2016 -2026

MGT

Boston Public Schools

BuildBPS

Demographics Report for the 10 Year Facility Master Plan

FINAL: November 2, 2016

BOSTON PUBLIC SCHOOLS

DEMOGRAPHICS REPORT
FACILITIES MASTER PLAN
NOVEMBER 2, 2016

SUBMITTED BY MGT OF AMERICA CONSULTING, LLC.
DRAFT REPORT

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BUILDBPS OVERVIEW

Launched on September 29, 2015 by Mayor Martin J. Walsh, the Boston School Committee, and Superintendent Tommy Chang, BuildBPS is a ten-Year Educational and Facilities Master Plan for Boston Public Schools (BPS).

BuildBPS will provide a strategic framework for facilities investments, as well as curriculum and instruction reforms that are aligned with the district's educational vision. BPS and the Mayor's Education Cabinet are working with Symmes, Maini & McKee Associates (SMMA) to develop a comprehensive set of options. MGT of America Consulting, LLC is a member of SMMA's consulting team.

The project is guided by five advisory committees that include educators and representatives of parent and community partner organizations. The work of SMMA is conducted in partnership with BPS, the Mayor's Education Cabinet, and several City agencies, including Public Facilities, the Office of Budget Management, Environment, Energy and Open Space, Neighborhood Services, and the Boston Planning and Development Agency (formerly the Boston Redevelopment Authority), in consultation with designer and project manager Margaret Wood of Pinck & Co.

EXECUTIVE SUMMARY

The Boston Public Schools is engaging in the development of BuildBPS, a district-wide Educational and Facilities Master Plan. As part of that process, the district is undertaking a demographic and enrollment analysis to better understand potential population changes and implications for BPS enrollment. MGT of America Consulting, LLC has been leading the demographic and enrollment study process.

There are a number of major themes within the study's findings. First, and possibly most important, is the strong disconnect between the growth patterns of Boston and the growth patterns of Boston Public Schools. Since the recession of 2007 – 2011, the City of Boston has experienced a continuous and significant increase in population[1]. The contributing factors to Boston's overall population increase could include the following:

- Job opportunities in the technology and health sectors
- Higher education institutions with increased enrollment
- An increase in new housing units

Despite this overall population increase, this study predicts that the population of the Boston Public Schools will increase only moderately over the next ten years, primarily because of two factors:

- A relatively small increase in birth to age-5 population
- The growth in charter schools, which draw students away from district schools

Results outlined in the study project moderate enrollment increases due to the primary factors outlined above and are further influenced by the following:

- Census Bureau population counts show an increase in the overall population but a decrease in the population segments which typically impact K2-12 enrollment.
- The general population and demographics of Boston are getting older, which is likely to contribute to only modest growth of the K2-12 population.

[1] Please see Exhibit 1 on page 3.

PURPOSE AND CHARGE

In July of 2015, the master planning project management team began to look at how the changing demographics of the city and school district were impacting the district's schools. This management team met with various agencies and city and district personnel to gain insight into current and potential demographic trends.

In November of 2015, a Demographics Advisory Committee was formed to look specifically at the demographic and enrollment trends of the district and city in an effort to begin to develop projection models for forecasting future student enrollment and to determine what influence these enrollment patterns would have on a Facilities Master Plan. The Committee started with an examination of historical demographic data from city planners and demographers, as well as longitudinal historical district data. The data included district enrollment and grade-level information, sub-group population percentage data, and geographical information related to existing neighborhoods and assignment zones. The Demographics Advisory Committee met several times in 2016 to discuss the emerging data patterns, to analyze the initial impacts of the data, and to refine the approach to future projection methodologies.

CONTEXTUAL DATA

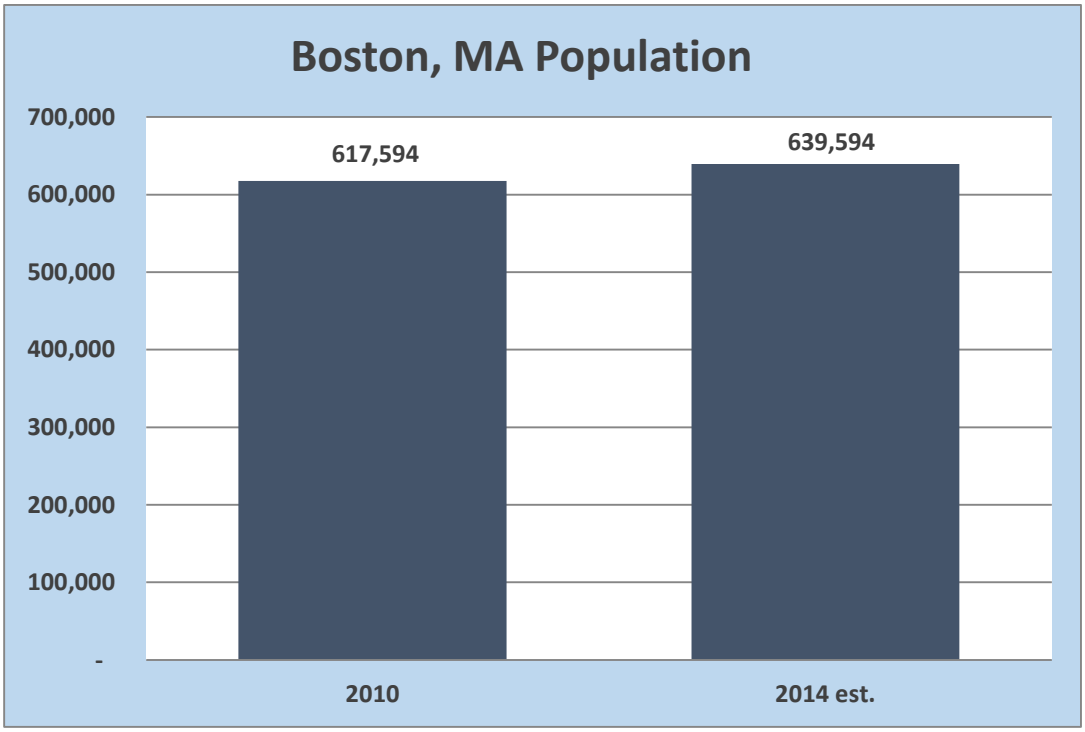
An analysis of both quantitative and qualitative data forms the basis for BPS' enrollment projections. Quantitative data comes from the district, city, and the U.S. Census Bureau (Census) and provides the "what" – the basic understanding of trends "by the numbers." Qualitative data was gathered through conversations with district officials familiar with enrollment trends and provides the "why" behind the numbers. Both forms of data are critical to the preparation of enrollment projections for the district's ten-year Educational and Facilities Master Plan.

BOSTON POPULATION TRENDS

Boston's population has been on the rise.

The City of Boston had a population of 617,594 in 2010; Census data indicates that number had increased to 639,594 in 2014, a population growth of almost 3.6% in four years. **Exhibit 1** shows the increase in total population from 2010 to 2014.

EXHIBIT 1



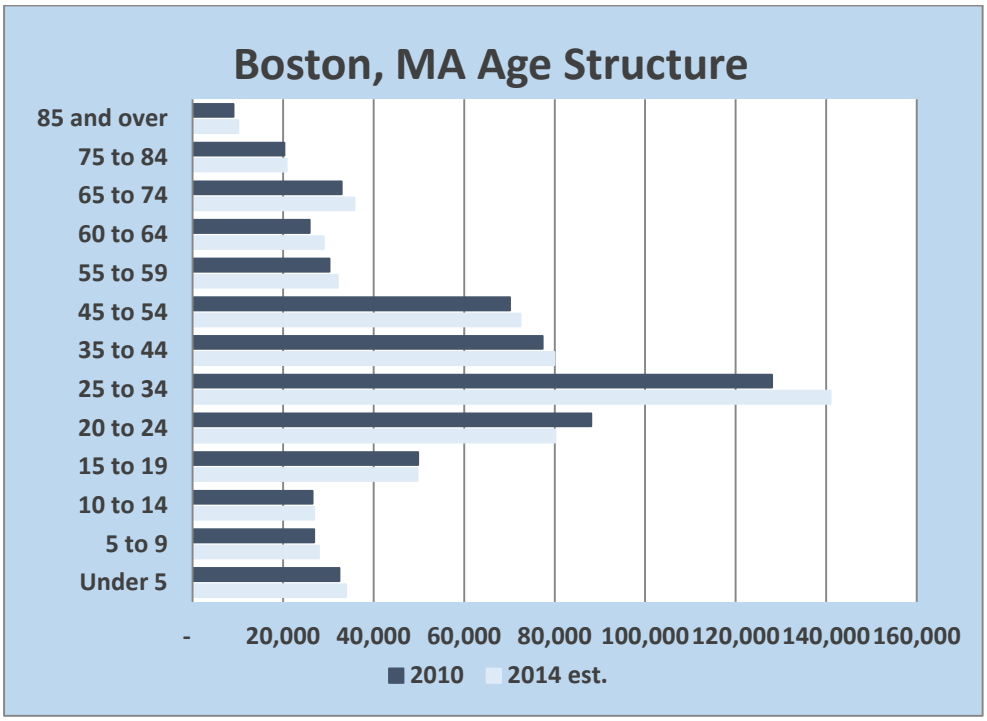
Source: U.S. Census Bureau.

Boston's population overall is aging and population make up does not directly indicate an increase in Boston's student-aged population.

An examination of the age structure of Boston reveals that the largest segment of the population is between 25 and 34 years of age:

Exhibit 2 illustrates the population age structure of Boston in 2010 and in 2014.

EXHIBIT 2



Source: U.S. Census Bureau.

Analysis and context for the age structure offers some interesting observations. The youngest three population segments ("Under 5," "5 to 9" and "10 to 14"), those at or nearing school age, show virtually no change from 2010 to 2014. The next two segments ("15 to 19" and "20 to 24") show a decline from 2010 to 2014.

There is a significant increase in the "25 to 34" segment, but again very little change in the "35 to 44" age segment. Typically these two age groups are considered the childbearing years, but in this case the majority of the growth in the "25 to 34" segment is due primarily to an influx of students obtaining postsecondary degrees at a number of area universities. This is further reflected in the subsequent decline in population in the "35 to 44" segment when the same students leave the city to find employment or return home.

Despite the size of the population between 25 and 34 years old, there are more people living in the City of Boston who fall above this age group, contributing to an older average age – an average which is only increasing[2].

These data points indicate a slowing of the growth of K2-12 student.

[2] Please see *Appendix B* for table of data.

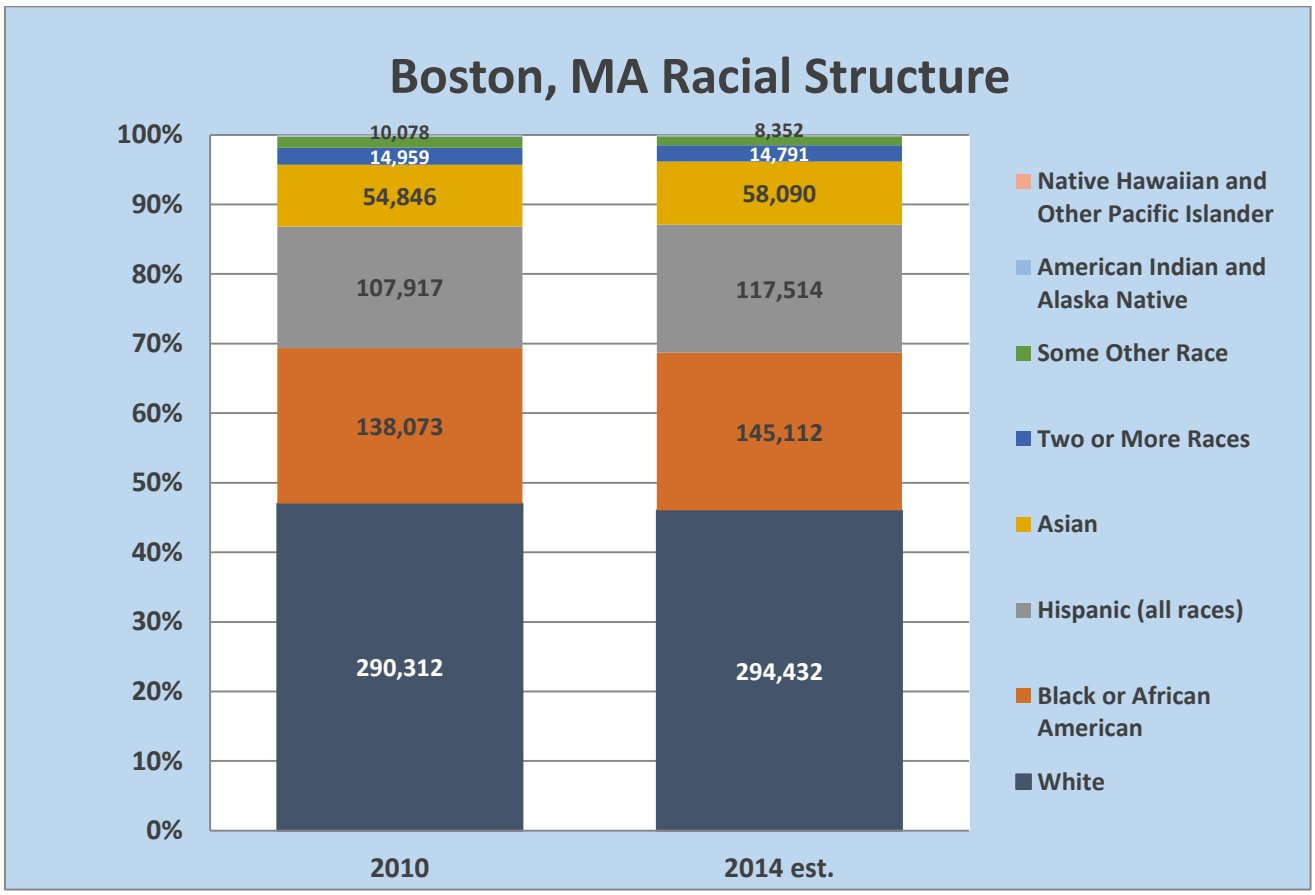
BOSTON'S RACIAL DIVERSITY

Boston's racial diversity has not changed significantly from 2010 to 2014.

The racial composition of Boston in 2010 consisted of 47% White, 22% Black or African-American, 18% Hispanic, and 9% Asian, with other races accounting for the remaining 4% of the population. There is very little difference between the 2010 and 2014 estimates for the city's racial composition.

Exhibit 3 illustrates the racial structure in the City of Boston for 2010 and 2014.

EXHIBIT 3



Source: U.S. Census Bureau.

BOSTON PUBLIC SCHOOLS STUDENTS BY NEIGHBORHOOD

Boston's neighborhoods vary in number of students.

The City of Boston is comprised of many distinct and diverse neighborhoods. The neighborhoods in Table A below represent how BPS reports students geographically. Pictured below is a breakdown by grade level of the current year's enrollment.

TABLE A

In-District Enrollment by Neighborhood	K0	K1	K2	01	02	03	04	05	06	07	08	09	10	11	12	Grand Total
Allston-Brighton	42	128	179	214	182	186	165	150	165	196	151	251	191	163	185	2,548
Back Bay/Beacon Hill	2	10	19	17	14	18	13	11	9	14	14	10	8	13	8	180
Central Boston	10	35	94	101	85	79	61	65	58	64	51	56	56	65	57	937
Charlestown	7	51	144	152	149	141	118	101	114	108	106	110	99	95	97	1,592
Dorchester	86	504	803	887	922	894	894	742	740	772	782	947	917	911	1020	11,821
East Boston	59	252	511	548	552	587	491	420	396	379	365	587	484	450	426	6,507
Fenway/Kenmore	5	13	30	45	42	43	27	23	23	19	28	28	31	27	16	400
Hyde Park	31	163	221	267	244	240	253	191	195	202	217	284	281	308	347	3,444
Jamaica Plain	20	140	223	254	221	228	218	186	179	179	188	198	201	212	235	2,882
Mattapan	51	197	347	419	405	396	350	335	328	345	336	469	413	415	476	5,282
Roslindale	32	178	252	295	294	292	258	207	204	247	214	275	260	289	308	3,605
Roxbury	77	431	745	784	867	799	774	591	595	639	620	772	719	688	769	9,870
South Boston	11	104	122	173	168	169	144	130	126	136	133	154	154	128	145	1,997
South End	22	77	189	172	214	223	193	169	161	197	160	208	192	182	207	2,566
West Roxbury	16	169	240	202	226	209	170	174	130	177	157	215	180	186	199	2,650
Other (not specified)*	3	3	3	9	17	21	18	14	14	16	14	20	30	24	33	239
In-District Total	**474**	**2,455**	**4122**	**4539**	**4602**	**4525**	**4147**	**3509**	**3437**	**3690**	**3536**	**4584**	**4216**	**4156**	**4528**	**56520**

*Neighborhood data not available

BOSTON PUBLIC SCHOOLS – ALL STUDENTS DISTRIBUTION

A geographical view of where students live.

Boston Public Schools (BPS) is comprised of over 56,520 students spread across 128 schools in a variety of programs. In examining the geographical distribution of students who qualify for the three broad-based programs Free and Reduced Lunch, Students with Disabilities, and English Language Learners, we can begin to see some commonalities across the city with respect to poverty, program, and population.

Table B, below, shows the percentages by grade level of each of the programs, and the total percentage of students within those programs in the Total line. The maps below represent the students' distribution in the above classifications. It is clear that most of the students within these groups reside in a mostly north/south corridor, stretching from East Boston to Mattapan and along an east/west orientation

throughout Roxbury and Dorchester. There are smaller numbers of these students in Fenway/Kenmore, Jamaica Plain, and West Roxbury. Most of the remaining neighborhoods have limited numbers of these students.

By displaying this program information in a Geographical Information System (GIS) mapping format we can clearly see where students with greater needs are concentrated across the city.

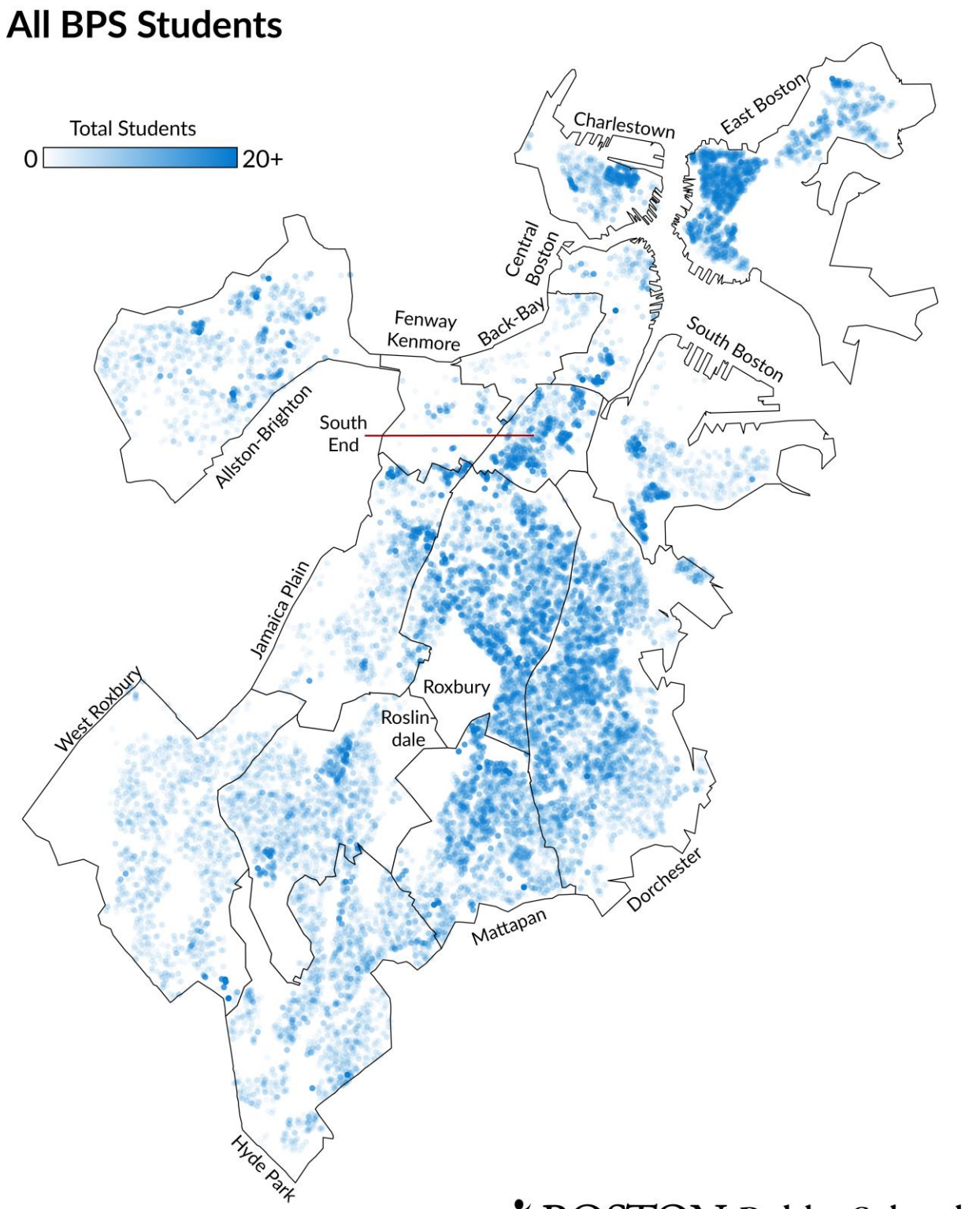
TABLE B

GRADE	% AWC	% ELL	% GEN ED	% SPED	% FREE LUNCH	% FULL PRICE LUNCH	TOTAL STUDENTS
K0		6%	33%	61%	63%	37%	408
K1		12%	75%	13%	55%	45%	2604
K2		14%	77%	9%	65%	35%	4123
1		17%	74%	9%	73%	27%	4113
2		15%	75%	10%	74%	26%	4387
3		12%	78%	10%	75%	25%	4429
4	6%	8%	76%	10%	76%	24%	4401
5	7%	6%	75%	12%	76%	24%	3610
6	10%	6%	73%	11%	72%	28%	3403
7		6%	84%	10%	69%	31%	3610
8		7%	82%	11%	70%	30%	3675
9		14%	75%	11%	69%	31%	4327
10		10%	80%	10%	69%	31%	4114
11		9%	82%	9%	68%	32%	4255
12		4%	83%	13%	69%	31%	4493
Grand Total	**2%**	**10%**	**78%**	**0.11**	**0.70**	**30%**	**55952**

Source: Boston Public Schools.

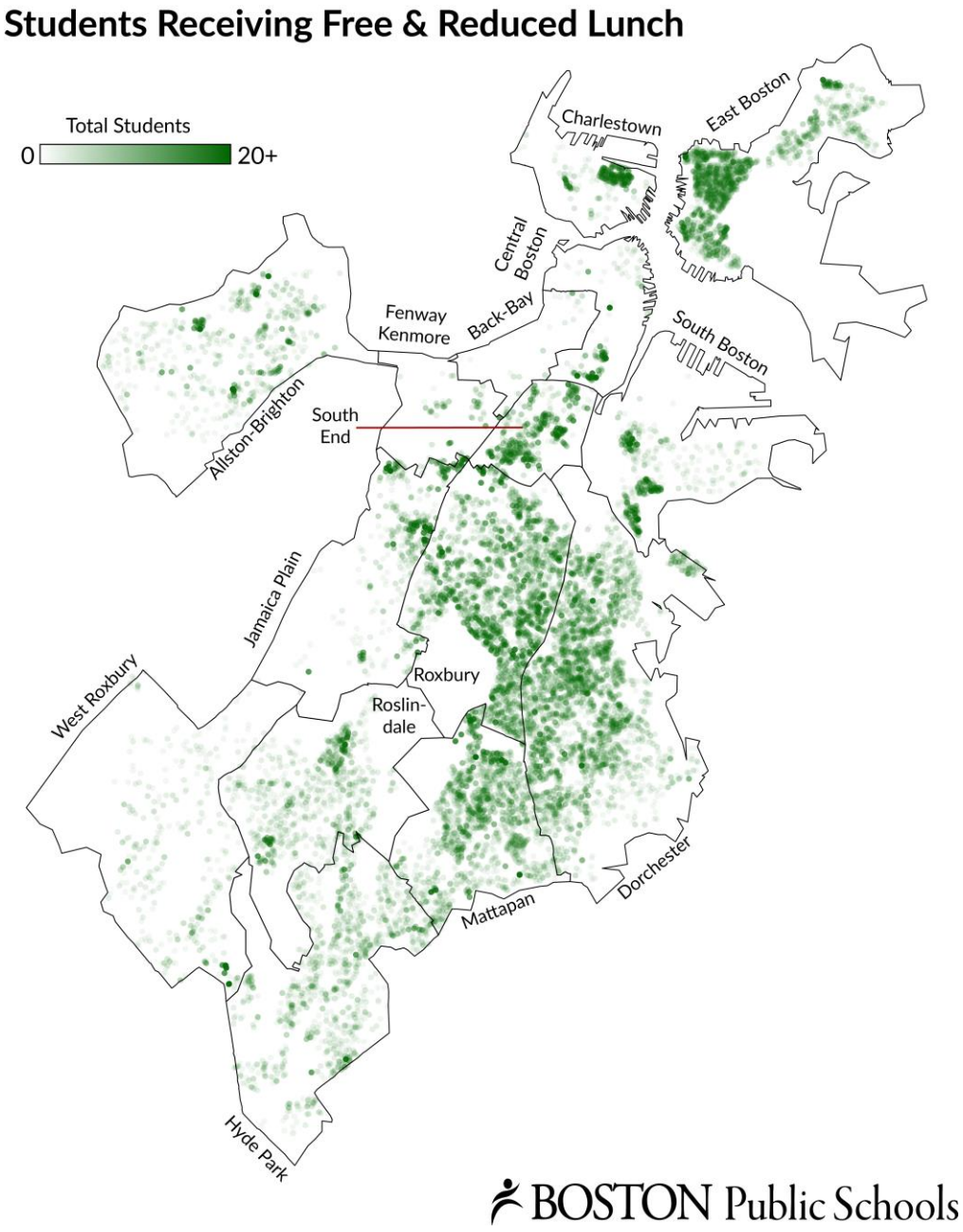
BOSTON PUBLIC SCHOOLS ALL STUDENTS

A better understanding of enrollment data by student group begins by first examining a comprehensive map of BPS showing the distribution of all students enrolled across the city and where the greatest concentrations of those populations reside.



