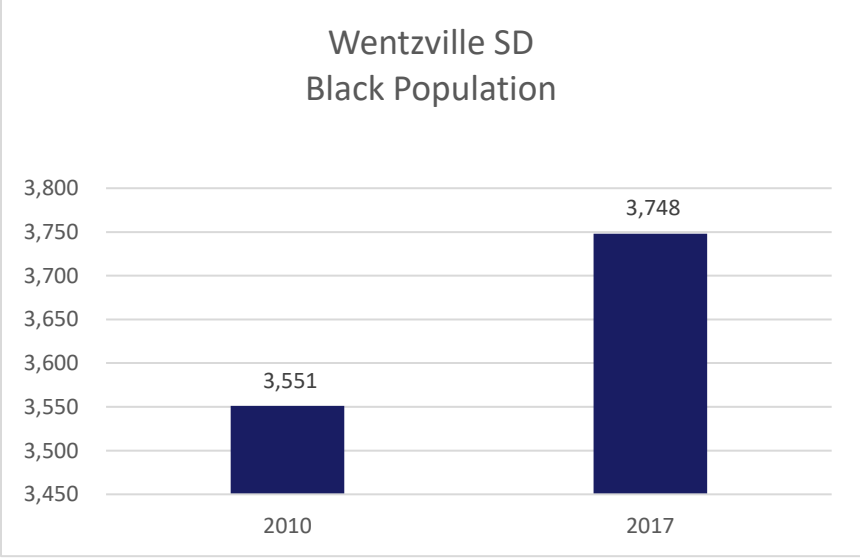
Source: U.S. Census Bureau, 2019.

The district's Black population is located primarily in the eastern portion of the district. Overall, 4% of the Wentzville School district population is Black.



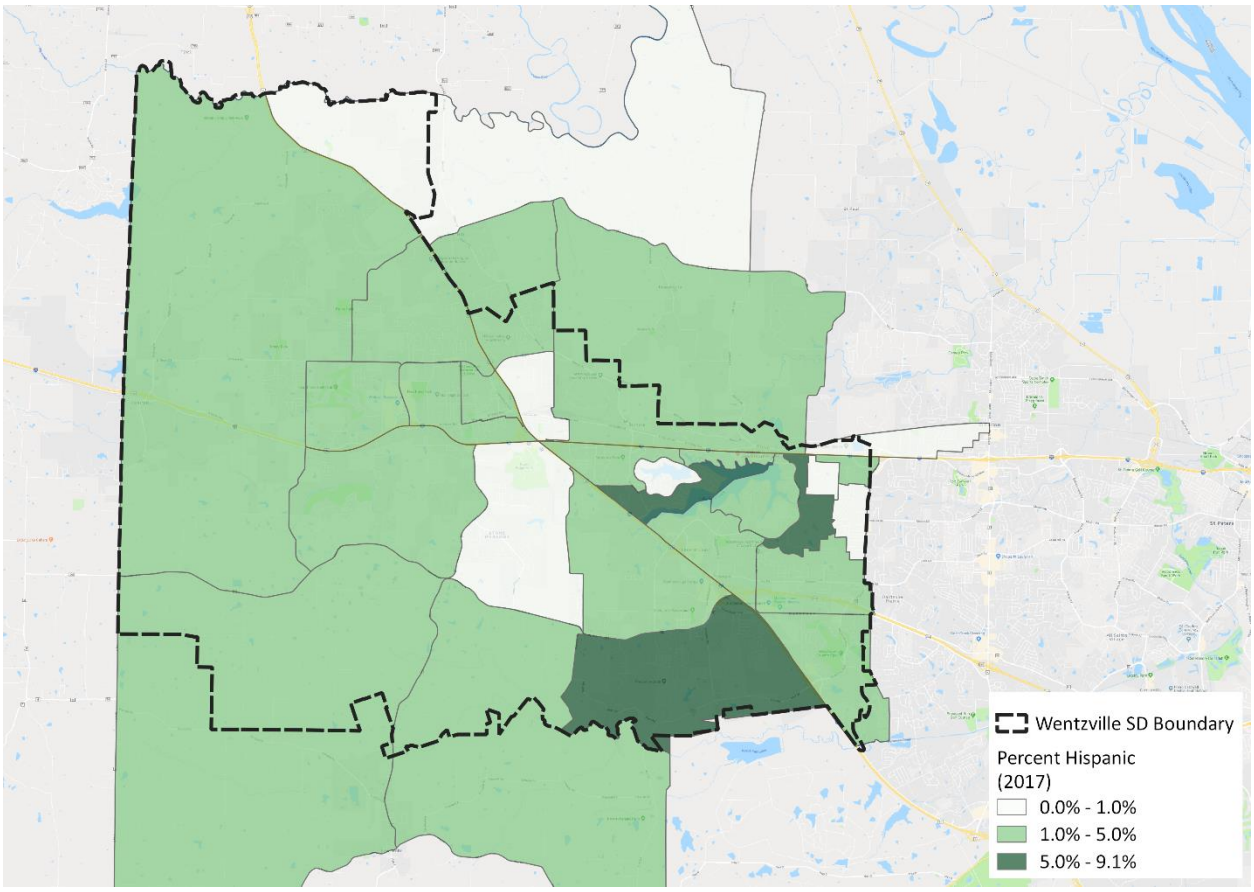
Source: U.S. Census Bureau, 2019.

The area of the district that saw the most significant increase in Black population is the southeast.



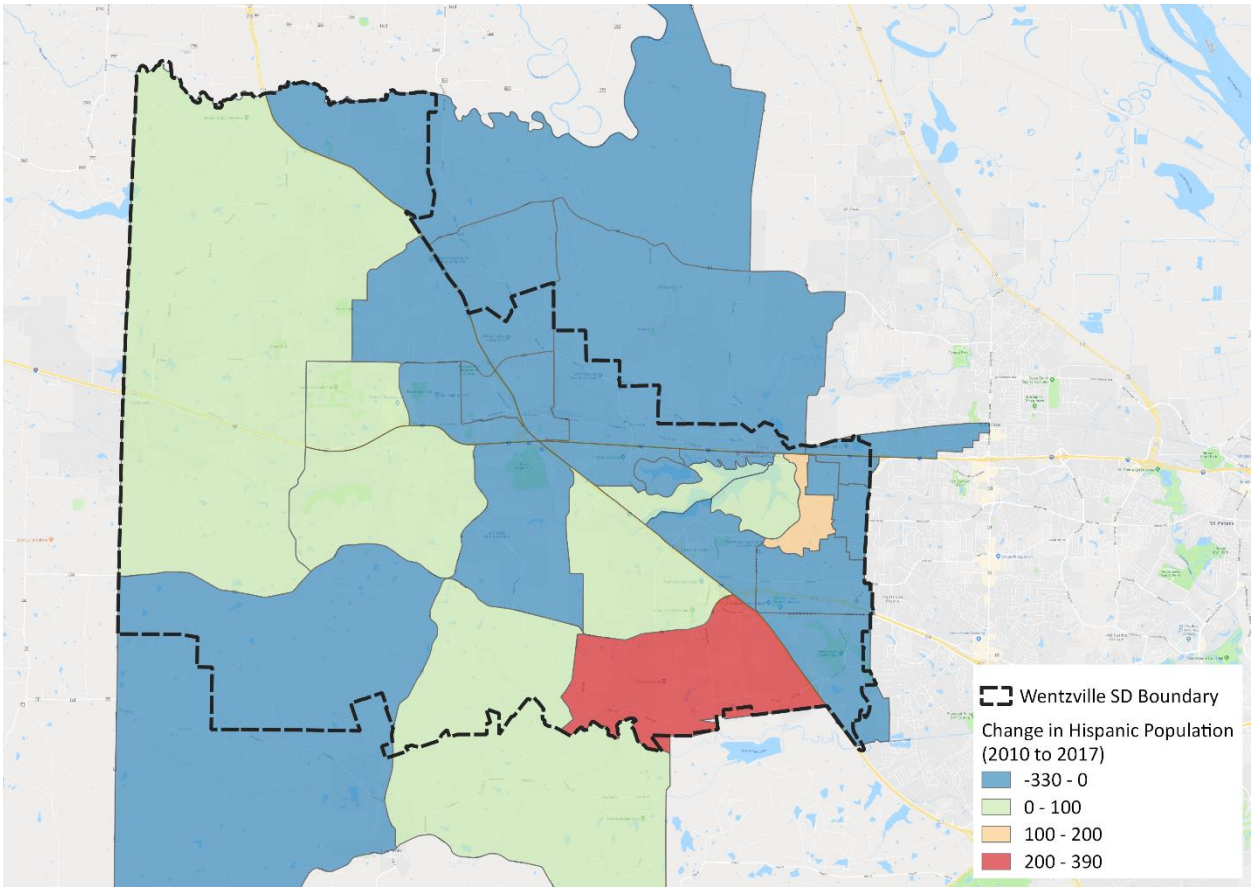
Source: U.S. Census Bureau, 2019.

HISPANIC POPULATION



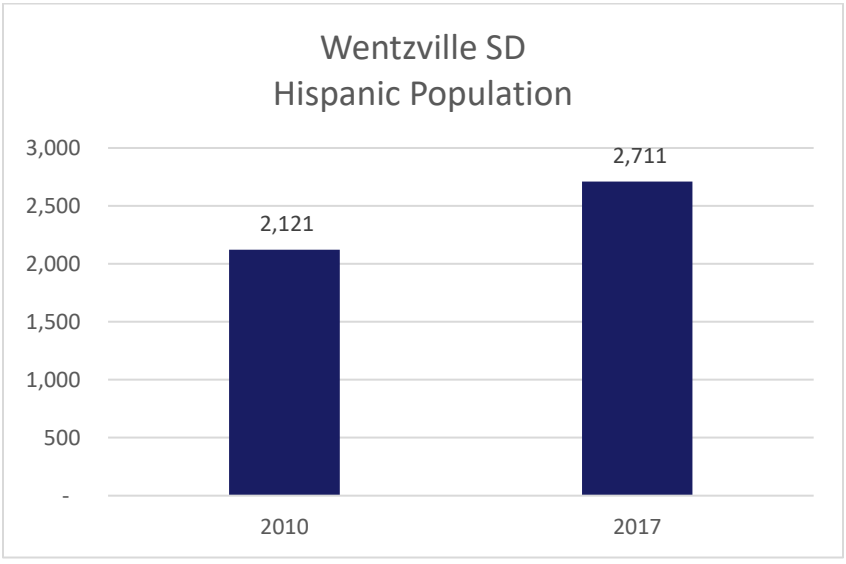
Source: U.S. Census Bureau, 2019.

The areas with the highest percentage of Hispanic residents is in the southeastern part of the district.



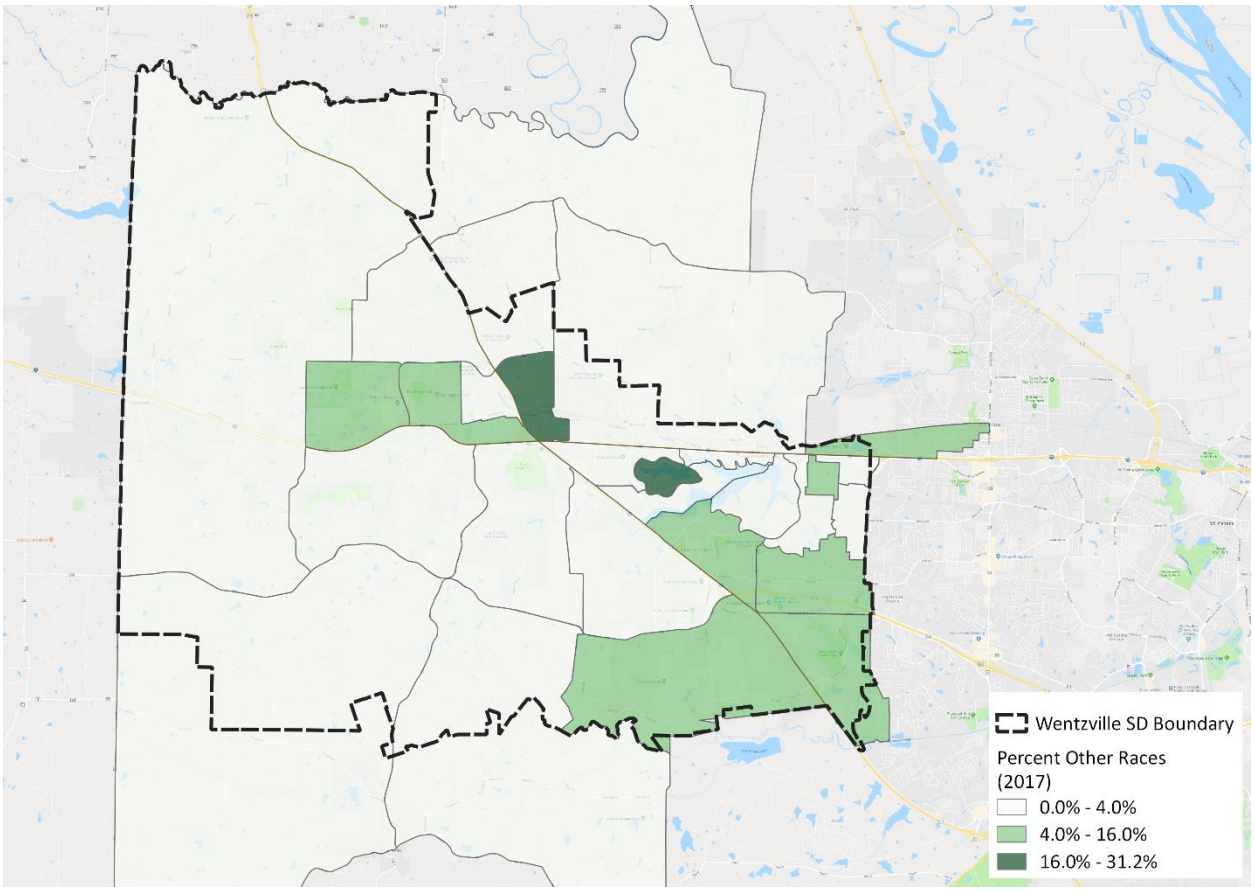
Source: U.S. Census Bureau, 2019.

The district's Hispanic population increased 28% from 2010 to 2017. The areas of increasing Hispanic population were predominately in the southern areas of the district.



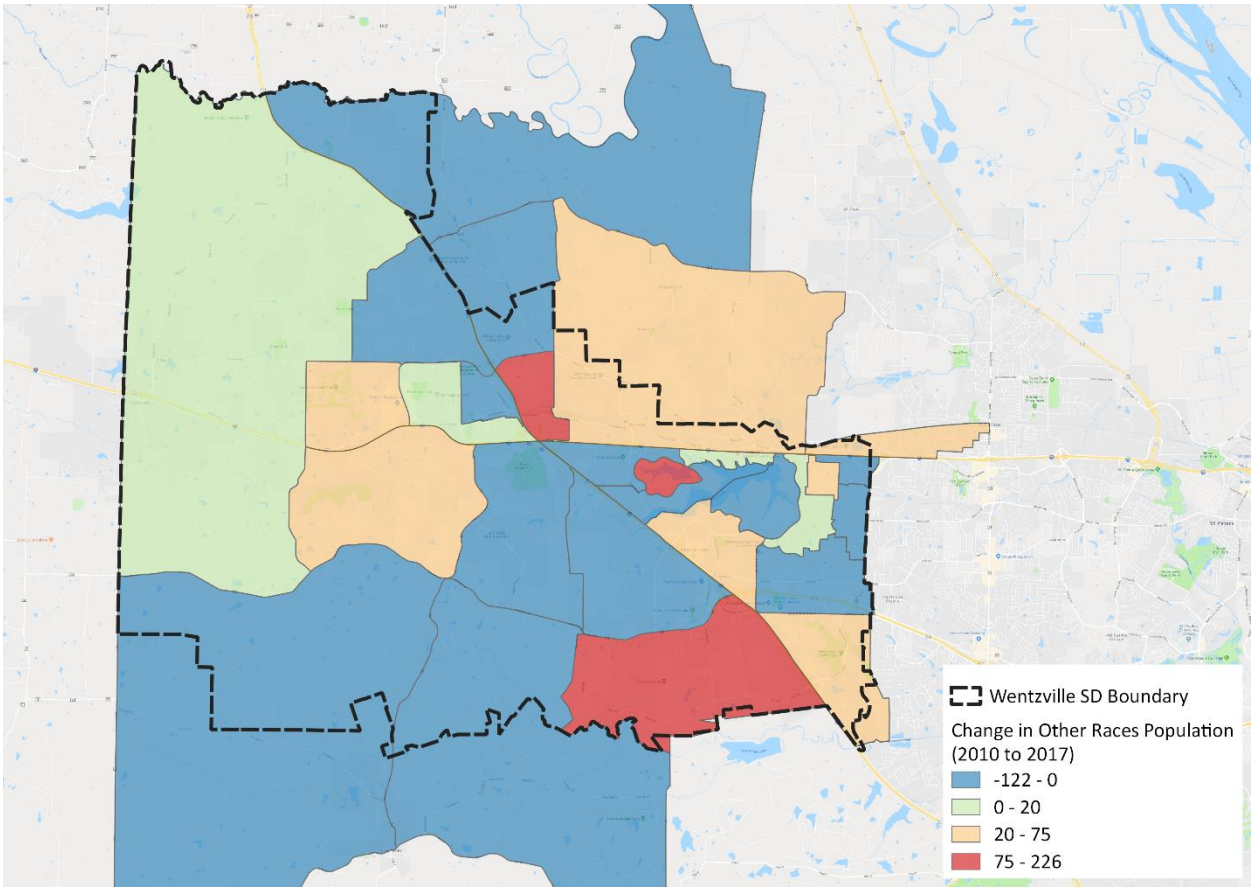
Source: U.S. Census Bureau, 2019.

POPULATION OF OTHER RACES



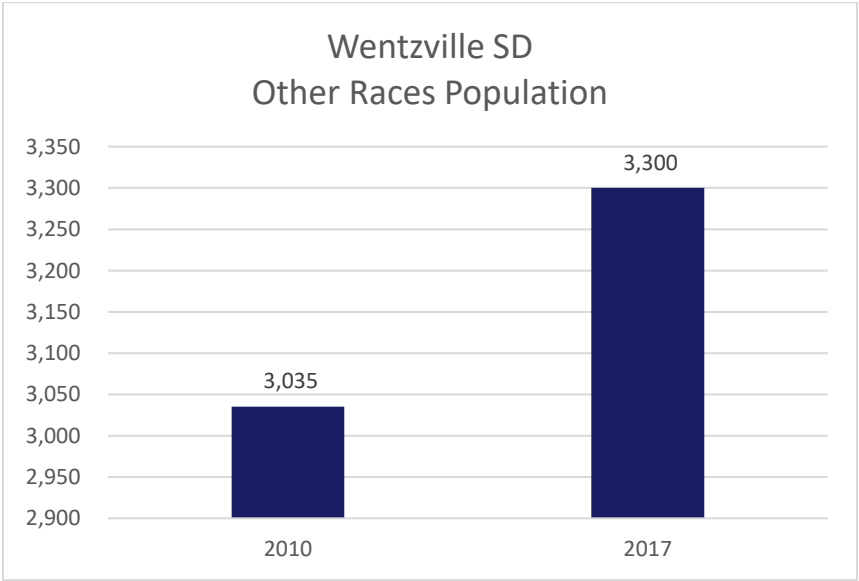
Source: U.S. Census Bureau, 2019.

The district's population of Other Races is distributed largely in the central and eastern parts of the district.



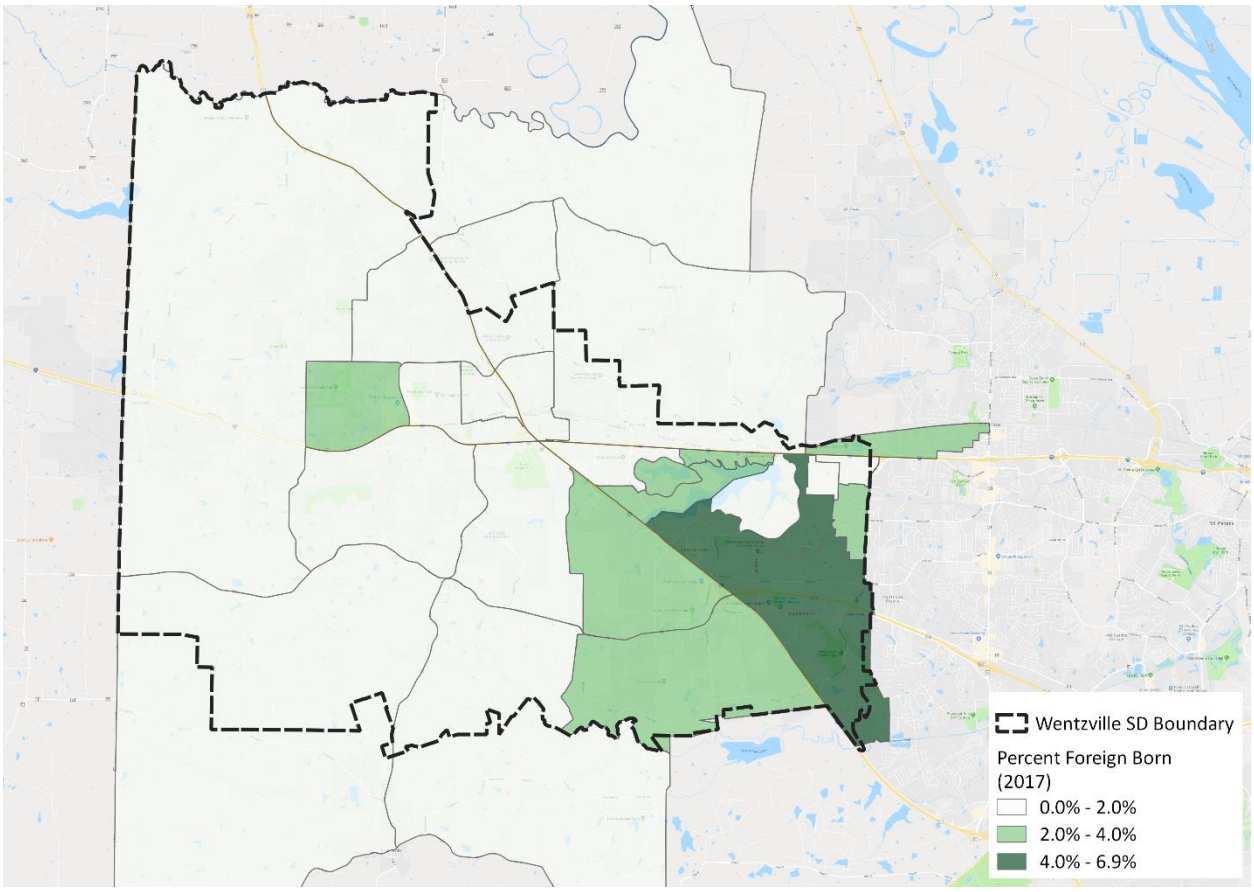
Source: U.S. Census Bureau, 2019.

The district's population of Other Races increased primarily in the eastern part of the district.



Source: U.S. Census Bureau, 2019.

FOREIGN-BORN POPULATION

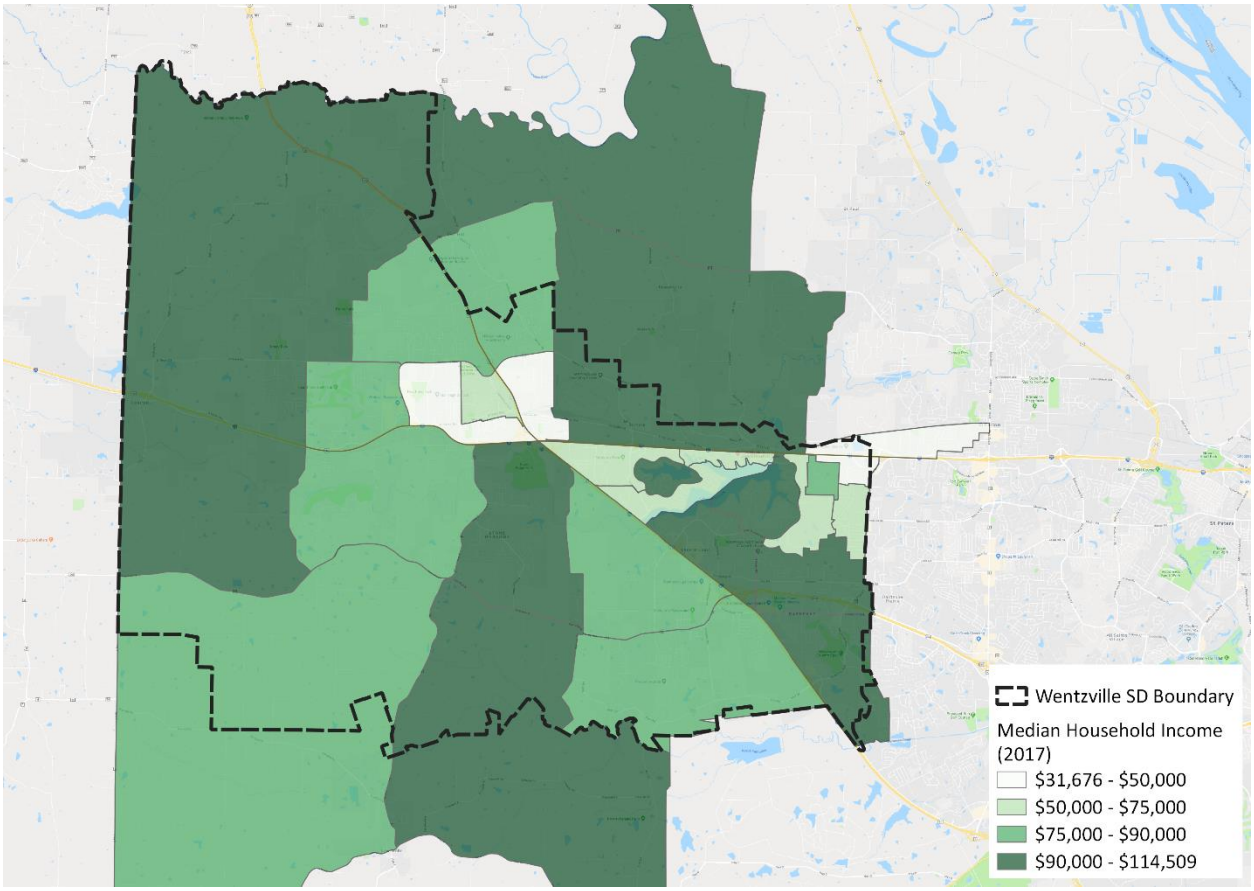


Source: U.S. Census Bureau, 2019.