SOCIO-ECONOMICALLY DISADVANTAGED STUDENTS

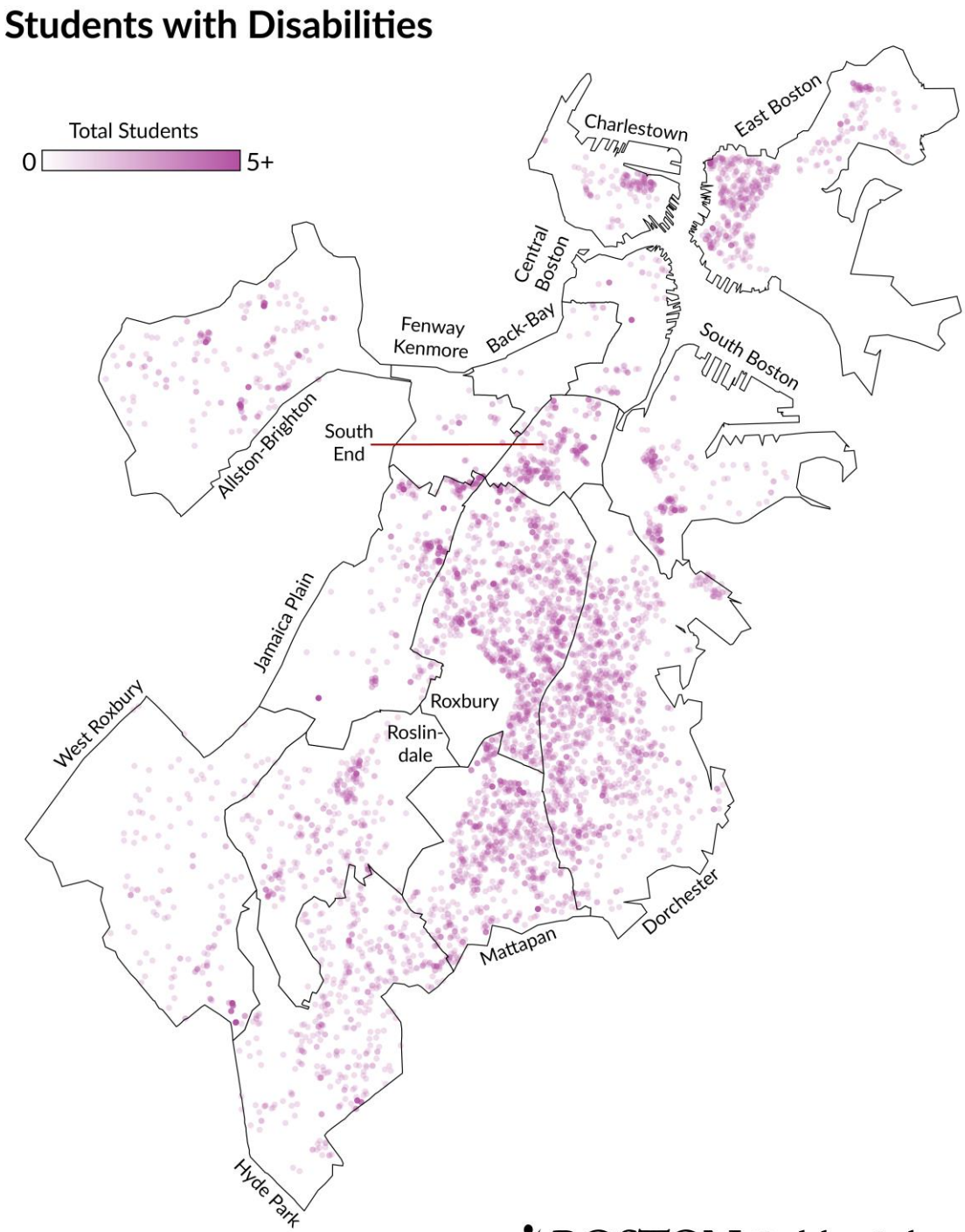
Boston has a large population of students who would typically qualify for the free and reduced lunch[3] program. In an effort to support all children and families, Boston has chosen to offer free meals to all students. The map below shows the distribution of the students who would have qualified under the previous model. Overall, the population of students eligible for free and reduced lunch is largely concentrated in the Roxbury, Dorchester and Mattapan neighborhoods, with other significant pockets in East Boston and the South End. The remaining neighborhoods across the district show moderate distributions of free and reduced lunch students.



[3] The Free and Reduced Lunch program is used to determine eligibility for federally-funded education programs. Although Boston Public Schools feeds all children this data is still collected for the purpose of submitting for federal funds.

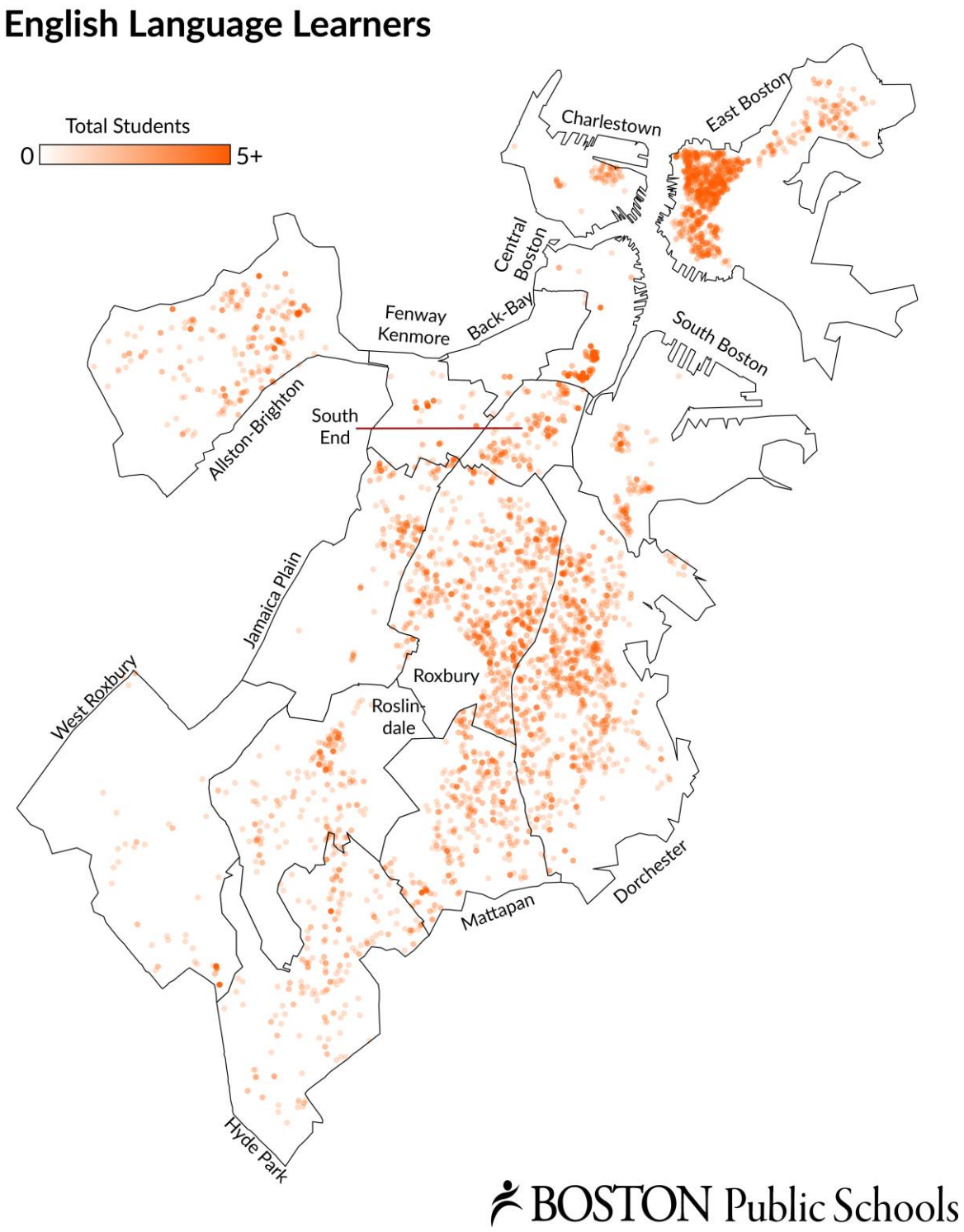
STUDENTS WITH DISABILITIES

The distribution of students with disabilities appears to be somewhat similar, proportionally, to the distribution of all students across the district. With major concentrations located in the western portion of East Boston and along the "spine" running from the South End, through Roxbury, and into Dorchester and Mattapan. There are fewer students with disabilities in the district's western neighborhoods of West Roxbury, Jamaica Plain, and Fenway/Kenmore. This distribution pattern is consistent across K2-12, although the number of students appears to be much higher at the lower grade levels.



ENGLISH LANGUAGE LEARNERS

The distribution of English Language Learners (ELLs) in Boston Public Schools is similar to that of the free and reduced lunch students and the students with disabilities with a few minor exceptions, notably in Mattapan, Hyde Park, and Roslindale, where there are smaller concentrations of ELLs than other student groups. The highest numbers of ELL students are in East Boston, followed by more moderate concentrations in Roxbury and Dorchester.



WHAT THIS DATA TELLS US

The historical data presented thus far builds the context for a discussion of future BPS enrollment. We have learned that the Boston is growing at a faster rate than enrollment in the school district. We have learned that the overall population in Boston is getting older and not producing as many children as it once did. We have also learned where specific subpopulations of students are concentrated, which could help inform future educational programming and facility investments.

ENROLLMENT DATA, METHODOLOGY AND PROJECTIONS

This section presents the demographic analysis and enrollment projections for the ten-year facilities master planning period of 2016 through 2026. It is important to keep in mind that enrollment projections are merely an *estimate* of future activity based on the historical data and information provided. Over the next ten years, enrollment is expected to increase modestly across the district. Although the data provides tremendous insight into the future, it is important to understand that the information contained in this report is constantly changing and will need to be reviewed and updated on a regular basis. The data used was provided by the Boston Public Schools and were not altered or changed prior to its use in the calculations and/or the projections contained in this report.

EARLY CHILDHOOD EDUCATION – KO / K1 ENROLLMENT

Boston's number of early childhood seats is on the rise.

As Boston Public Schools continues to examine various options for early childhood and preschool programs, one of the most significant challenges will be to determine where the programs should be located, and what spaces are available or will need to be constructed to accommodate these early childhood programs. **Tables C** and **D** below shows the historical enrollment of K0 students who range in age from 2.9 to 4 years old and for K1 students who range from 4 to 5 years old. Over the past 10 years, BPS has added K0 and K1 seats to accommodate more students in these age groups. For the purposes of projecting future enrollment, this report assumes the addition of approximately 100 preschool seats per year for the next ten years, leading to an increase in the enrollment of K0 and K1 students from nearly 3,000 currently to nearly 4,000 students by school year 2025-26. This number is based on the continued expansion of K0/K1 seats at a rate the district can renovate or construct.

TABLE C
HISTORICAL K0/K1 ENROLLMENT

Grade	06-07	07-08	08-09	09-10	10-11	11-12	12-13	13-14	14-15	15-16
K0 / K1	1,801	2,256	2,429	2,453	2,526	2,631	2,882	2,815	2,826	2,929

TABLE D
PROJECTED K0/K1 ENROLLMENT

Grade	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	24-25	25-26
K0 /K1	3,029	3,129	3,229	3,329	3,429	3,529	3,629	3,729	3,829	3,929

HISTORICAL K2-12 ENROLLMENT

Boston has seen a decline in enrollment over the past ten years.

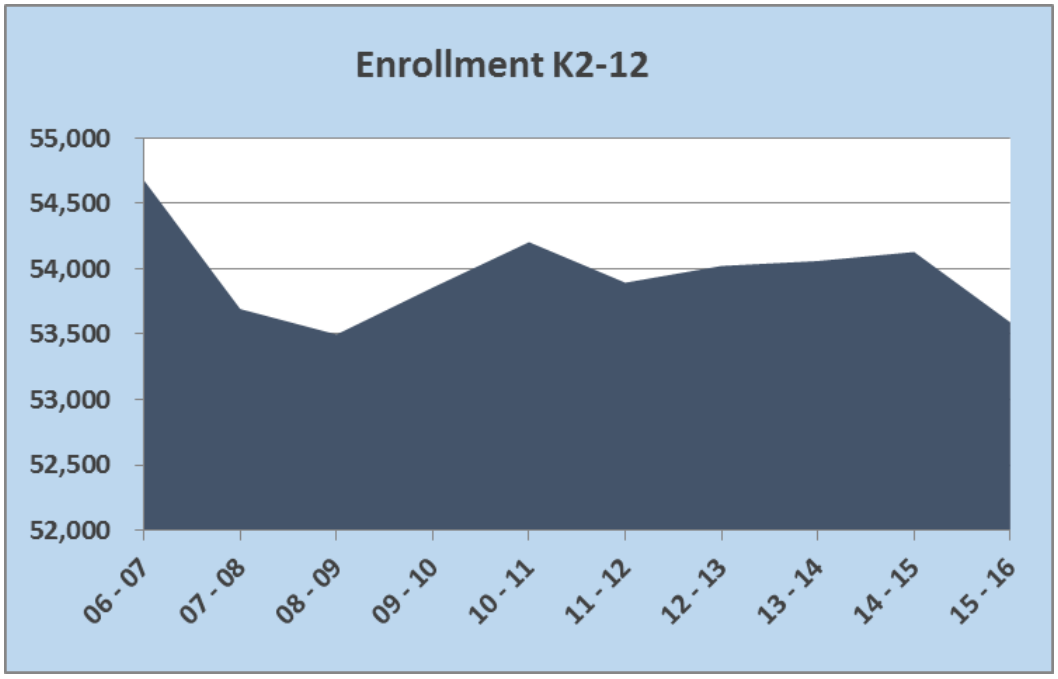
K2-12 enrollment represents the core body of data used to develop MGT's enrollment projections. Total enrollment in Boston Public Schools stood at 54,678 students in 2006-07. Since then, enrollment has decreased to 53,591 in 2015-16. **Exhibit 4**, below, details the enrollment history of K2-12 students. **Exhibit 5** on the following page charts the history. MGT's enrollment forecast will focus on K2-12. For K0 and K1 enrollment see Table C on page 14.

EXHIBIT 4

Grade	06 - 07	07 - 08	08 - 09	09 – 10	10 - 11	11 - 12	12 - 13	13 - 14	14 - 15	15 - 16
K2	3,865	3,781	3,897	4,047	4,232	4,220	4,471	4,580	4,453	4,122
1	4,167	4,196	4,117	4,272	4,372	4,369	4,595	4,723	4,749	4,539
2	4,007	3,994	4,092	3,999	4,195	4,243	4,180	4,378	4,598	4,602
3	4,016	3,992	4,033	4,049	3,971	4,141	4,202	4,154	4,274	4,525
4	3,825	3,960	3,999	3,999	4,101	3,977	4,106	4,109	4,078	4,147
5	3,827	3,578	3,839	3,856	3,788	3,836	3,382	3,505	3,546	3,509
6	3,701	3,571	3,327	3,683	3,716	3,605	3,657	3,234	3,435	3,437
7	4,183	4,005	3,917	3,767	4,007	4,046	3,971	4,002	3,491	3,690
8	4,286	4,096	4,024	3,960	3,791	3,966	4,078	4,001	4,004	3,536
9	5,679	5,315	5,186	5,030	4,889	4,641	4,783	4,712	4,731	4,584
10	4,580	4,508	4,460	4,484	4,370	4,228	4,041	4,384	4,176	4,216
11	4,380	4,348	4,175	4,272	4,254	4,263	4,202	4,045	4,254	4,156
12	4,162	4,349	4,432	4,440	4,519	4,360	4,355	4,234	4,341	4,528
K2-12	54,678	53,693	53,498	53,858	54,205	53,895	54,023	54,061	54,130	53,591

Source: Boston Public Schools, 2016.

EXHIBIT 5



Source: MGT, 2016.

GRADE BAND ENROLLMENT

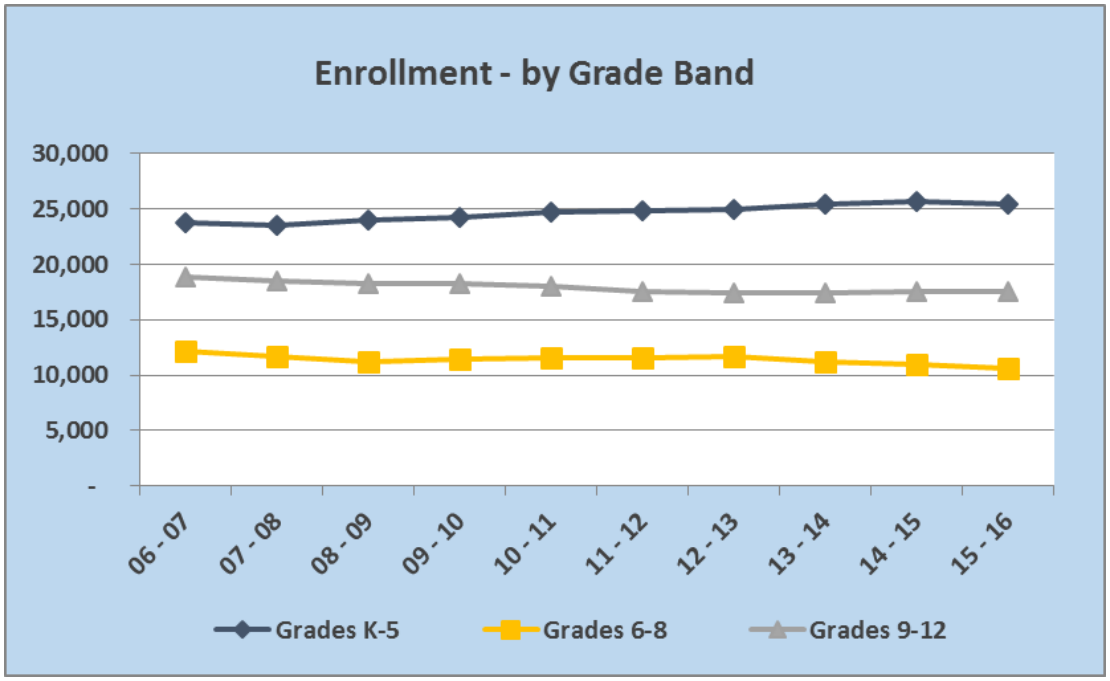
Decreasing middle and high school enrollments have led to an overall K2-12 enrollment decline.

An examination of historical enrollment by grade bands (e.g., elementary, middle, high school) reveals that the decrease in overall enrollment over the last ten years has been due to a decrease in enrollment at the secondary grade levels. Grades 6-8 and grades 9-12 decreased by 12.4% and 7% respectively, from 2006-07 to 2015-16. The K-5 grade band increased by 7% over this same time period. **Exhibits 6 – 9** illustrate the historical enrollment for each grade band, as well as **Table E**, which is a cutaway of historical enrollment totals by grade band.

TABLE E
HISTORICAL ENROLLMENT BY GRADE BAND

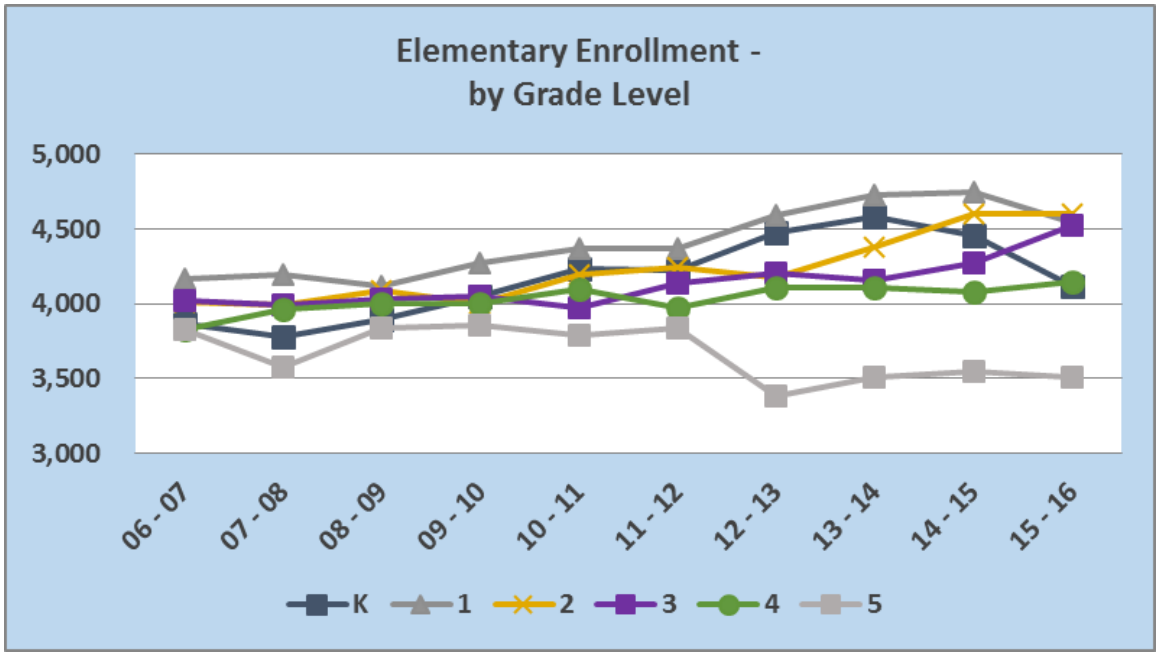
Grade Band	06 - 07	07 - 08	08 - 09	09 – 10	10 - 11	11 - 12	12 - 13	13 - 14	14 - 15	15 - 16
K2-5	23,707	23,501	23,977	24,222	24,659	24,786	24,936	25,449	25,698	25,444
6-8	12,170	11,672	11,268	11,410	11,514	11,617	11,706	11,237	10,930	10,663
9-12	18,801	18,520	18,253	18,226	18,032	17,492	17,381	17,375	17,502	17,484
K2-12	54,678	53,693	53,498	53,858	54,205	53,895	54,023	54,061	54,130	53,591

EXHIBIT 6



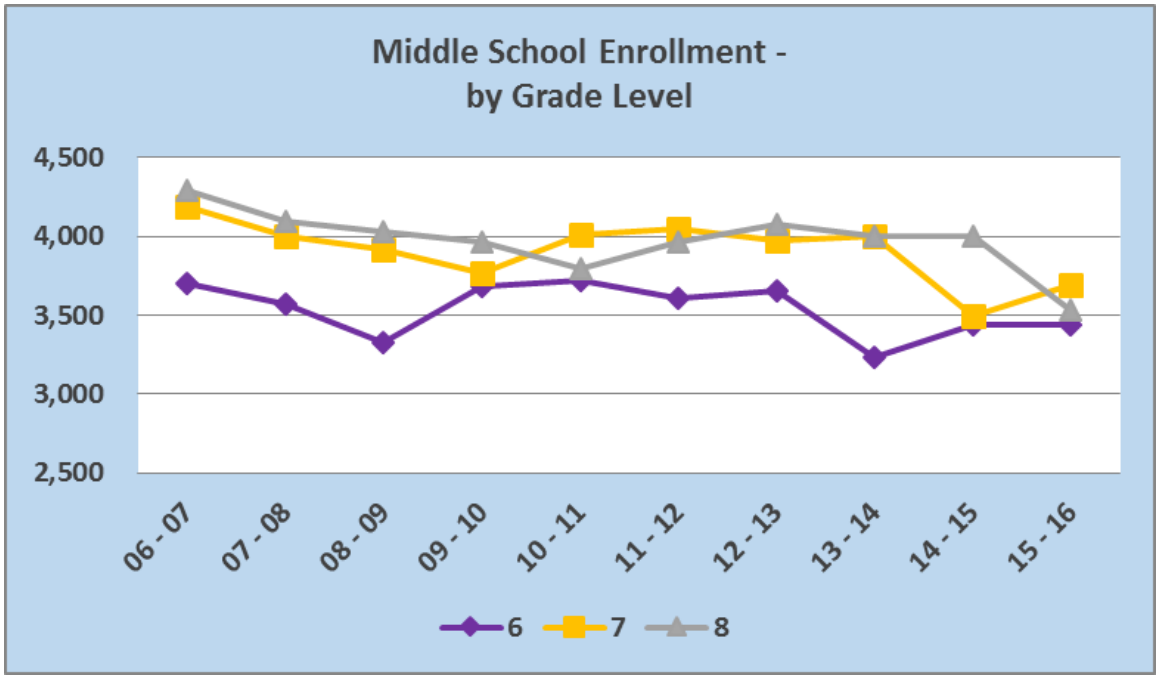
Source: MGT, 2016.

EXHIBIT 7



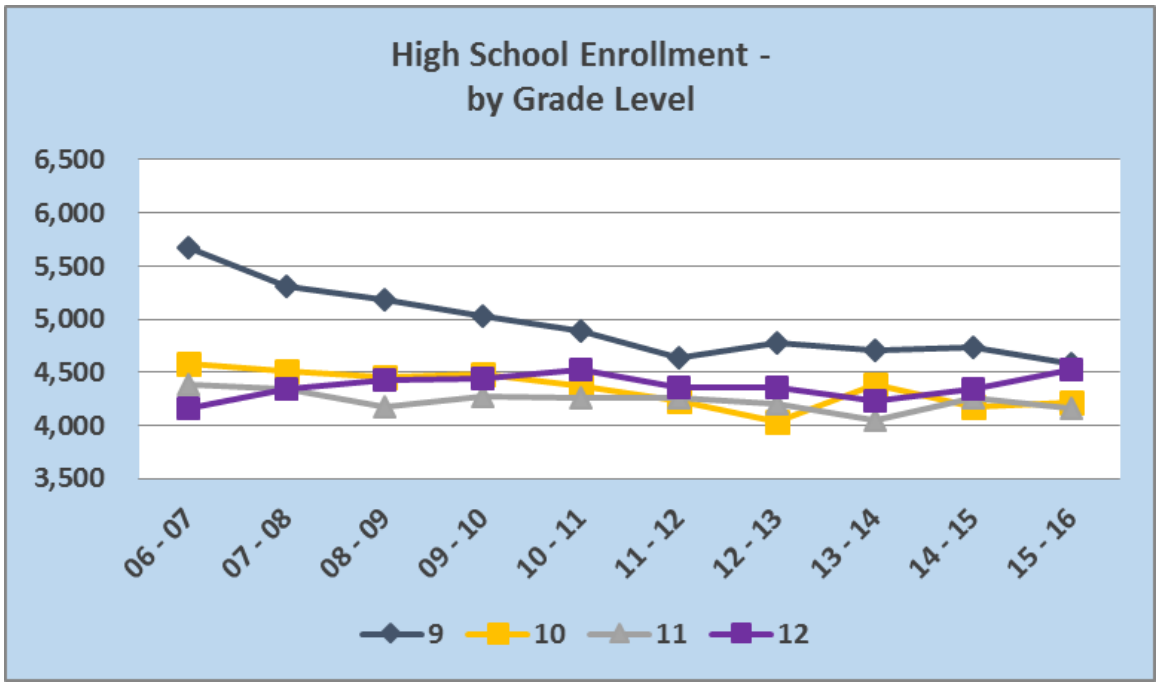
Source: MGT, 2016.

EXHIBIT 8



Source: MGT, 2016.

EXHIBIT 9



Source: MGT, 2016.

HISTORICAL ENROLLMENT FINDINGS

Based on an analysis of the data presented in this section, we have found the following regarding the demographics of the City of Boston:

- Census Bureau population counts show an increase in the overall population, but a decrease in the population segments which typically impact K2-12 enrollment.
- The general population of Boston is getting older, which is likely to impact growth in the K2-12 population.
- There has been a decline in enrollment between 4th and 8th grades over the last ten years, however there is a return to typical enrollment in 9th grade.

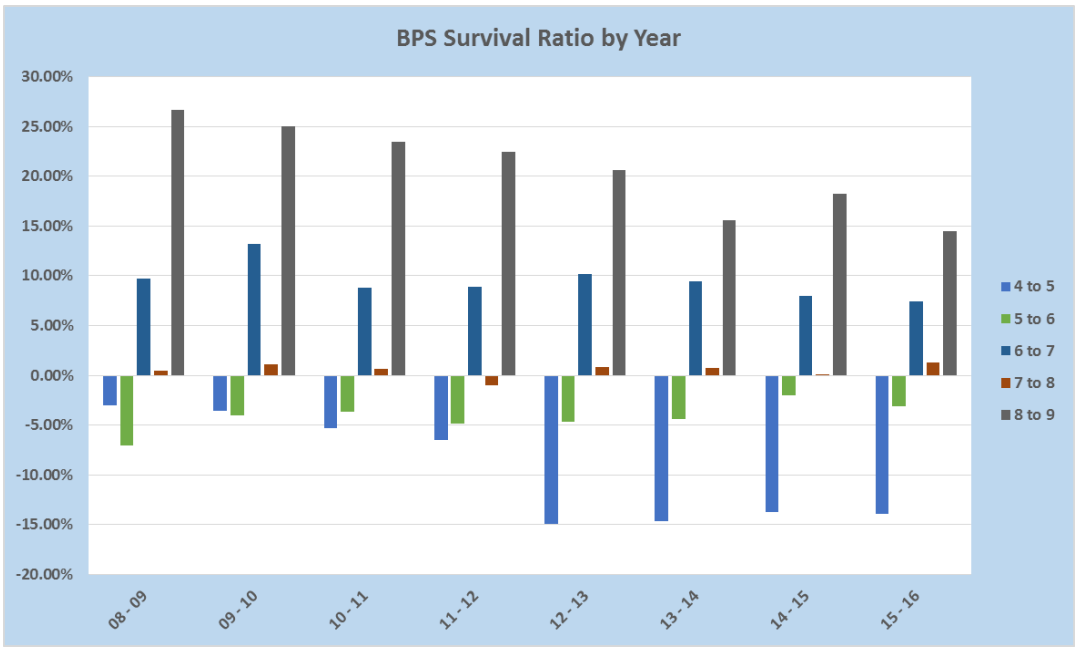
Exhibit 10 shows ten years of enrollment data, illustrating the variability of student enrollment between 4th and 8th grades. **Exhibit 11** shows the survival ratios between grades 4 and 8.

EXHIBIT 10

GRADE	06 - 07	07 - 08	08 - 09	09 - 10	10 - 11	11 - 12	12 - 13	13 - 14	14 - 15	15 - 16
4	3,825	3,960	3,999	3,999	4,101	3,977	4,106	4,109	4,078	4,147
5	3,827	3,578	3,839	3,856	3,788	3,836	3,382	3,505	3,546	3,509
6	3,701	3,571	3,327	3,683	3,716	3,605	3,657	3,234	3,435	3,437
7	4,183	4,005	3,917	3,767	4,007	4,046	3,971	4,002	3,491	3,690
8	4,286	4,096	4,024	3,960	3,791	3,966	4,078	4,001	4,004	3,536
4-8	19,822	19,210	19,106	19,265	19,403	19,430	19,194	18,851	18,554	18,319

Source: MGT, 2016.

EXHIBIT 11



Source: MGT, 2016.

DEMOGRAPHIC MODELS

There are several population and demographic studies going on simultaneously throughout the city which need to be taken into consideration when making long-term decisions regarding schools, building construction, transportation, and economic growth. The Boston Planning and Development Agency (BPDA) is developing models that will help shape *Imagine Boston 2030*, the Mayor's long-term future plan for the city.

The City of Boston has also projected charter school enrollment growth, both under the existing charter cap and in the event that voters approve this year's Ballot Question 2, which would lift the current cap.

Whereas the MGT study contained in the remaining pages of this document is focused specifically on the historical, current, and future enrollment of Boston Public Schools, the other two analyses do not have this focus. The BPDA study looks at population growth, but does not account for student choice decisions and BPS's capture rate. The charter school growth analysis looks solely at possible added capacity at charter schools under the current charter school cap and does not take population changes into account. Only the MGT analysis accounts for changes in the population and BPS's capture rate.

MGT PROJECTED GROWTH

The MGT projections are based on historical enrollment data and look at how student populations could vary using four nationally recognized projection methodologies: average percentage growth, cohort survival, students per household, and linear regression. MGT then combines these four models into one weighted model that identifies our best estimate for a single enrollment projection. Based on our enrollment projection methodologies, MGT's conclusions contained in this report show a slow and steady enrollment growth pattern for Boston Public Schools over the next ten years. The combined weighted model for districtwide enrollment projections calculates a total projected growth of 2,515 students by the school year 2025-26.

BOSTON PLANNING AND DEVELOPMENT AGENCY (BPDA) PROJECTED GROWTH

The BPDA in its *Imagine Boston 2030* documents projects a significant amount of growth throughout the City. The projections are based on U.S. Census data, housing starts, immigration data, and live birth data and are being used to examine where and how much the city population will grow over the next ten to fifteen years. If these projections come to fruition, an additional 10,000 school-aged children could be added to Boston, but it is unclear what portion of this would be captured by BPS from this analysis.

CHARTER SCHOOL IMPACT

The number of charter school seats continues to grow in Boston based on the state achievement gap legislation enacted in 2010. In the 2016-2017 school year, there is an 18% cap on the percentage of Boston's net school spending that the state can assess from Boston to pay for charter schools. Largely due to this legislation, which increased the cap from 9% in 2010 to 18% today, Boston's charter school population has grown from 5,273 in 2010-2011 to 9,251 in 2015-2016.

Because the current cap is on Boston's charter school spending, not a cap on students, Boston projects that an additional 4,368 students could attend charter schools by the 2025-2026 school year. This projection is based on the roll out of seats already approved by the Commonwealth and the availability of more seats each year as Boston's spending in support of education grows.

Due to the continued increase in allowable charter school seats as a function of the district's expenditures, Commonwealth charter schools will continue to increase and to impact BPS enrollment. In 2013, the Boston Municipal Research Bureau reported that between 2002 and 2012, 74% of new charter school students in grades 1-12 had transferred from BPS the year before[4]. Applying that rate over the next ten years, it is projected that BPS will lose an additional 3,232 students to charter schools, even under the existing charter school cap. If voters approve Ballot Question 2 to raise the cap on charter schools, the growth in charter school students would accelerate, and Boston should reexamine its BPS demographic/enrollment projections. For more detail, see **Table F** below, which illustrates the historical changes in out-of-district enrollment over time.

TABLE F

Ten-Year Enrollment of School -aged Children Living in Boston, School Year 2007 – 2016													
	BPS(1)		CHARTER(2)		METCO(3)		PRIVATE		PAROCHIAL		OTHER(4)		TOTAL
2015-16	56,520	72.5%	9,240	11.9%	2,844	3.7%	4,262	5.5%	4,573	5.9%	470	0.60%	**77,909**
2014-15	56,956	73.1%	8,255	10.6%	2,815	3.6%	4,133	5.3%	5,278	6.8%	463	0.59%	**77,900**
2013-14	56,866	73.8%	7,139	9.3%	3,072	4.0%	4,091	5.3%	5,401	7.0%	435	0.56%	**77,004**
2012-13	56,905	73.9%	6,726	8.7%	3,088	4.0%	4,149	5.4%	5,713	7.4%	471	0.61%	**77,052**
2011-12	56,526	74.9%	5,467	7.2%	3,043	4.0%	4,063	5.4%	5,939	7.9%	458	0.61%	**75,496**
2010-11	56,731	76.3%	4,785	6.4%	2,903	3.9%	3,621	4.9%	5,884	7.9%	440	0.59%	**74,364**
2009-10	55,891	74.9%	4,663	6.3%	3,183	4.3%	3,709	5.0%	6,678	9.0%	458	0.61%	**74,582**
2008-09	55,927	75.0%	4,806	6.4%	3,142	4.2%	3,733	5.0%	6,555	8.8%	425	0.57%	**74,588**
2007-08	55,949	74.8%	4,372	5.8%	3,051	4.1%	3,651	4.9%	7,261	9.7%	486	0.65%	**74,770**
2006-07	56,957	74.6%	4,405	5.8%	3,034	4.0%	3,606	4.7%	7,906	10.4%	450	0.59%	**76,358**

Source: BPS Records Management Unit (RMU).

Notes:

1. Boston Public School students, including students attending an in-district Horace Mann Charter School
2. Commonwealth Charter School students
3. Metropolitan Cooperative students attending a public school in another school district
4. Includes privately placed Special Education, educational collaborative, homeschooled students and other placement

[4] Boston Municipal Research Bureau Special Report; September 18, 2013.

ENROLLMENT PROJECTION METHODOLOGY

MGT's enrollment projections are based on a compilation of the following four, nationally recognized demographic models:

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 2000 to 2001 and decreased seven percent from 2001 to 2002, then the average percentage change would be a six percent decrease, and six percent would be the factor used to project future first grade enrollment in this model.

LINEAR REGRESSION MODEL

This model uses a statistical approach to estimating 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 subsequent 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. 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. The correlation method was used for BPS due to a seemingly more accurate longitudinal projection between live births and 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 total enrollment by grade level and dividing it by the current housing levels, a *student generation factor* (SGF) was calculated for each grade level. This factor indicates the number of students within each grade level that will be generated by each new housing unit.

WEIGHTED MODEL

Once each of these four base models has been calculated, MGT generates a weighted average of each of the models. A weighted average allows the analysis to reflect all of 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.

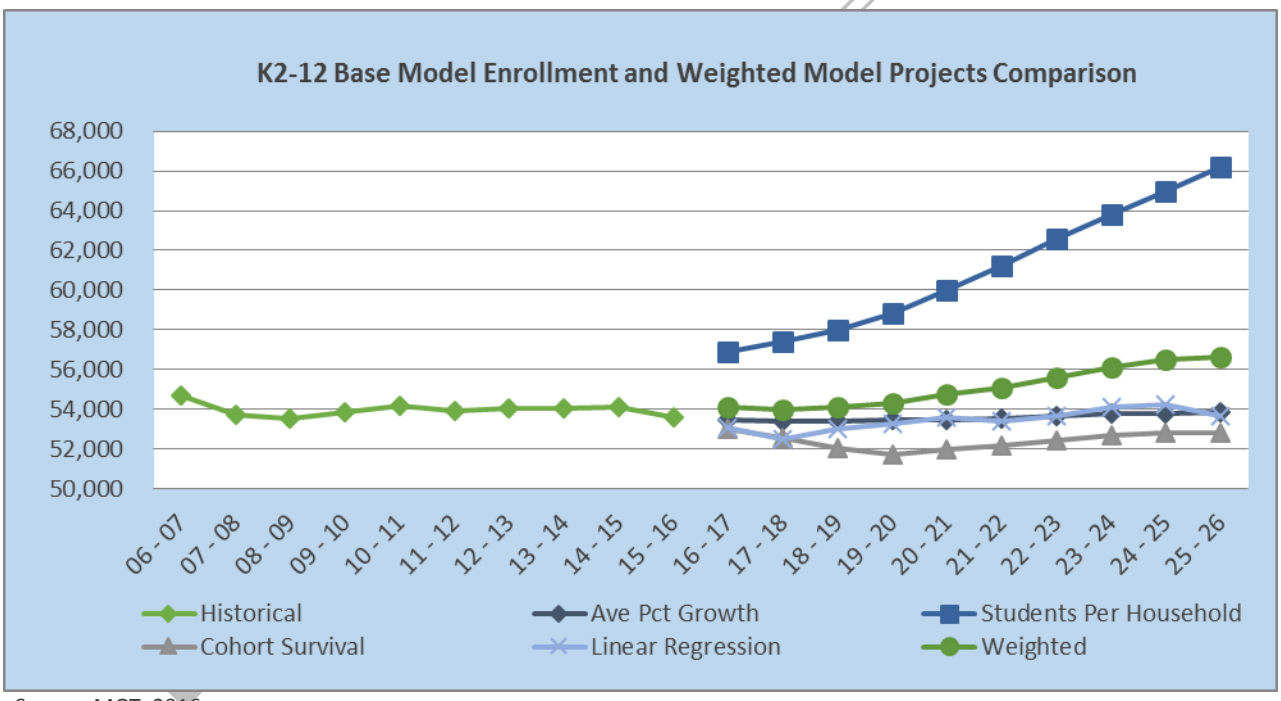
Two models, the Average Percentage Annual Increase Model and the Linear Regression Model, emphasize historical data. These models are quite effective predictors if there is no expectation of unusual community growth or decline and student population rates have minimal fluctuation.

The Cohort Survival Model also uses historical enrollment numbers but takes into account 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 take into account projections for housing developments and general growth in the City. This model looks forward and is based on input from local planners. The planning information is important and the district should continue to monitor this information. The Demographics Advisory Committee agreed to weight the models equally for the purpose of controlling any one model from over emphasizing or influencing the total projections.

Exhibit 12 illustrates the four enrollment projection models and the one combined weighted model.

EXHIBIT 12



Source: MGT, 2016.

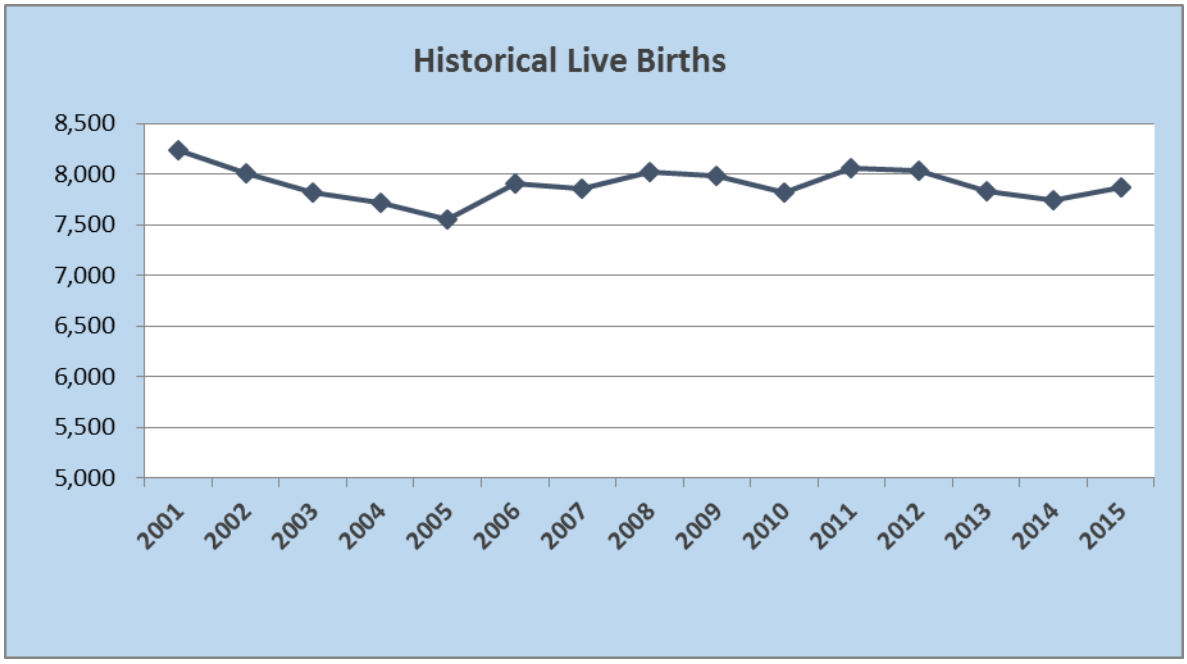
LIVE BIRTHS AND KINDERGARTEN ENROLLMENT

Boston has shown a fluctuating birth rate that has had little influence on kindergarten enrollment.

A second key component to analyzing potential future enrollment is to examine live birth trends in the area and the live-births-to-kindergarten capture rate. A steady or increasing birth rate could lead to additional students in the district, which would also push future enrollment higher. The number of live births in Boston has fluctuated between a low of 7,554 in 2015 to a high of 8,231 in 2001.

Exhibit 13 shows the trend of historical live births for Boston.

EXHIBIT 13

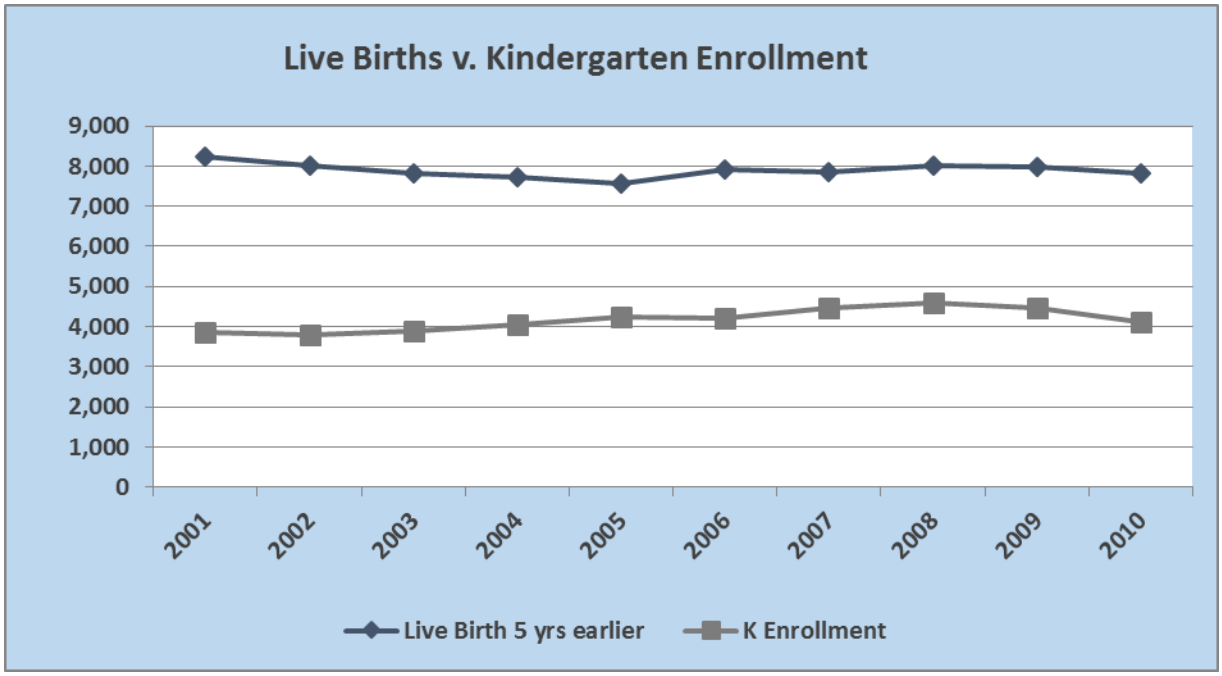


*2015 estimated via linear regression.
Source: Massachusetts Executive Office of Health and Human Services, 2016.

For the examination of the ratio of live-births-to-kindergarten enrollment, we have used live birth data for the past 15 years and kindergarten enrollment for the past ten years. For example, a child born in 1990 would enroll in kindergarten at the age of five in 1995. Therefore, in this analysis, we are looking 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.

Exhibit 14 compares the district's historical kindergarten enrollment to the live birth data.

EXHIBIT 14



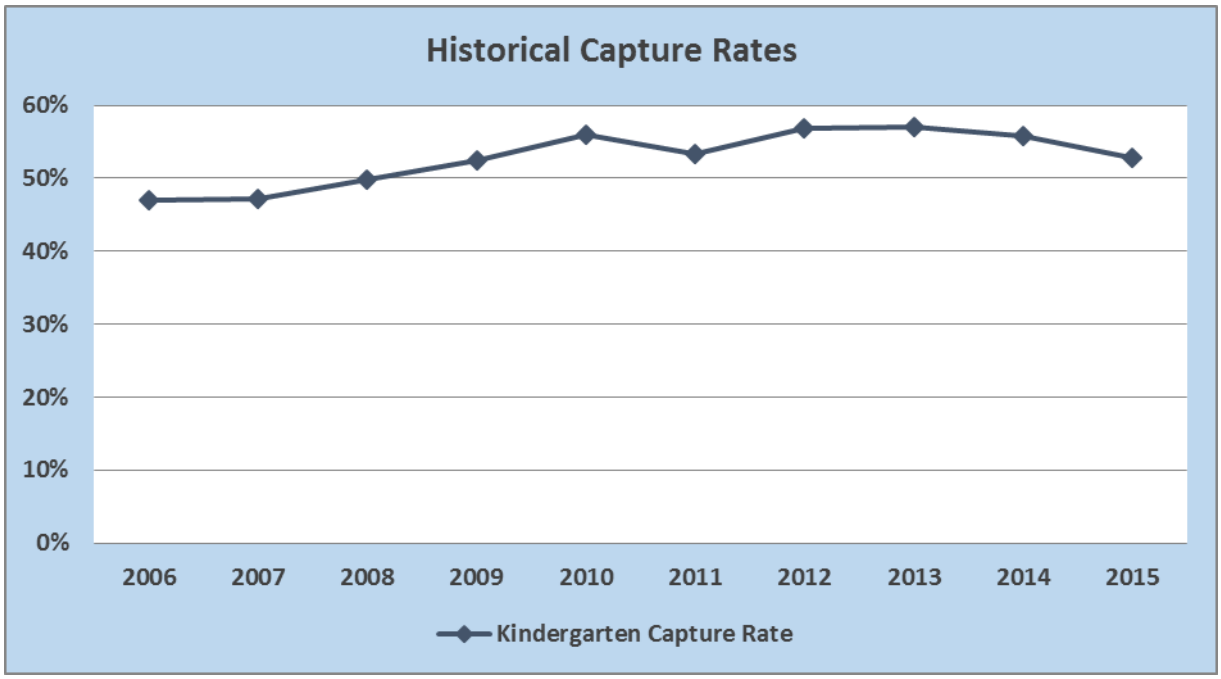
Source: MGT, 2016.

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

A correlation coefficient calculates the relationship between two series of data. A correlation coefficient of 1 or -1 indicates a strong positive or negative relationship; a correlation coefficient of 0 indicates a weak relationship. For BPS, the correlation coefficient for live birth to kindergarten enrollment is -0.134 which indicates a weak relationship – meaning that the data cannot predict the future.

The capture rate is used to forecast the percentage of live births that resulted in kindergarten enrollment five years later. Over the last ten years, the district's capture rate has averaged 52.8%. However, the capture rate has been decreasing in recent years, as **Exhibit 15** illustrates. Driving this weakened coefficient and capture rate is the district's lack of appropriate capacity to meet the demand for K0 and K1 student seats, particularly in high-demand areas.

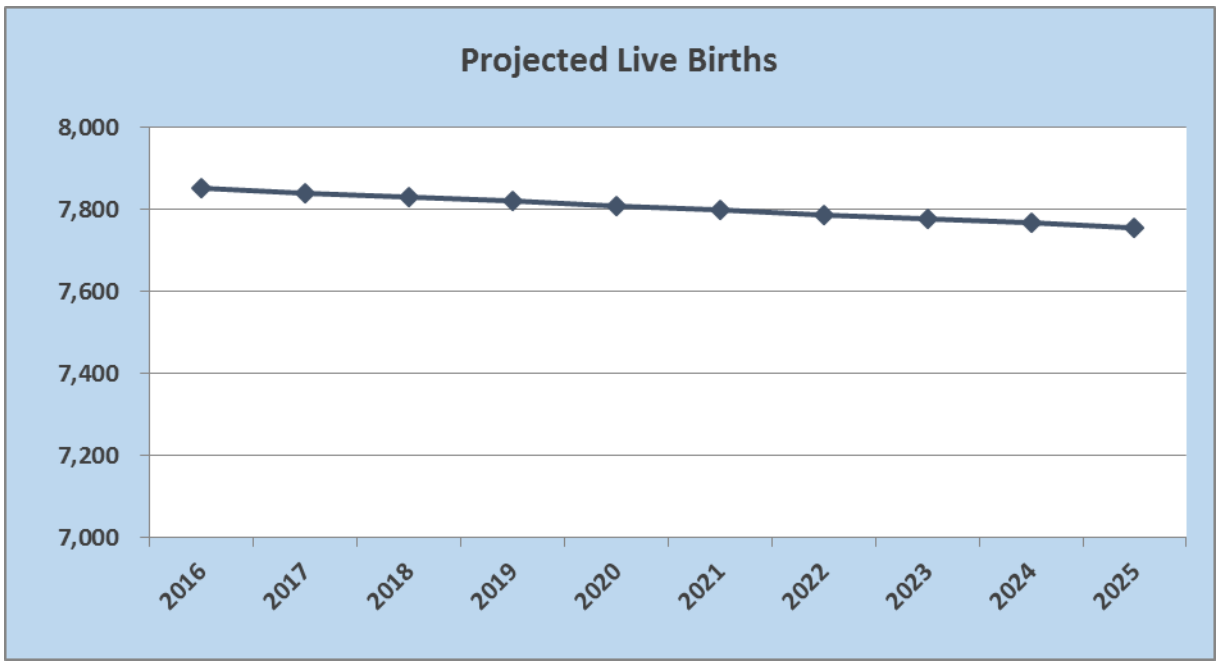
EXHIBIT 15



Source: MGT, 2016.

Exhibit 16 illustrates the projected live births for the district. Live births are projected using a linear regression model based on historical live births in Boston.

EXHIBIT 16



Source: MGT, 2016.

HOUSING UNITS

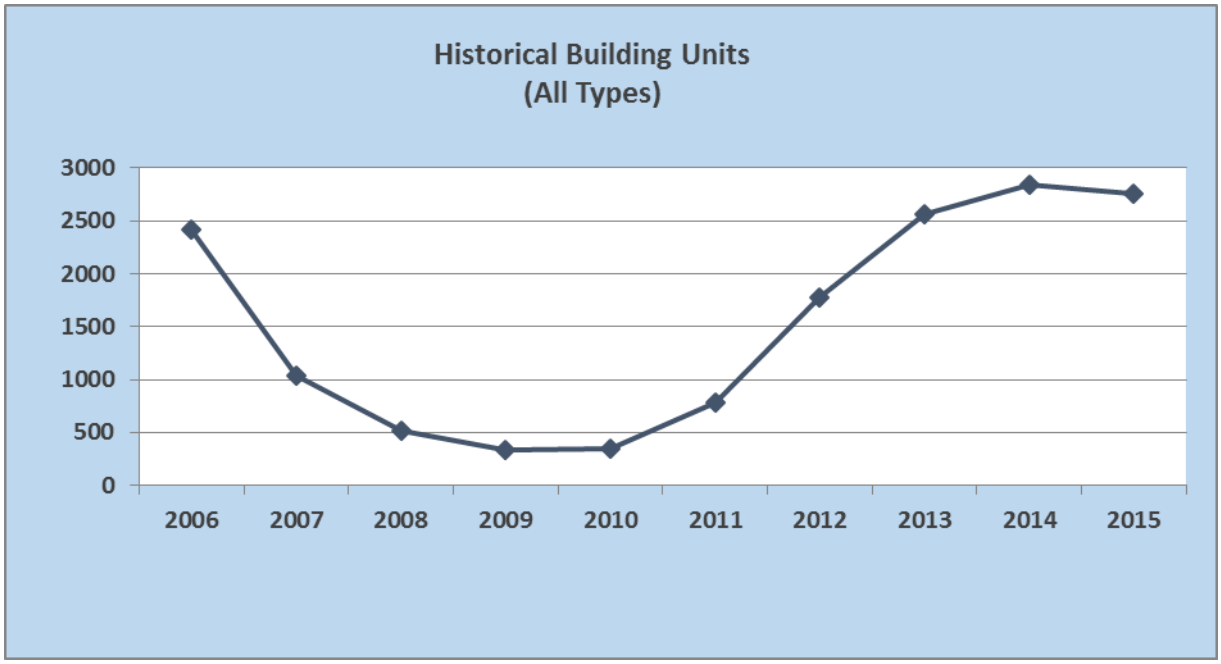
After a significant decline, housing units have generally been on the rise in Boston.

Another approach to developing enrollment projections is to conduct an analysis of the trends in housing units in the city. The U.S. Census Bureau recorded 251,935 Boston housing units in the 2000 Census and 272,481 housing units in 2010.

Since 2006, the number of housing permits issued each year in Boston has fluctuated greatly. In an effort to better understand these fluctuations, MGT met with the Boston Planning and Development Agency planners to further analyze the housing permit information. The consensus was to continue to use census data as the default, given the lack of an alternative data source or the availability of data such as city housing permits.

Exhibit 17 illustrates the number of housing units each year since 2006 in Boston, which includes both single- and multi-family building units. After a prolonged decline due to the great recession, the number of housing units has generally been on the rise.

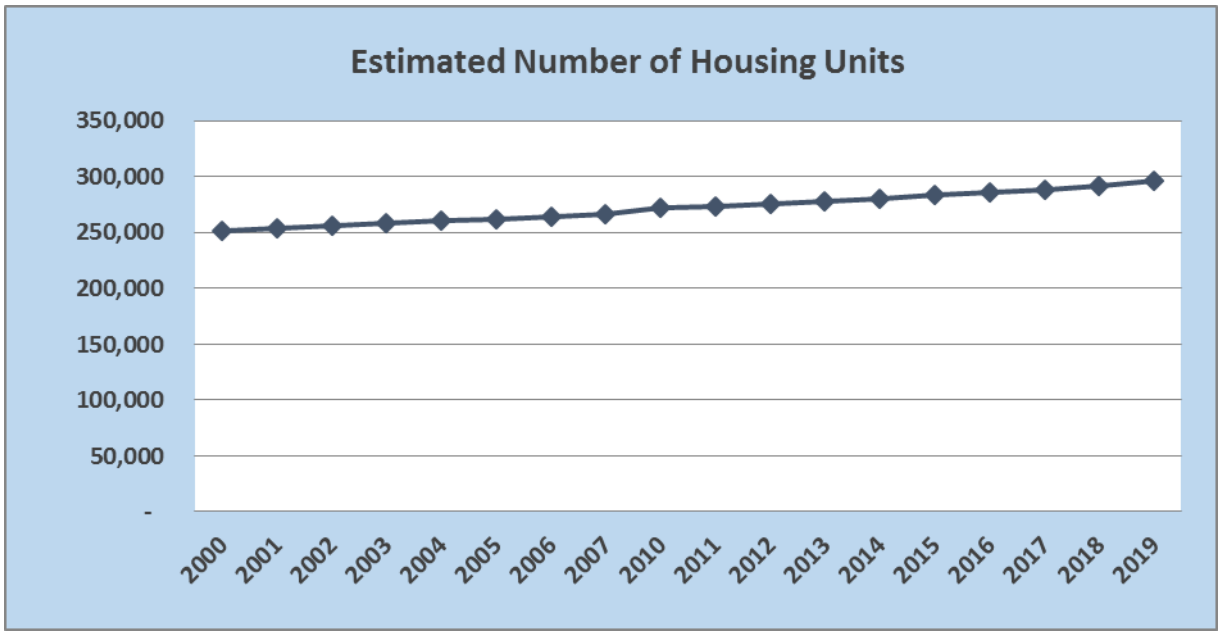
EXHIBIT 17
HOUSING UNITS – ALL TYPES



Source: U.S. Census Bureau, Building Permits Survey, 2010.