Only 2.9% of the district's population is foreign-born. The part of the district that is foreign-born is located primarily in the southeastern areas of the district.

ECONOMICS, HOUSING, AND EDUCATION

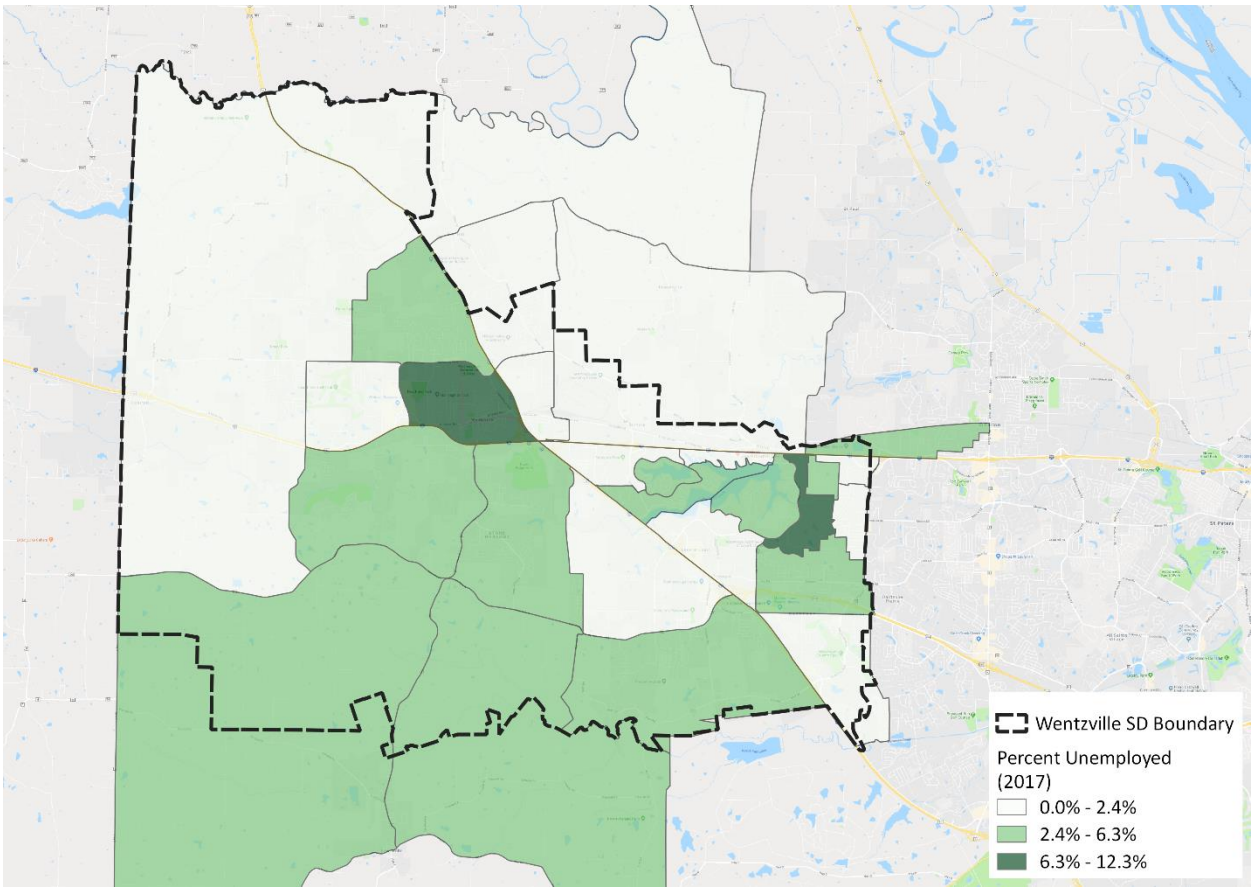
MEDIAN HOUSEHOLD INCOME



Source: U.S. Census Bureau, 2019.

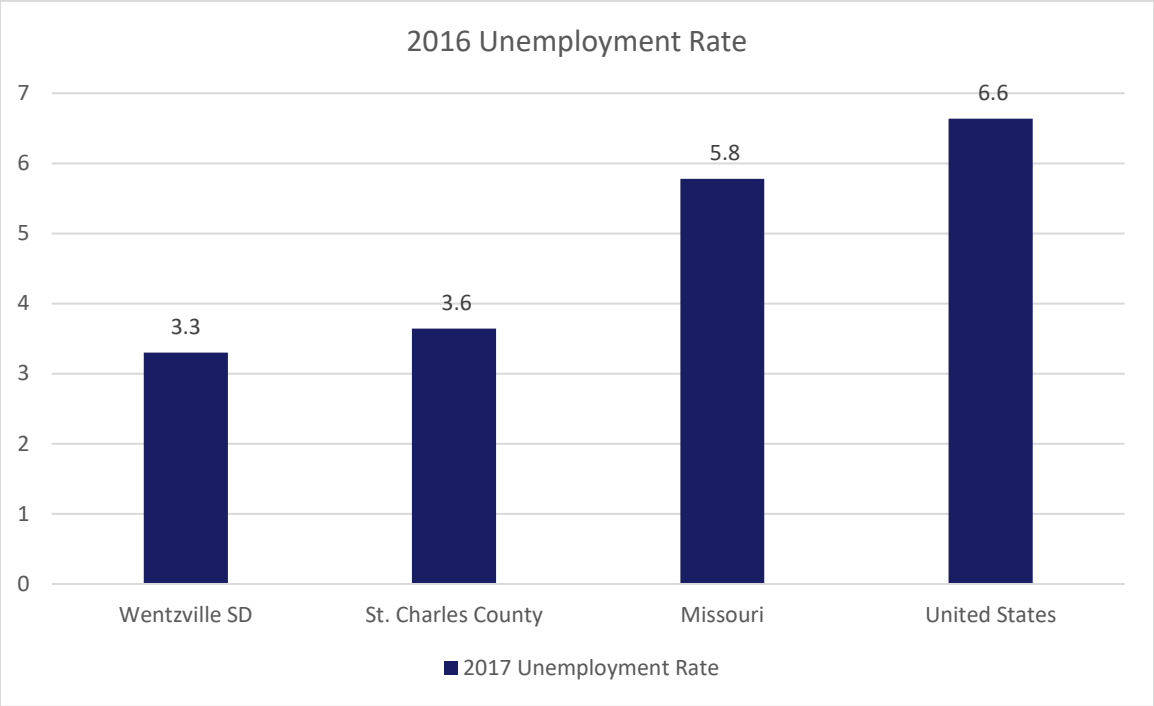
The areas of the district with the lowest household income are in the central part of the district.

UNEMPLOYMENT



Source: U.S. Census Bureau, 2019.

The district's unemployment rate in 2017 was 3.3%. Within the district, unemployment is the highest in the southern part of the district.



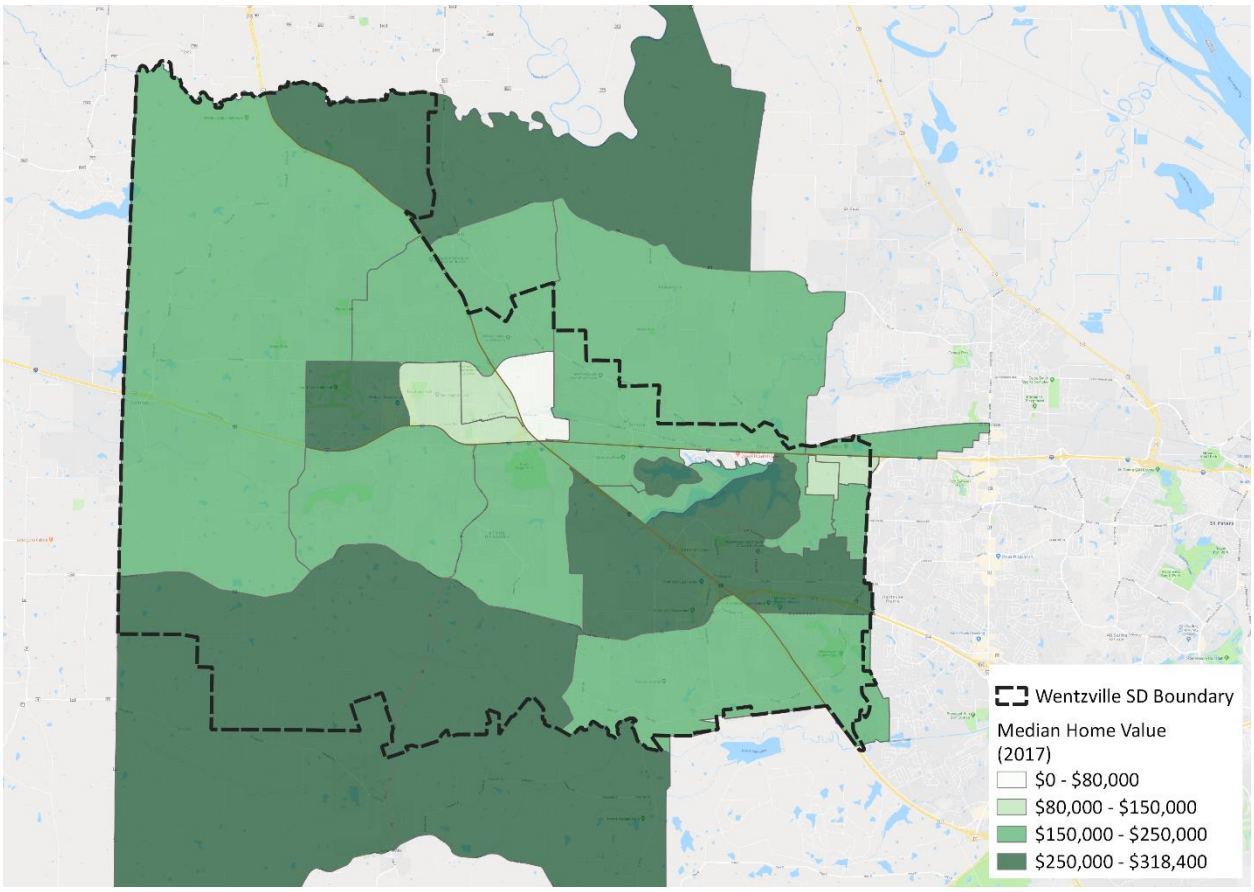
Source: U.S. Census Bureau, 2019; Bureau of Labor Statistics. [2]

In 2017, the Wentzville School District unemployment rate of 3.3% was less than St. Charles County (3.6%), the State of Missouri (5.8%), and the United States (6.6%). The foregoing unemployment rates were for 2017, the most recent year for which comparable data for the district is available.

The unemployment rate has changed since 2017. In June of 2018, the unemployment rate in Missouri was 3.5% and the U.S. unemployment rate was 4.0%. Unemployment rate data for the Wentzville School District in 2018 is not available. However, if the district has followed national and state trends, the district's unemployment rate should be lower in 2018 than it was in 2017.

[2] Note that in order to obtain an unemployment rate at the district level, American Community Survey data was analyzed at the block group level. The St. Louis County, Missouri and United States unemployment rates reflect comparable American Community Survey data and are not sourced from the Bureau of Labor Statistics.

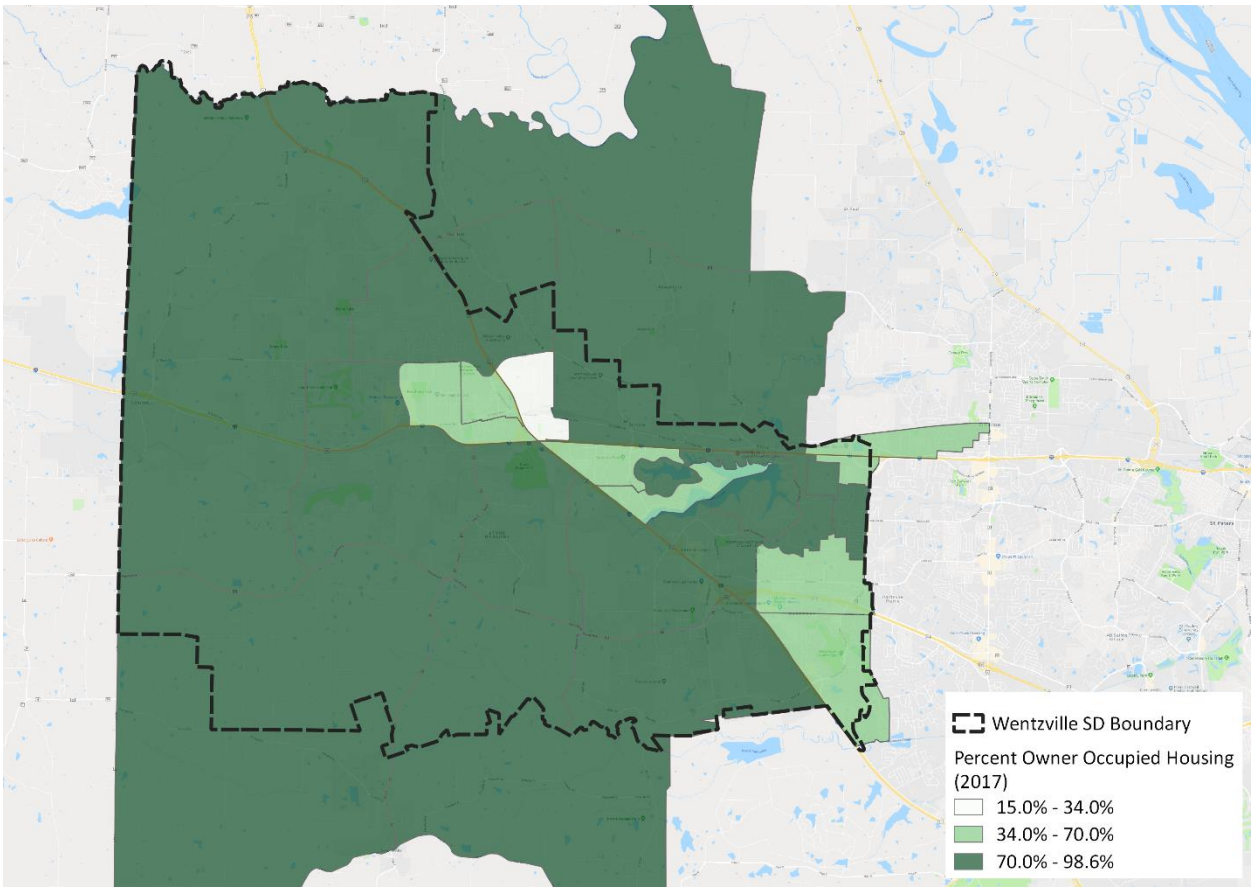
MEDIAN HOME VALUES



Source: U.S. Census Bureau, 2019.

The median home value in the district was $215,867 in 2017. The areas within the district with the highest median home values are in the central and western parts of the district.

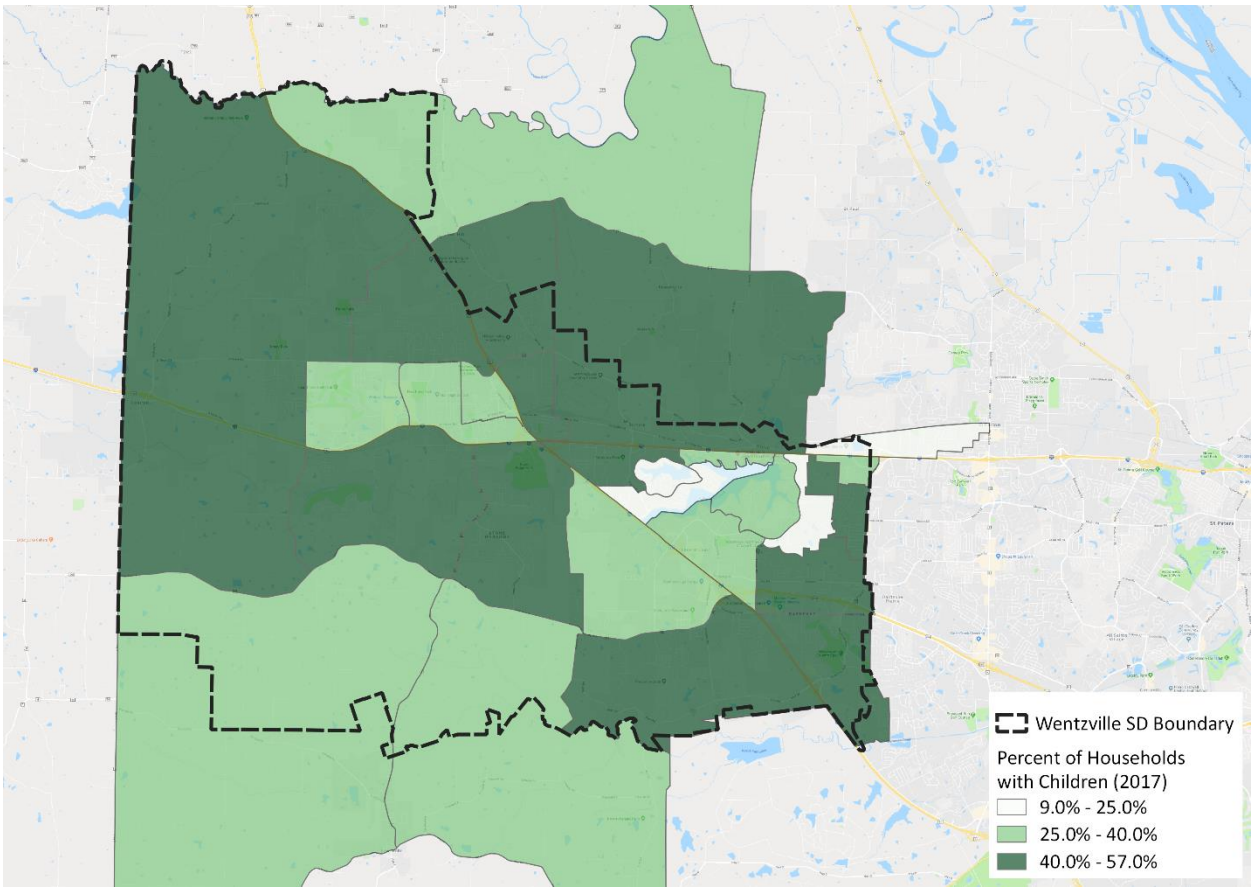
OWNER-OCCUPIED HOMES



Source: U.S. Census Bureau, 2019.

The areas with the lowest percentages of owner-occupied homes are in the central part of the district. In 2017, 82.2% of occupied housing was owner occupied.

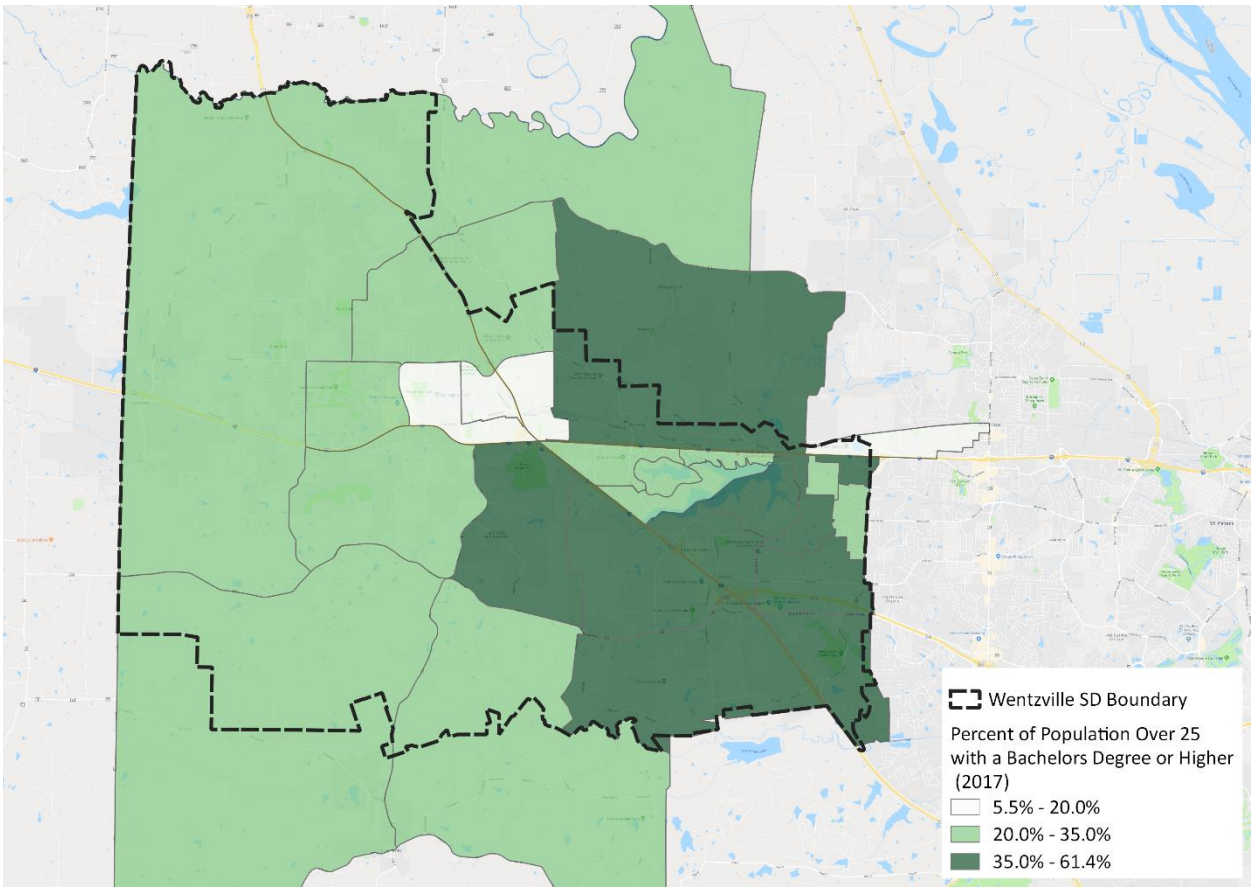
HOUSEHOLDS WITH CHILDREN



Source: U.S. Census Bureau, 2019.

The central part of the district has the lowest percentage of households with children. Areas of the district with higher percentages of households with children are generally in the north and southeast.

EDUCATION

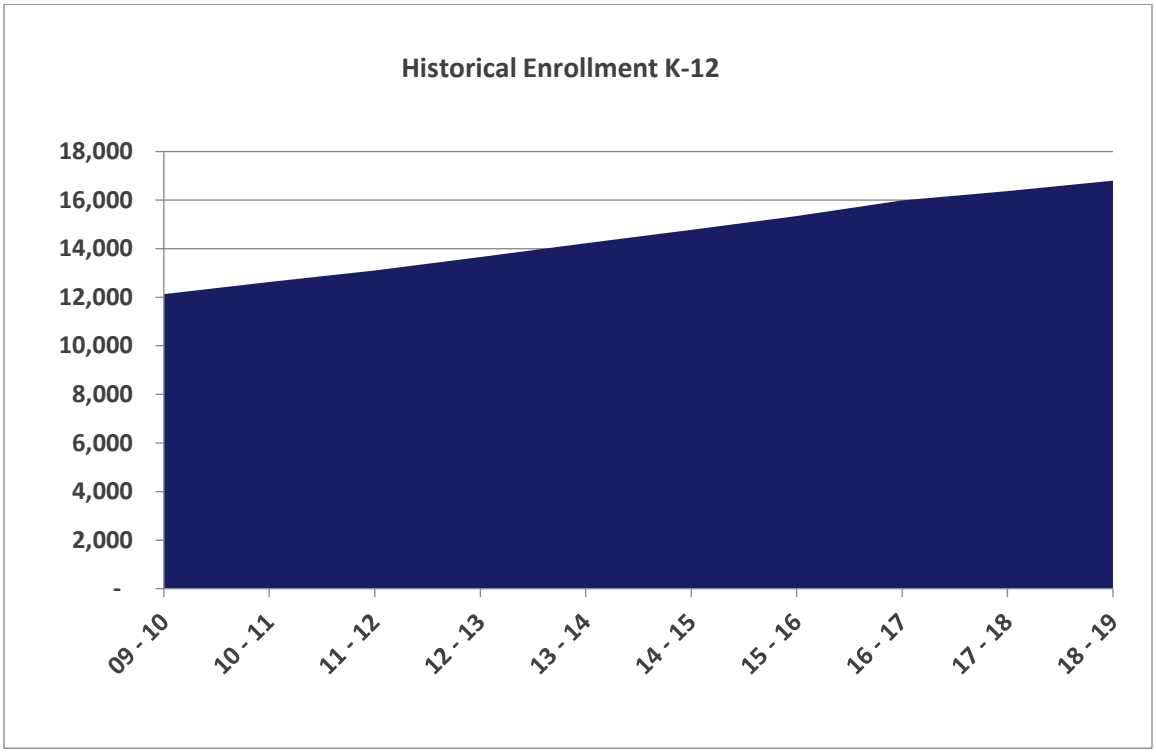


Source: U.S. Census Bureau, 2019.