If we combine the historical and average projected building units, and assume that each unit will result in an occupied residential unit, we can estimate the number of future housing units in the city. The total estimated number of housing units is generated by using the number of projected building units and adding it to the number of housing units established by the 2010 Census, illustrated by **Exhibit 18** below.

EXHIBIT 18



Source: MGT, 2016.

ENROLLMENT PROJECTIONS

BPS PreK – 12 enrollment shows slow growth over the next ten years.

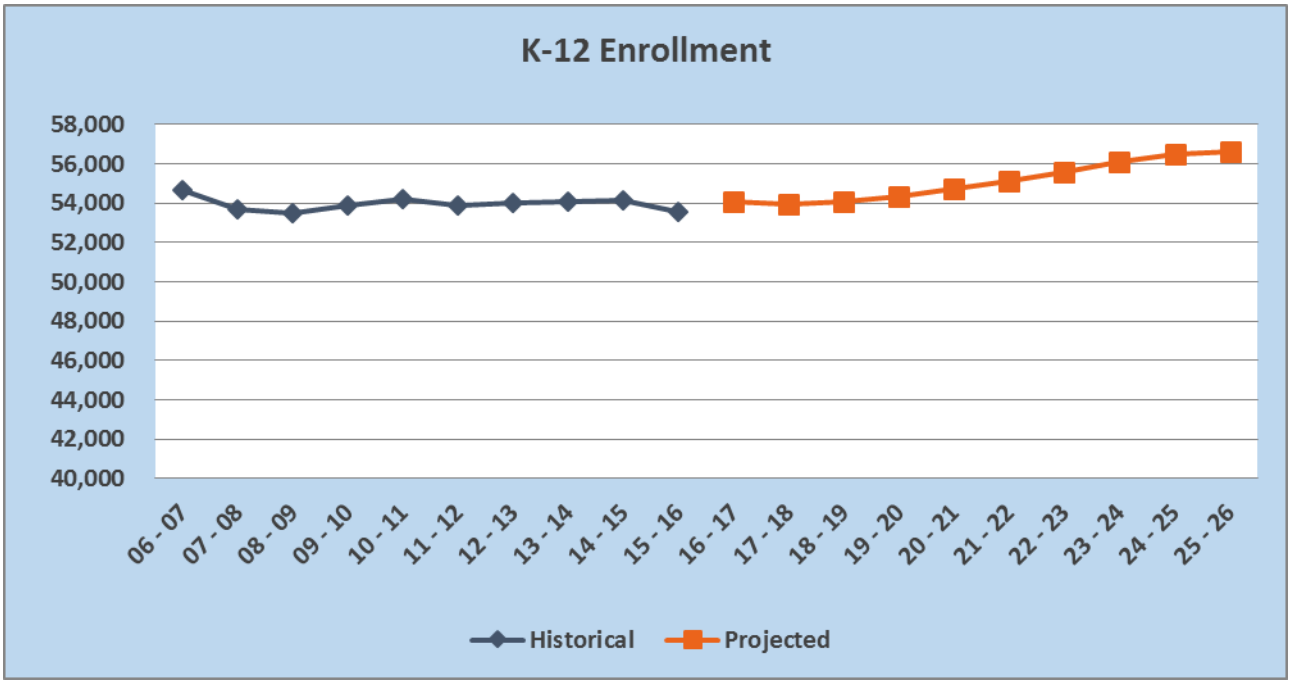
MGT staff has utilized the methodology described above to forecast enrollment for the district over the next ten years, as shown in **Exhibit 19**. **Exhibit 20** on the following page illustrates BPS historical and projected enrollment.

EXHIBIT 19

PROJECTED ENROLLMENT										
Grade	**16 - 17**	**17 - 18**	**18 - 19**	**19 - 20**	**20 - 21**	**21 - 22**	**22 - 23**	**23 - 24**	**24 - 25**	**25 - 26**
K2	4,101	3,974	3,938	4,011	4,160	4,235	4,333	4,430	4,512	4,555
1	4,401	4,373	4,433	4,515	4,622	4,714	4,795	4,878	4,917	4,953
2	4,534	4,502	4,672	4,789	4,808	4,844	4,947	4,991	5,041	5,082
3	4,544	4,621	4,604	4,634	4,683	4,752	4,774	4,834	4,877	4,908
4	4,275	4,304	4,249	4,208	4,299	4,317	4,350	4,374	4,439	4,505
5	3,633	3,691	3,730	3,733	3,577	3,594	3,600	3,617	3,676	3,705
6	3,576	3,628	3,757	3,607	3,545	3,489	3,555	3,668	3,683	3,672
7	3,838	3,862	3,631	3,674	3,663	3,660	3,721	3,795	3,815	3,794
8	3,523	3,369	3,419	3,460	3,590	3,674	3,645	3,613	3,644	3,627
9	4,551	4,562	4,594	4,606	4,702	4,746	4,705	4,614	4,528	4,494
10	4,263	4,159	4,150	4,275	4,268	4,265	4,300	4,291	4,239	4,203
11	4,220	4,186	4,201	4,226	4,201	4,205	4,249	4,341	4,326	4,277
12	4,645	4,739	4,724	4,584	4,635	4,602	4,619	4,673	4,775	4,843
K2-12	54,103	53,969	54,103	54,323	54,753	55,096	55,591	56,120	56,472	56,618

Source: MGT, 2016.

EXHIBIT 20



Source: MGT, 2016.

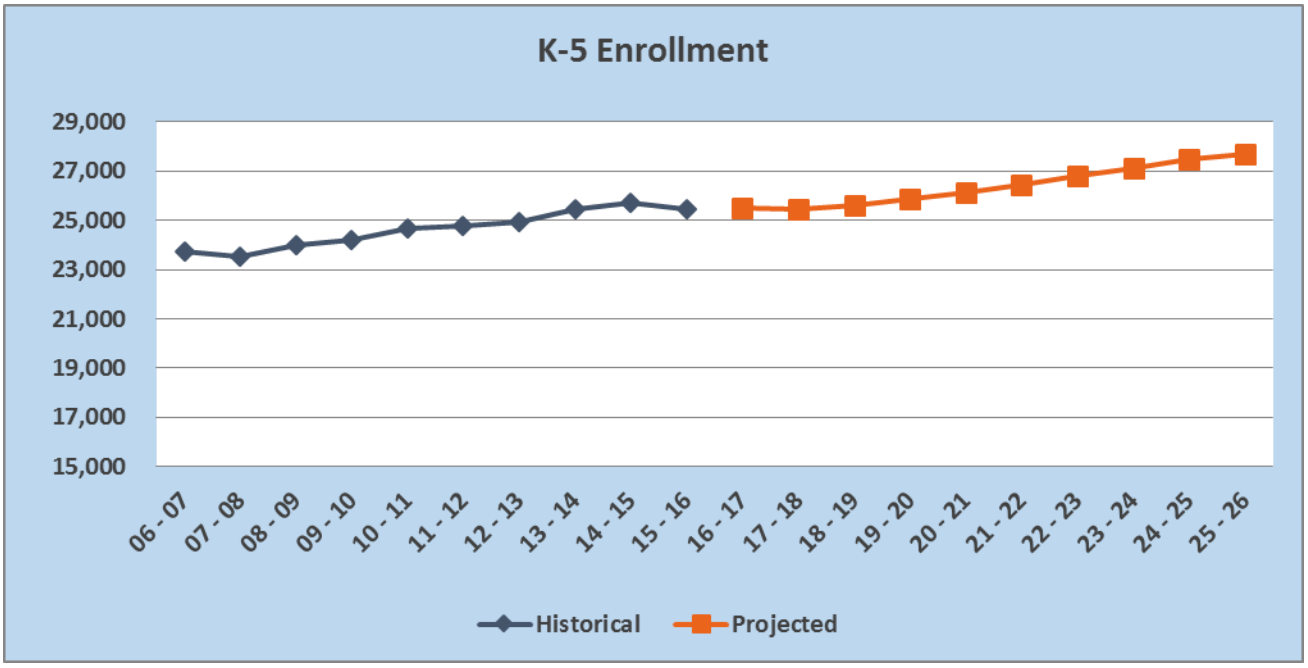
GRADE BAND PROJECTED ENROLLMENT

The District is strongly encouraged to continue revisiting these projections on an annual basis and to update them to reflect current trends and data. The following **Exhibits 21** through **23** illustrate the historical and projected enrollment at each grade band, with **Table G** as a reference of projected enrollment by grade band.

TABLE G
PROJECTED ENROLLMENT BY GRADE BAND

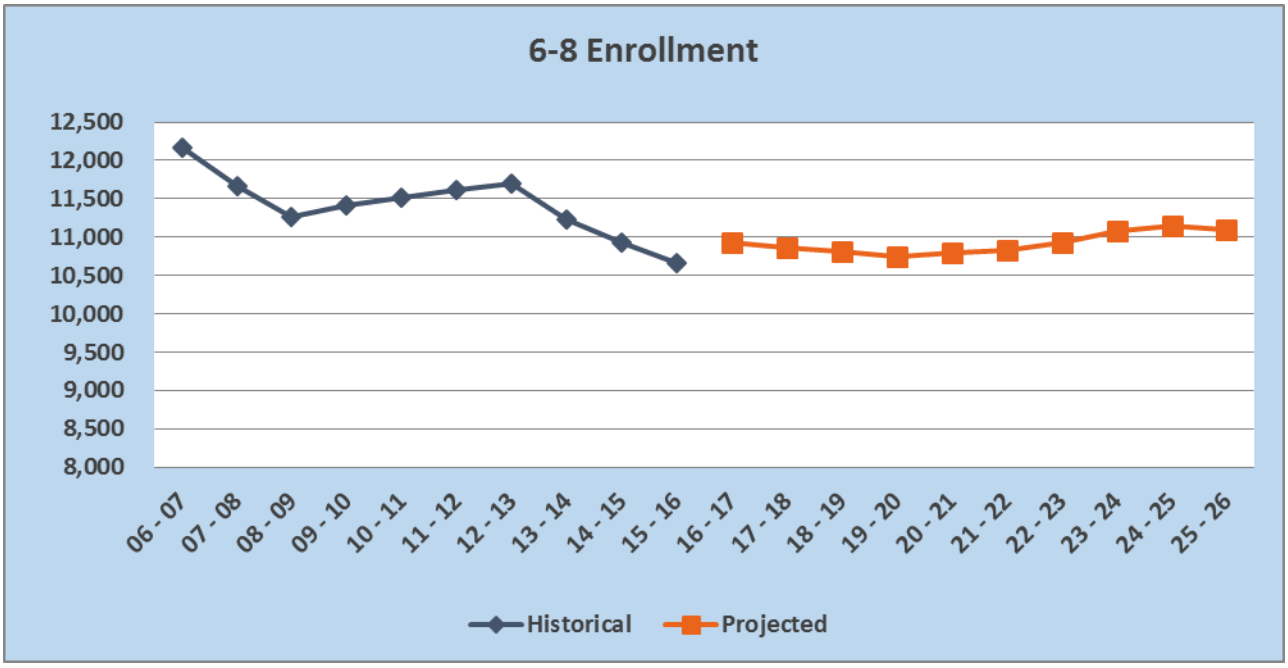
Grade	16 - 17	17 - 18	18 - 19	19 - 20	20 - 21	21 - 22	22 - 23	23 - 24	24 - 25	25 - 26
K2-5	25,488	25,464	25,627	25,890	26,149	26,455	26,798	27,124	27,461	27,708
6-8	10,937	10,859	10,807	10,741	10,799	10,823	10,921	11,077	11,142	11,093
9-12	17,678	17,646	17,669	17,692	17,805	17,818	17,872	17,919	17,868	17,817
K2-12	54,103	53,969	54,103	54,323	54,753	55,096	55,591	56,120	56,472	56,618

EXHIBIT 21



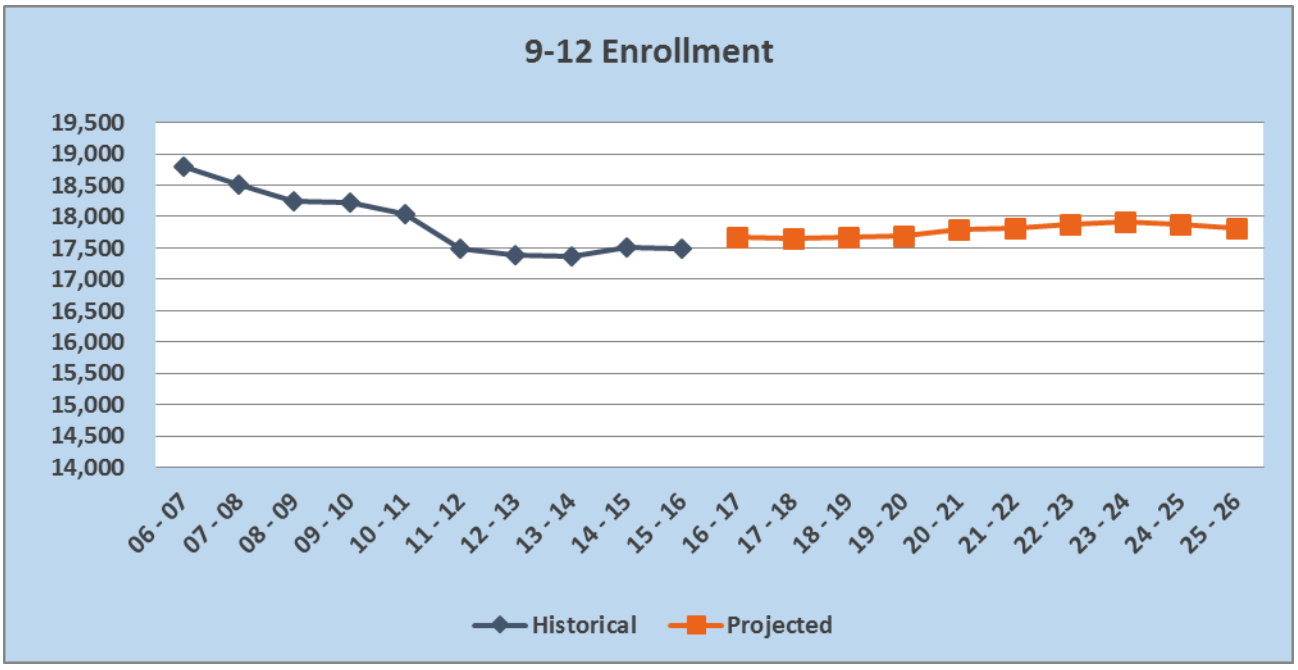
Source: MGT, 2016.

EXHIBIT 22



Source: MGT, 2016.

EXHIBIT 23



Source: MGT, 2016.

CONCLUSIONS, OBSERVATIONS AND NEXT STEPS

The demographic analysis shows the historical and ten-year potential school age population trends. The study also reveals where the children are based through Global Information System (GIS) mapping, as provided by BPS. The report highlights where particular populations, such as students with disabilities and English Language Learners, are most concentrated, providing BPS with insight into where program and space needs could be evolving across the district. The report will help BPS to locate particular populations of students, or to examine the addition of necessary seats in neighborhoods where there is overcrowding.

As described earlier, enrollment across the district is expected to grow at a rate of 2,515 students in the next ten years, or approximately 0.4 percent. As previously mentioned, this study points to a number of factors that are contributing to the modest enrollment growth. Those factors include:

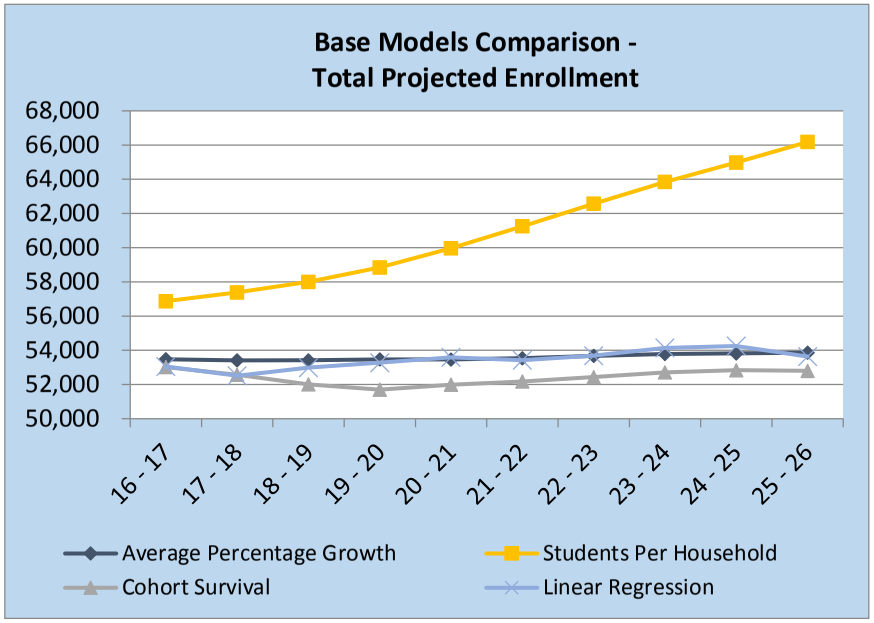
- An aging Boston population
- A relatively small increase in birth to age-5 population
- A reduction in the population segments ranging between 6-19 years of age
- A growth in charter school enrollment, which draw students away from district schools

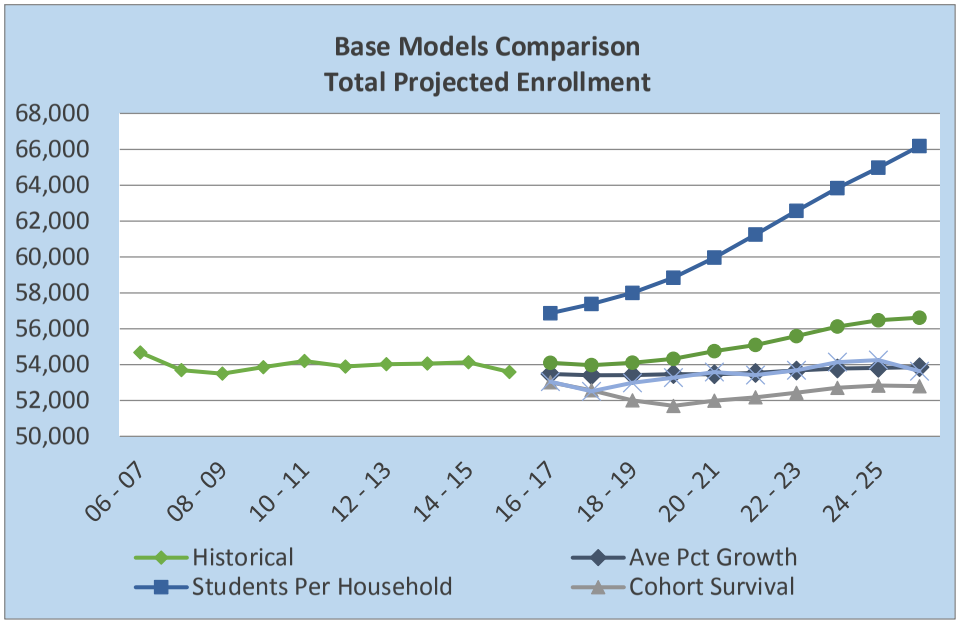
APPENDIX A

ENROLLMENT COMPARISON CHARTS

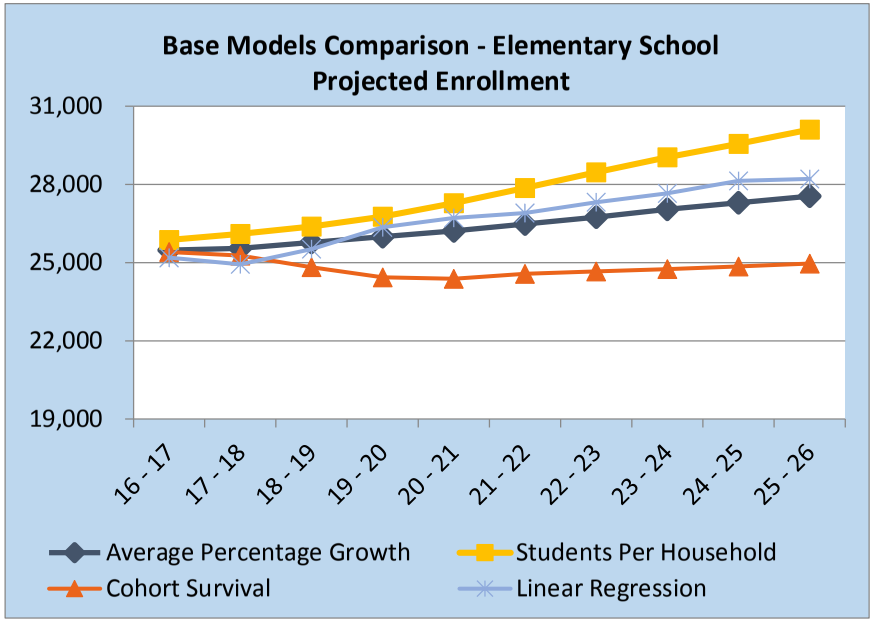
Enrollment Projection Models Comparison

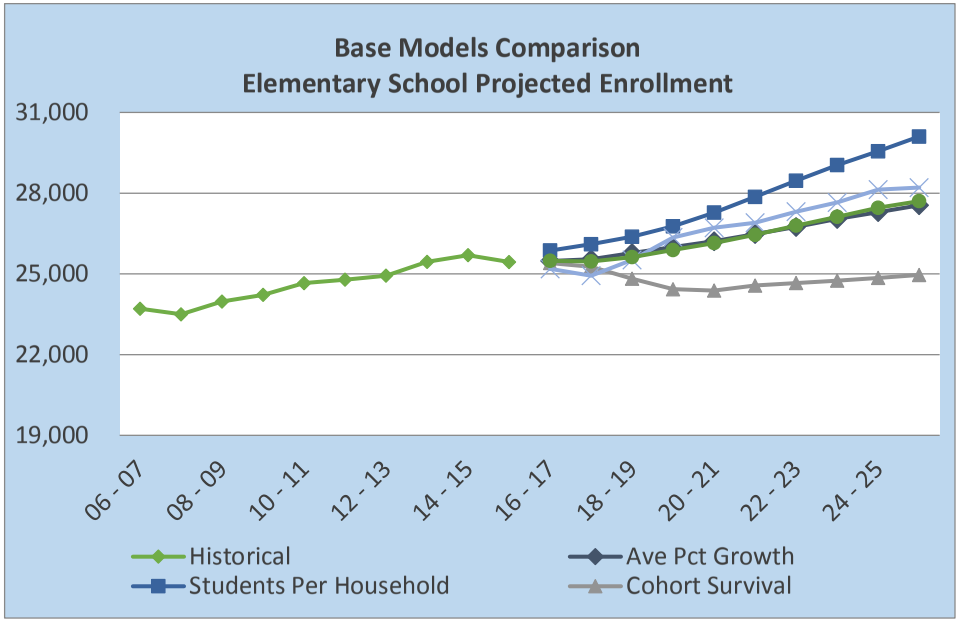
TOTAL PROJECTED ENROLLMENT											Analysis					
Model	16 - 17	17 - 18	18 - 19	19 - 20	20 - 21	21 - 22	22 - 23	23 - 24	24 - 25	25 - 26	Maximum	Minimum	Mean	Median	Change	% Change
Average Percentage Growth	53,475	53,411	53,418	53,470	53,465	53,540	53,672	53,786	53,818	53,859	53,859	53,411	53,591	53,507	384	0.72%
Students Per Household	56,867	57,381	57,998	58,844	59,967	61,250	62,570	63,843	64,979	66,181	66,181	56,867	60,988	60,608	9,313	16.38%
Cohort Survival	53,017	52,572	52,010	51,701	51,991	52,177	52,434	52,710	52,835	52,797	53,017	51,701	52,424	52,503	(220)	-0.41%
Linear Regression	53,052	52,513	52,987	53,276	53,589	53,419	53,686	54,141	54,255	53,636	54,255	52,513	53,455	53,504	584	1.10%



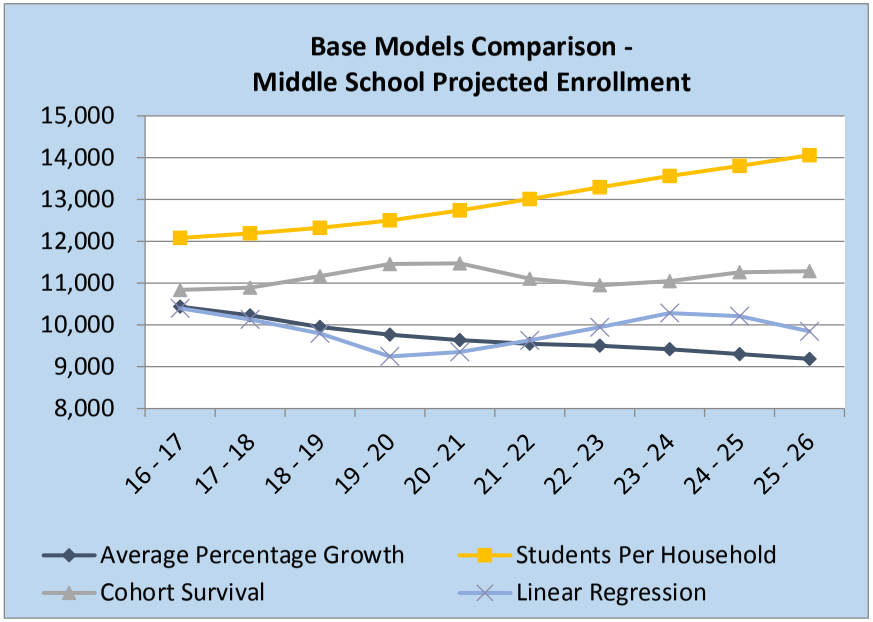


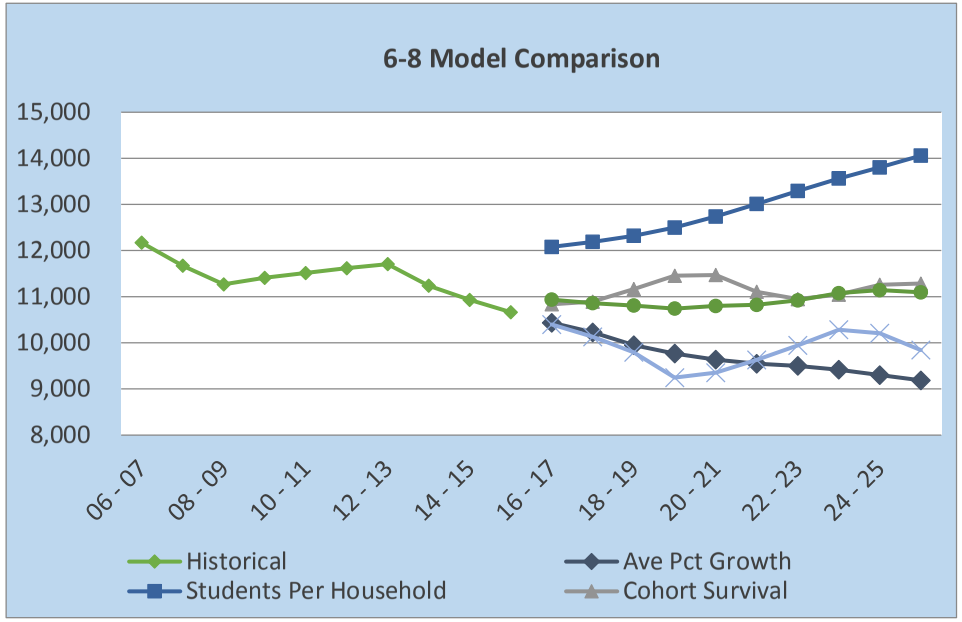
TOTAL PROJECTED ENROLLMENT											Analysis					
Model	**16 - 17**	**17 - 18**	**18 - 19**	**19 - 20**	**20 - 21**	**21 - 22**	**22 - 23**	**23 - 24**	**24 - 25**	**25 - 26**	**Maximum**	**Minimum**	**Mean**	**Median**	**Change**	**% Change**
Average Percentage Growth	25,483	25,547	25,777	25,998	26,216	26,482	26,746	27,045	27,297	27,552	27,552	25,483	26,414	26,349	2,068	8.12%
Students Per Household	25,870	26,104	26,385	26,769	27,280	27,864	28,465	29,043	29,560	30,107	30,107	25,870	27,745	27,572	4,237	16.38%
Cohort Survival	25,407	25,269	24,824	24,435	24,381	24,572	24,663	24,751	24,852	24,964	25,407	24,381	24,812	24,787	(443)	-1.74%
Linear Regression	25,190	24,936	25,520	26,357	26,717	26,904	27,316	27,658	28,136	28,209	28,209	24,936	26,694	26,811	3,019	11.99%