Areas in the southeastern parts of the district have the highest percentage of population with a Bachelors' degree or higher.

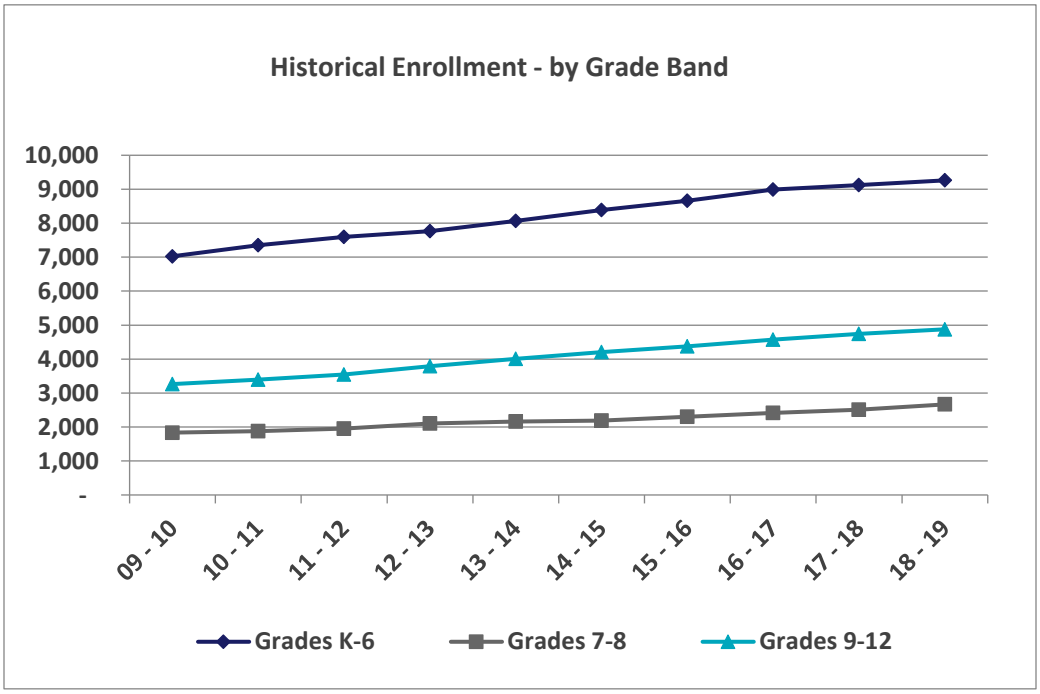
ENROLLMENT

HISTORICAL ENROLLMENT



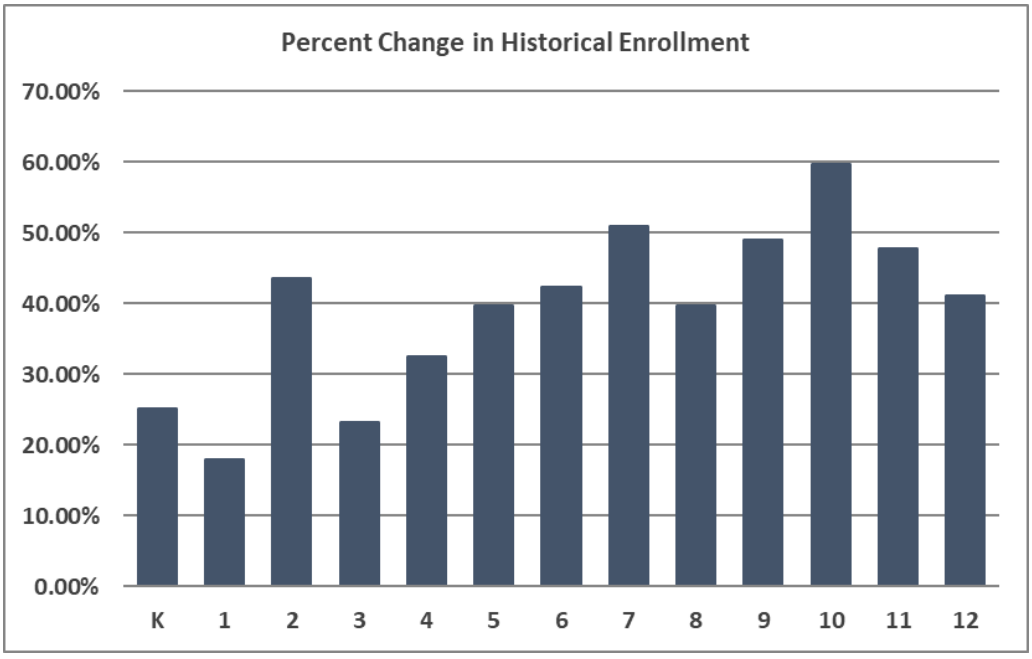
Source: Wentzville School District, 2018.

The enrollment of the Wentzville School District has steadily increased over the past ten years. The district's enrollment has increased 38.57% since the 2009-10 school year. Enrollment has increased as the total population, school-age population, and future school-age population in the area has increased.



Source: Wentzville School District, 2018.

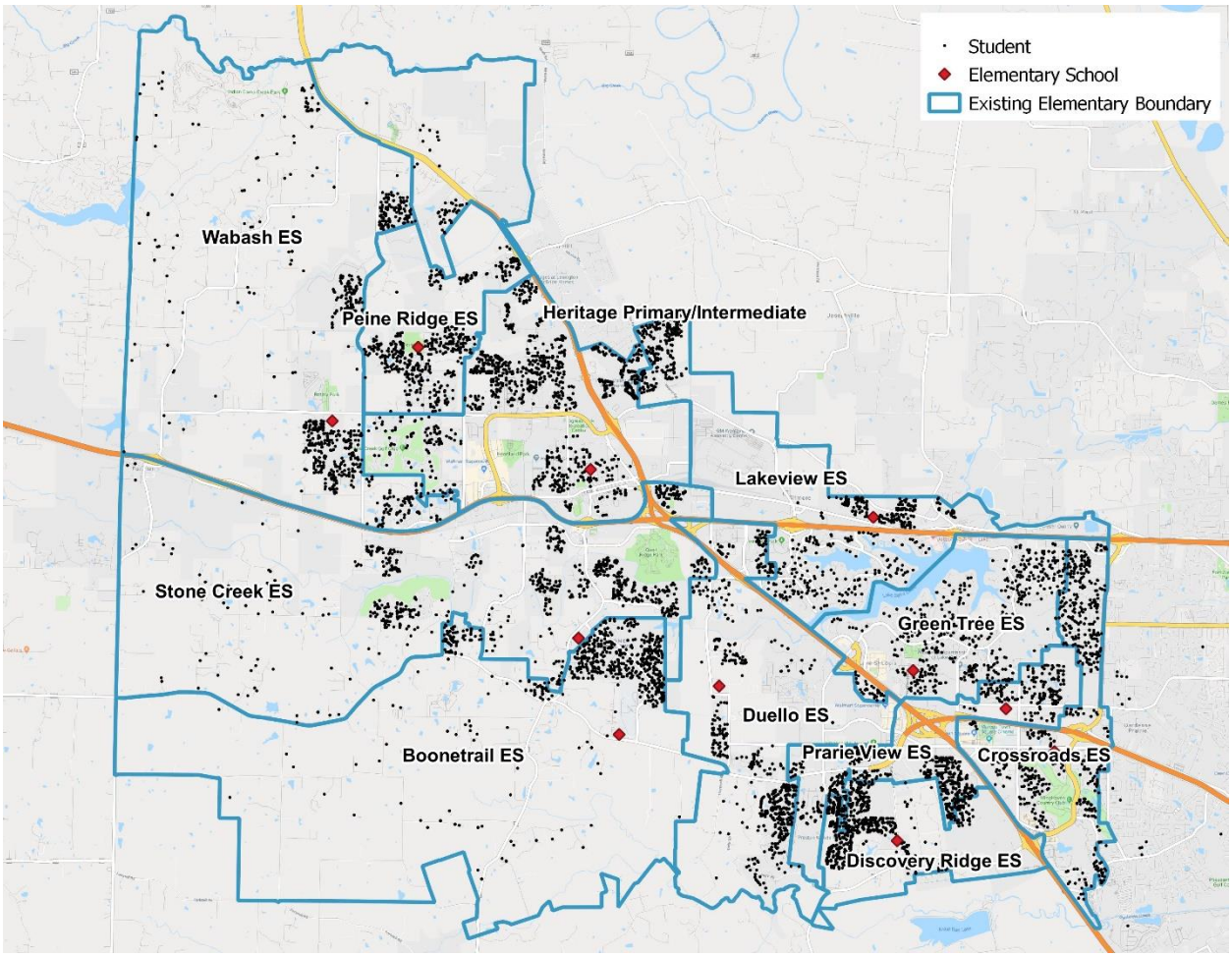
Enrollment has increased at all three grade bands. The K-6 grade band enrollment has increased 31.80% and the 7-8 grade band enrollment has increased 45.29%. The grade band that has experienced the highest increase is the 9-12 grade band at 49.39%.



Source: Wentzville School District, 2018.

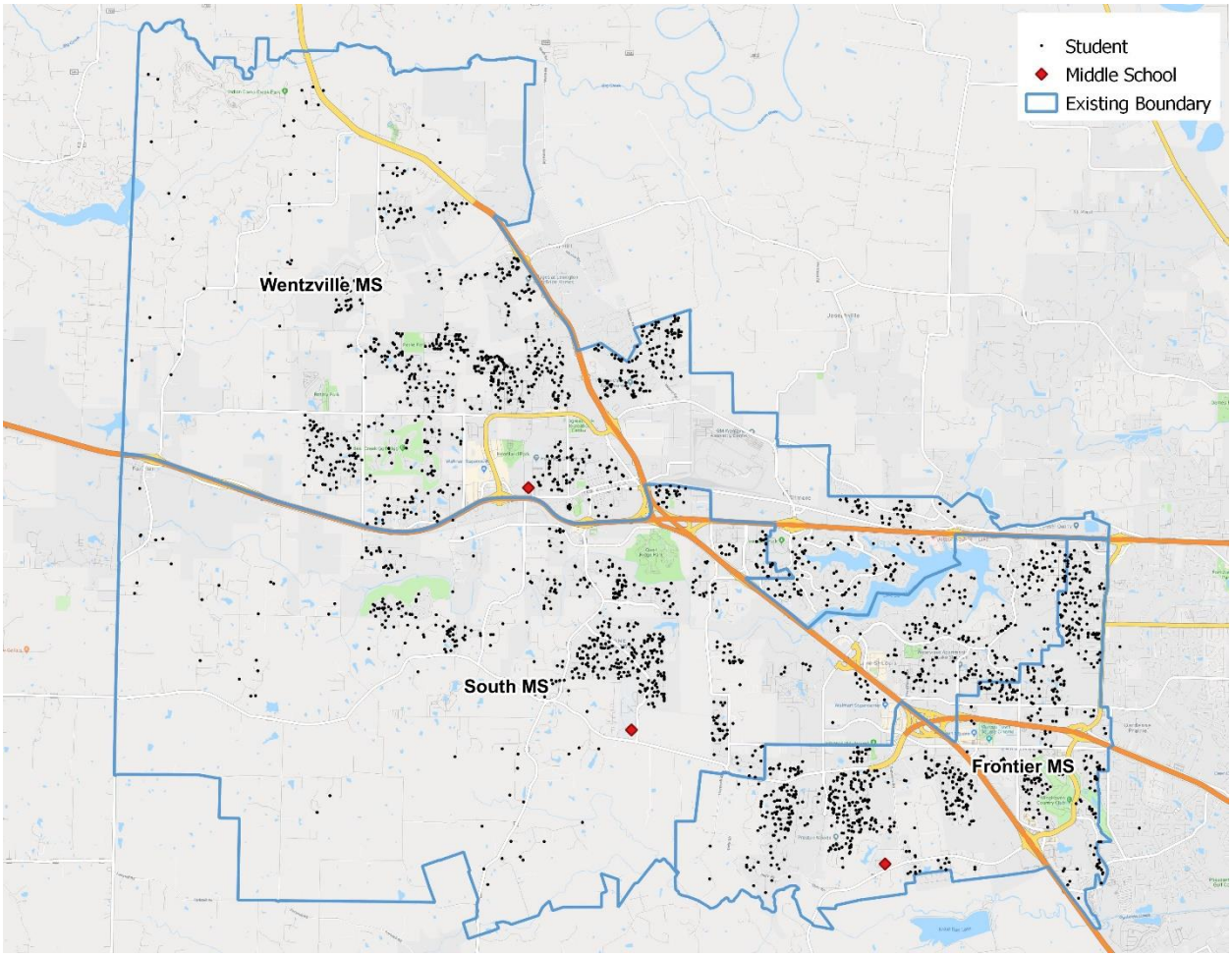
Enrollment increased in all grade levels over the last ten years. Grade 1 saw the smallest increase at 18%, while grade 10 saw the greatest increase at 51%.

CURRENT STUDENT LOCATION



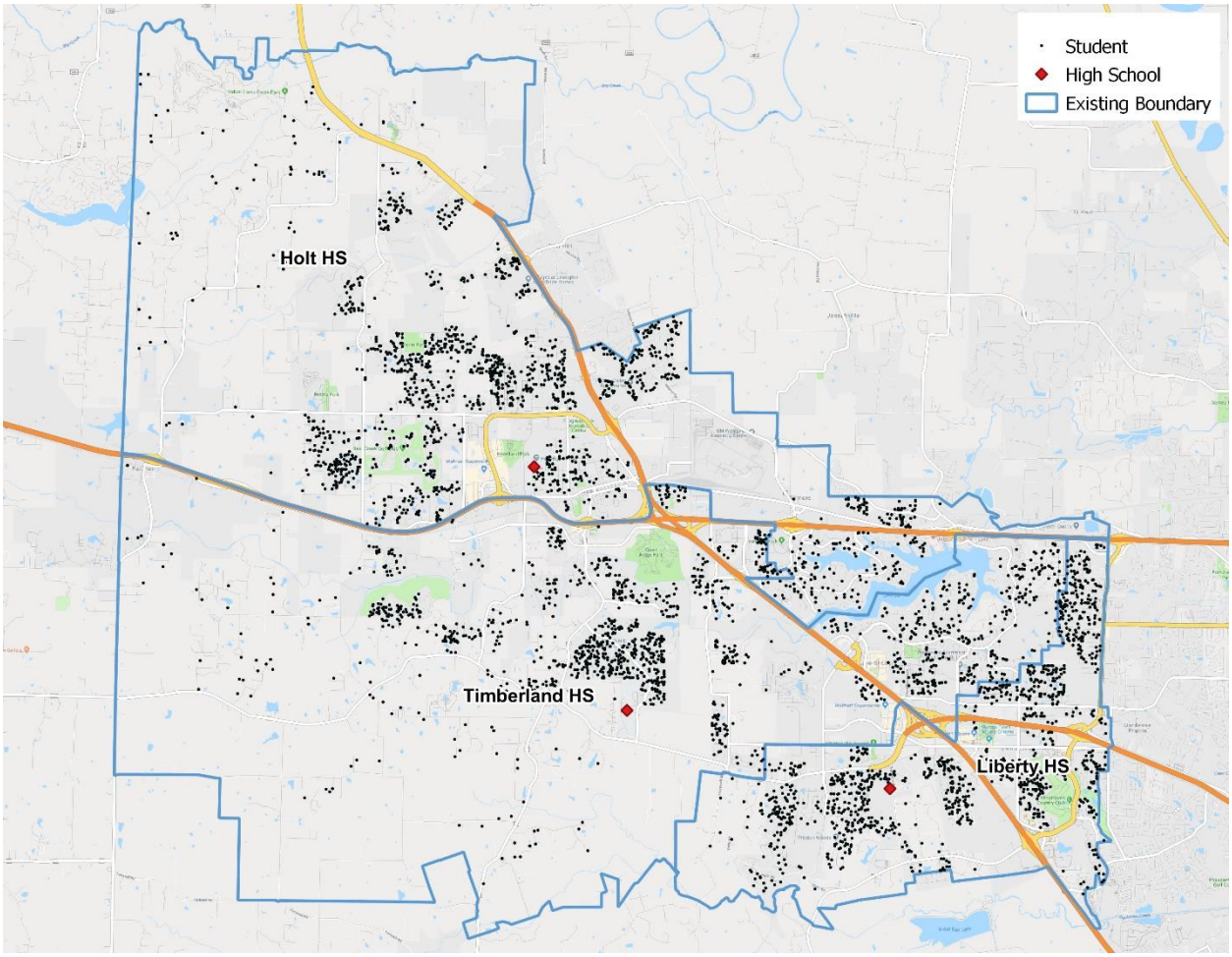
Source: Wentzville School District, 2018.

Current elementary school students reside in concentrated pockets in most elementary school attendance zones. Boone Trail, Stone Creek, and Wabash have the largest areas of lightly populated attendance zones due to the lower number of households in the western part of the district.



Source: Wentzville School District, 2018.

Current middle school students are distributed throughout the middle school attendance zones, though there are fewer students in the western parts of the district due to the lower density of housing.

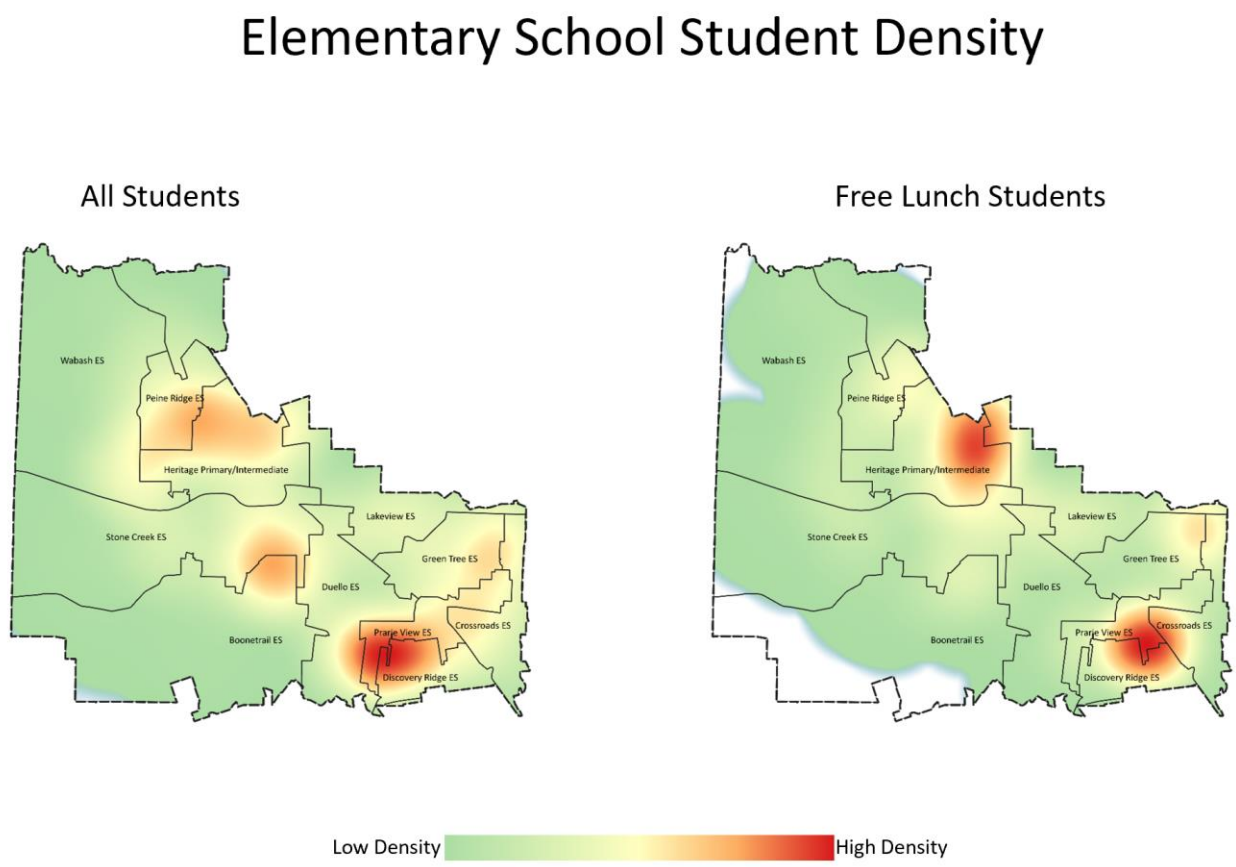


Source: Wentzville School District, 2018.

Current high school students reside in some concentrated areas but are generally distributed throughout the high school attendance zones. The western part of the district has the fewest high school students due to the lower housing levels.

STUDENT DENSITY

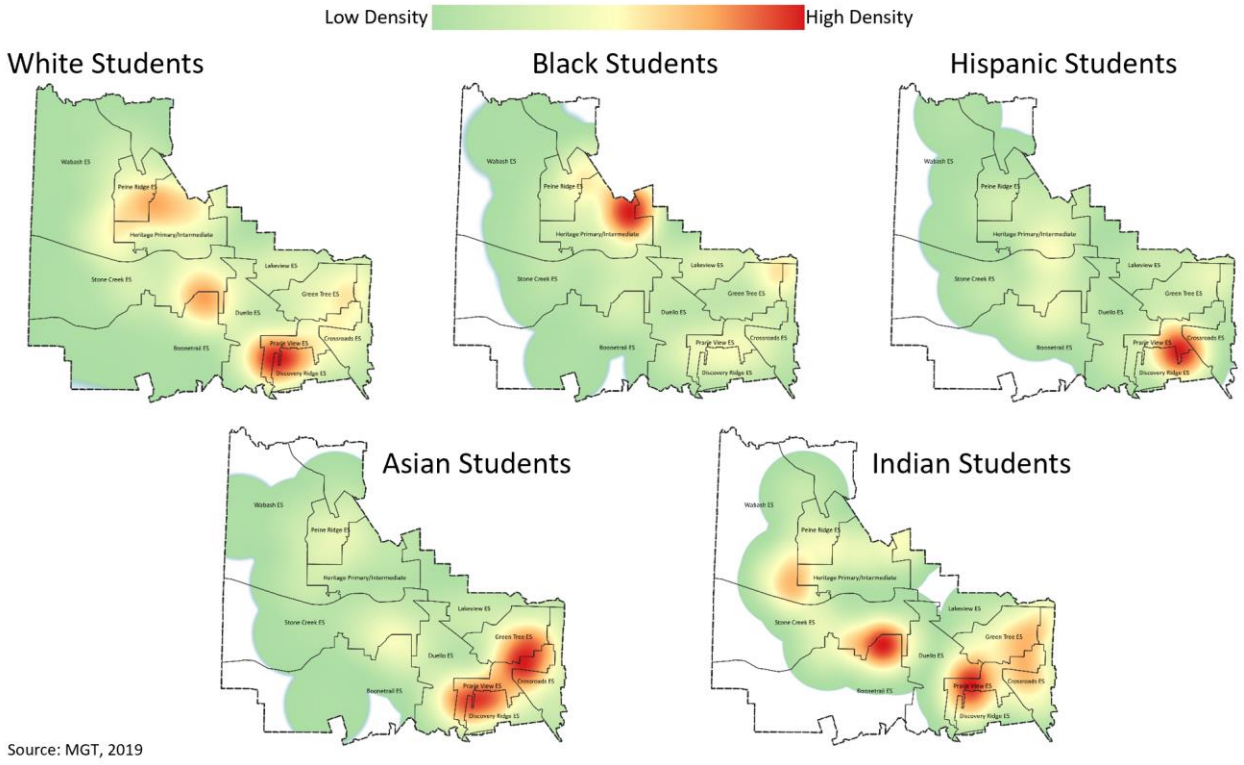
The following series of maps are based on the geocoded student locations.



Source: MGT, 2019

There is a concentration of elementary students in the southeastern area of the district. The map on the right shows a similar pattern for students receiving free lunch, as well as an area of higher density in the Heritage boundary.

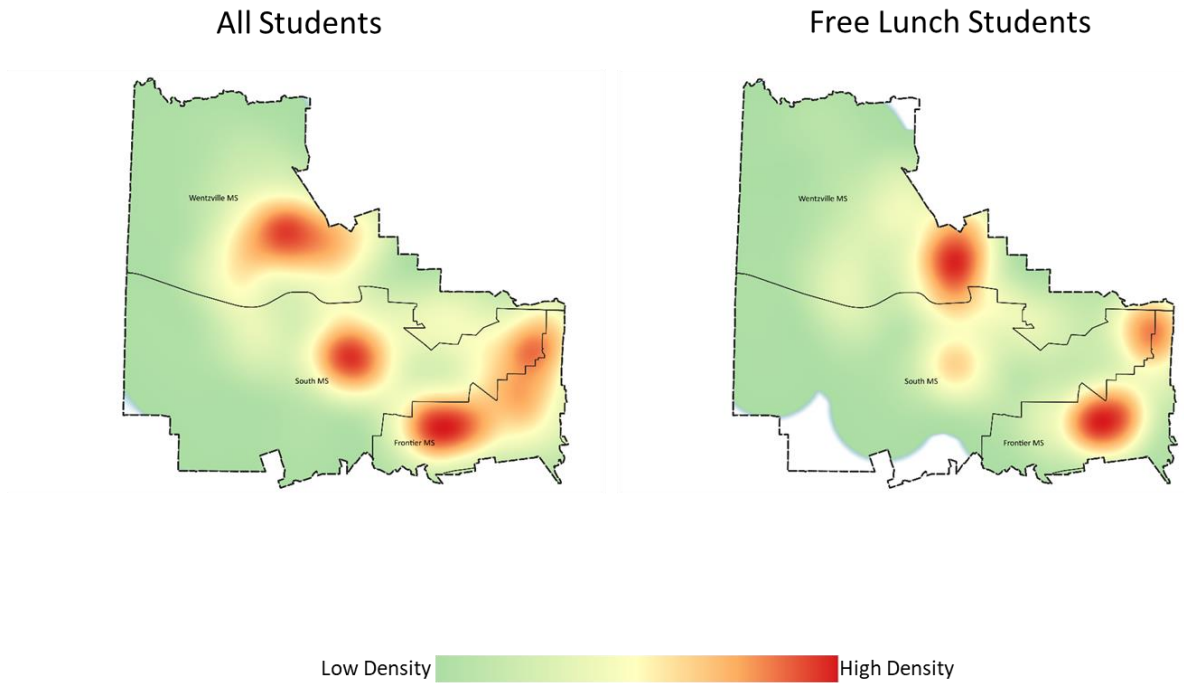
Elementary School Student Density



Source: MGT, 2019

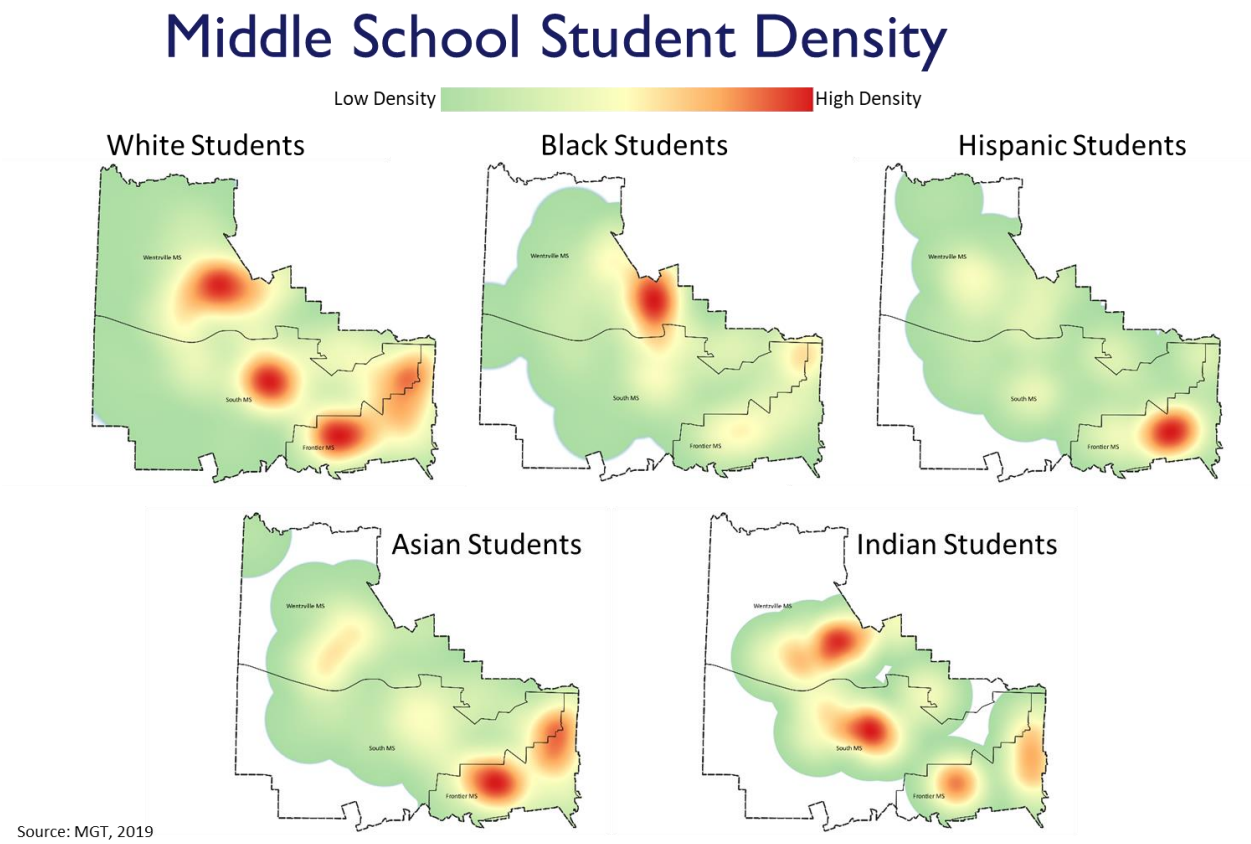
Mirroring the overall population, White elementary school students are the most predominant race and have a few pockets of higher density located around the district. Black elementary school students have an area of high density in the northeastern area of the district.

Middle School Student Density



Source: MGT, 2019

Middle school student densities follow a similar pattern to elementary school students. Students receiving free lunch are densest in the Frontier Middle School and Wentzville Middle School boundaries.

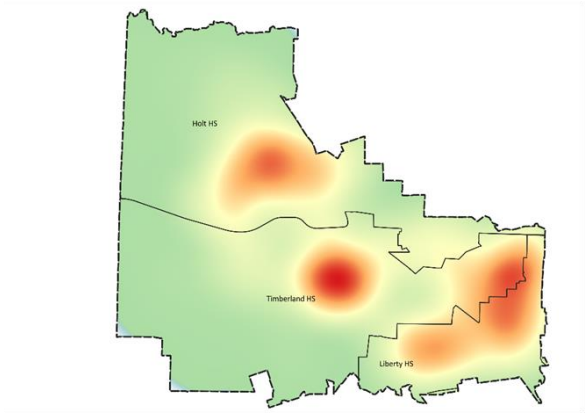


Source: MGT, 2019

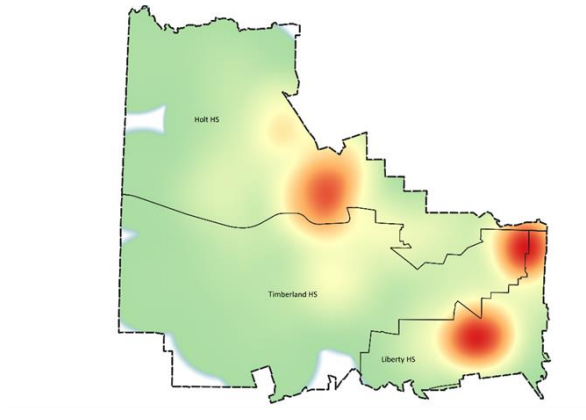
Middle school students have slightly different patterns of density compared to elementary school students. White and Indian students have concentrated pockets in all three middle school boundaries. Black students have one area of high density in the Wentzville Middle School area. Hispanic and Asian students are more concentrated in the Frontier Middle School attendance zone.

High School Student Density

All Students



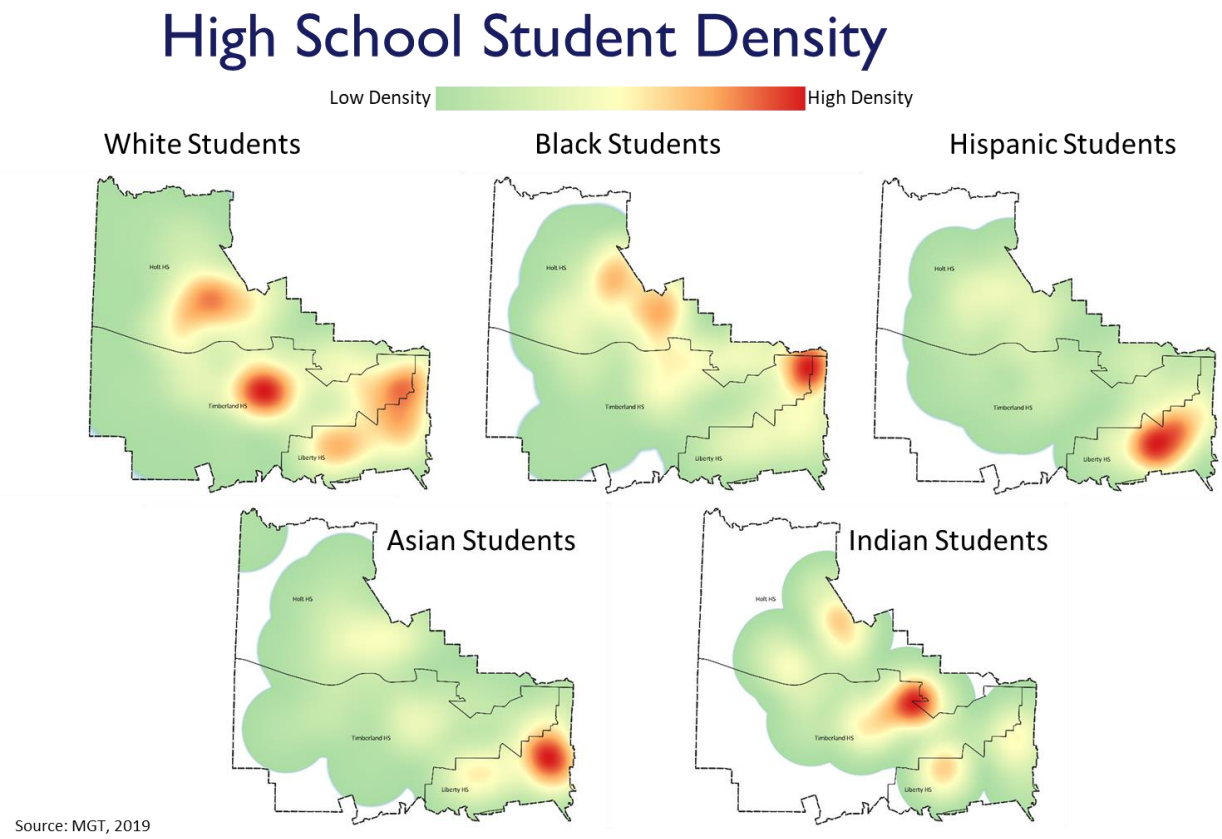
Free Lunch Students



Low Density High Density

Source: MGT, 2019

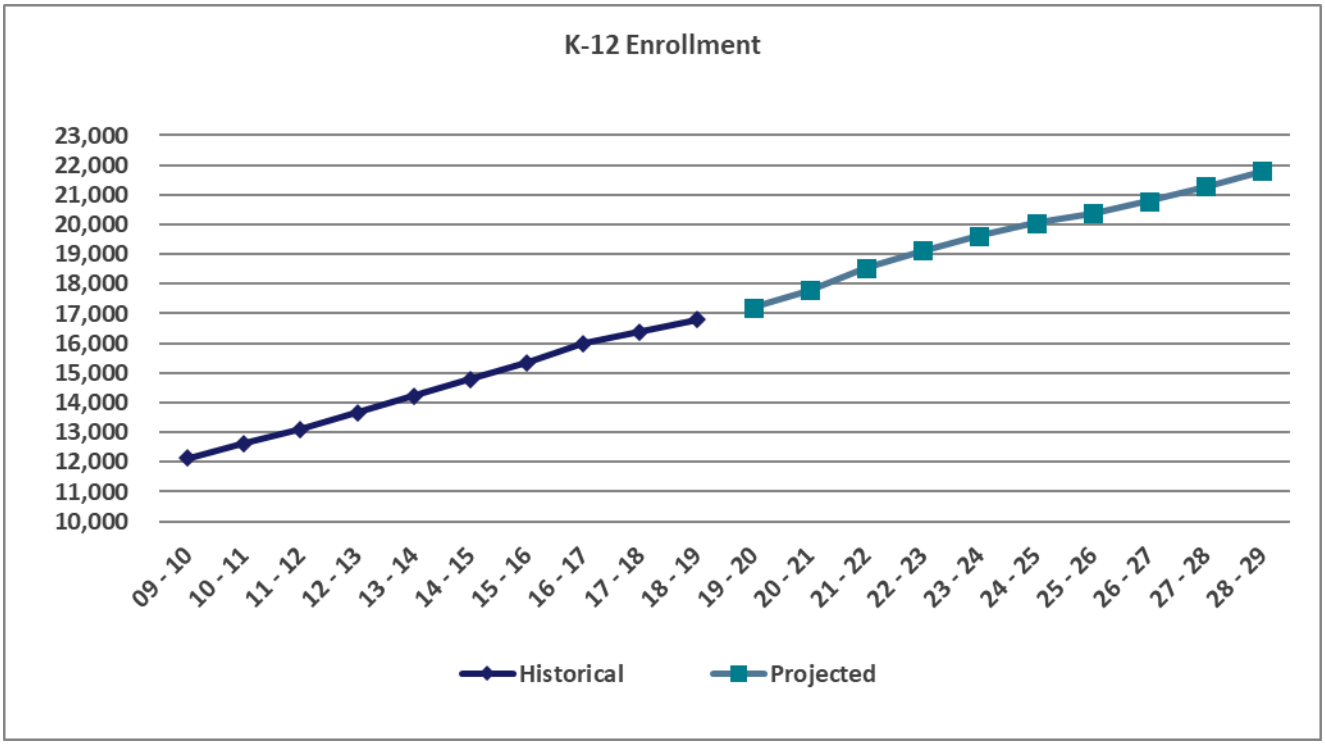
High school students have areas of concentrated population in all three high school attendance boundaries. Free lunch students are most concentrated in the central and southeastern parts of the district.



Source: MGT, 2019

White high school students have areas of concentrated population in all three high school attendance boundaries. Black students have areas of higher density in the eastern part of the district. Hispanic and Asian students have areas of higher density in the southeastern part of the district, while Indian students are more concentrated in the central part of the district.

PROJECTED ENROLLMENT[3]

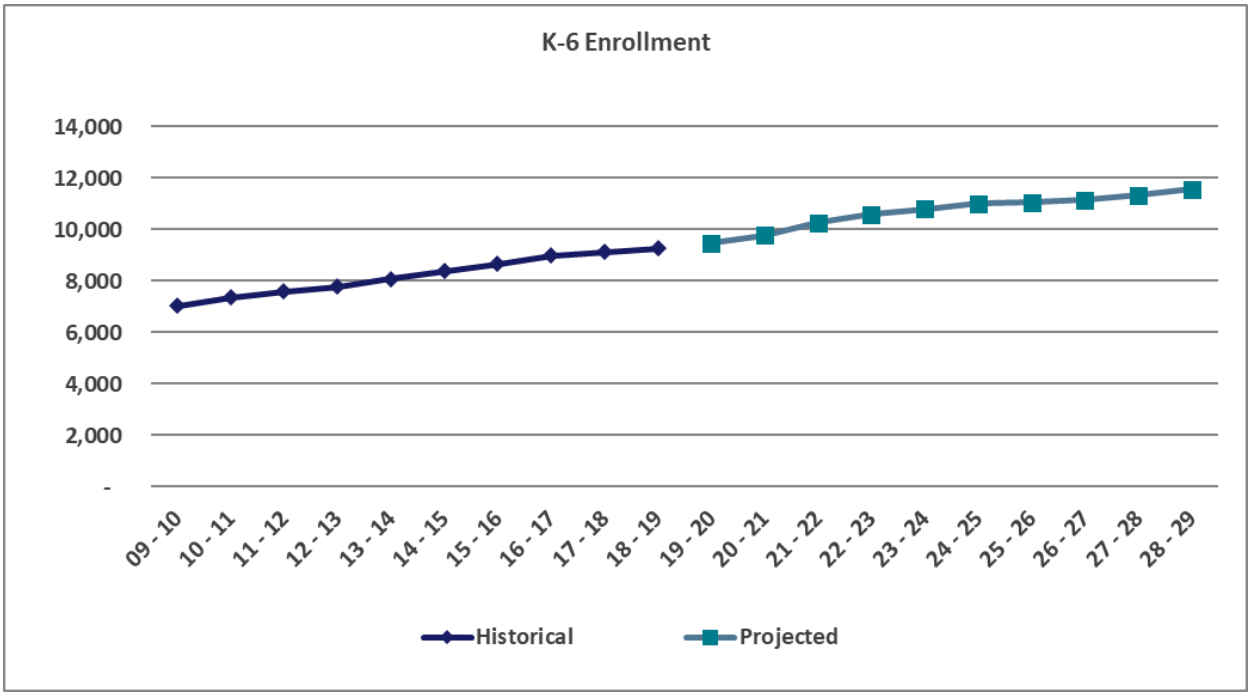


Source: Wentzville School District, 2018; MGT, 2019.

Total enrollment is expected to increase 27% over the next ten years, reaching about 22,000 students in 2028-2029.[4]

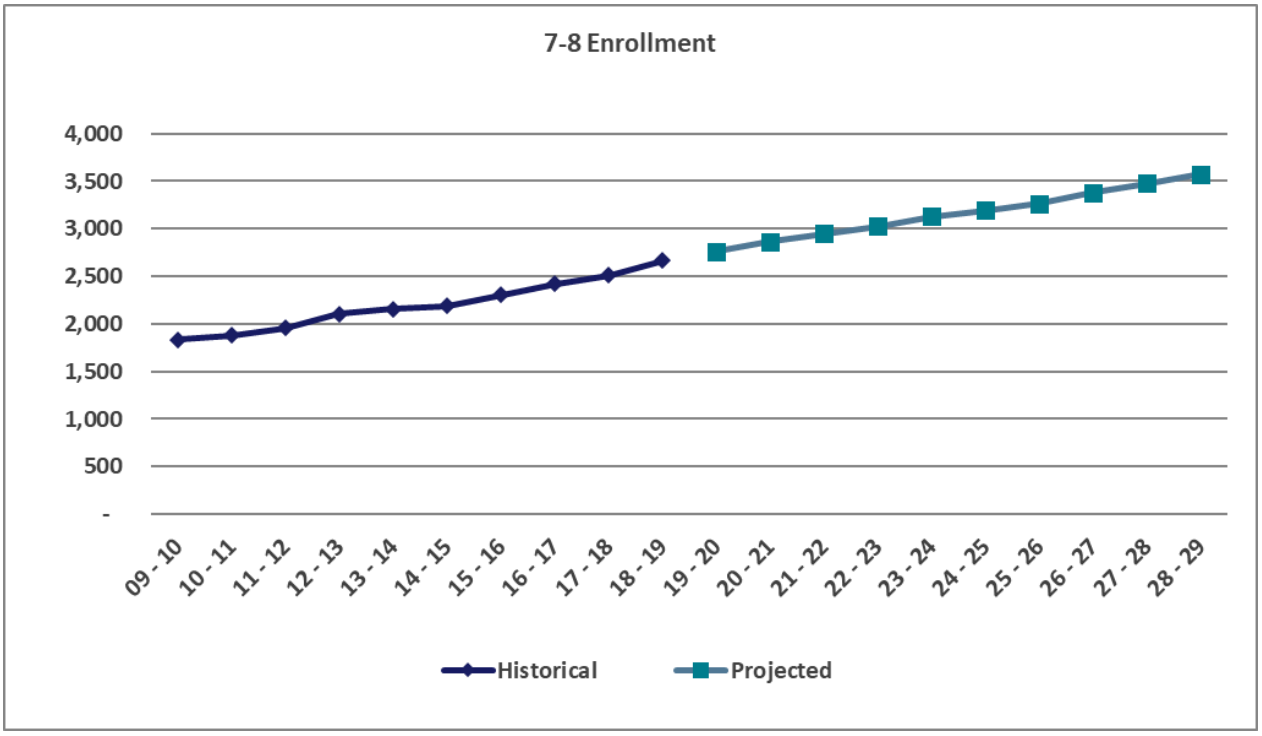
[3] Appendix A contains an explanation of the enrollment forecast methodology used to develop these enrollment projections.

[4] A 2016 study concluded with a similar enrollment forecast. In that study, the 2026-2027 enrollment forecast ranged from a high of 23,000 students to a low of 21,500 students. Appendix C contains a chart illustrating the 2016 study's results.



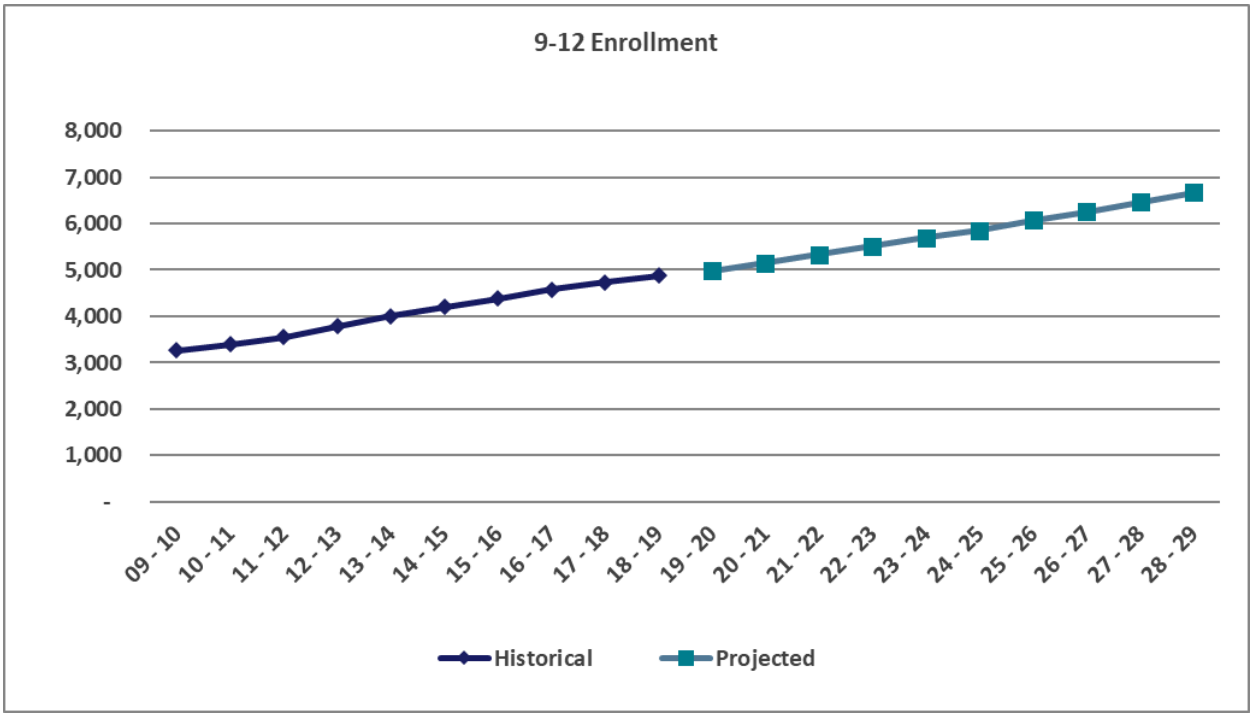
Source: Wentzville School District, 2018; MGT, 2019.

K-6 enrollment is forecasted to increase 22% over the next ten years.



Source: Wentzville School District, 2018; MGT, 2019.

Enrollment in grades 7-8 is expected to increase 29% over the next ten years.



Source: Wentzville School District, 2018; MGT 2019.

High school enrollment is projected to increase 34% over the next ten years.

ENROLLMENT FORECAST BY SCHOOL[5]

Site Name	2018-19 K-12 Enrollment	2019-2020 Projected Enrollment	2028-2029 Projected Enrollment
Boone Trail ES	864	892	1,085
Crossroads ES	743	711	574
Discovery Ridge ES	792	718	1,064
Duello ES	789	925	1,267
Green Tree ES	733	747	694
Heritage Primary	570	609	774
Heritage Intermediate	759	819	1,170
Lakeview ES	765	754	1,046
Peine Ridge ES	665	661	795
Prairie View ES	812	870	1,007
Stone Creek ES	898	889	1,026
Wabash ES	870	881	1,058
Elementary Total	**9,260**	**9,477**	**11,560**

Source: MGT, 2019.

All but two current elementary schools are projected to see increased enrollment over the next ten years. Crossroads Elementary and Green Tree Elementary are expected to see a decline in enrollment. While new housing is expected in the current attendance zones of these two schools, enrollment at these two schools has declined over the last ten years. The influence of the decline in enrollment will continue to be felt over the next ten years, mitigated somewhat by new residents attracted to those areas by new housing.

[5] Appendix D contains a year by year enrollment forecast for each school.

Site Name	2018-19 K-12 Enrollment	2019-2020 Projected Enrollment	2028-2029 Projected Enrollment
Frontier MS	773	793	893
South MS	879	888	1,194
Wentzville MS	1,014	1,081	1,488
Middle Total	**2,666**	**2,762**	**3,575**

Source: MGT, 2019.

Enrollment is expected to increase at all three middle schools over the next ten years.

Site Name	2018-19 K-12 Enrollment	2019-2020 Projected Enrollment	2028-2029 Projected Enrollment
Holt HS	1,757	1,802	2,531
Liberty HS	1,358	1,372	1,600
Timberland HS	1,761	1,800	2,537
High School Total	**4,876**	**4,974**	**6,667**

Source: MGT, 2019.

Enrollment at all three current high schools is expected to increase over the next ten years.