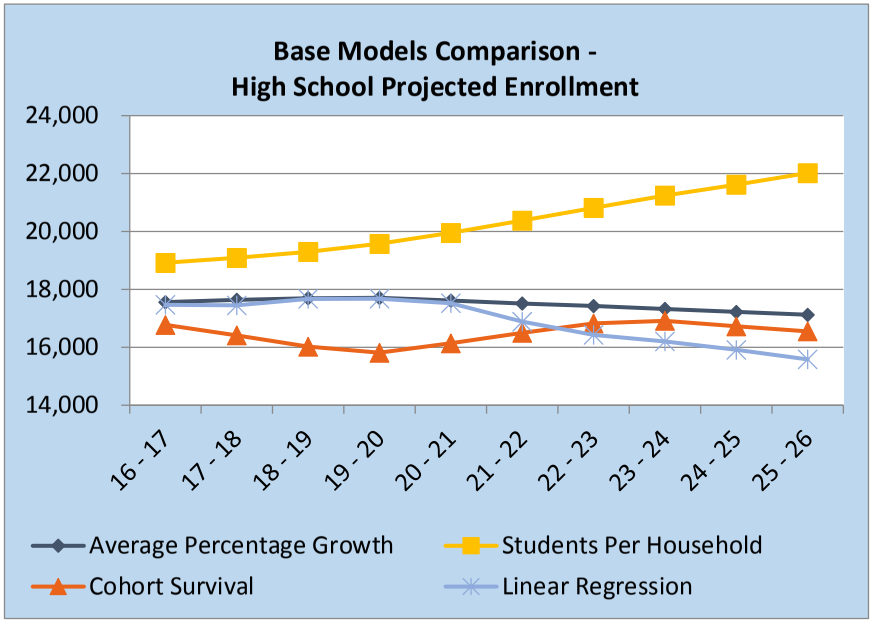


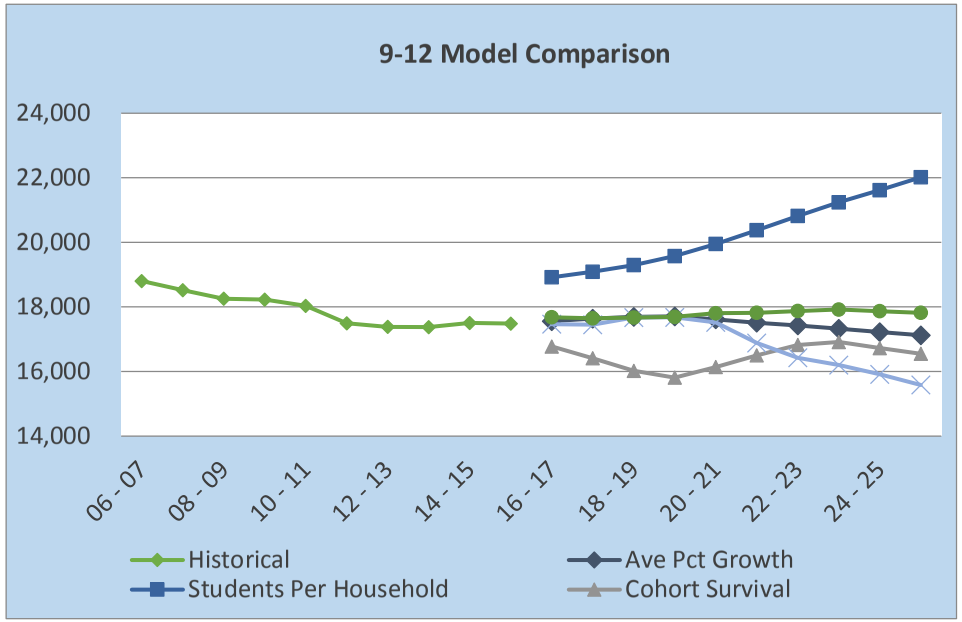
TOTAL PROJECTED ENROLLMENT											Analysis					
Model	**16 - 17**	**17 - 18**	**18 - 19**	**19 - 20**	**20 - 21**	**21 - 22**	**22 - 23**	**23 - 24**	**24 - 25**	**25 - 26**	**Maximum**	**Minimum**	**Mean**	**Median**	**Change**	**% Change**
Average Percentage Growth	10,435	10,227	9,949	9,766	9,635	9,547	9,501	9,416	9,300	9,186	10,435	9,186	9,696	9,591	(1,249)	-11.97%
Students Per Household	12,080	12,189	12,320	12,499	12,738	13,010	13,291	13,561	13,803	14,058	14,058	12,080	12,955	12,874	1,978	16.38%
Cohort Survival	10,836	10,892	11,165	11,455	11,470	11,106	10,948	11,045	11,259	11,285	11,470	10,836	11,146	11,136	449	4.14%
Linear Regression	10,396	10,129	9,795	9,244	9,352	9,630	9,944	10,283	10,208	9,844	10,396	9,244	9,882	9,894	(552)	-5.31%





TOTAL PROJECTED ENROLLMENT											Analysis					
Model	**16 - 17**	**17 - 18**	**18 - 19**	**19 - 20**	**20 - 21**	**21 - 22**	**22 - 23**	**23 - 24**	**24 - 25**	**25 - 26**	**Maximum**	**Minimum**	**Mean**	**Median**	**Change**	**% Change**
Average Percentage Growth	17,556	17,637	17,692	17,706	17,614	17,511	17,425	17,324	17,221	17,121	17,706	17,121	17,481	17,534	(435)	-2.48%
Students Per Household	18,918	19,088	19,294	19,575	19,949	20,376	20,815	21,238	21,616	22,016	22,016	18,918	20,288	20,162	3,098	16.38%
Cohort Survival	16,774	16,411	16,021	15,812	16,139	16,499	16,823	16,914	16,724	16,548	16,914	15,812	16,467	16,524	(226)	-1.35%
Linear Regression	17,466	17,448	17,672	17,675	17,520	16,885	16,426	16,201	15,911	15,583	17,675	15,583	16,879	17,166	(1,883)	-10.78%





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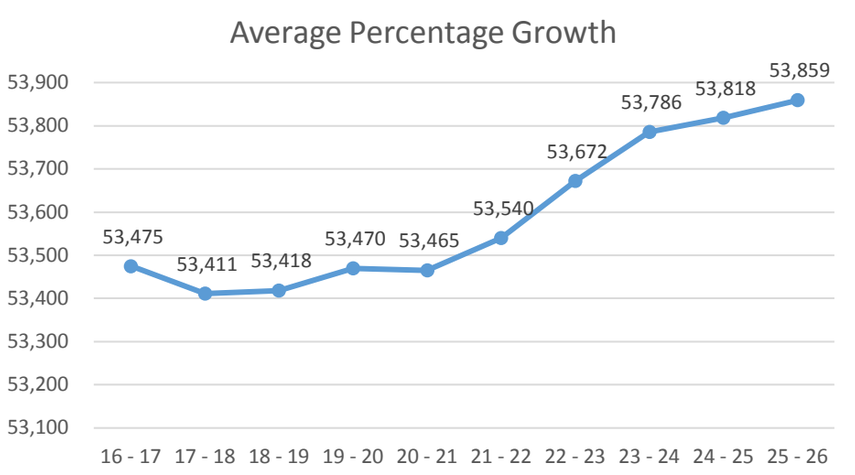
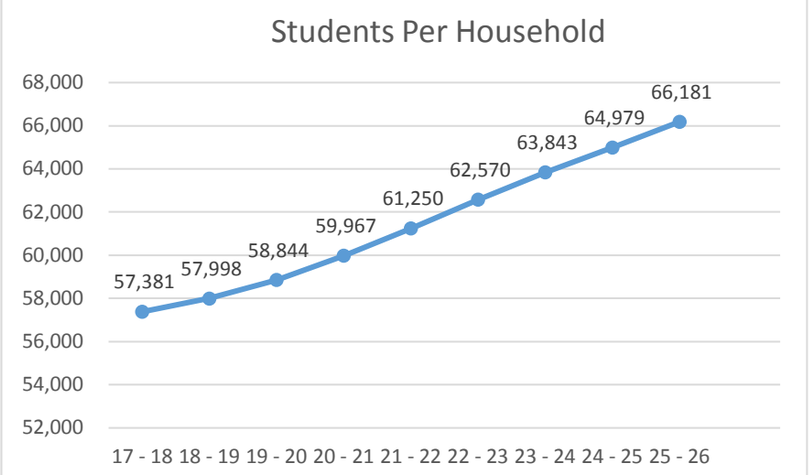
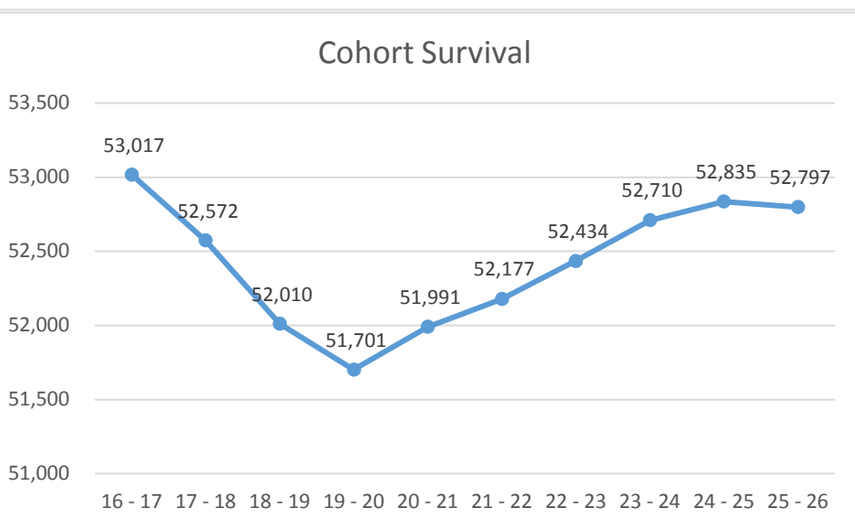
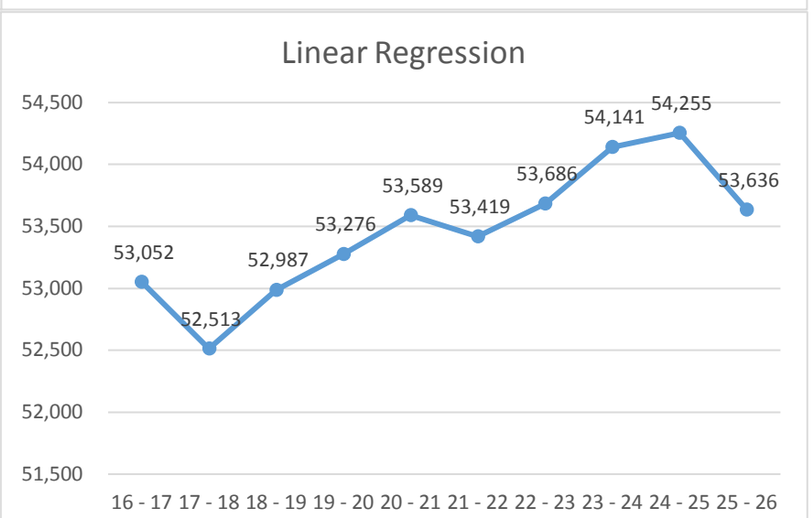
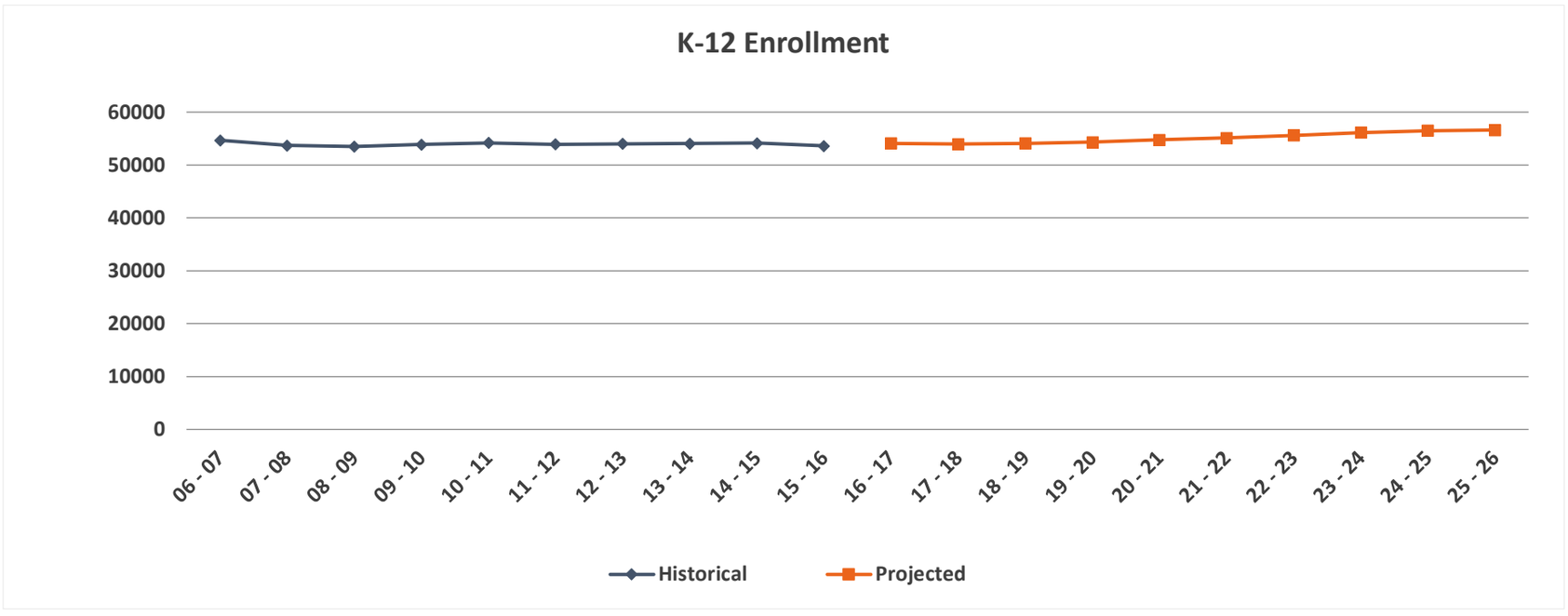
TOTAL PROJECTED ENROLLMENT	16 - 17	17 - 18	18 - 19	19 - 20	20 - 21	21 - 22	22 - 23	23 - 24	24 - 25	25 - 26
Average Percentage Growth	53,475	53,411	53,418	53,470	53,465	53,540	53,672	53,786	53,818	53,859
Students Per Household	56,867	57,381	57,998	58,844	59,967	61,250	62,570	63,843	64,979	66,181
Cohort Survival	53,017	52,572	52,010	51,701	51,991	52,177	52,434	52,710	52,835	52,797
Linear Regression	53,052	52,513	52,987	53,276	53,589	53,419	53,686	54,141	54,255	53,636

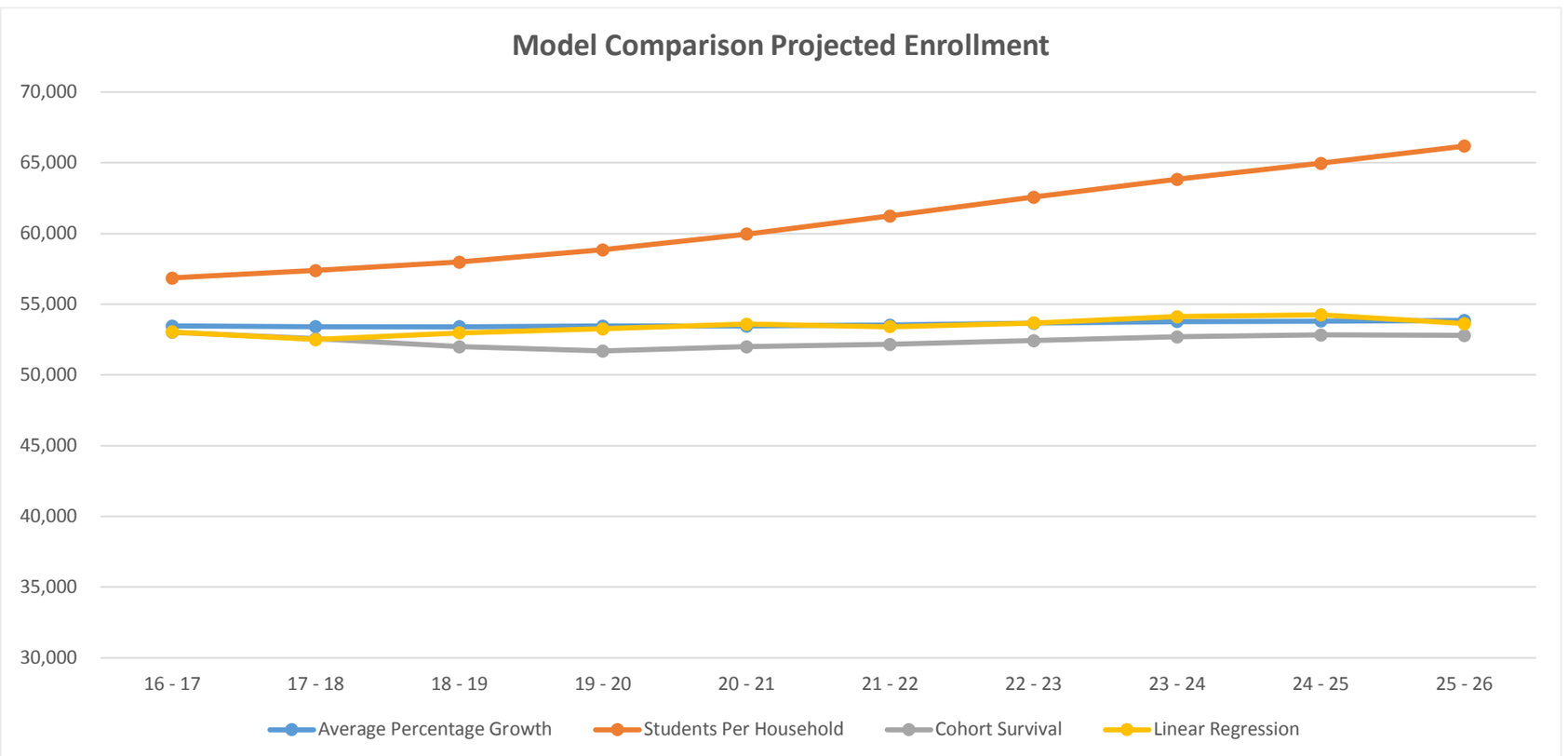






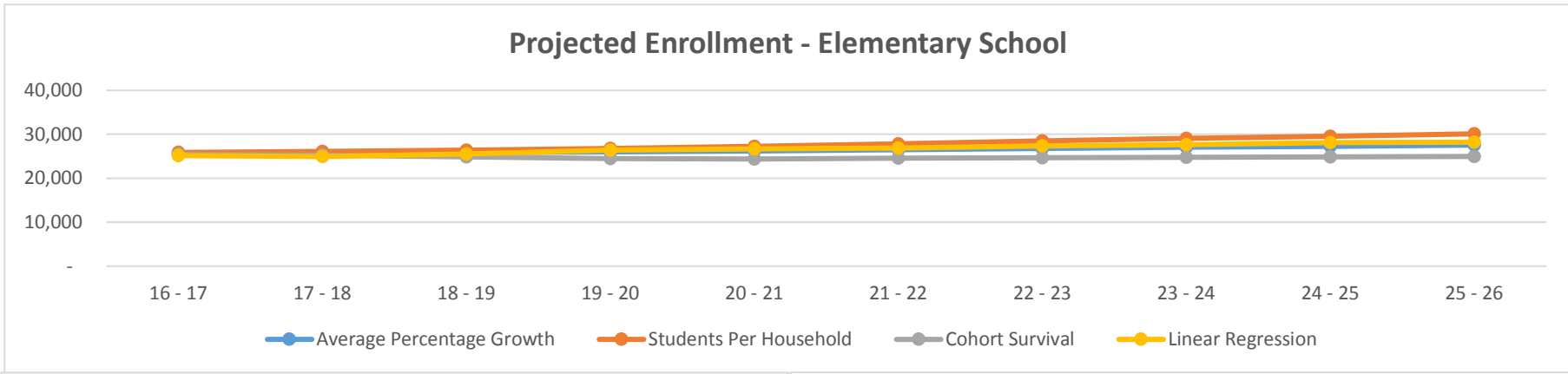


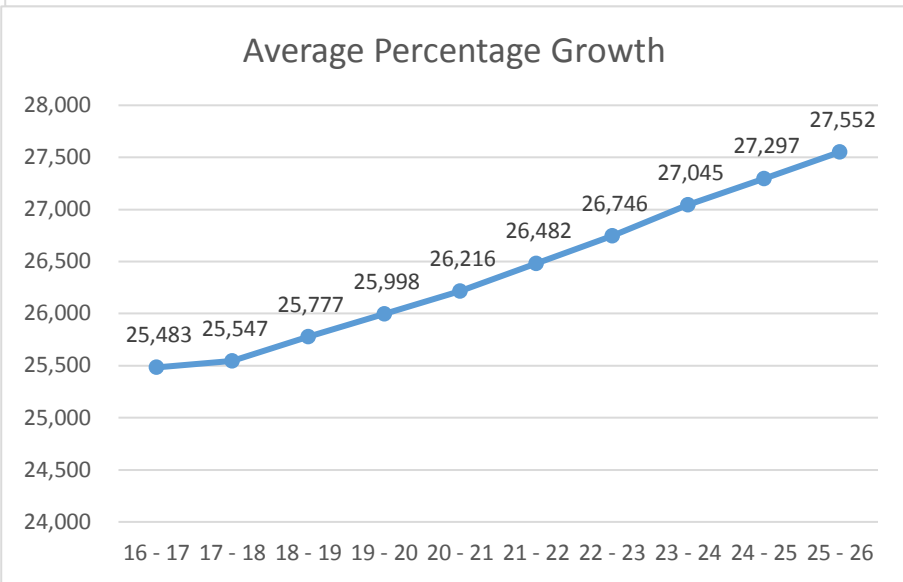


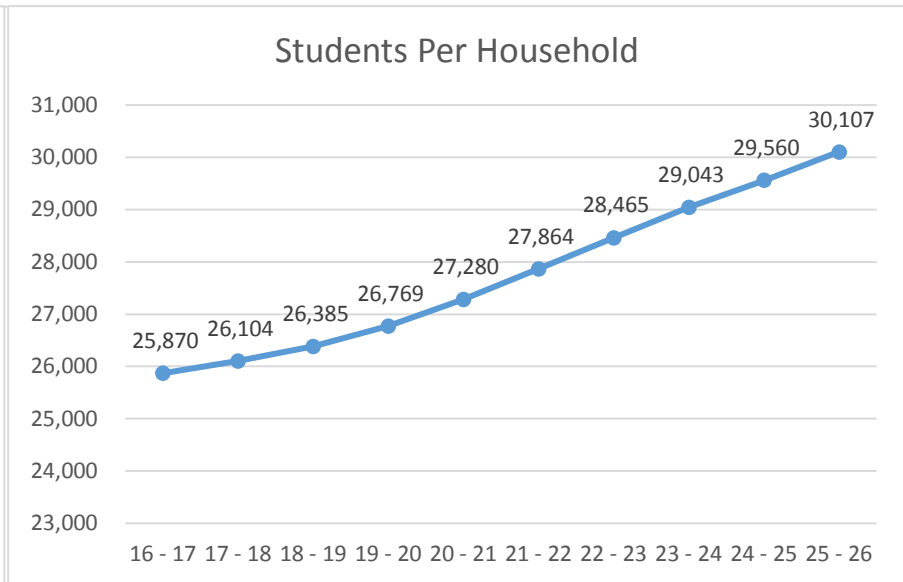


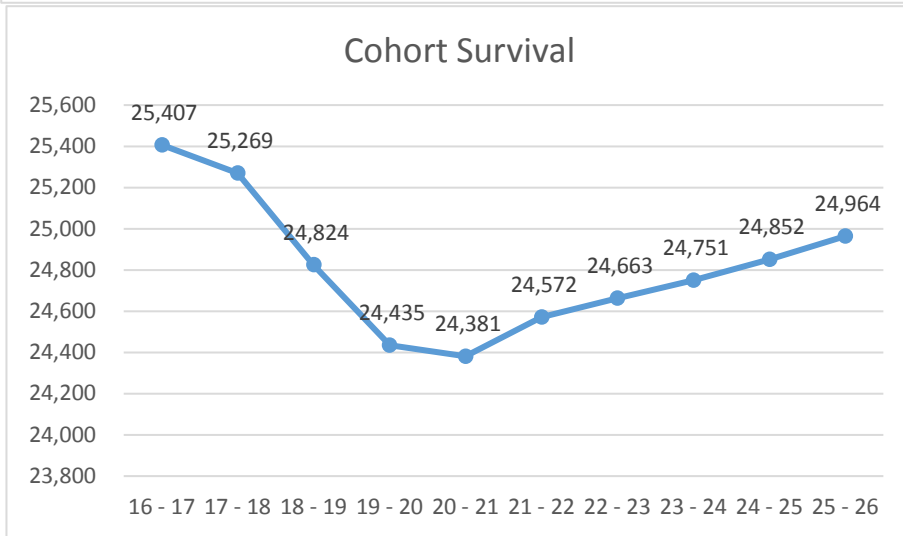
Projected Enrollment - Elementary School

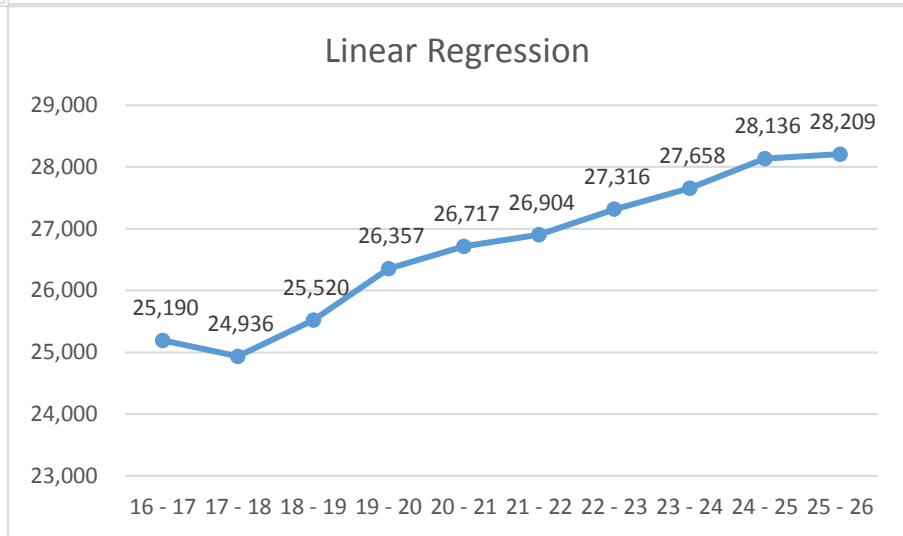
Model	16 - 17	17 - 18	18 - 19	19 - 20	20 - 21	21 - 22	22 - 23	23 - 24	24 - 25	25 - 26
Average Percentage Growth	25,483	25,547	25,777	25,998	26,216	26,482	26,746	27,045	27,297	27,552
Students Per Household	25,870	26,104	26,385	26,769	27,280	27,864	28,465	29,043	29,560	30,107
Cohort Survival	25,407	25,269	24,824	24,435	24,381	24,572	24,663	24,751	24,852	24,964
Linear Regression	25,190	24,936	25,520	26,357	26,717	26,904	27,316	27,658	28,136	28,209