CAPACITY

ELEMENTARY SCHOOL CAPACITY[6]

Site Name	MGT Capacity
Boone Trail ES	843
Crossroads ES	835
Discovery Ridge ES	831
Duello ES	759
Green Tree ES	714
Heritage Primary Heritage Intermediate	1,182
Lakeview ES	796
Peine Ridge ES	797
Prairie View ES	813
Stone Creek ES	786
Wabash ES	826
Elementary Total	**9,181**

Source: MGT, 2019.

Heritage Primary and Heritage Intermediate are treated as one campus for capacity planning purposes. The two schools are located in the same building and share some spaces within the building.

The new elementary school scheduled to open for the 2020-2021 school year will add capacity for another 801 students, **bringing the Elementary Total capacity to 9,982**.

[6] Appendix B contains an explanation of the methodology used to calculate the capacity of each school.

MIDDLE SCHOOL CAPACITY

Site Name	MGT Capacity
Frontier MS	1,106
South MS	1,232
Wentzville MS	1,036
Middle Total	**3,374**

Source: MGT, 2019.

There are no immediate plans for a new middle school.

HIGH SCHOOL CAPACITY

Site Name	MGT Capacity
Holt HS	1,673
Liberty HS	1,652
Timberland HS	1,750
High School Total	**5,075**

Source: MGT, 2019.

The new high school scheduled to open for the 2021-2022 school year will add capacity for another 1,700 students, **bringing the High School Total capacity to 6,775**.

CAPACITY OF NON-COMPREHENSIVE PROGRAM SCHOOLS

Site Name	MGT Capacity
Barfield ECC	378
Pearce Hall	273

Source: MGT, 2019.

Barfield Early Childhood Center and Pearce Hall do not have attendance zones. Barfield is a district-wide pre-kindergarten school. Pearce Hall houses an alternative education program for students from across the district.

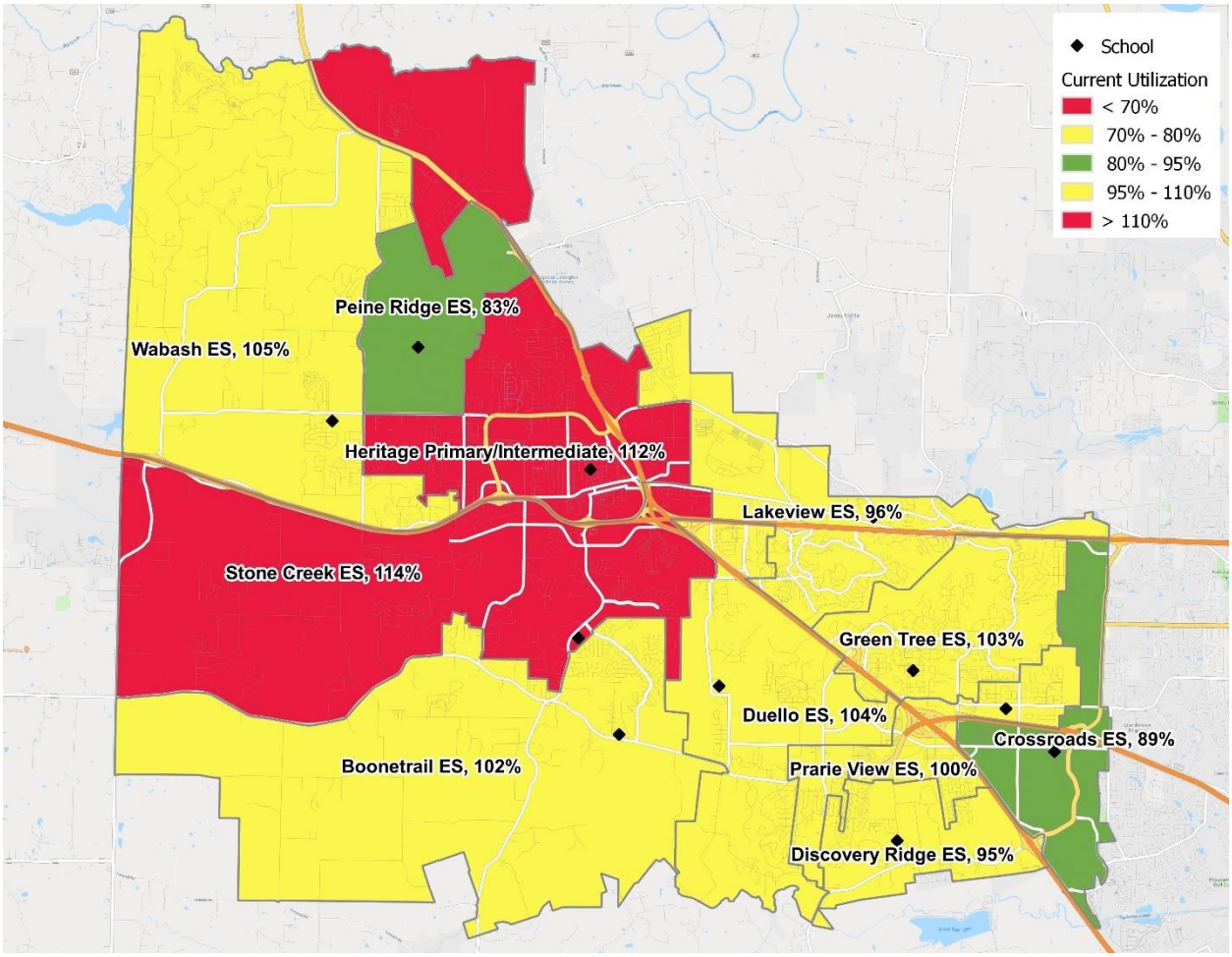
UTILIZATION

ELEMENTARY SCHOOL UTILIZATION

Site Name	2018-19 Utilization	2019-2020 Projected Utilization	2028-2029 Projected Utilization
Boone Trail ES	102%	106%	129%
Crossroads ES	89%	85%	69%
Discovery Ridge ES	95%	86%	128%
Duello ES	104%	122%	167%
Green Tree ES	103%	105%	97%
Heritage Primary Heritage Intermediate	112%	121%	164%
Lakeview ES	96%	95%	132%
Peine Ridge ES	83%	83%	100%
Prairie View ES	100%	107%	124%
Stone Creek ES	114%	113%	131%
Wabash ES	105%	107%	128%
Elementary Total	**101%**	**103%**	**126%**

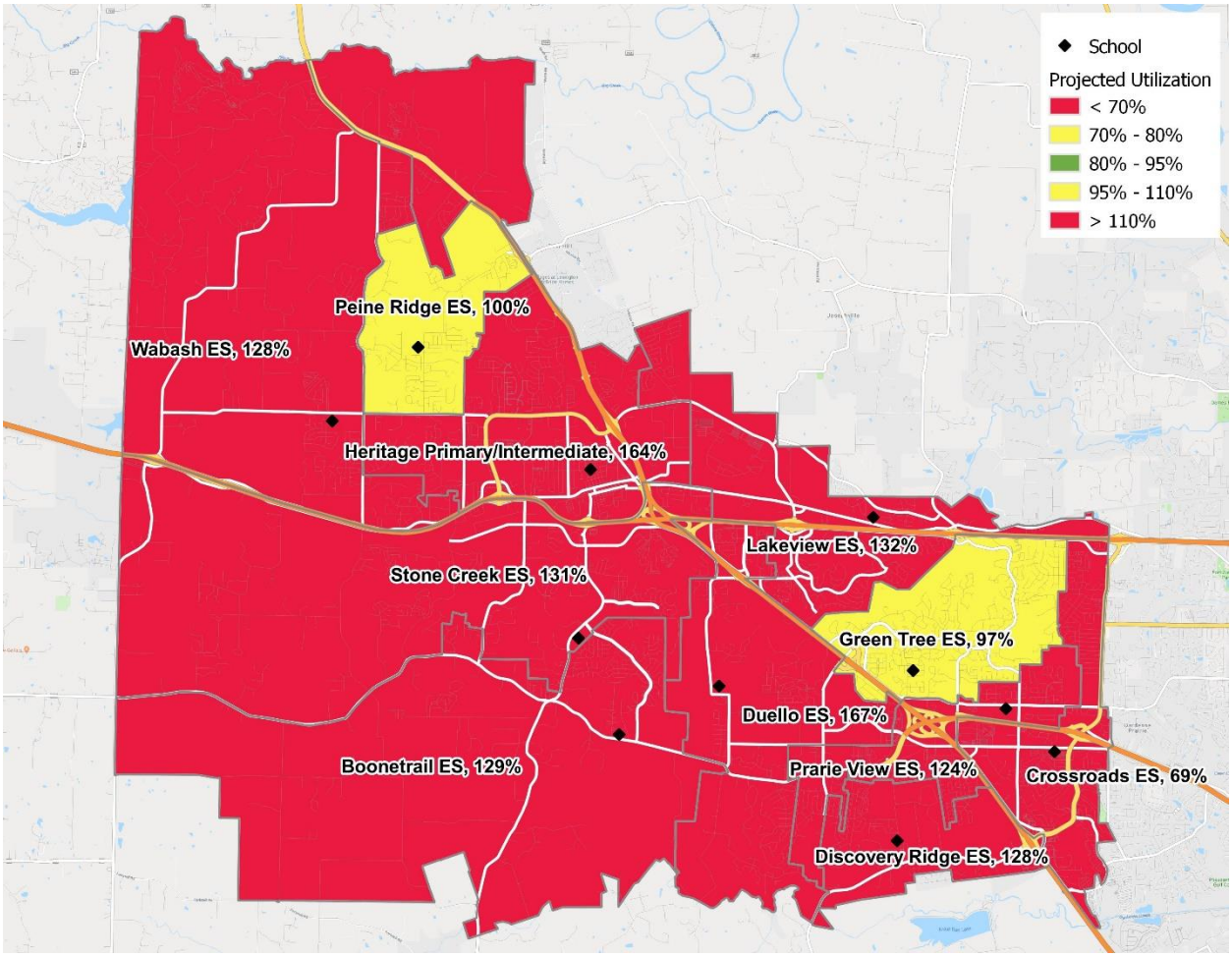
Source: MGT, 2019.

The elementary school grade band is currently over-utilized and is expected to be significantly over-utilized by the 2028-2029 school year. The Elementary Total shown here does not include the new elementary school with a capacity of 801. The new elementary school is scheduled to open for the 2020-2021 school year.



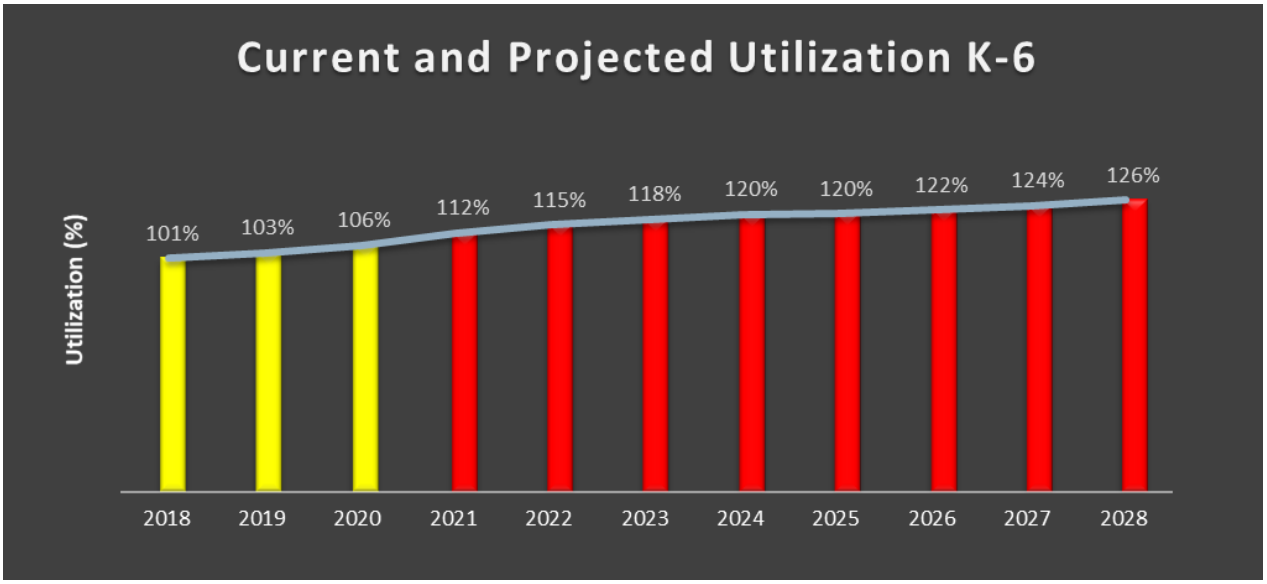
Source: MGT, 2019.

Currently, the most over-utilized elementary schools are located in the central part of the district.

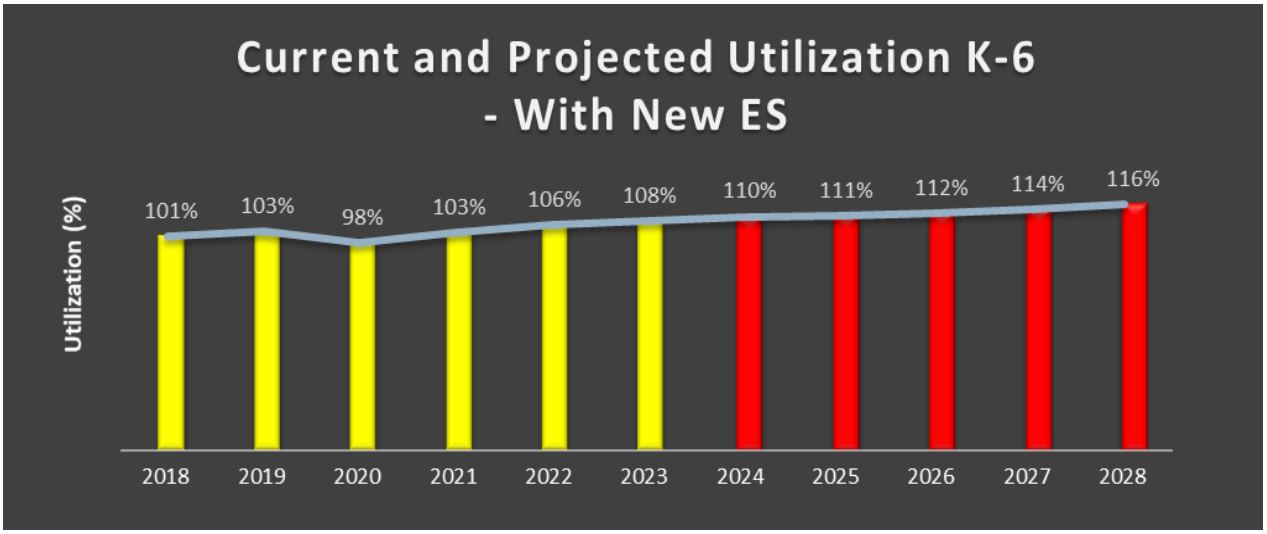


Source: MGT, 2019.

Over the next ten years, all elementary schools are expected to be above or near 100% utilization, with the notable exception of Crossroads Elementary School where enrollment is forecasted to decrease.



Without the new elementary school, the K-6 grade band utilization is expected to reach 126% over the next ten years. For planning purposes, the new elementary school scheduled to open for the 2020-2021 school year will have a capacity of 801. The new elementary school capacity will temporarily alleviate the K-6 over-utilization, but the anticipated increase in enrollment will soon lead the elementary grade band back into an over-utilized condition, reaching a forecasted 116% over the next ten years. Additional elementary school capacity will be needed over the next ten years.



Source: MGT, 2019.

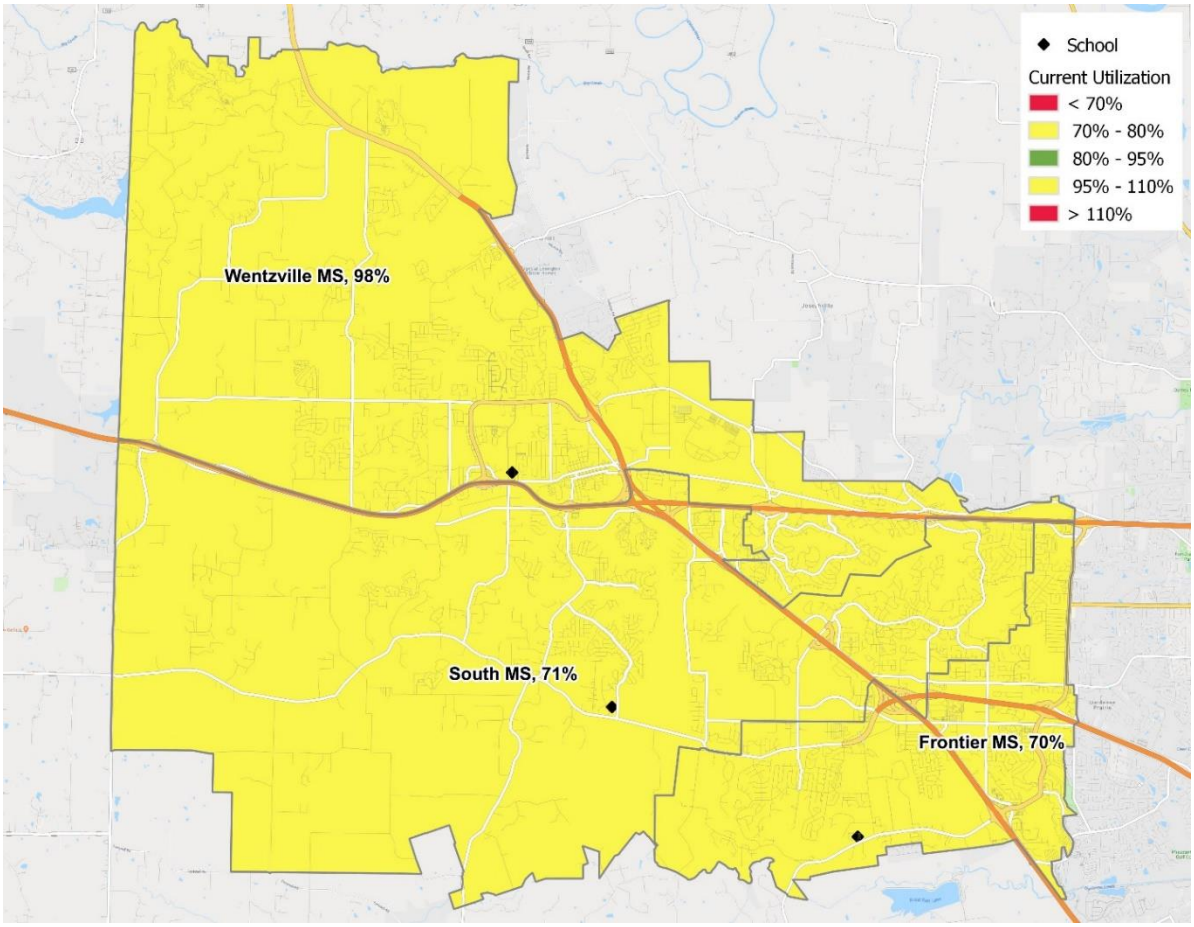
The projected elementary school utilization would change significantly if the district decides to move the 6th grade back into the middle school buildings. In that situation, the over-utilization at the elementary school buildings would be alleviated and the need for additional elementary school capacity would be reduced.

MIDDLE SCHOOL UTILIZATION

Site Name	2018-19 Utilization	2019-2020 Projected Utilization	2028-2029 Projected Utilization
Frontier MS	70%	72%	81%
South MS	71%	72%	97%
Wentzville MS	98%	104%	144%
Middle Total	**79%**	**82%**	**106%**

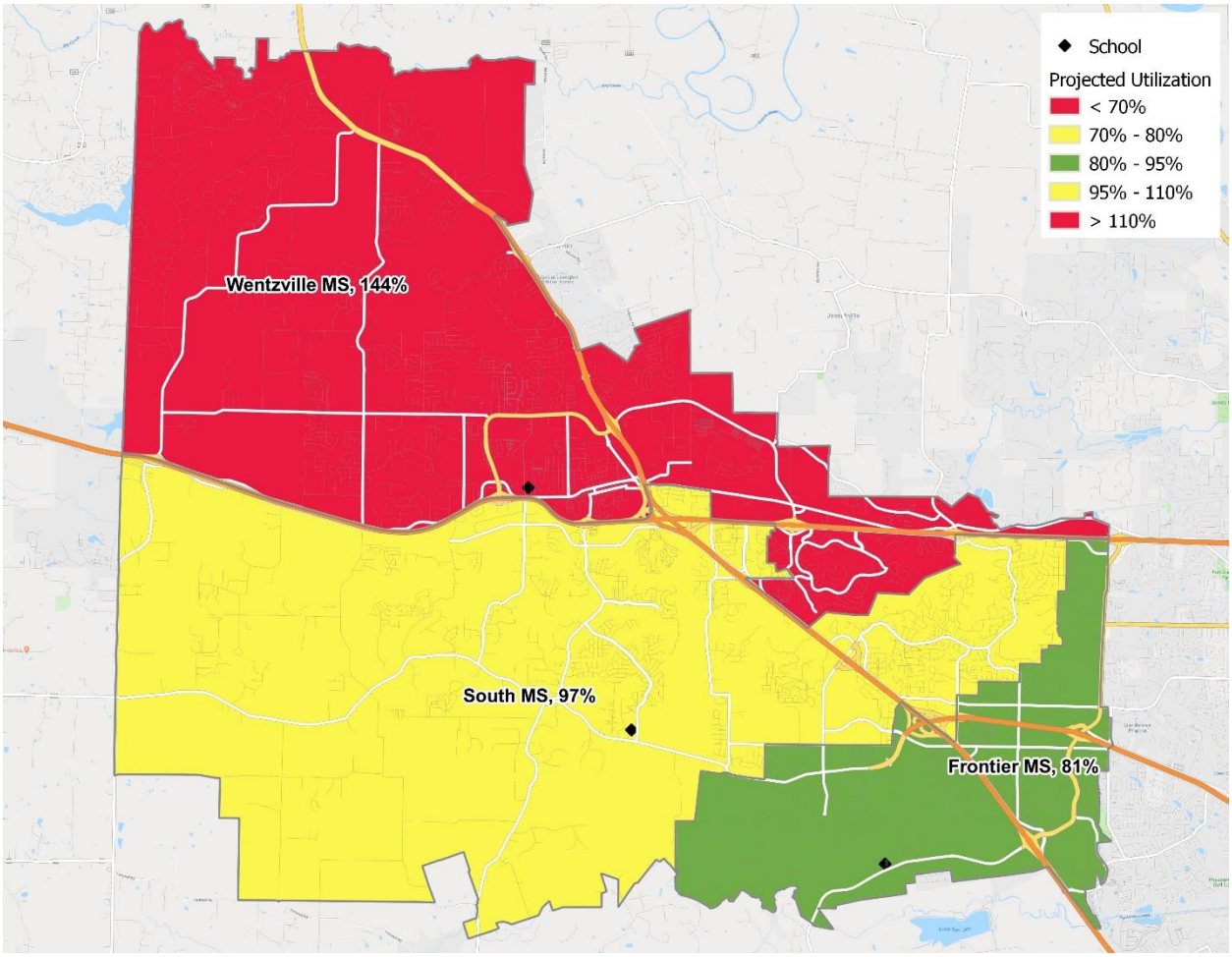
Source: MGT, 2019.

The middle school grade band is currently within a comfortable utilization range overall, but enrollment could be better balanced across the middle schools to maximize available capacity. Wentzville Middle School enrollment is projected to exceed capacity in the near future, and the building will be significantly over-utilized in the next ten years.



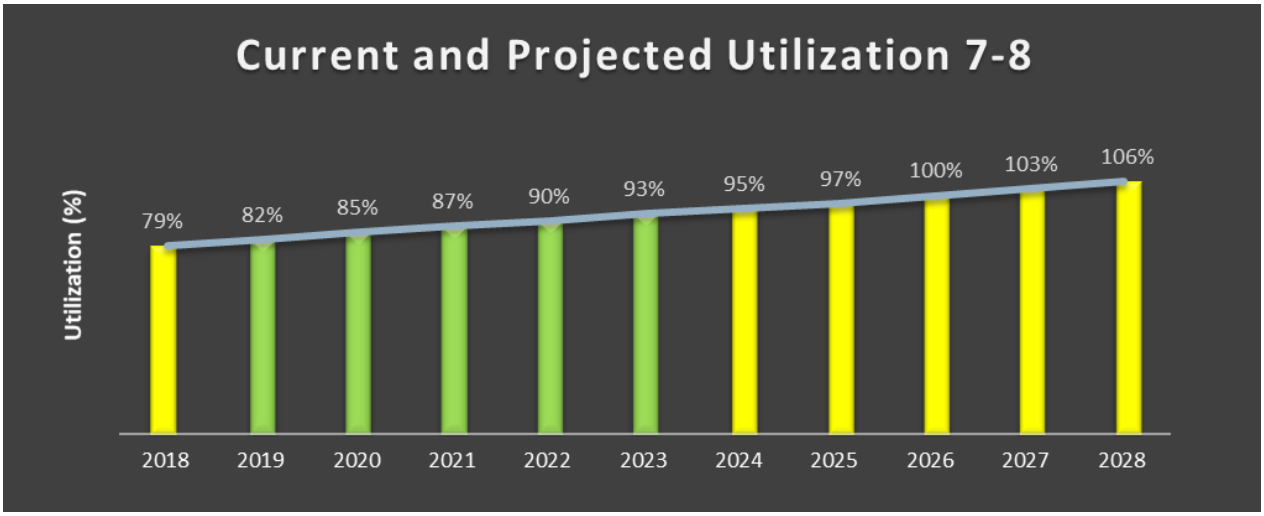
Source: MGT, 2019.

Currently, only Wentzville Middle School is close to being over-utilized.



Source: MGT, 2019.

Over the next ten years, Wentzville Middle School is forecasted to be significantly over-utilized. South Middle School will be approaching an over-utilized condition, while Frontier Middle School will remain within a comfortable utilization zone.



Source: MGT, 2019.

Current middle school capacity will accommodate enrollment for the next several years, though enrollment will need to be balanced across existing space. A fourth middle school may be needed toward the end of the next decade if middle school enrollment continues to increase as expected.

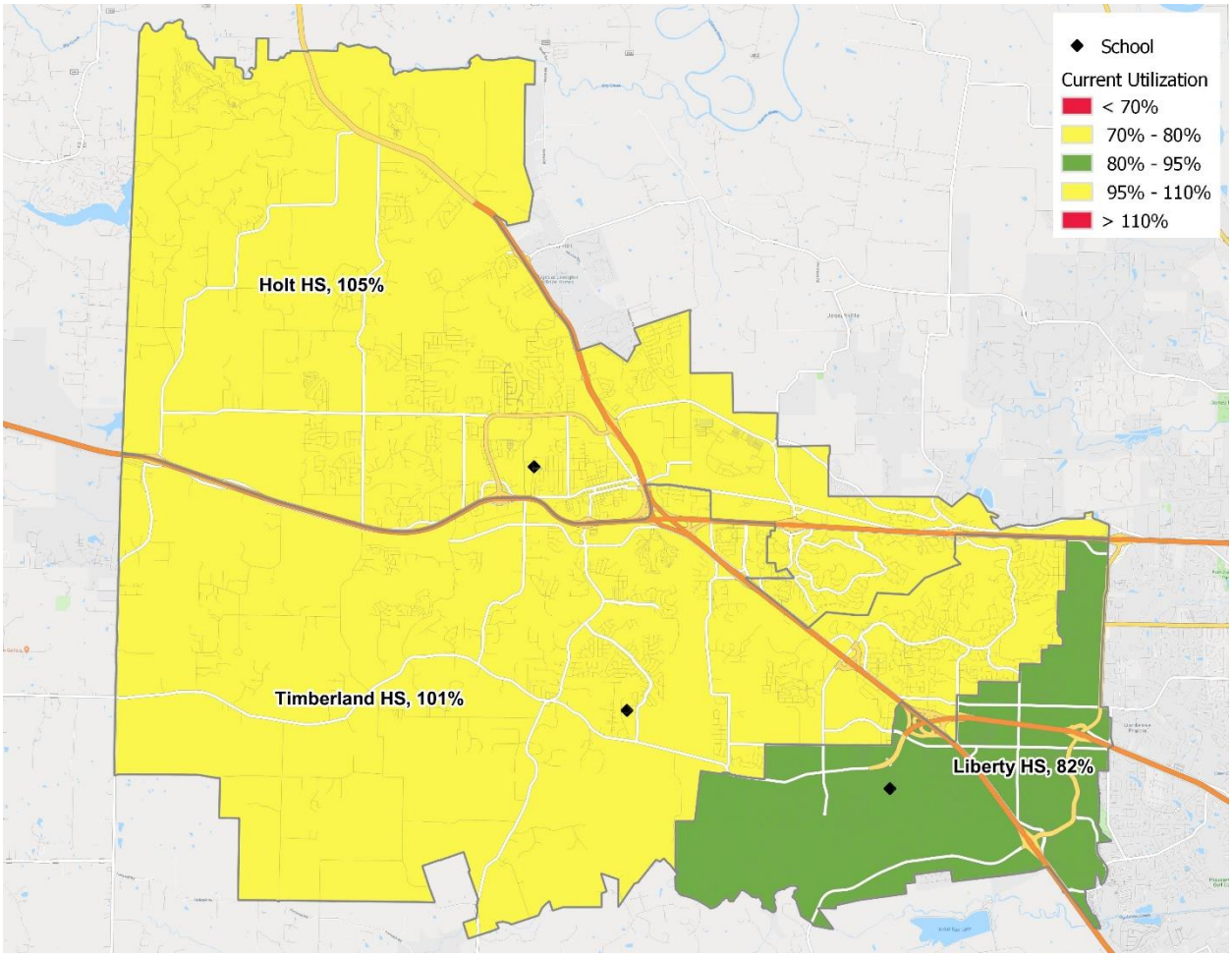
The projected utilization for the middle schools would change significantly if the district decided to move the 6th grade back into the middle school buildings. In that situation, it is highly likely that the need for a fourth middle school would be accelerated.

HIGH SCHOOL UTILIZATION

Site Name	2018-19 Utilization	2019-2020 Projected Utilization	2028-2029 Projected Utilization
Holt HS	105%	108%	151%
Liberty HS	82%	83%	97%
Timberland HS	101%	103%	145%
High School Total	**96%**	**98%**	**131%**

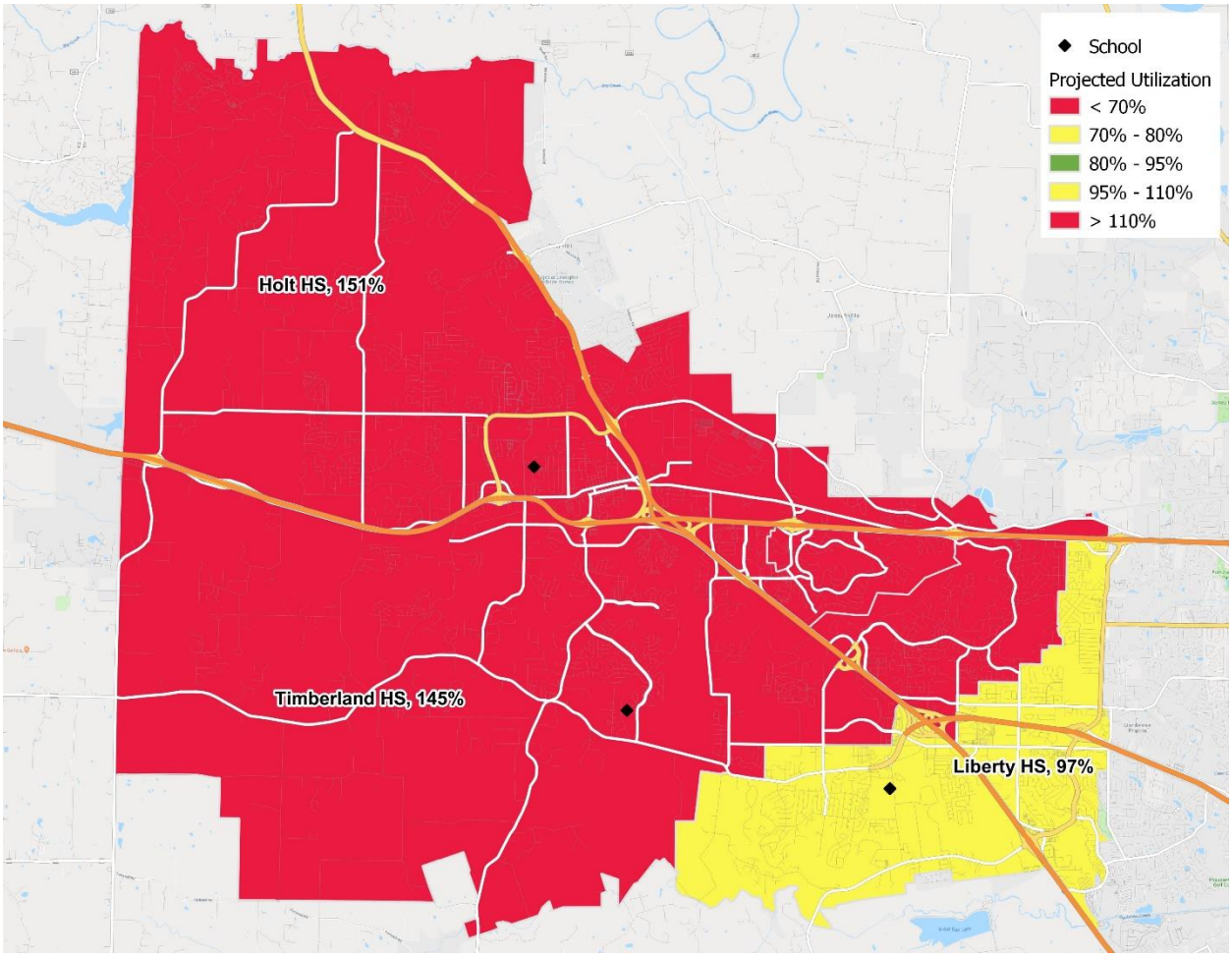
Source: MGT, 2019.

Enrollment at Holt High School and Timberland High School currently exceeds the capacity of those schools, and the high school grade band utilization is approaching over-utilization. The grade band will be significantly over-utilized by the end of the next decade. The new 1,700 capacity high school scheduled to open for the 2021-2022 school year will allow the district to more efficiently balance enrollment across the district.



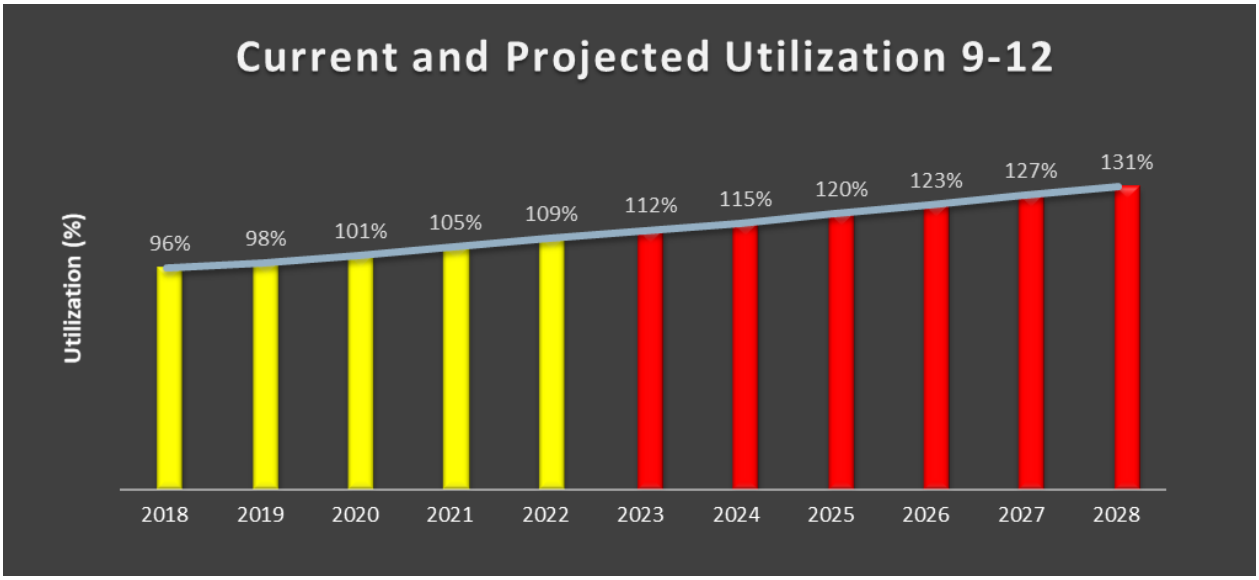
Source: MGT, 2019.

Currently, two of the three high schools are over-utilized.



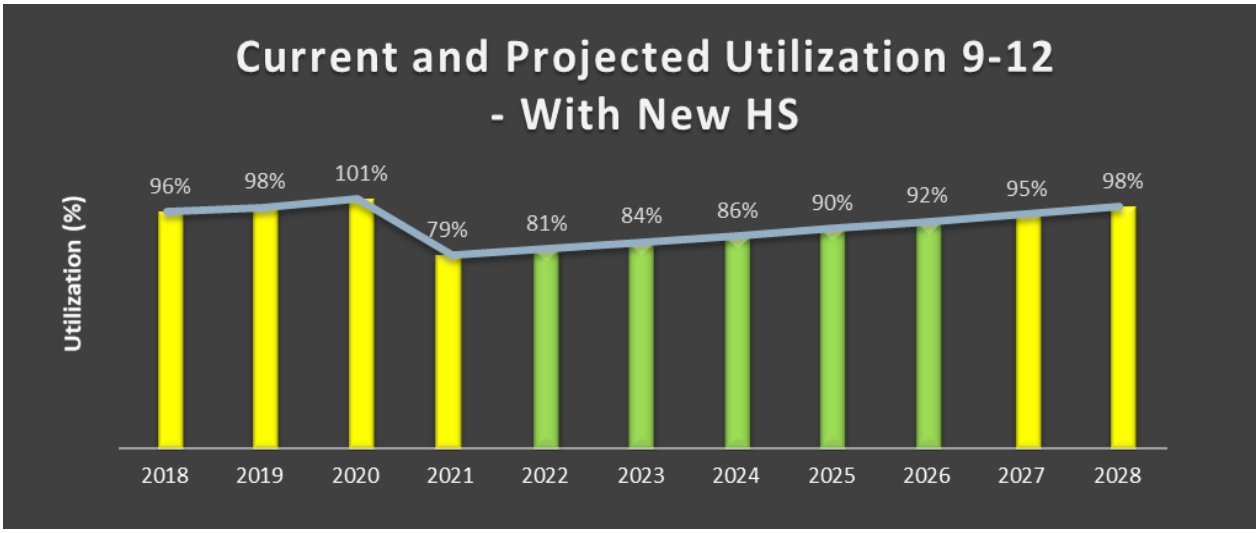
Source: MGT, 2019.

Over the next ten years, Holt High School and Timberland High School are forecasted to be significantly over-utilized. Liberty High School is expected to be close to 100% utilized as well.



Source: MGT, 2019.

Without the new high school, the high school grade band is expected to reach 131% utilization over the next ten years. For planning purposes, the new high school scheduled to open for the 2021-2022 school year will have a capacity of 1,700. The new capacity will alleviate the over-utilization at the high school grade band and keep the high school grade band efficiently utilized through the next decade.



Source: MGT, 2019.

APPENDIX A – ENROLLMENT FORECASTING METHODOLOGY

Enrollment forecasts are merely an *estimate* of future activity based on the historical data and information provided. During the implementation of any of the recommendations provided, it is critical that the district reassess these numbers on a regular basis and adjust plans accordingly.

To identify trends and prepare for adequate spaces, teaching staff, materials and supplies, educational leaders use several methods of projecting enrollment. Among the most commonly used models are *Average Percentage Annual Increase, Cohort Survival, Linear Regression*, and *Student-per-Housing Unit* models. Because no one model is foolproof, MGT generates a weighted average of these four "base" models to arrive at its enrollment forecast.

A rule of thumb when forecasting enrollment is that the models should use as many years of historical data as there are years in the projection period. In other words, if the model is projecting enrollment for five years from now, then five years of historical data are used. If the model is projecting enrollment for ten years from now, then ten years of historical data are used. Each of the following "base" models draw data in this manner for their calculations.

AVERAGE PERCENTAGE ANNUAL INCREASE MODEL

This model calculates future school enrollment growth based on the historical average growth from year to year for each grade level. This simple model multiplies the historical average percentage increase (or decrease) by the prior year's enrollment to project future enrollment estimates. For example, if enrollment in the first grade decreased five percent from 2010 to 2011 and decreased seven percent from 2011 to 2012, then the average percentage change would be a six percent decrease, and six percent would be the factor used to project future enrollment in this model.

LINEAR REGRESSION MODEL

This model uses a statistical approach to estimate an unknown future value of a variable by performing calculations on known historical values. Once calculated, future values for different future dates can then be plotted to provide a "regression line" or "trend line". MGT has chosen a "straight-line" model to estimate future enrollment values, a model that finds the "best fit" based on the historical data.

COHORT SURVIVAL MODEL

This model calculates the growth or decline between grade levels over a period of ten years based on the ratio of students who attend each of the previous years, or the "survival rate". This ratio is then applied to the incoming class to calculate the trends in that class as it "moves" or graduates through the school system. For example, if history shows that between the first and second grades, the classes for the last ten years have grown by an average of 3.5%, then the size of incoming classes for the next ten years is calculated by multiplying them by 103.5%. If the history shows a declining trend, the multiplying factor would be 100% minus the declining trend number.

The determination of future kindergarten enrollment estimates is critical, especially for projections exceeding more than five years, because future kindergarten enrollment forms the beginning baseline in the cohort survival model. There are two methods of projecting kindergarten enrollment. The first

model is based on the correlation between historical resident birth rates (natality rates) and historical kindergarten enrollment. The second model uses a linear regression line based on the historical kindergarten enrollment data.

When examining the ratio of live-births-to-kindergarten enrollment, live-birth data is collected for the past 15 years and kindergarten enrollment for the past ten years. For example, a child born in 2010 would enroll in kindergarten at the age of five in 2015. Therefore, in this analysis, the model looks at how many children are enrolled in kindergarten as compared to the number of children born in the area five years prior to a particular school year.

Two statistics are critical to understanding the relationship between live births and kindergarten enrollment in the district: the correlation coefficient and the capture rate.

The correlation coefficient calculates the strength or weakness of the relationship between two series of data. A correlation coefficient of 1 or -1 indicates a strong relationship; a correlation coefficient of 0 indicates a weak relationship. The capture rate measures the percentage of live births that resulted in kindergarten enrollment five years later.

In Wentzville School District, there was a very weak correlation between live births and future kindergarten enrollment, likely due to the number of people moving to the district and bringing young children with them. Because of the weak correlation, the models use linear regression based on historical kindergarten enrollment to forecast future kindergarten enrollment.

STUDENTS-PER-HOUSEHOLD MODEL

This last model utilizes the estimated number of housing units as its base data. Using the housing unit data and historical enrollment data, MGT created a student generation factor for each projected grade level. By taking the 2017 enrollment by grade level and dividing it by the 2017 U.S. Census Bureau estimated housing units, MGT calculated a *Student Generation Factor* ("SGF") for each grade level. This factor indicates the number of students within each grade level that can be expected to be generated by each new housing unit.

BASE MODEL WEIGHTING

Once each of these four base models has been calculated, MGT generates a weighted average of the models. A weighted average allows the analysis to reflect all the trends observed in the historical data and the over-arching themes from the qualitative information gathered in this process. The weighted average also works to maximize the strengths of each of the “base” models.

Two models, the Average Percentage Annual Increase Model and the Linear Regression Model, emphasize historical data. These models are quite effective predictors if there is no expectation of unusual community growth or decline and student population rates have minimal fluctuation.

The Cohort Survival Model also uses historical enrollment numbers but considers student-mobility patterns and the effects of the natality rates in prior years. The Cohort Survival Model is perhaps the best-known predictive tool using this type of data. However, like the Annual Percentage Annual Increase Model and the Linear Regression Model, the Cohort Survival Model loses its predictive capabilities in communities that experience, or are expecting to experience, more rapid growth or rapid decline.

The Students-Per-Household Model allows the planner to consider projections for housing developments and general growth in the county. This model looks forward and is based on the input from local planners. The planning information is important, and the district should continue to monitor this information.

In Wentzville School District, the forecast model weighted each base model equally. All historical trends in the Wentzville area are expected to continue over the next ten years. Housing development is expected to continue to grow, and the district's population will continue to grow along with the availability of new housing. This will lead to an increase in enrollment over the next ten years.

APPENDIX B – CAPACITY MODELLING

Capacity is a decision, not a definition. In other words, a school's capacity depends on how the Wentzville School District chooses to use that school. More specifically, a school's capacity is the number of students which can be accommodated given the specific educational programs, the class schedules, the student-teacher ratios, and the size of the rooms.

MGT used an instructional space model to allow program decisions – the way the school is used – to determine the capacity of Wentzville School District's schools. Here is how the model works:

1. MGT counted the number of the various types of instructional rooms in each school. MGT team members walked each school and identified each type instructional space, generating a room inventory to support capacity modeling. MGT reviewed the results of each walk-through with district staff and confirmed the resulting capacities with district administration. In all, MGT developed a room inventory for 1,035 instructional spaces across 20 district facilities.
2. MGT worked with district leadership to identify programmatic consideration that affect capacity in the Wentzville School District.
    a. Resources spaces are needed for small-group, pull-out instruction to meet individual student's needs.
    b. Schools need classroom space for a broad array of elective choices, particularly at the high school buildings.
    c. Space must be allocated for additional positions at the elementary schools (the School Support Interventionist) and the secondary schools (the Educational Support Counselor).
    d. The high schools need space for new college preparatory electives.
    e. The elementary schools need two spaces each for art, music, and computer classrooms.
    f. The capacity model needs to account for 6th grade elective scheduling within an elementary school environment.

3. MGT multiplied the number of classrooms by the maximum students-per-room or the *loading* factor to identify the gross capacity for the school.

WSD INSTRUCTIONAL SPACE MODEL GUIDELINES	
ROOM TYPE	**MGT Capacity LOADING FACTOR (STUDENTS/ROOM)**
Pre-Kindergarten	25
General classroom grades K-2	25
General classroom grades 3-4	27
General classroom grades 5-6	30
General classroom grades 7-8	30
General classroom grades 9-12	30
Science (7-8)	30
Vocational (7-8)	30
Music (7-8)	30
P.E. (7-8)	30
Art (7-8)	30
Computer Lab (7-8)	30
Science (9-12)	30
Vocational (9-12)	30
Music (9-12)	30
P.E. (9-12)	30
Art (9-12)	30
Computer Lab (9-12)	30
K-6 Special Education self-contained	10
7-12 Special Education self-contained	10
K-6 Resource (pull-out)	0
7-12 Resource (pull-out)	0
Vacant K-2	25
Vacant 3-4	27
Vacant 5-6	30
Vacant 7-8	30
Vacant 9-12	30
Portable K-2	0
Portable 3-4	0
Portable 5-6	0
Portable 7-8	0
Portable 9-12	0

Source: MGT, 2019.

4. MGT then applied a scheduling factor, which takes into account the realities of how the space is used. Typically, not all classrooms are scheduled for every period at a middle school or high school. For example, high school students move from room to room and enroll in a variety of courses. As a result, some rooms will sit empty or will be less than fully occupied at any given time. Teacher preparation periods will also contribute to rooms not being used for instruction at a particular time. Therefore, MGT used a 70% scheduling factor at high schools to reduce the gross capacity of the building to reflect these dynamics. For similar reasons, middle schools were assigned a 70% scheduling factor. An elementary school has a much more static and consistent daily use, so MGT used a 90% scheduling factor for elementary schools.

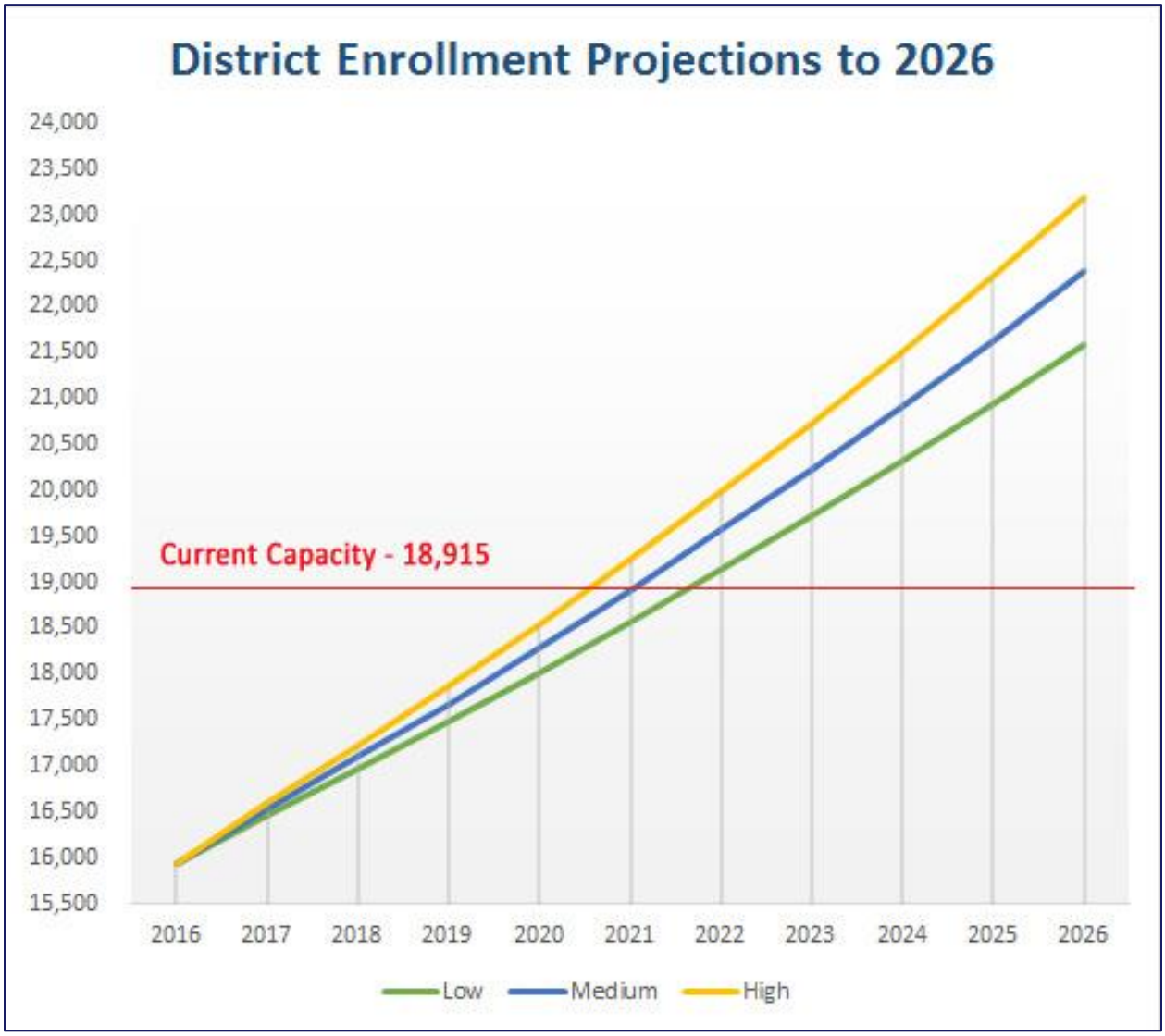
Scheduling Factor	
Elementary Schools	90%
Middle Schools	70%
High Schools	70%

Source: MGT, 2018

5. The following illustrates this capacity calculation model, using Timberland High School as the example.

Classroom Type	Number of Classrooms	x Students/Classroom	= Capacity
General Classrooms (9-12)	45	30	1,350
Science	12	30	360
Vocational	13	30	390
Music	3	30	90
Physical Education	6	30	180
Art	3	30	90
Computer Lab	0	30	0
Special Ed (Self-Contained)	4	10	40
Special Ed (Resource)	8	0	0
		Gross Capacity (w/o scheduling factor) =	2,500
		x High School scheduling factor of	70%
		Timberland High School Capacity =	**1,750**

APPENDIX C – PREVIOUS ENROLLMENT STUDY



Source: Business Information Services, 2017.