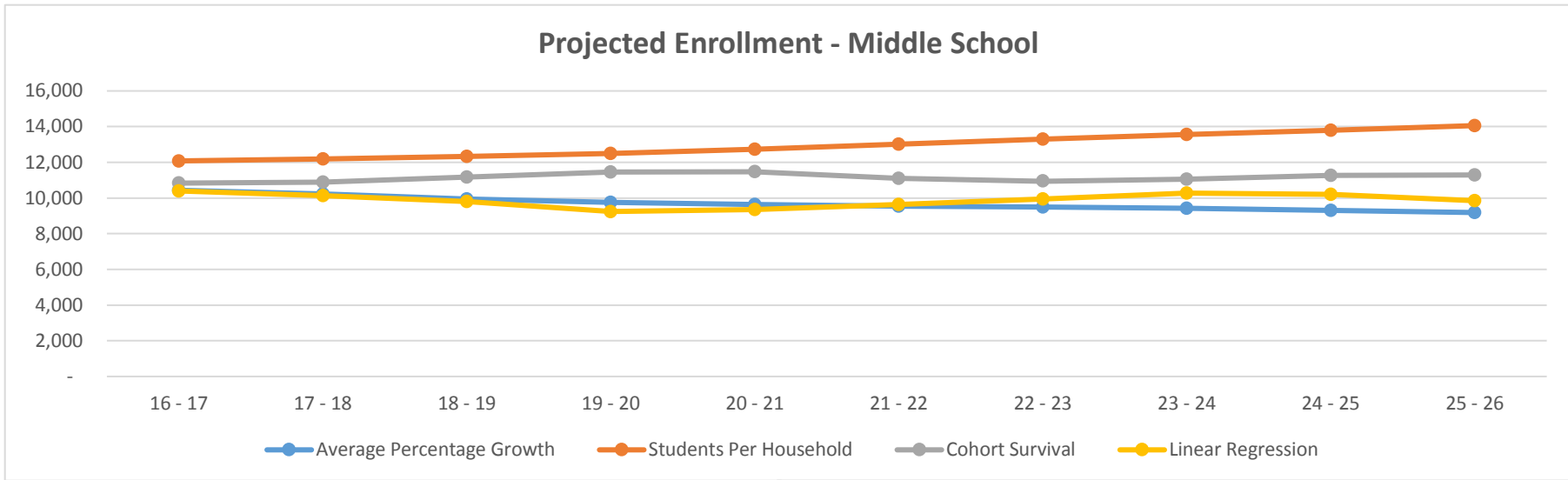


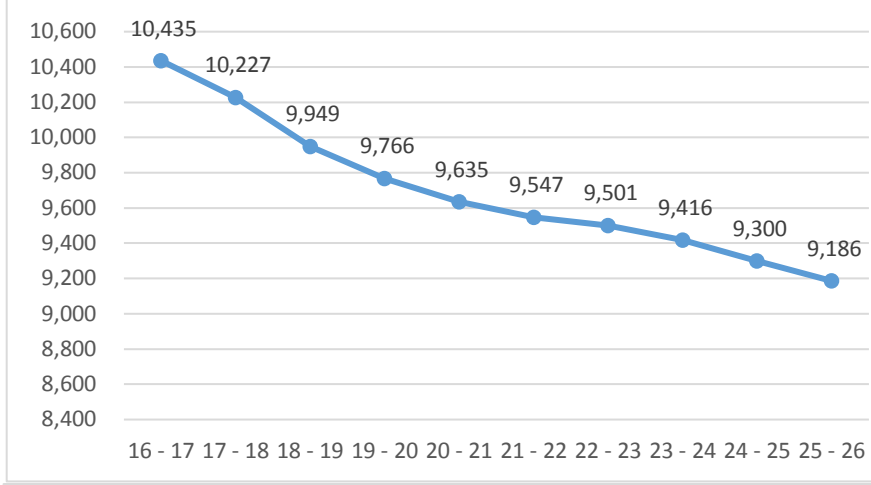


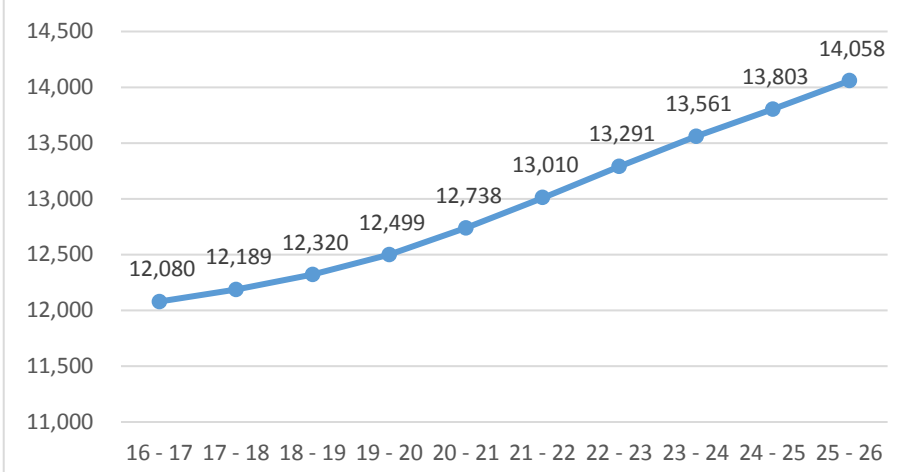


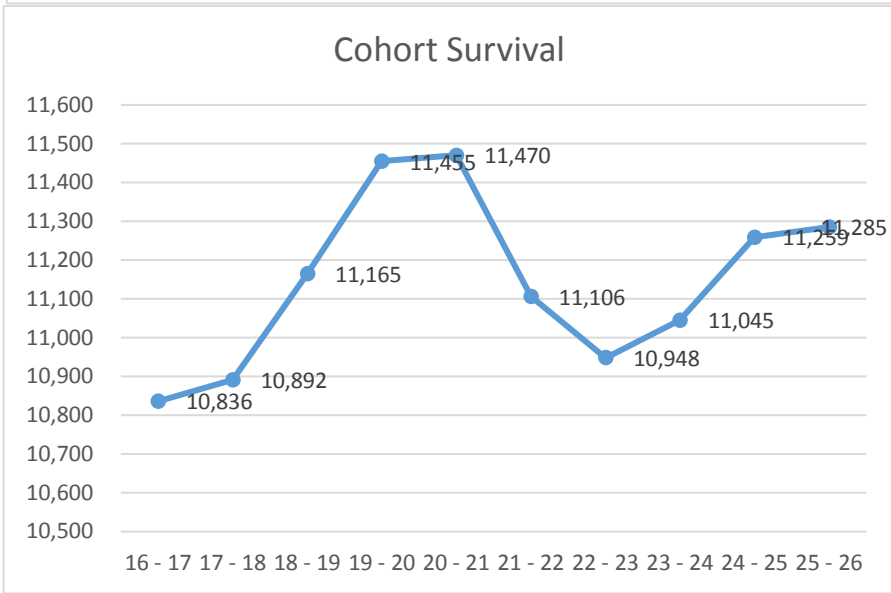
Projected Enrollment - Middle School

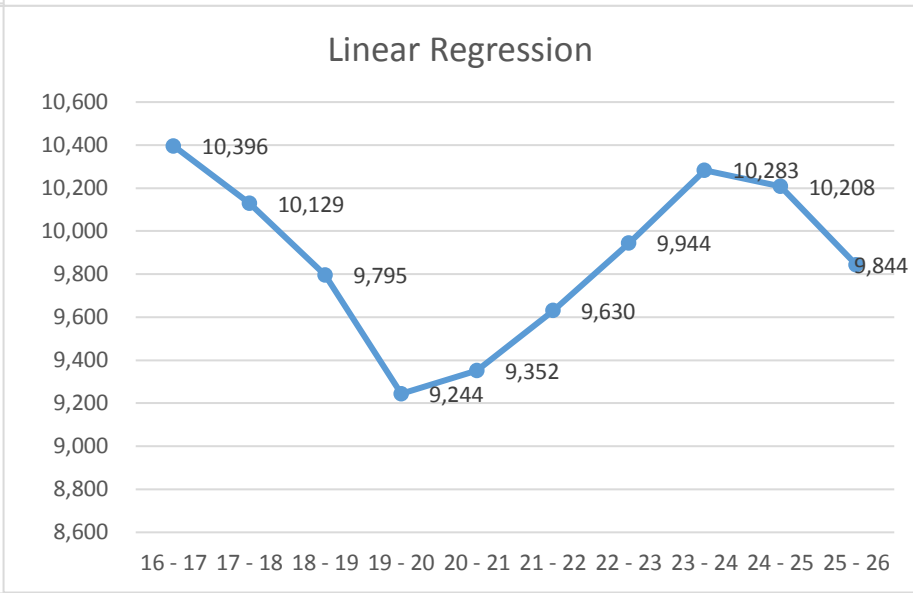
Model	16 - 17	17 - 18	18 - 19	19 - 20	20 - 21	21 - 22	22 - 23	23 - 24	24 - 25	25 - 26
Average Percentage Growth	10,435	10,227	9,949	9,766	9,635	9,547	9,501	9,416	9,300	9,186
Students Per Household	12,080	12,189	12,320	12,499	12,738	13,010	13,291	13,561	13,803	14,058
Cohort Survival	10,836	10,892	11,165	11,455	11,470	11,106	10,948	11,045	11,259	11,285
Linear Regression	10,396	10,129	9,795	9,244	9,352	9,630	9,944	10,283	10,208	9,844





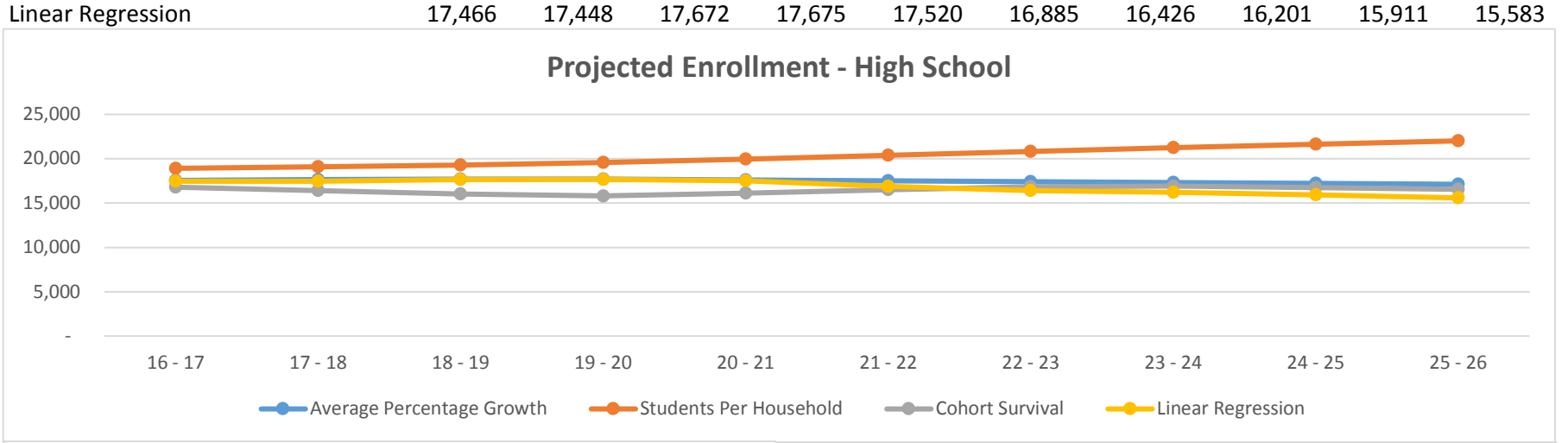


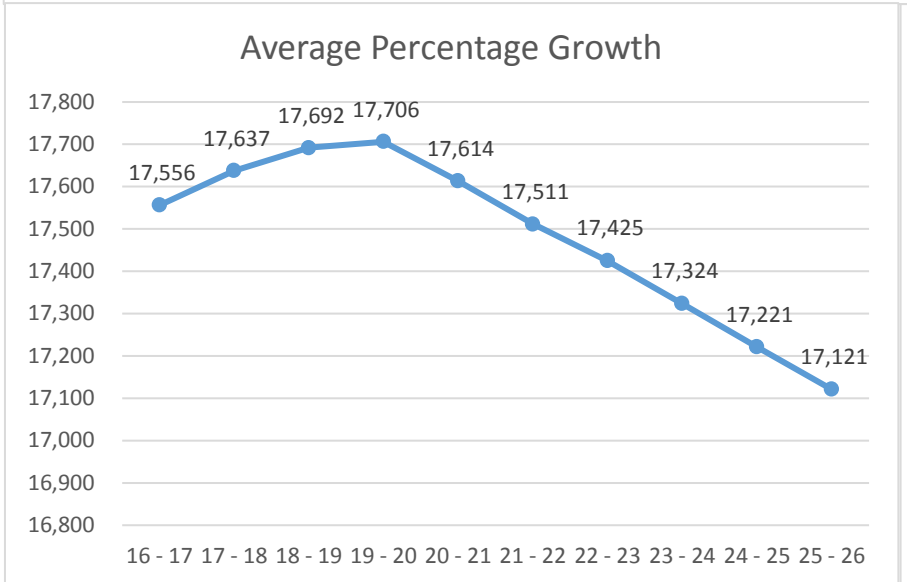


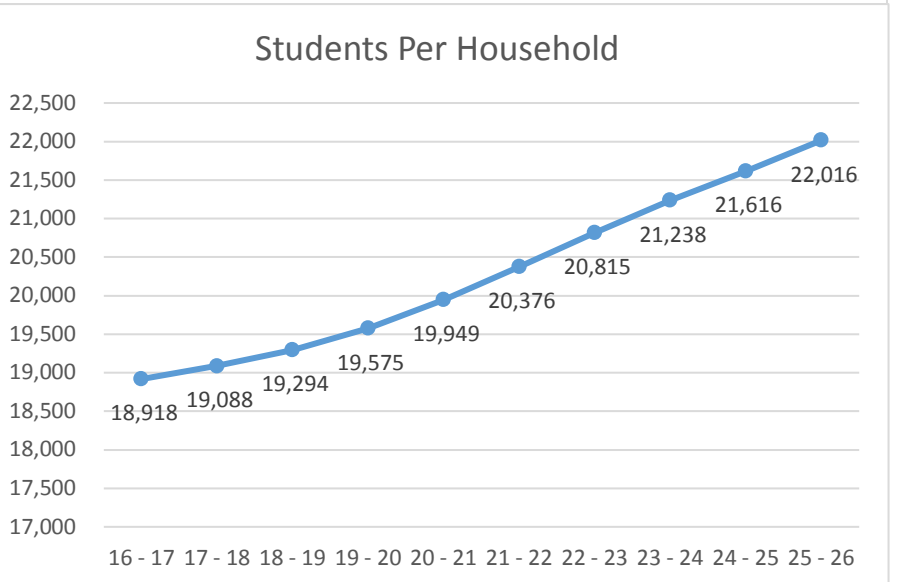


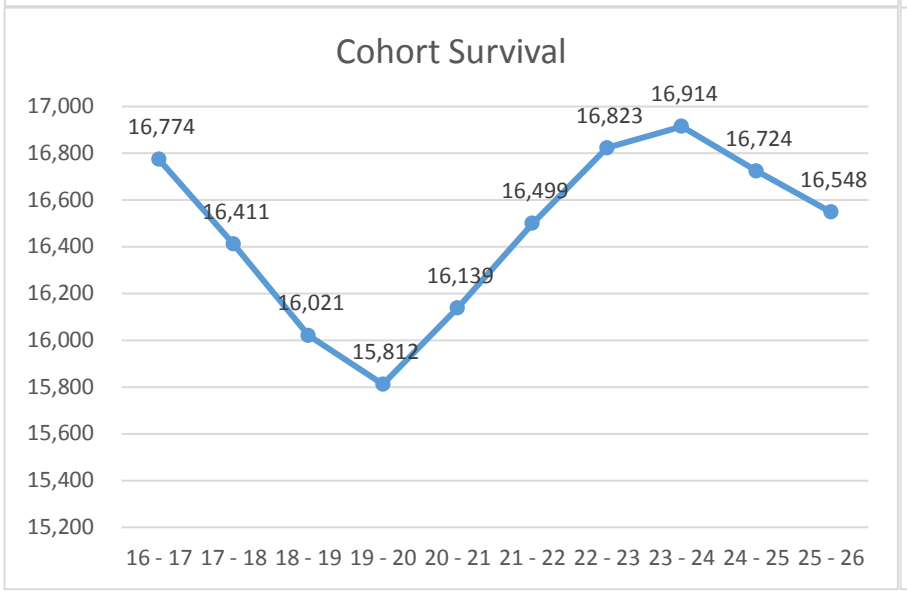
Projected Enrollment - High School

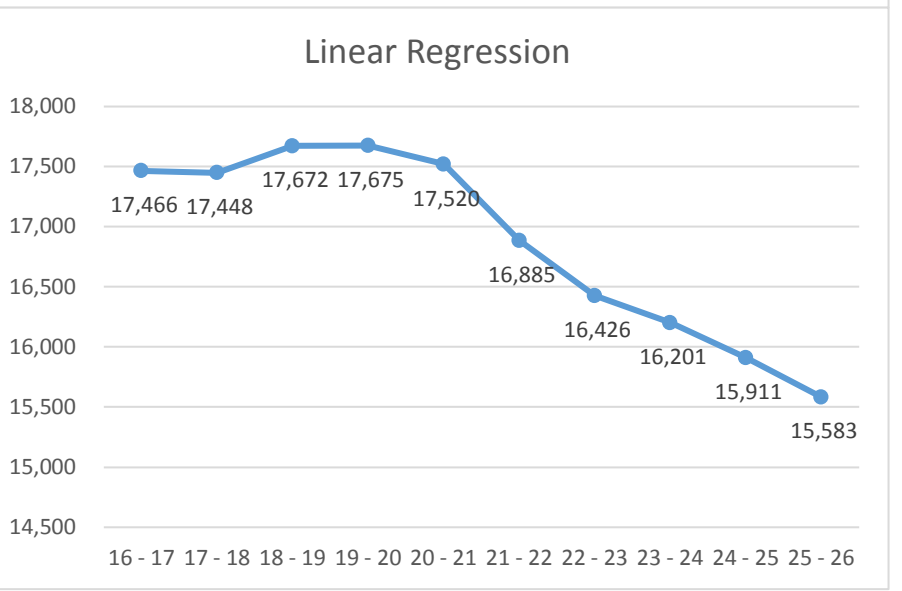
Model	16 - 17	17 - 18	18 - 19	19 - 20	20 - 21	21 - 22	22 - 23	23 - 24	24 - 25	25 - 26
Average Percentage Growth	17,556	17,637	17,692	17,706	17,614	17,511	17,425	17,324	17,221	17,121
Students Per Household	18,918	19,088	19,294	19,575	19,949	20,376	20,815	21,238	21,616	22,016
Cohort Survival	16,774	16,411	16,021	15,812	16,139	16,499	16,823	16,914	16,724	16,548
Linear Regression	17,466	17,448	17,672	17,675	17,520	16,885	16,426	16,201	15,911	15,583



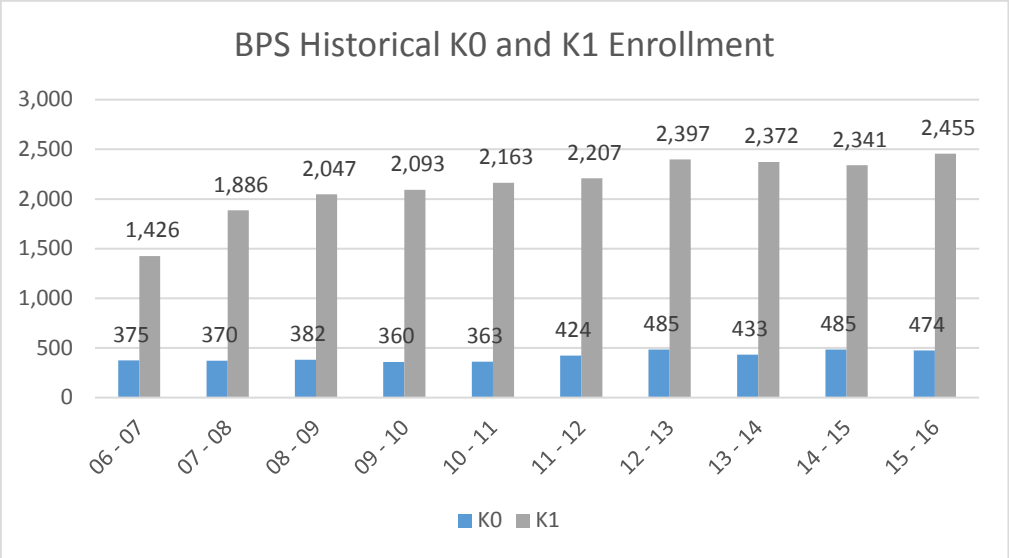


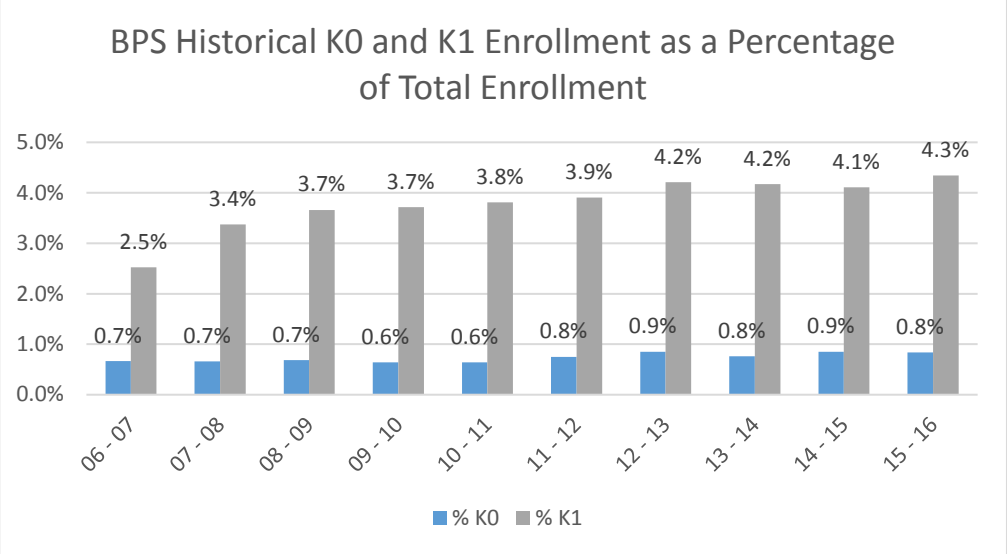






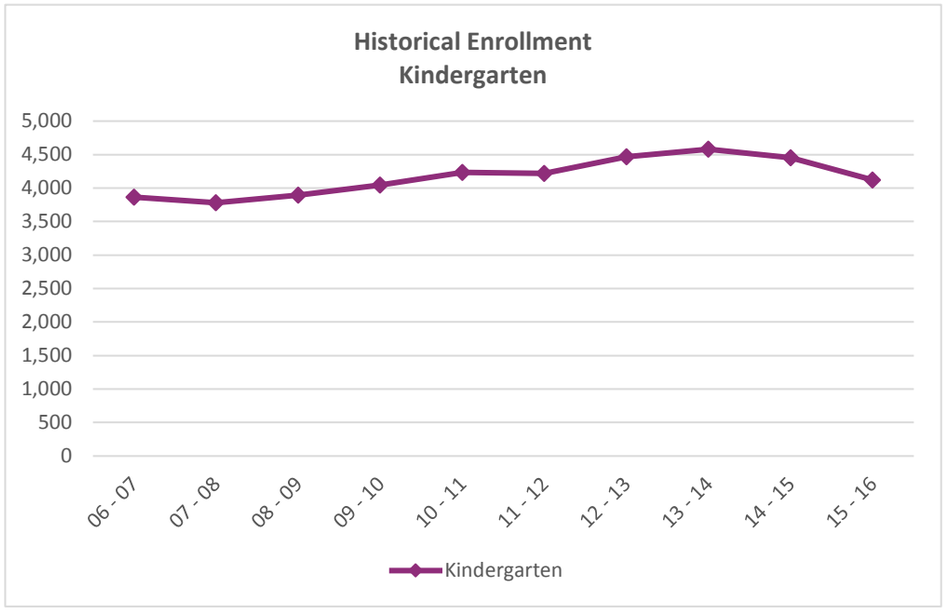
Year	K0	K1	% K0	% K1	Totals wPK	Totalw/o PK
06 - 07	375	1,426	0.7%	2.5%	56,479	54,678
07 - 08	370	1,886	0.7%	3.4%	55,949	53,693
08 - 09	382	2,047	0.7%	3.7%	55,927	53,498
09 - 10	360	2,093	0.6%	3.7%	56,311	53,858
10 - 11	363	2,163	0.6%	3.8%	56,731	54,205
11 - 12	424	2,207	0.8%	3.9%	56,526	53,895
12 - 13	485	2,397	0.9%	4.2%	56,905	54,023
13 - 14	433	2,372	0.8%	4.2%	56,866	54,061
14 - 15	485	2,341	0.9%	4.1%	56,956	54,130
15 - 16	474	2,455	0.8%	4.3%	56,520	53,591
10 yr ave	*415*	*2,139*	*0.7%*	*3.8%*	*56,517*	
5 yr ave	*460*	*2,354*	*0.8%*	*4.1%*	*56,755*	
3 yr ave	*464*	*2,389*	*0.8%*	*4.2%*	*56,781*	

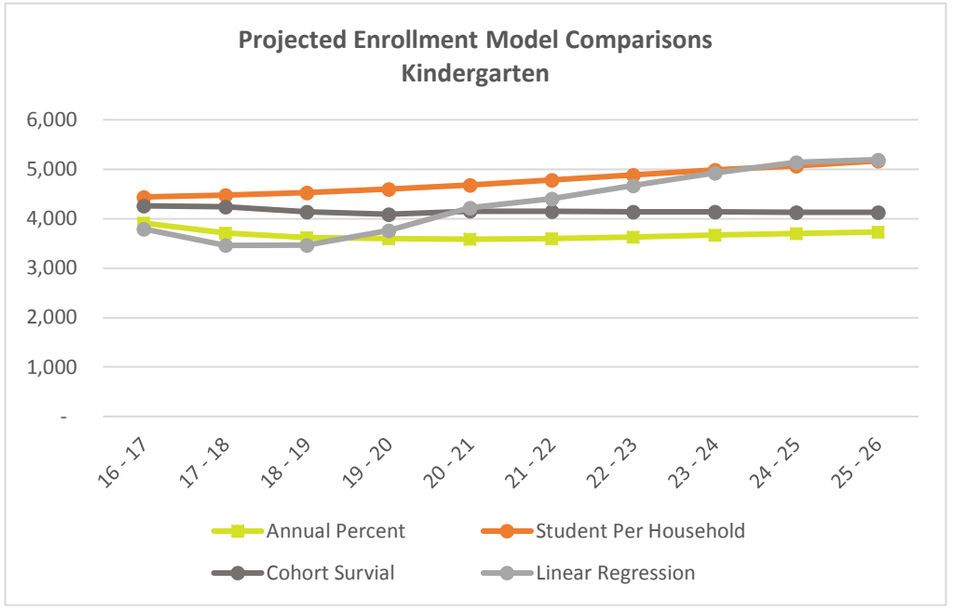


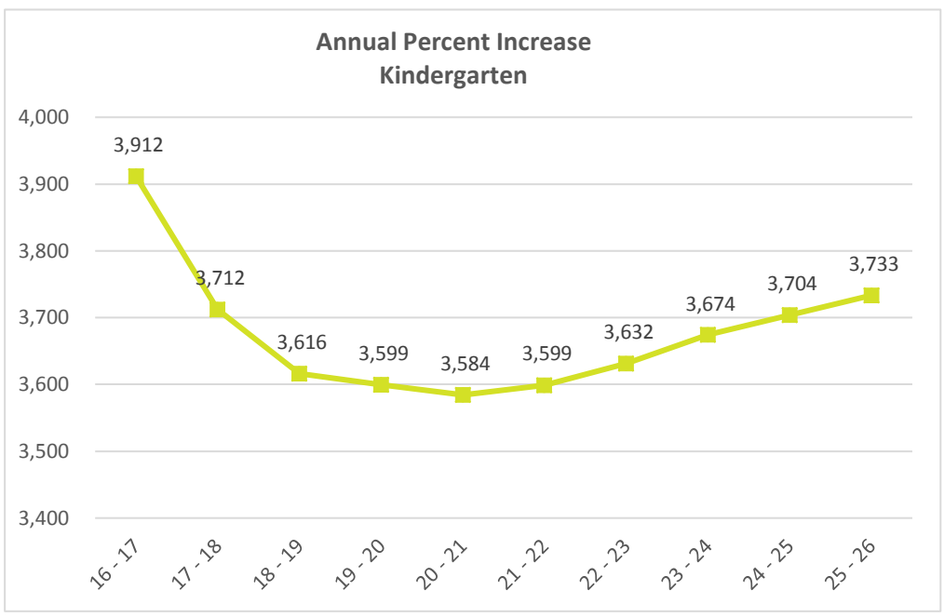


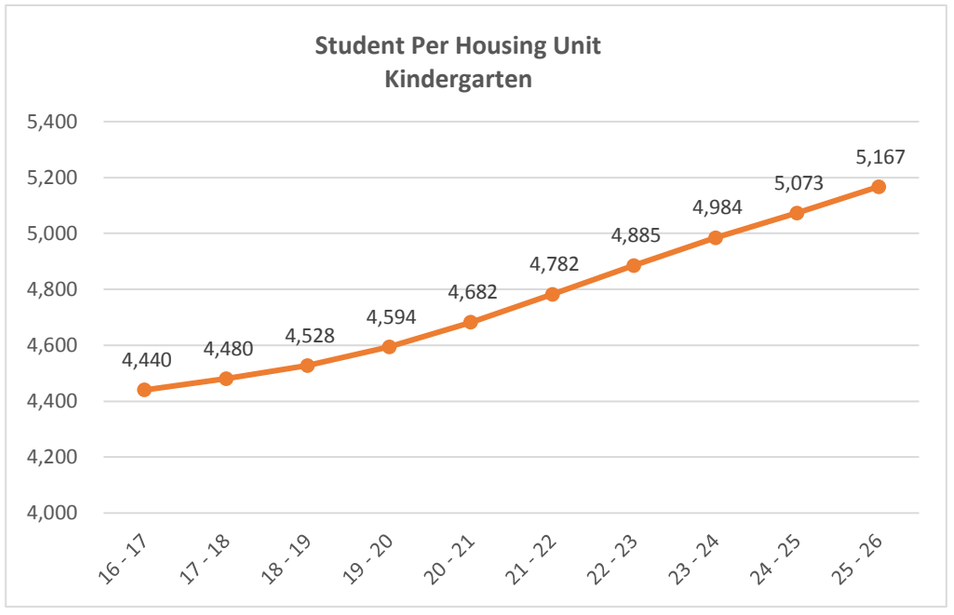
Kindergarten	16 - 17	17 - 18	18 - 19	19 - 20	20 - 21	21 - 22	22 - 23	23 - 24	24 - 25	25 - 26
Annual Percent	3,912	3,712	3,616	3,599	3,584	3,599	3,632	3,674	3,704	3,733
Student Per Household	4,440	4,480	4,528	4,594	4,682	4,782	4,885	4,984	5,073	5,167
Cohort Survial	4,260	4,244	4,139	4,089	4,154	4,149	4,143	4,137	4,132	4,126
Linear Regression	3,791	3,460	3,469	3,761	4,219	4,409	4,670	4,924	5,140	5,194

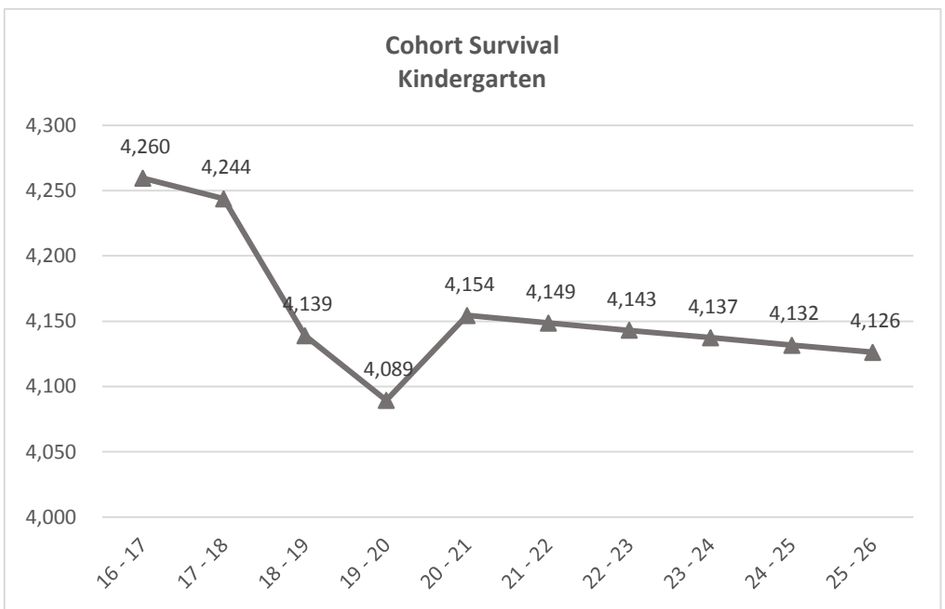
	06 - 07	07 - 08	08 - 09	09 - 10	10 - 11	11 - 12	12 - 13	13 - 14	14 - 15	15 - 16
Kindergarten	3865	3781	3897	4047	4232	4220	4471	4580	4453	4122

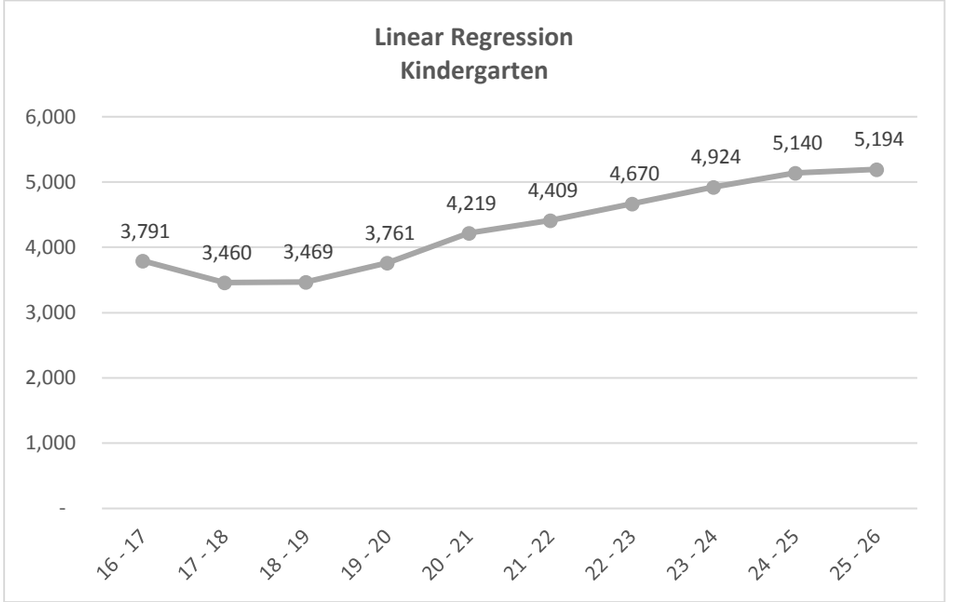






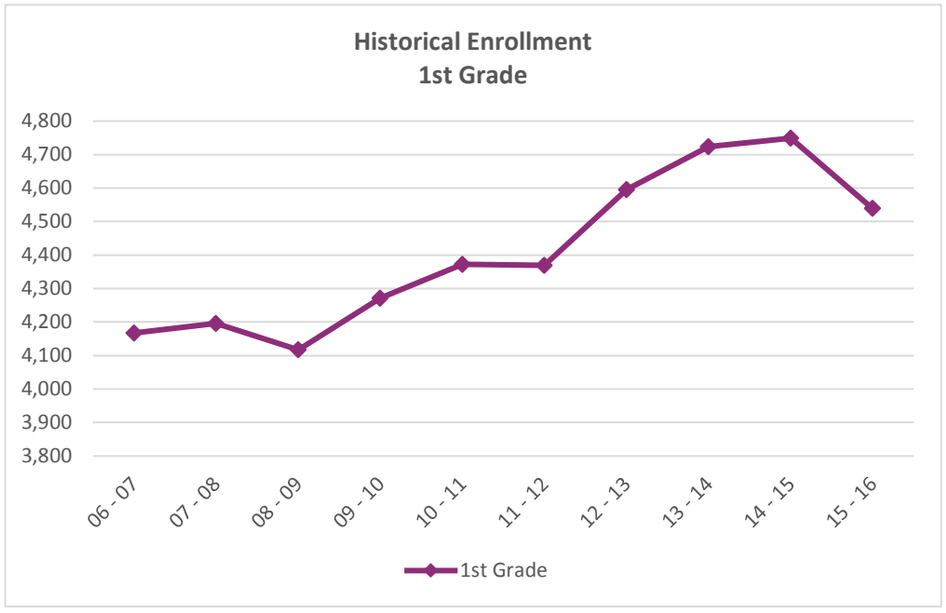


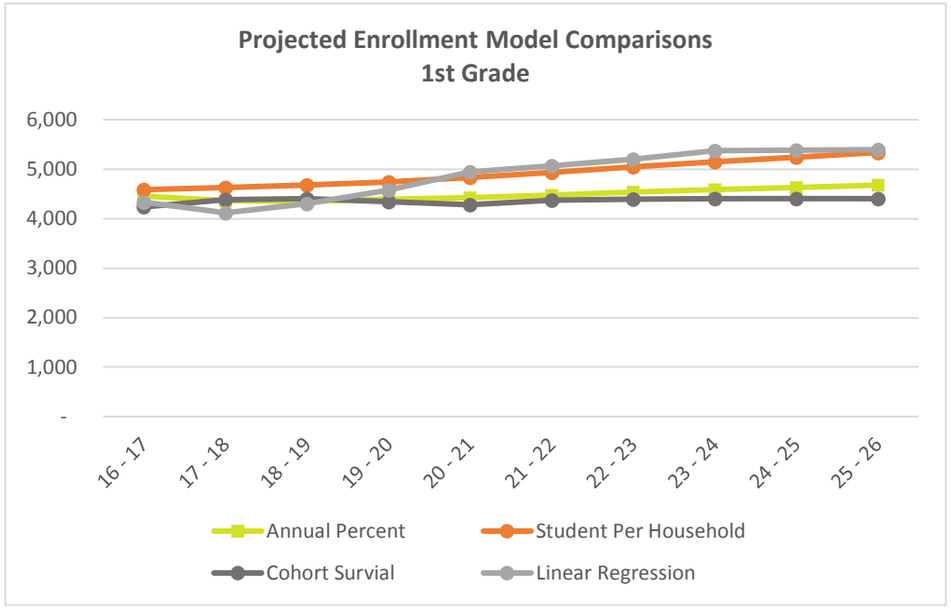


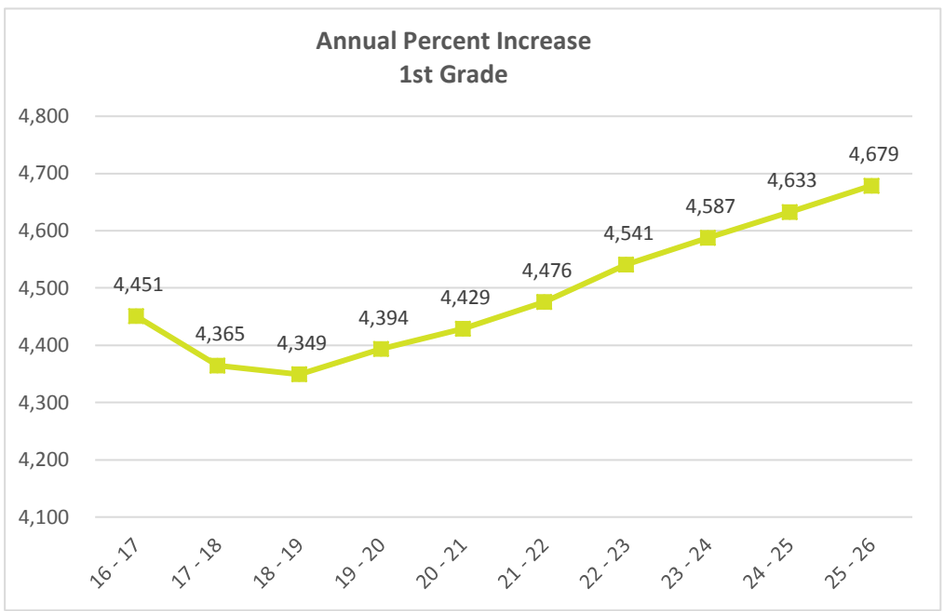


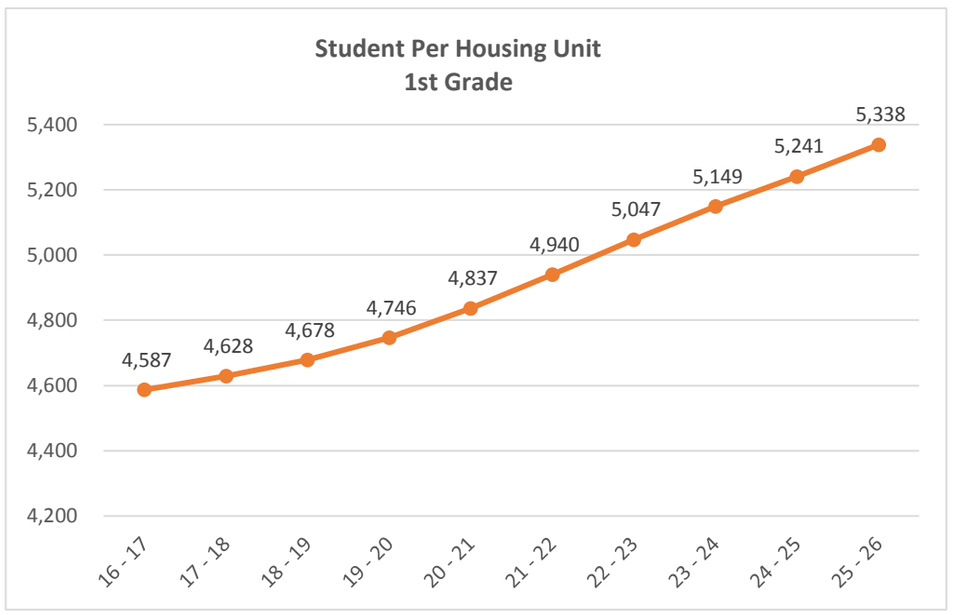
1st Grade	16 - 17	17 - 18	18 - 19	19 - 20	20 - 21	21 - 22	22 - 23	23 - 24	24 - 25	25 - 26
Annual Percent	4,451	4,365	4,349	4,394	4,429	4,476	4,541	4,587	4,633	4,679
Student Per Household	4,587	4,628	4,678	4,746	4,837	4,940	5,047	5,149	5,241	5,338
Cohort Survial	4,238	4,379	4,403	4,348	4,281	4,372	4,392	4,402	4,406	4,400
Linear Regression	4,329	4,119	4,302	4,573	4,941	5,069	5,199	5,373	5,389	5,395

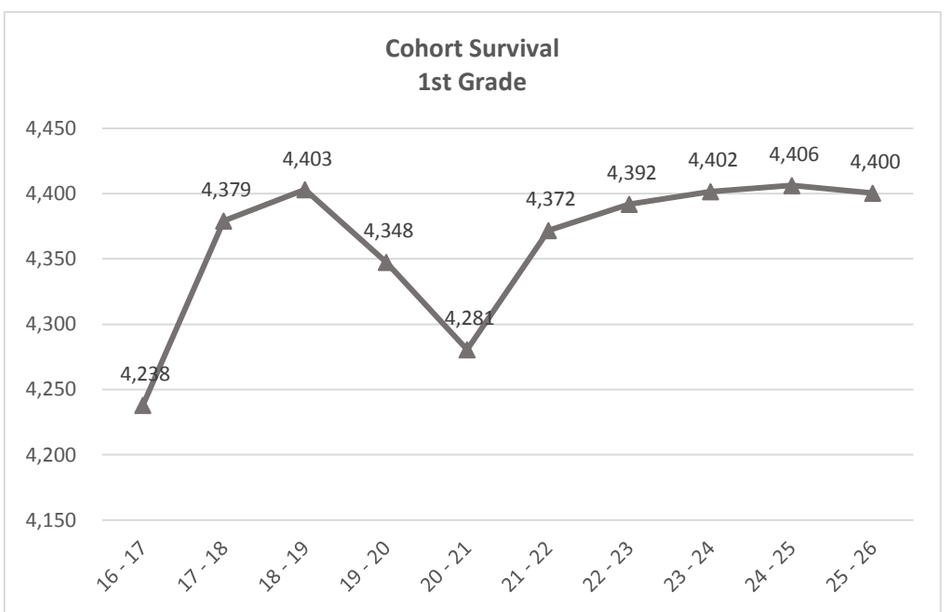
	06 - 07	07 - 08	08 - 09	09 - 10	10 - 11	11 - 12	12 - 13	13 - 14	14 - 15	15 - 16
1st Grade	4167	4196	4117	4272	4372	4369	4595	4723	4749	4539

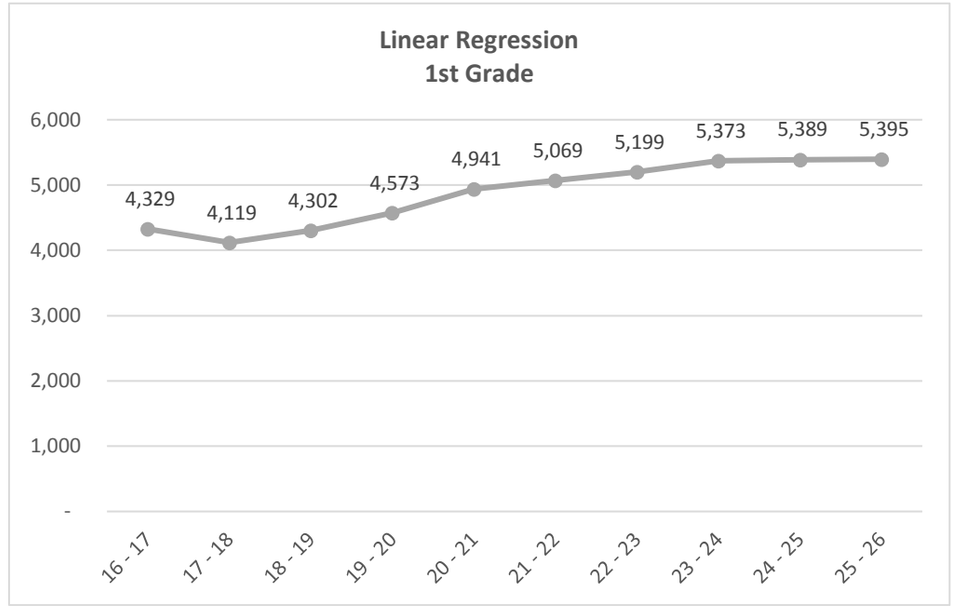






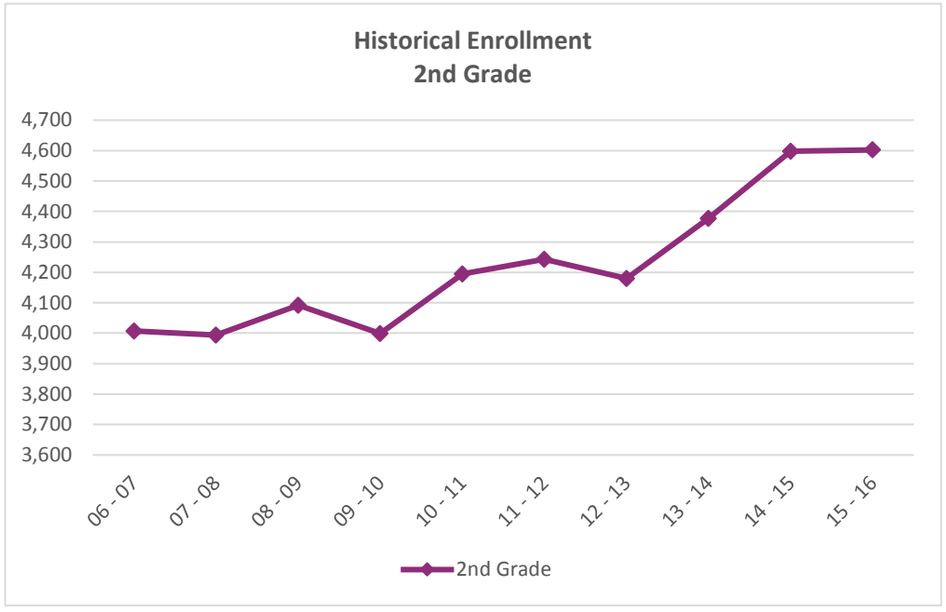


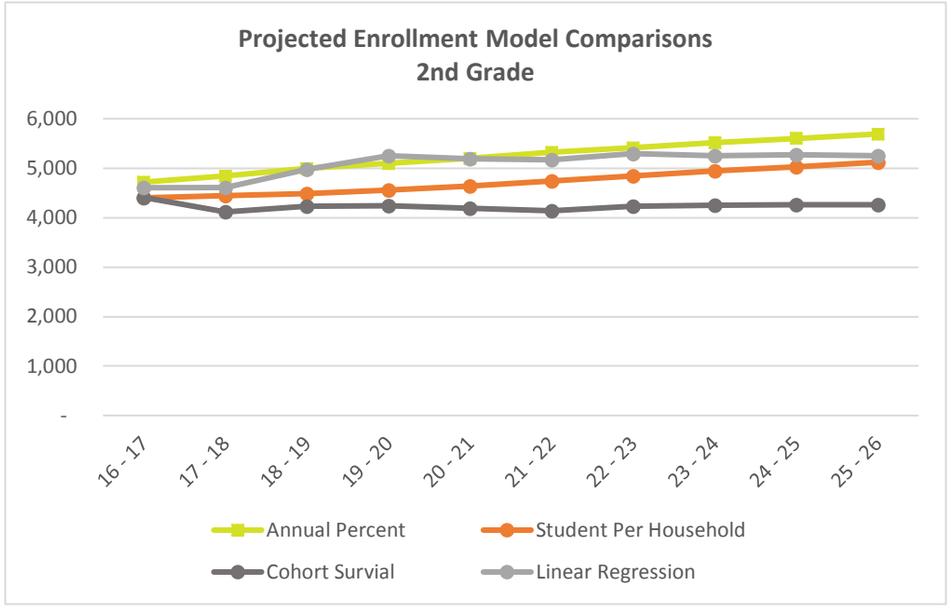


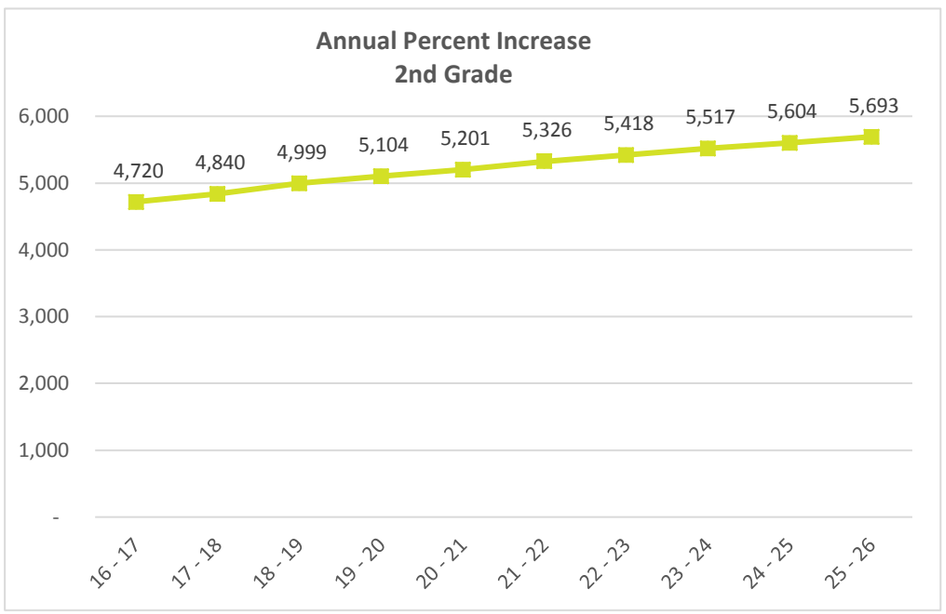


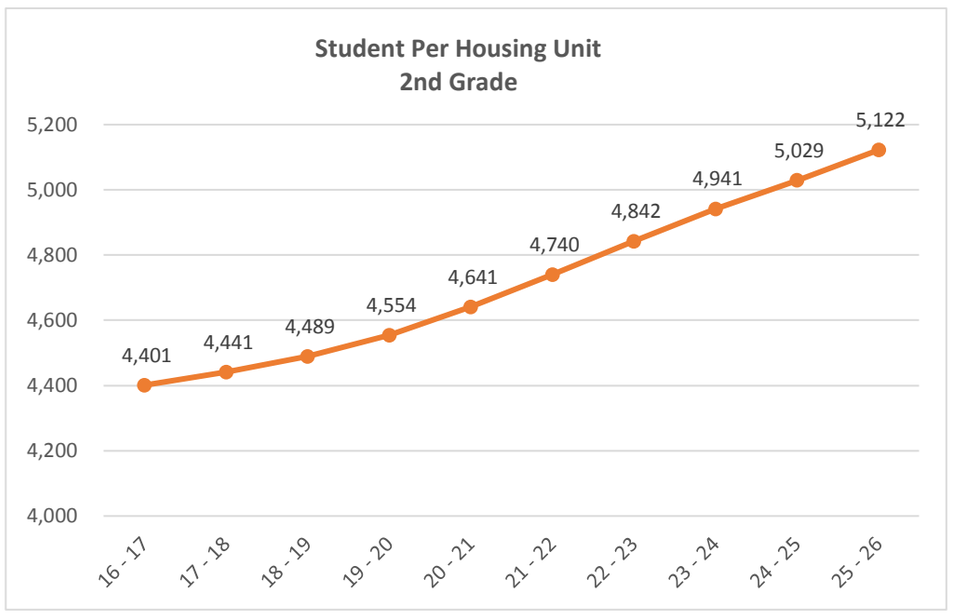
2nd Grade	16 - 17	17 - 18	18 - 19	19 - 20	20 - 21	21 - 22	22 - 23	23 - 24	24 - 25	25 - 26
Annual Percent	4,720	4,840	4,999	5,104	5,201	5,326	5,418	5,517	5,604	5,693
Student Per Household	4,401	4,441	4,489	4,554	4,641	4,740	4,842	4,941	5,029	5,122
Cohort Survial	4,409	4,116	4,227	4,240	4,193	4,141	4,232	4,255	4,260	4,264
Linear Regression	4,606	4,610	4,974	5,257	5,195	5,167	5,296	5,251	5,270	5,249