A 2017 enrollment study by Business Information Services forecasted enrollment increases through 2026. Note that the capacity of 18,915 differs slightly from the MGT calculated capacity because the use of the buildings has changed.

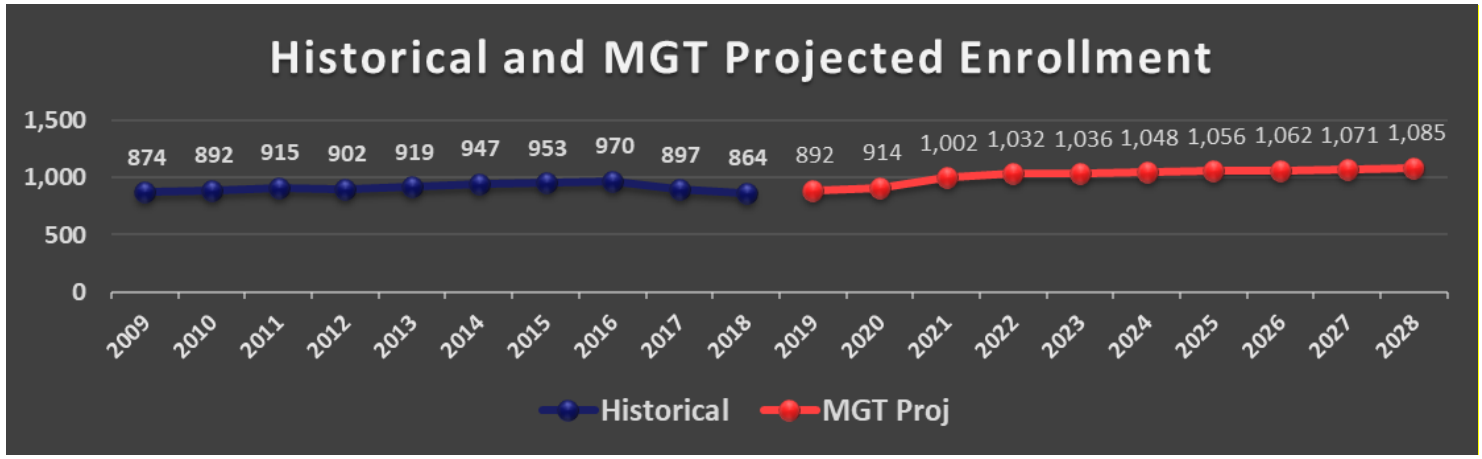
APPENDIX D – SCHOOL ENROLLMENT FORECASTS

BOONE TRAIL ELEMENTARY SCHOOL

ENROLLMENT TABLE BY GRADE BY YEAR

Projected Enrollment										
Grade	**19 - 20**	**20 - 21**	**21 - 22**	**22 - 23**	**23 - 24**	**24 - 25**	**25 - 26**	**26 - 27**	**27 - 28**	**28 - 29**
K	93	91	92	97	95	95	96	96	95	96
1	98	96	114	113	113	116	117	117	117	116
2	139	150	151	147	155	158	160	162	163	167
3	121	112	123	134	134	136	136	135	136	138
4	129	141	166	169	174	174	175	178	180	182
5	164	177	201	200	200	202	205	207	211	215
6	148	147	155	172	166	167	167	168	168	170

HISTORICAL AND PROJECTED ENROLLMENT

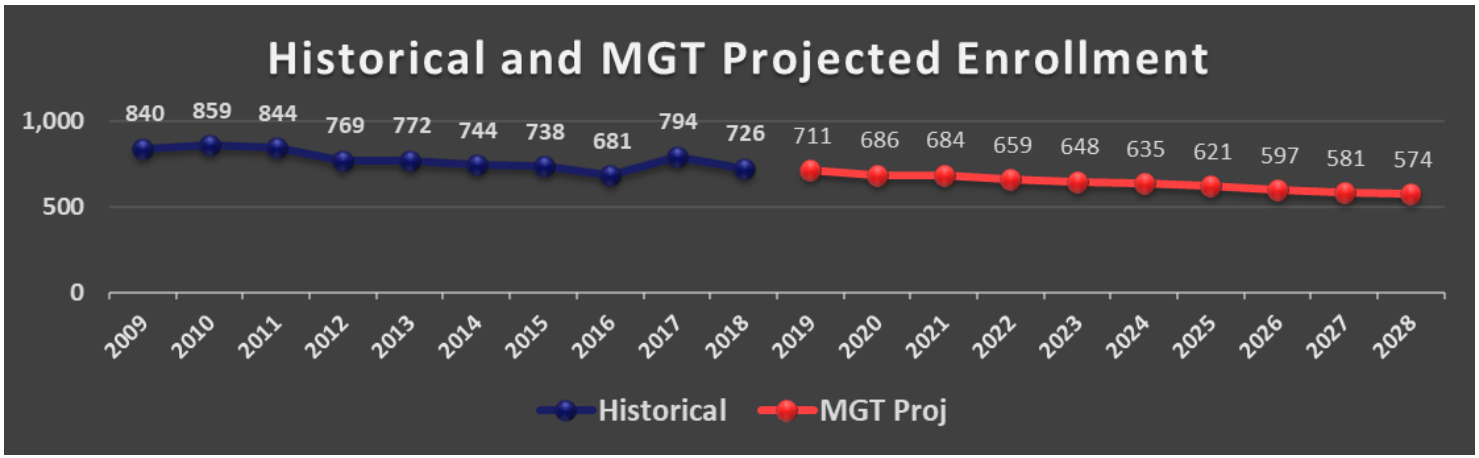


CROSSROADS ELEMENTARY SCHOOL

ENROLLMENT TABLE BY GRADE BY YEAR

Projected Enrollment										
Grade	**19 - 20**	**20 - 21**	**21 - 22**	**22 - 23**	**23 - 24**	**24 - 25**	**25 - 26**	**26 - 27**	**27 - 28**	**28 - 29**
K	92	91	88	82	83	81	76	70	64	62
1	93	88	84	85	83	75	68	63	60	58
2	96	92	100	95	88	80	76	75	73	75
3	107	109	101	90	84	83	83	82	84	80
4	91	79	82	80	77	77	79	79	73	71
5	110	111	105	102	106	106	108	98	96	95
6	123	116	125	125	128	133	131	130	131	132

HISTORICAL AND PROJECTED ENROLLMENT

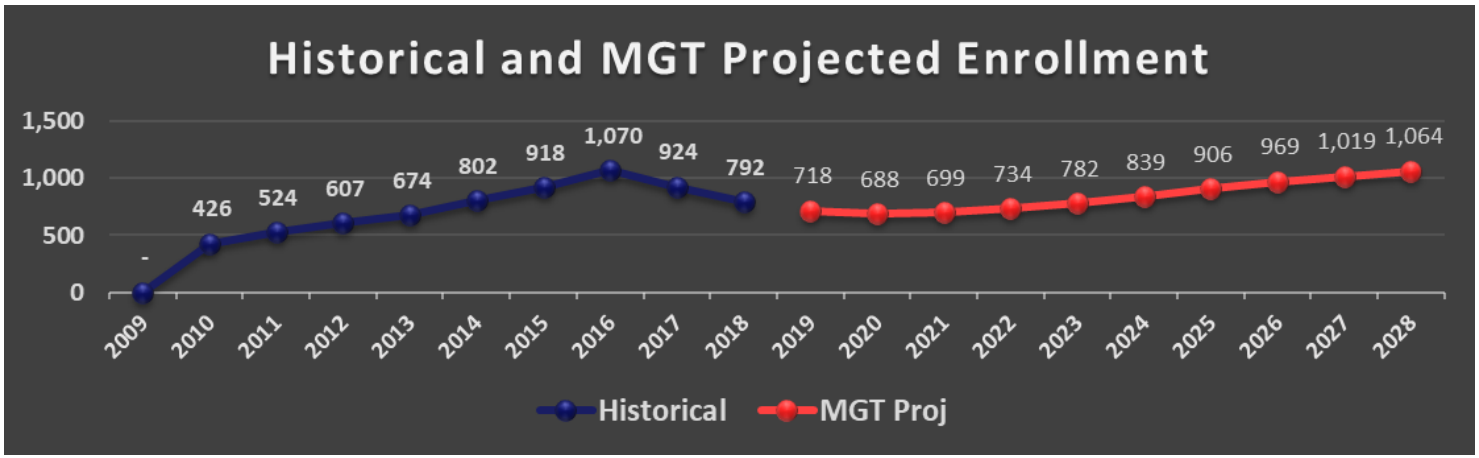


DISCOVERY RIDGE ELEMENTARY SCHOOL

ENROLLMENT TABLE BY GRADE BY YEAR

Projected Enrollment										
Grade	**19 - 20**	**20 - 21**	**21 - 22**	**22 - 23**	**23 - 24**	**24 - 25**	**25 - 26**	**26 - 27**	**27 - 28**	**28 - 29**
K	122	120	121	123	127	130	133	137	141	146
1	107	122	128	133	138	143	147	153	160	166
2	114	101	121	132	141	149	155	163	171	180
3	109	95	89	108	120	129	138	145	150	157
4	96	92	85	83	104	117	128	139	146	151
5	85	73	74	71	70	90	103	113	122	127
6	85	85	80	82	82	82	103	118	129	138

HISTORICAL AND PROJECTED ENROLLMENT

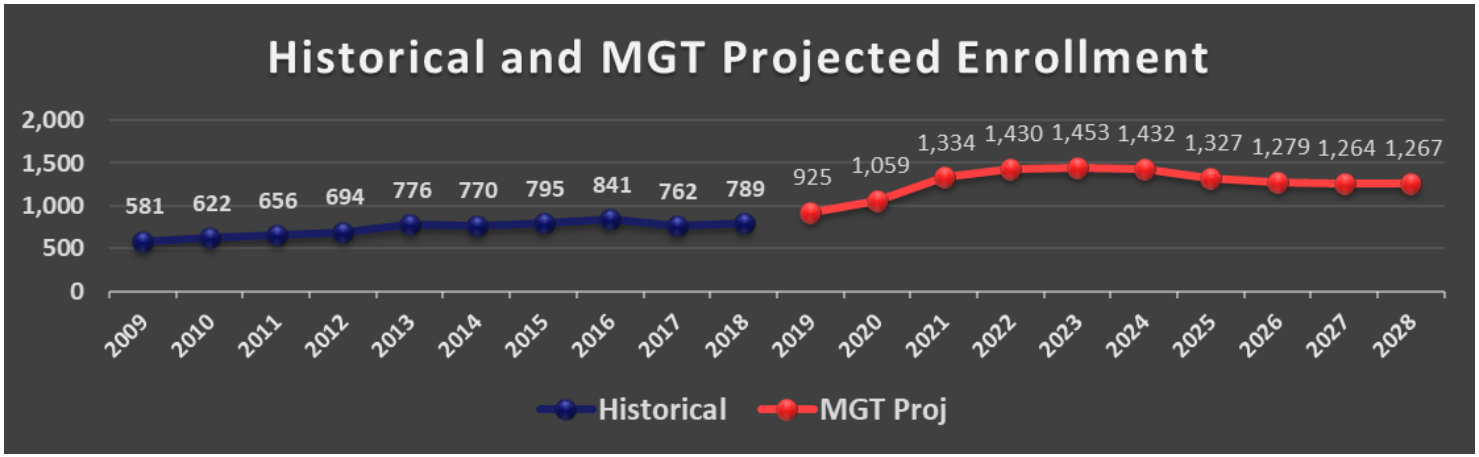


DUELLO ELEMENTARY SCHOOL

ENROLLMENT TABLE BY GRADE BY YEAR

Projected Enrollment										
Grade	**19 - 20**	**20 - 21**	**21 - 22**	**22 - 23**	**23 - 24**	**24 - 25**	**25 - 26**	**26 - 27**	**27 - 28**	**28 - 29**
K	115	121	148	151	150	148	150	149	150	151
1	127	122	144	144	142	145	143	144	145	148
2	124	152	160	159	159	154	154	153	154	157
3	128	152	224	202	186	181	178	177	176	178
4	151	182	243	274	231	210	201	198	196	194
5	158	186	226	257	284	230	210	201	197	195
6	121	144	189	244	300	364	290	257	245	243

HISTORICAL AND PROJECTED ENROLLMENT

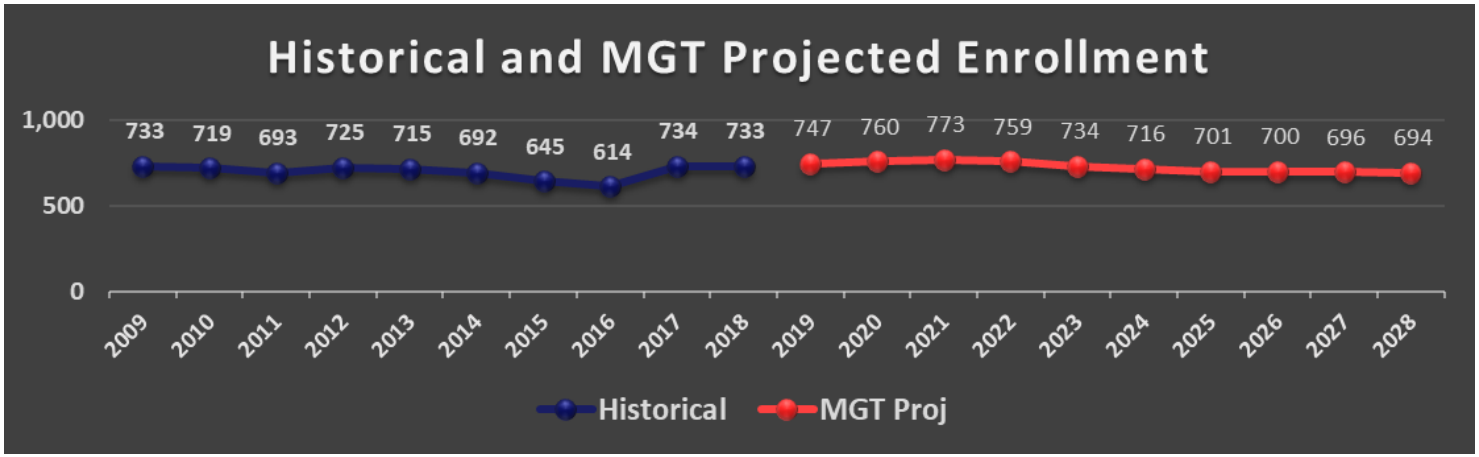


GREENTREE ELEMENTARY SCHOOL

ENROLLMENT TABLE BY GRADE BY YEAR

Projected Enrollment										
Grade	**19 - 20**	**20 - 21**	**21 - 22**	**22 - 23**	**23 - 24**	**24 - 25**	**25 - 26**	**26 - 27**	**27 - 28**	**28 - 29**
K	103	107	104	103	98	95	89	91	90	87
1	93	85	94	91	90	84	85	84	81	83
2	108	116	113	111	104	104	101	95	98	100
3	114	114	128	116	116	110	103	106	106	105
4	121	129	115	120	111	103	105	107	105	104
5	93	86	93	89	88	86	89	88	85	83
6	115	124	125	129	127	134	131	130	131	133

HISTORICAL AND PROJECTED ENROLLMENT

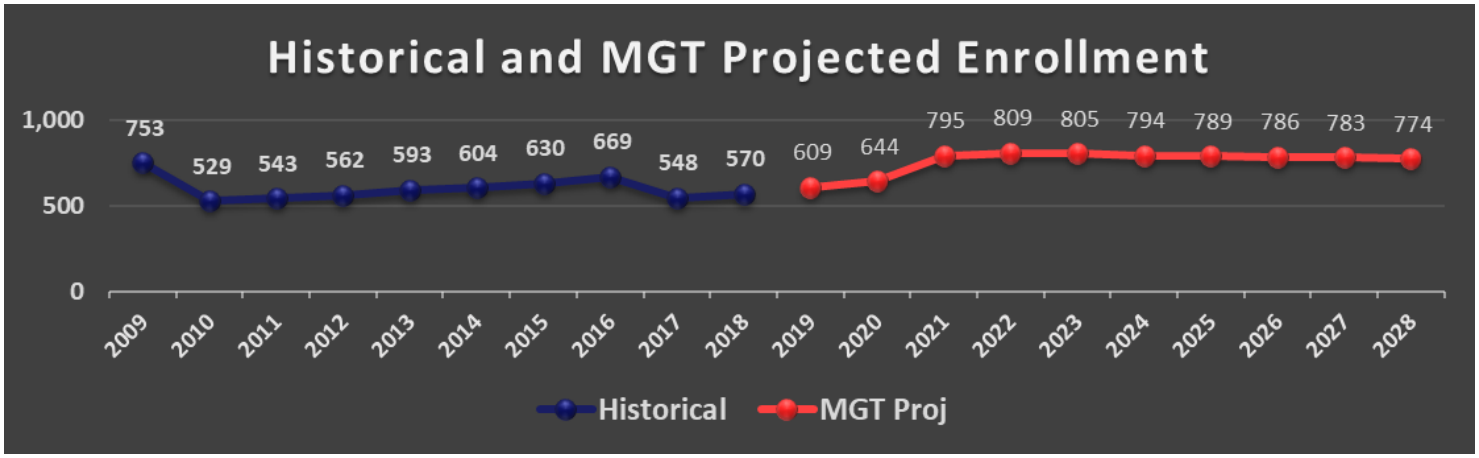


HERITAGE PRIMARY SCHOOL

ENROLLMENT TABLE BY GRADE BY YEAR

Projected Enrollment										
Grade	**19 - 20**	**20 - 21**	**21 - 22**	**22 - 23**	**23 - 24**	**24 - 25**	**25 - 26**	**26 - 27**	**27 - 28**	**28 - 29**
K	188	195	244	259	262	257	259	255	253	251
1	191	176	258	265	262	263	259	258	259	255
2	230	273	293	285	280	273	272	273	271	268

HISTORICAL AND PROJECTED ENROLLMENT

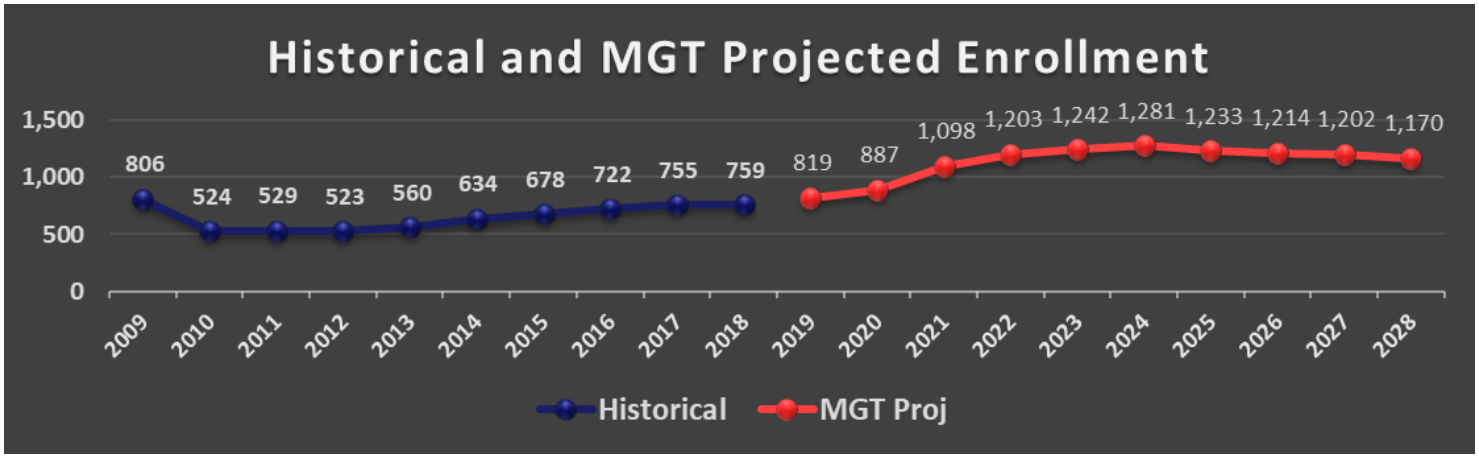


HERITAGE INTERMEDIATE SCHOOL

ENROLLMENT TABLE BY GRADE BY YEAR

Projected Enrollment										
Grade	**19 - 20**	**20 - 21**	**21 - 22**	**22 - 23**	**23 - 24**	**24 - 25**	**25 - 26**	**26 - 27**	**27 - 28**	**28 - 29**
3	184	192	260	250	242	246	253	256	259	252
4	203	238	290	330	305	302	303	301	297	286
5	221	230	306	323	369	340	327	322	314	301
6	211	227	242	301	325	392	350	335	332	331

HISTORICAL AND PROJECTED ENROLLMENT

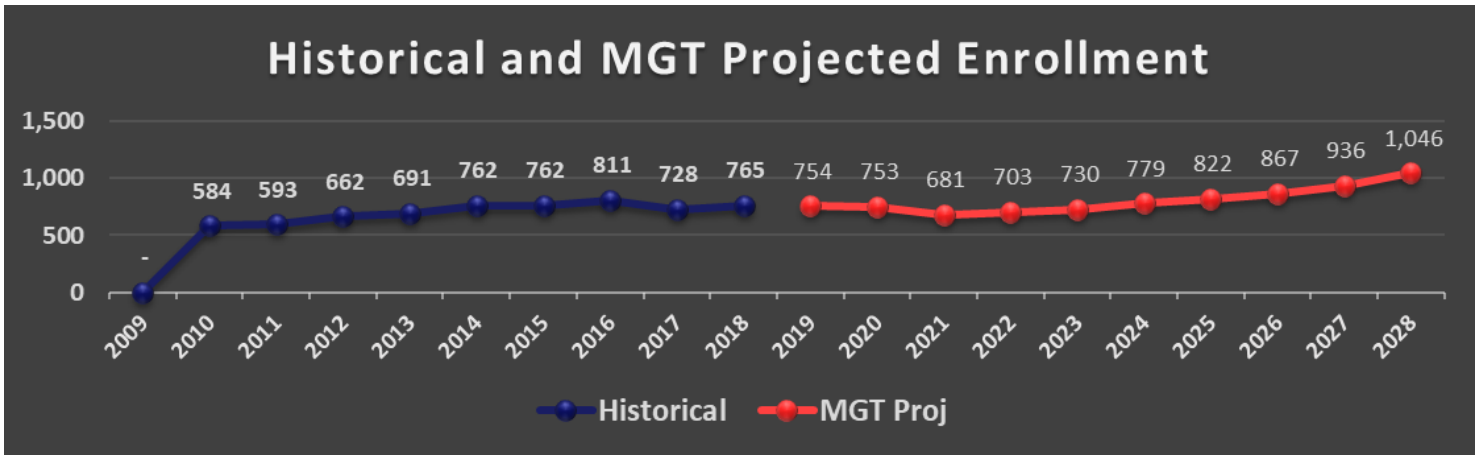


LAKEVIEW ELEMENTARY SCHOOL

ENROLLMENT TABLE BY GRADE BY YEAR

Projected Enrollment										
Grade	**19 - 20**	**20 - 21**	**21 - 22**	**22 - 23**	**23 - 24**	**24 - 25**	**25 - 26**	**26 - 27**	**27 - 28**	**28 - 29**
K	133	143	116	127	129	129	130	137	146	166
1	88	81	83	86	85	88	94	98	107	120
2	106	113	103	100	100	109	113	121	133	149
3	104	96	86	85	94	101	109	119	129	144
4	105	105	85	91	100	110	121	127	137	153
5	106	100	92	95	105	118	125	131	140	161
6	113	115	115	119	116	124	129	135	143	153

HISTORICAL AND PROJECTED ENROLLMENT

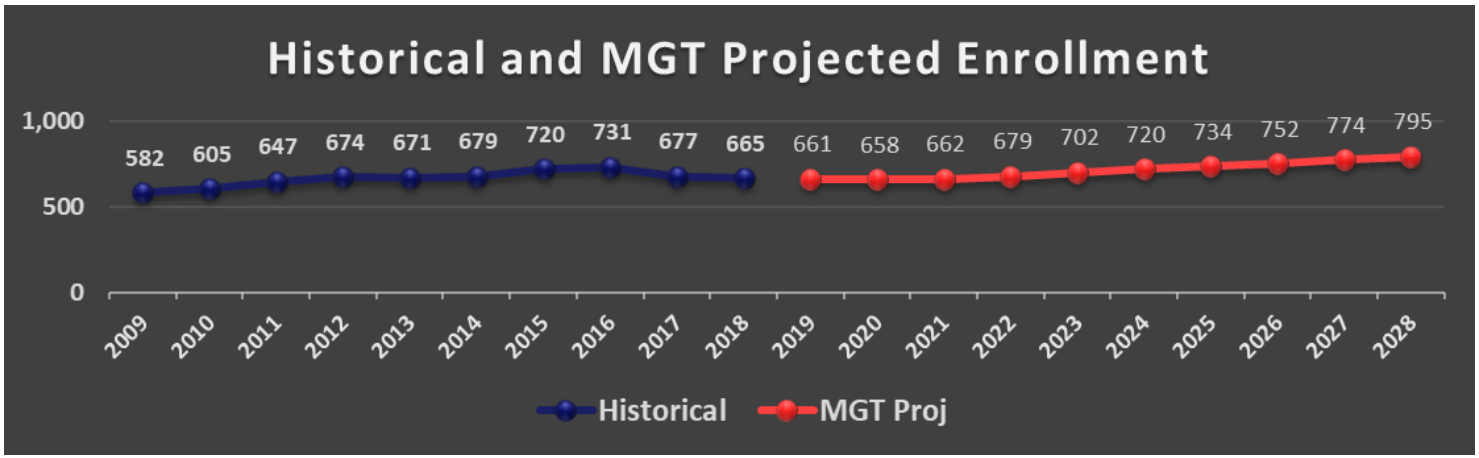


PEINE RIDGE ELEMENTARY SCHOOL

ENROLLMENT TABLE BY GRADE BY YEAR

Projected Enrollment										
Grade	**19 - 20**	**20 - 21**	**21 - 22**	**22 - 23**	**23 - 24**	**24 - 25**	**25 - 26**	**26 - 27**	**27 - 28**	**28 - 29**
K	99	101	99	101	104	106	104	106	110	114
1	95	97	95	97	100	99	100	103	106	105
2	91	92	89	90	90	93	96	100	100	102
3	86	80	85	88	93	98	102	101	101	106
4	95	96	102	101	106	112	113	115	121	125
5	97	95	94	98	104	105	107	113	117	122
6	97	97	98	103	105	108	112	115	118	121

HISTORICAL AND PROJECTED ENROLLMENT

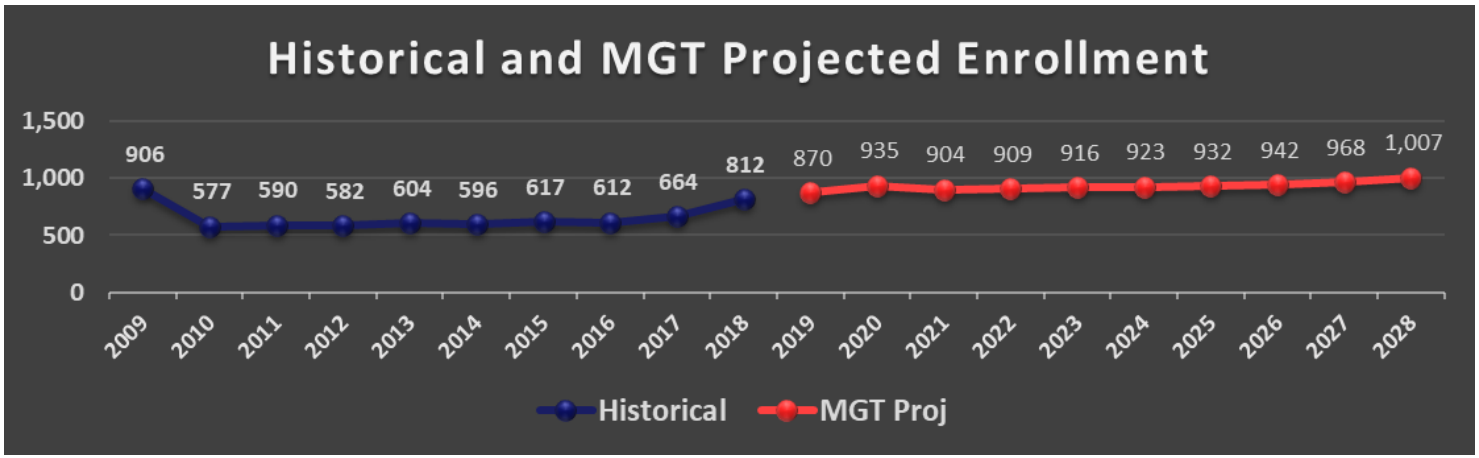


PRAIRIE VIEW ELEMENTARY SCHOOL

ENROLLMENT TABLE BY GRADE BY YEAR

Projected Enrollment										
Grade	**19 - 20**	**20 - 21**	**21 - 22**	**22 - 23**	**23 - 24**	**24 - 25**	**25 - 26**	**26 - 27**	**27 - 28**	**28 - 29**
K	99	103	99	97	97	93	95	97	97	97
1	106	110	106	102	99	102	104	105	106	107
2	134	149	135	133	139	144	144	146	150	161
3	108	106	105	109	110	108	109	108	111	112
4	138	159	160	161	156	157	159	162	165	176
5	154	168	167	164	172	173	176	179	190	205
6	131	140	132	143	143	147	144	144	148	150

HISTORICAL AND PROJECTED ENROLLMENT

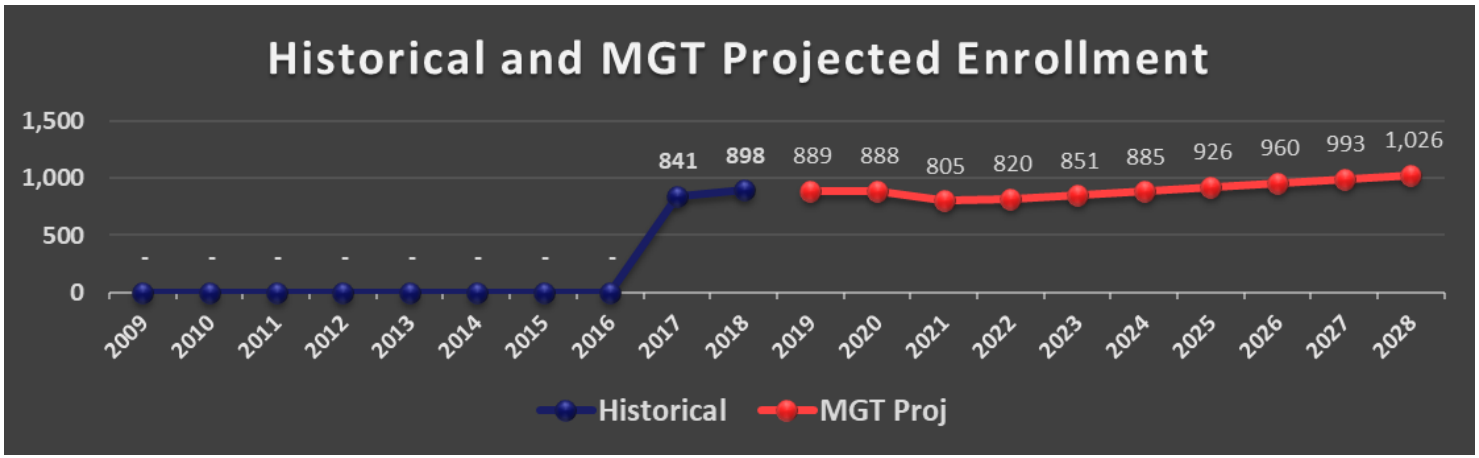


STONE CREEK ELEMENTARY SCHOOL

ENROLLMENT TABLE BY GRADE BY YEAR

Projected Enrollment										
Grade	**19 - 20**	**20 - 21**	**21 - 22**	**22 - 23**	**23 - 24**	**24 - 25**	**25 - 26**	**26 - 27**	**27 - 28**	**28 - 29**
K	138	144	127	130	130	131	138	139	142	146
1	112	109	100	97	98	107	109	112	116	120
2	106	104	89	93	106	108	113	117	121	126
3	126	126	107	116	118	126	132	136	143	148
4	122	110	107	111	119	123	128	135	140	143
5	144	150	131	132	137	140	151	159	164	170
6	141	144	143	140	143	150	156	162	167	173

HISTORICAL AND PROJECTED ENROLLMENT

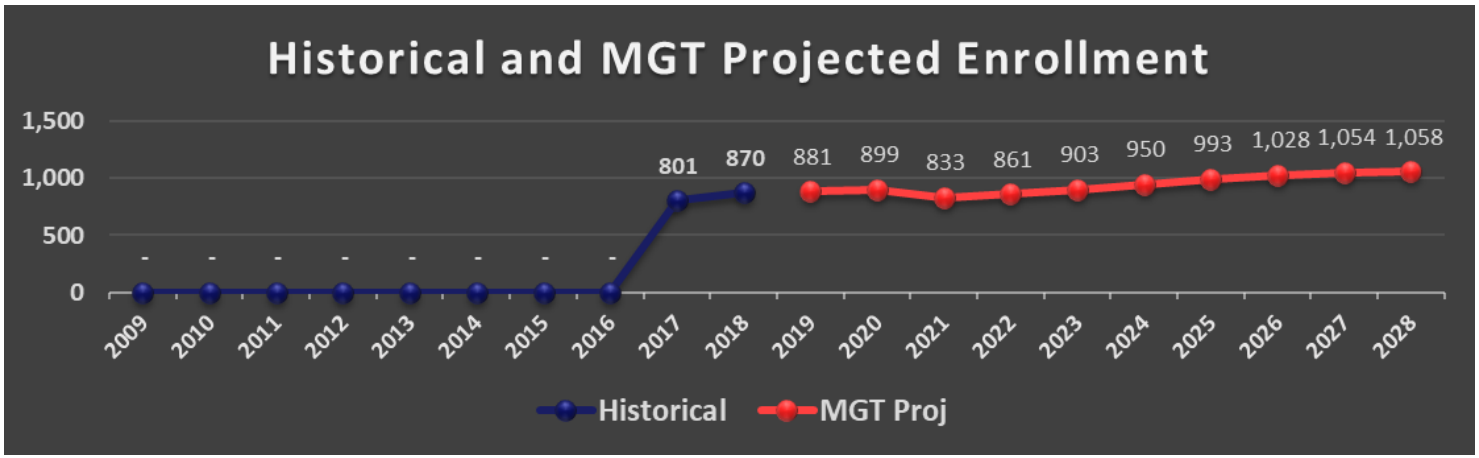


WABASH ELEMENTARY SCHOOL

ENROLLMENT TABLE BY GRADE BY YEAR

Projected Enrollment										
Grade	**19 - 20**	**20 - 21**	**21 - 22**	**22 - 23**	**23 - 24**	**24 - 25**	**25 - 26**	**26 - 27**	**27 - 28**	**28 - 29**
K	138	139	128	139	146	149	155	157	159	161
1	134	138	135	136	139	146	148	153	159	159
2	146	150	139	141	147	151	159	167	170	172
3	128	130	117	121	126	134	143	148	152	151
4	114	119	101	99	107	119	126	131	134	132
5	99	94	85	91	100	108	114	120	122	120
6	122	128	128	134	138	142	148	153	159	163

HISTORICAL AND PROJECTED ENROLLMENT

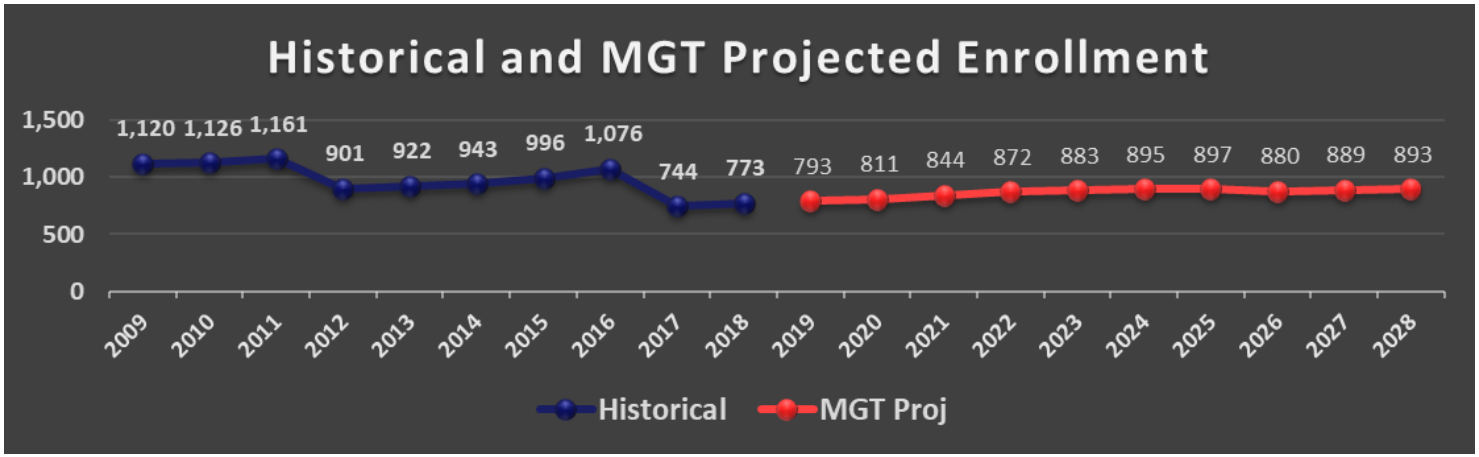


FRONTIER MIDDLE SCHOOL

ENROLLMENT TABLE BY GRADE BY YEAR

Projected Enrollment										
Grade	**19 - 20**	**20 - 21**	**21 - 22**	**22 - 23**	**23 - 24**	**24 - 25**	**25 - 26**	**26 - 27**	**27 - 28**	**28 - 29**
7	417	439	444	452	474	472	477	477	481	485
8	376	372	400	421	409	422	420	403	408	408

HISTORICAL AND PROJECTED ENROLLMENT

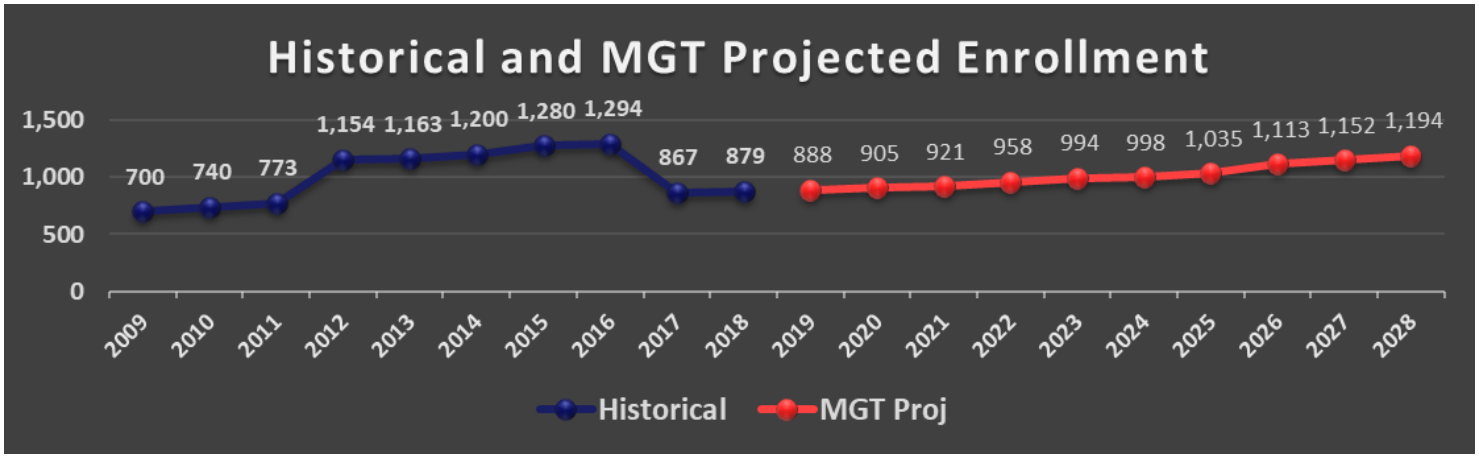


SOUTH MIDDLE SCHOOL

ENROLLMENT TABLE BY GRADE BY YEAR

Projected Enrollment										
Grade	**19 - 20**	**20 - 21**	**21 - 22**	**22 - 23**	**23 - 24**	**24 - 25**	**25 - 26**	**26 - 27**	**27 - 28**	**28 - 29**
7	462	485	476	488	508	506	530	556	583	609
8	426	420	445	470	486	493	505	557	568	584

HISTORICAL AND PROJECTED ENROLLMENT

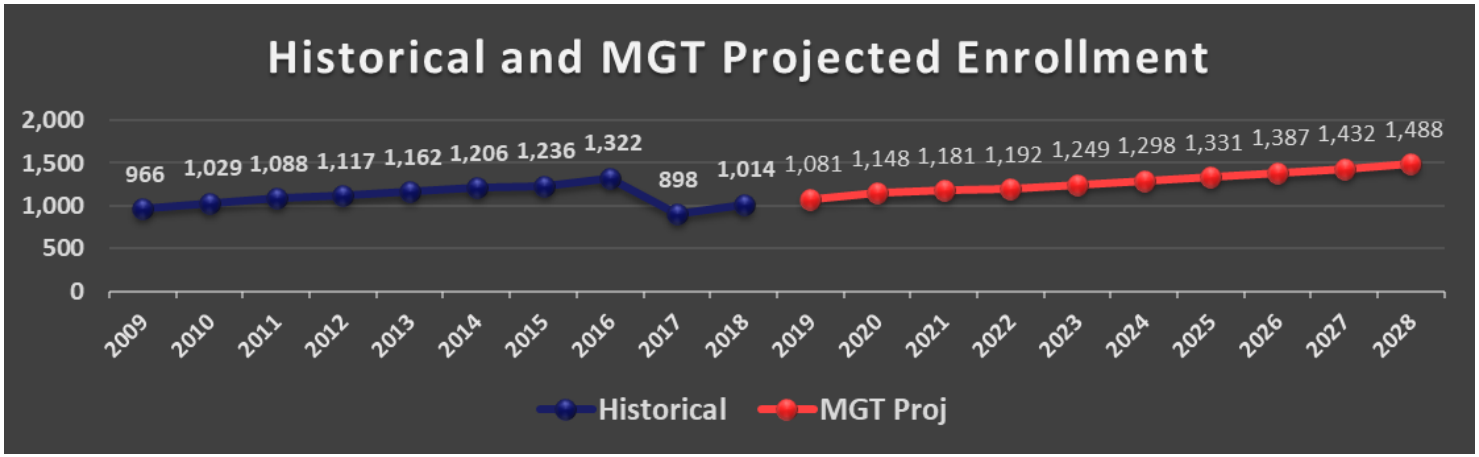


WENTZVILLE MIDDLE SCHOOL

ENROLLMENT TABLE BY GRADE BY YEAR

Projected Enrollment										
Grade	**19 - 20**	**20 - 21**	**21 - 22**	**22 - 23**	**23 - 24**	**24 - 25**	**25 - 26**	**26 - 27**	**27 - 28**	**28 - 29**
7	532	555	594	598	638	649	678	690	714	744
8	549	593	587	594	611	649	653	697	718	745

HISTORICAL AND PROJECTED ENROLLMENT

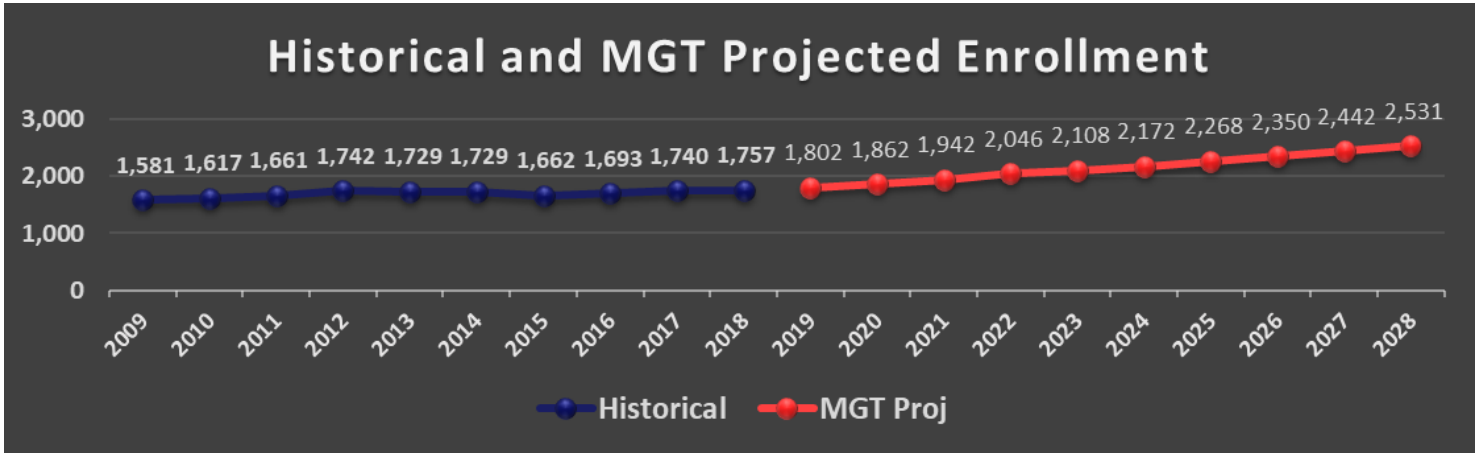


HOLT HIGH SCHOOL

ENROLLMENT TABLE BY GRADE BY YEAR

Projected Enrollment										
Grade	**19 - 20**	**20 - 21**	**21 - 22**	**22 - 23**	**23 - 24**	**24 - 25**	**25 - 26**	**26 - 27**	**27 - 28**	**28 - 29**
9	491	500	521	540	535	543	604	607	645	662
10	472	514	535	521	534	575	588	633	641	687
11	452	462	457	493	535	541	554	571	619	609
12	387	385	430	493	503	514	521	539	537	572

HISTORICAL AND PROJECTED ENROLLMENT

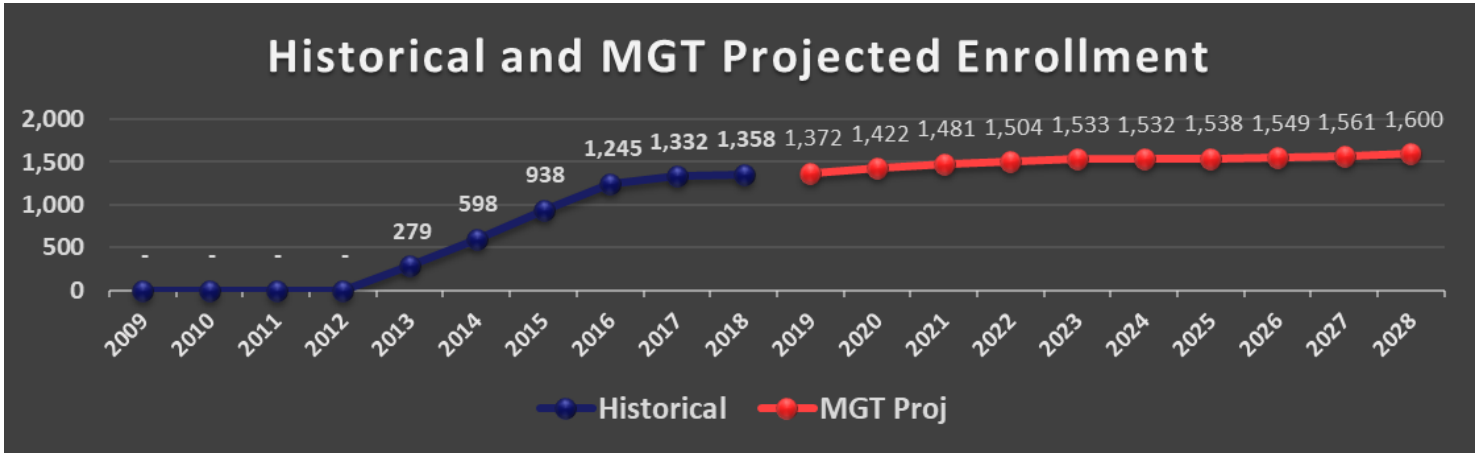


LIBERTY HIGH SCHOOL

ENROLLMENT TABLE BY GRADE BY YEAR

Projected Enrollment										
Grade	**19 - 20**	**20 - 21**	**21 - 22**	**22 - 23**	**23 - 24**	**24 - 25**	**25 - 26**	**26 - 27**	**27 - 28**	**28 - 29**
9	364	384	400	401	410	410	406	400	400	421
10	353	360	363	375	392	383	374	378	377	388
11	319	317	338	365	352	361	363	360	375	374
12	337	361	380	364	378	377	396	411	409	416

HISTORICAL AND PROJECTED ENROLLMENT



TIMBERLAND HIGH SCHOOL

ENROLLMENT TABLE BY GRADE BY YEAR

Projected Enrollment										
Grade	**19 - 20**	**20 - 21**	**21 - 22**	**22 - 23**	**23 - 24**	**24 - 25**	**25 - 26**	**26 - 27**	**27 - 28**	**28 - 29**
9	504	541	546	567	576	593	628	653	688	689
10	456	451	473	475	497	526	553	577	591	628
11	432	460	437	460	485	521	543	564	596	615
12	408	409	445	461	496	508	537	566	585	605

HISTORICAL AND PROJECTED ENROLLMENT