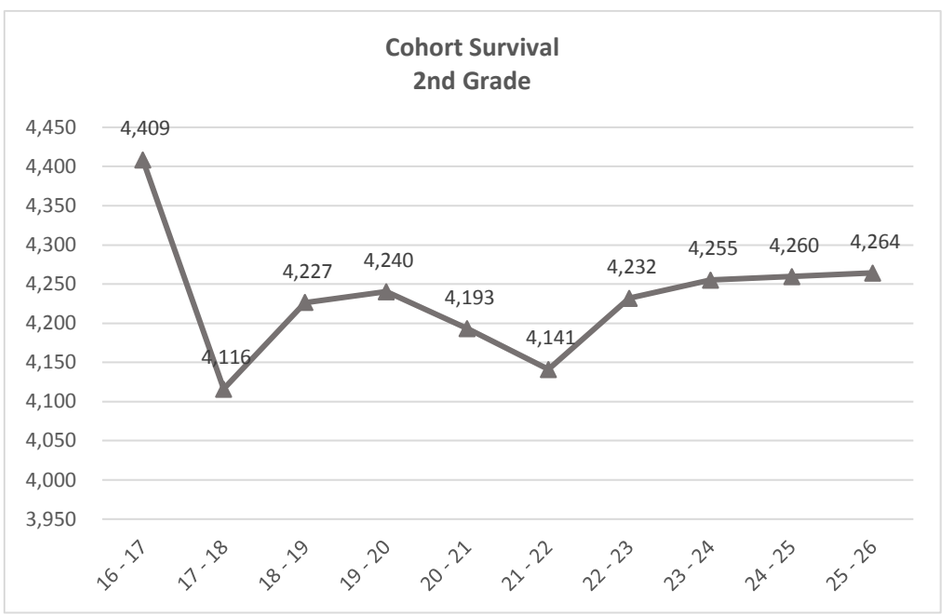
	06 - 07	07 - 08	08 - 09	09 - 10	10 - 11	11 - 12	12 - 13	13 - 14	14 - 15	15 - 16
2nd Grade	4007	3994	4092	3999	4195	4243	4180	4378	4598	4602

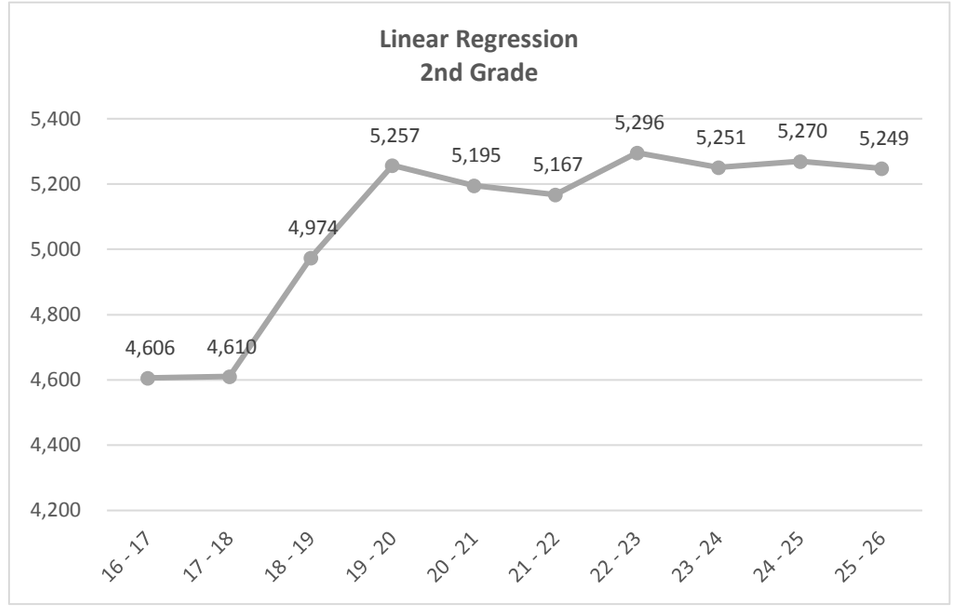






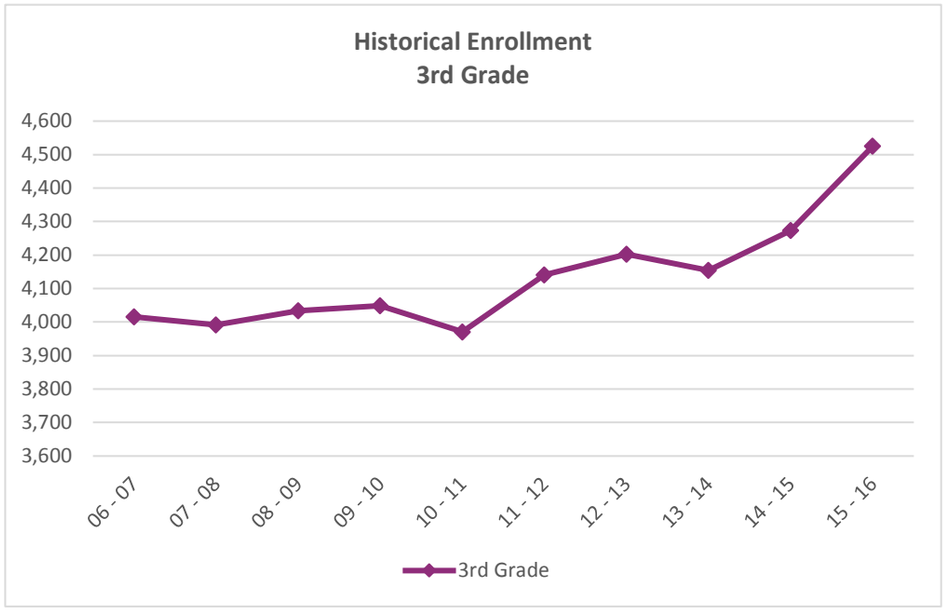


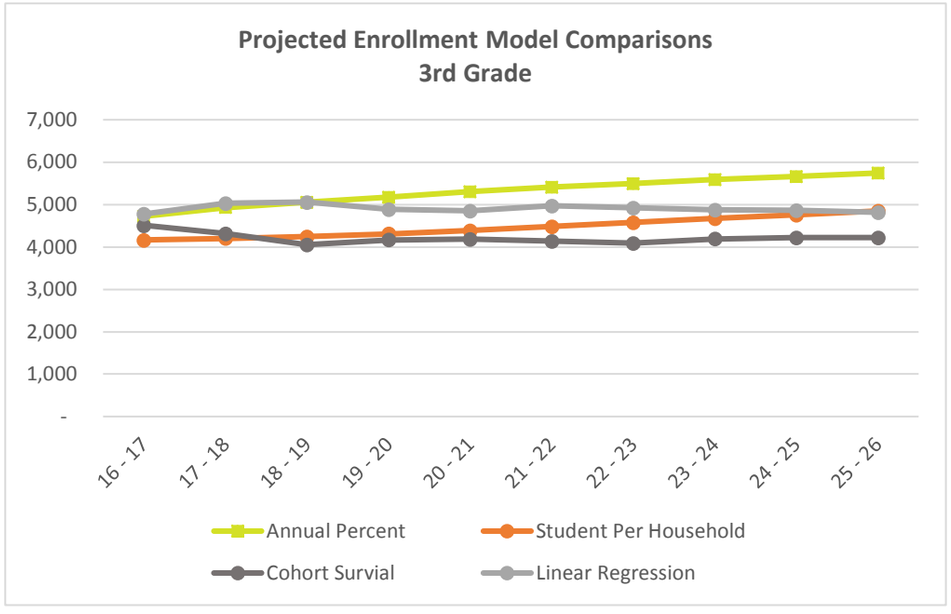


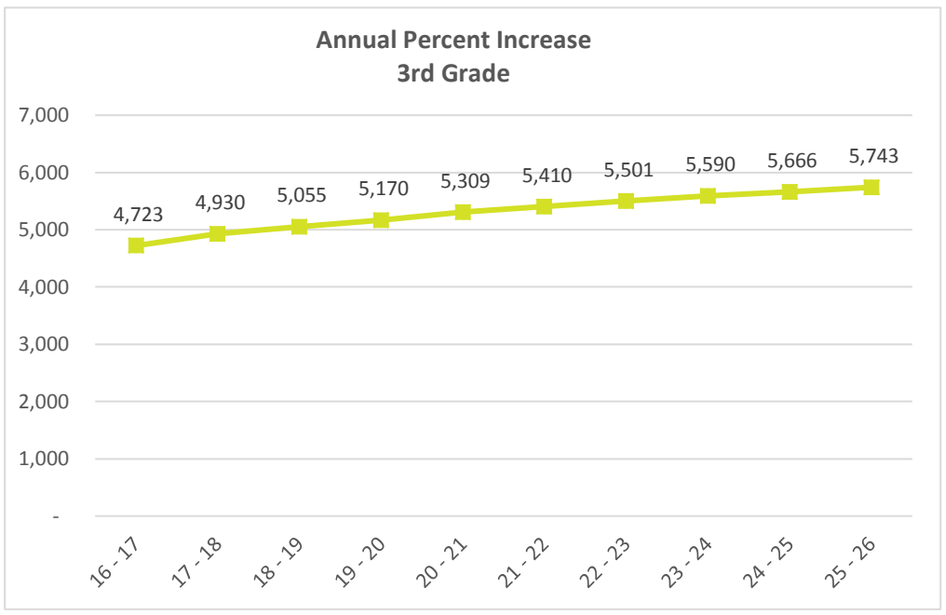


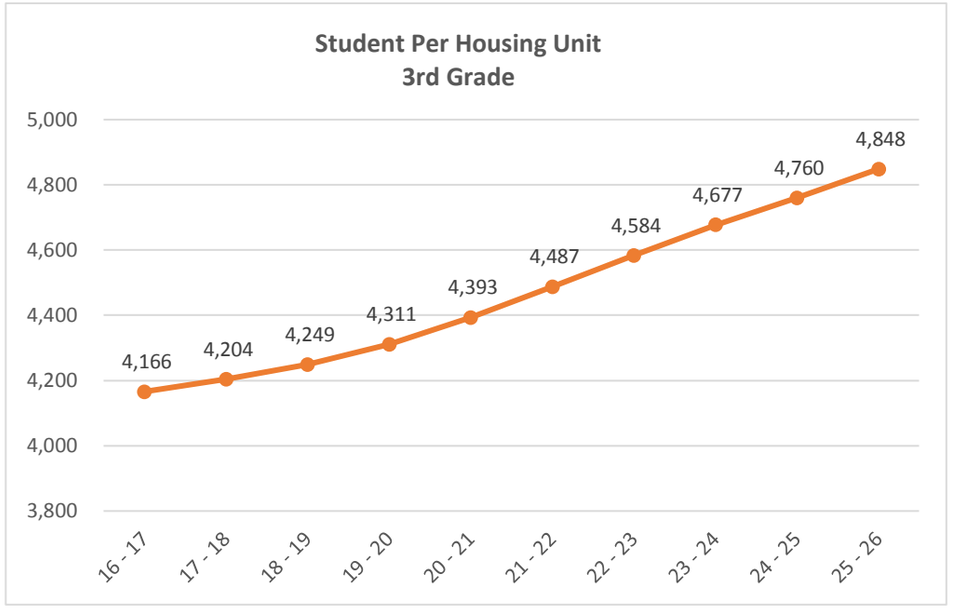
3rd Grade	16 - 17	17 - 18	18 - 19	19 - 20	20 - 21	21 - 22	22 - 23	23 - 24	24 - 25	25 - 26
Annual Percent	4,723	4,930	5,055	5,170	5,309	5,410	5,501	5,590	5,666	5,743
Student Per Household	4,166	4,204	4,249	4,311	4,393	4,487	4,584	4,677	4,760	4,848
Cohort Survial	4,511	4,321	4,053	4,168	4,182	4,141	4,090	4,192	4,218	4,222
Linear Regression	4,776	5,027	5,060	4,888	4,847	4,969	4,919	4,878	4,863	4,820

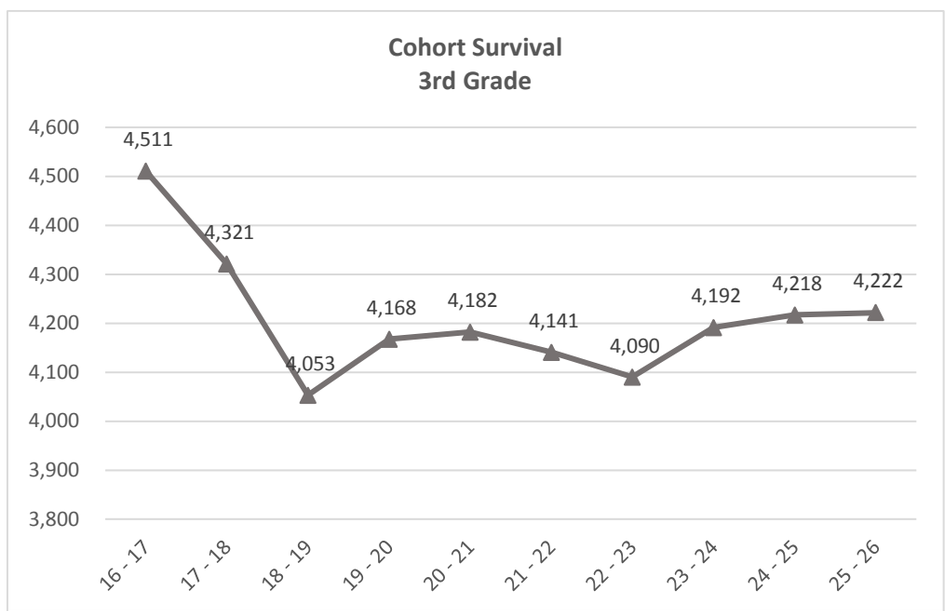
	06 - 07	07 - 08	08 - 09	09 - 10	10 - 11	11 - 12	12 - 13	13 - 14	14 - 15	15 - 16
3rd Grade	4016	3992	4033	4049	3971	4141	4202	4154	4274	4525

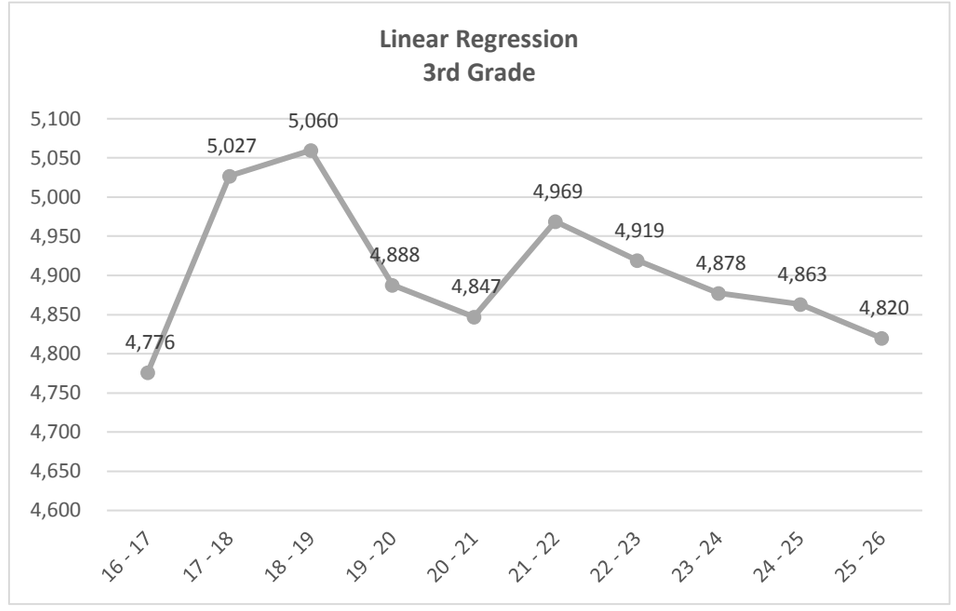






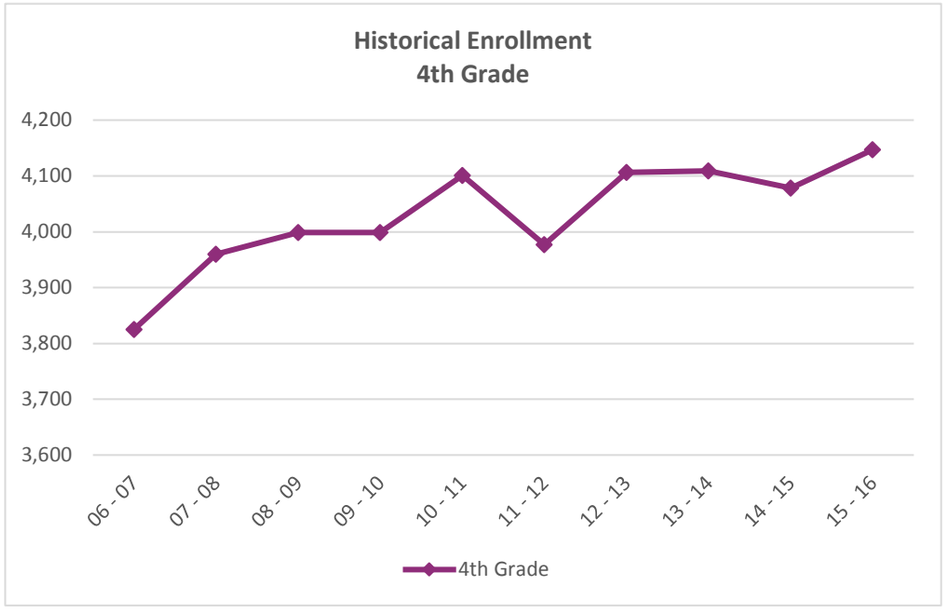


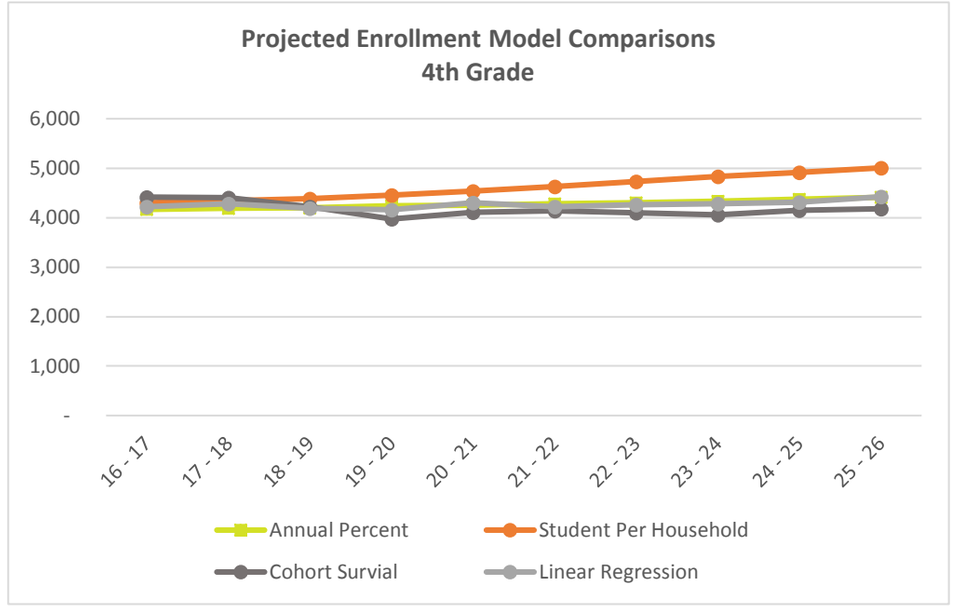


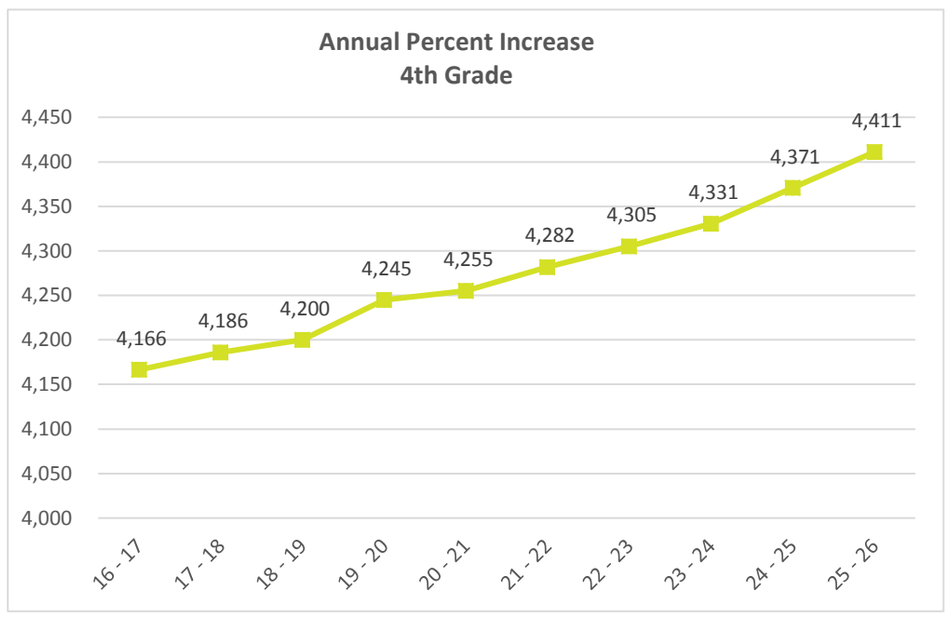


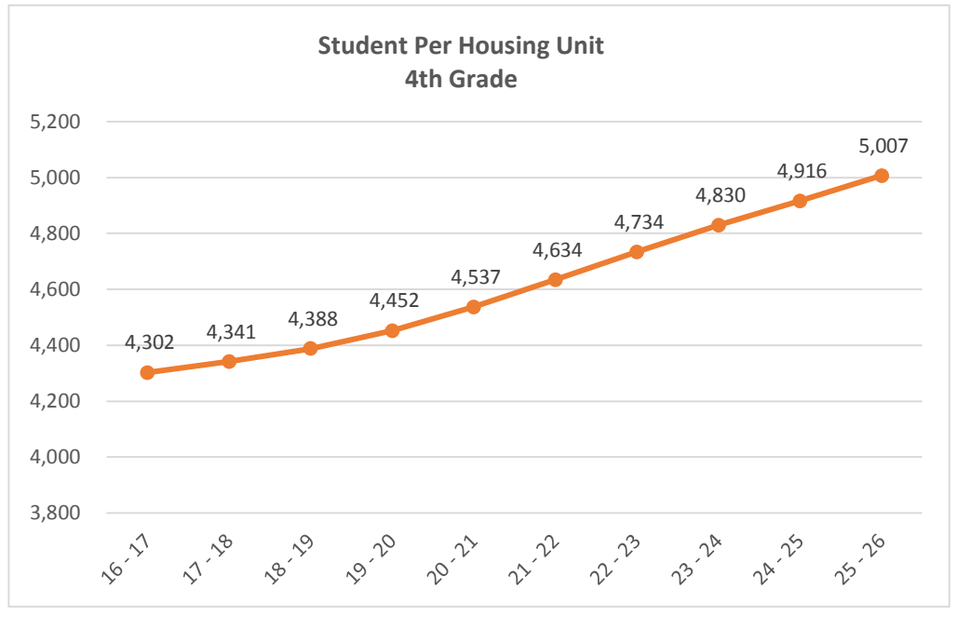
4th Grade	16 - 17	17 - 18	18 - 19	19 - 20	20 - 21	21 - 22	22 - 23	23 - 24	24 - 25	25 - 26
Annual Percent	4,166	4,186	4,200	4,245	4,255	4,282	4,305	4,331	4,371	4,411
Student Per Household	4,302	4,341	4,388	4,452	4,537	4,634	4,734	4,830	4,916	5,007
Cohort Survial	4,416	4,403	4,220	3,974	4,104	4,137	4,098	4,054	4,152	4,178
Linear Regression	4,216	4,285	4,187	4,161	4,302	4,217	4,263	4,281	4,315	4,423
Weighted Average	4,275	4,304	4,249	4,208	4,299	4,317	4,350	4,374	4,439	4,505

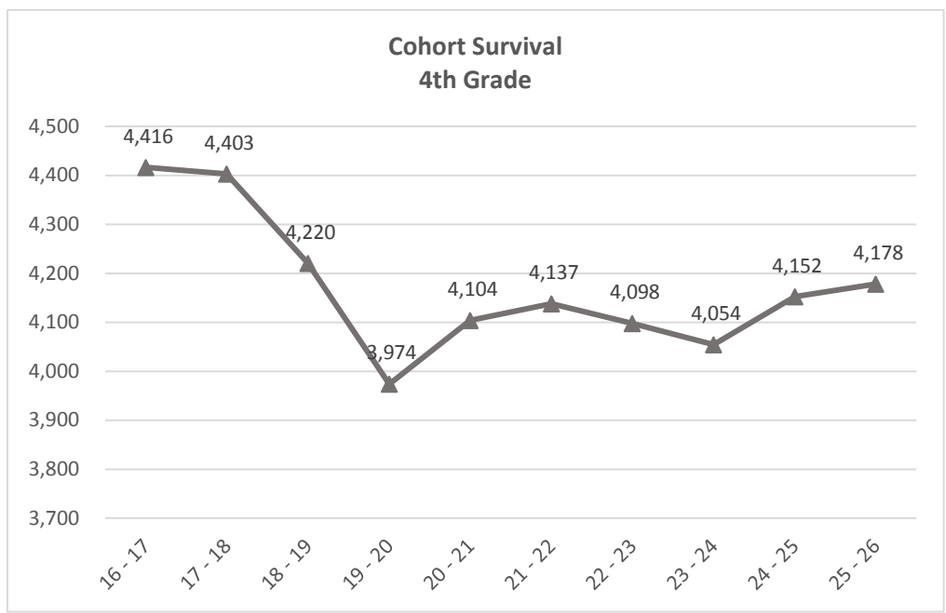
	06 - 07	07 - 08	08 - 09	09 - 10	10 - 11	11 - 12	12 - 13	13 - 14	14 - 15	15 - 16
4th Grade	3825	3960	3999	3999	4101	3977	4106	4109	4078	4147

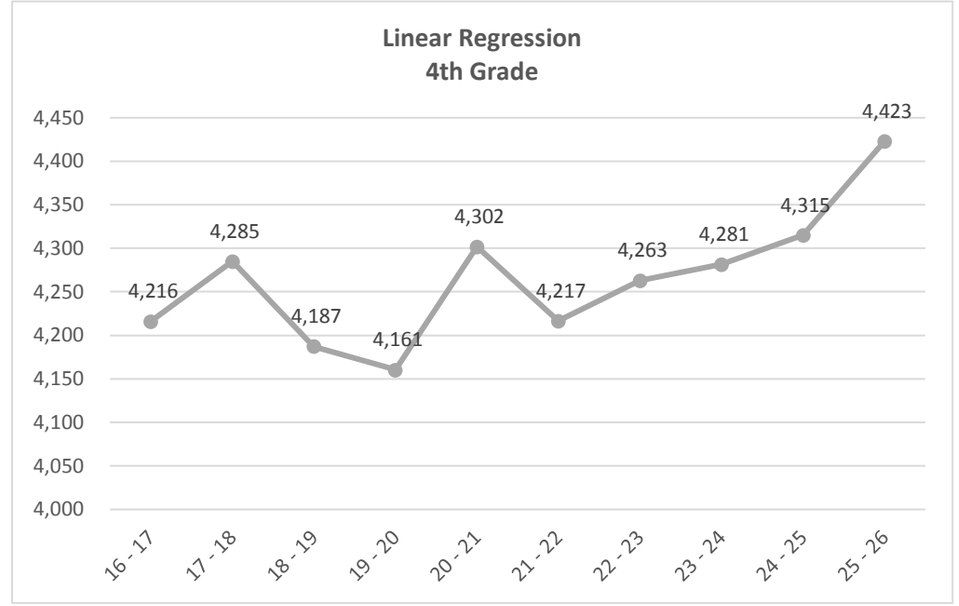






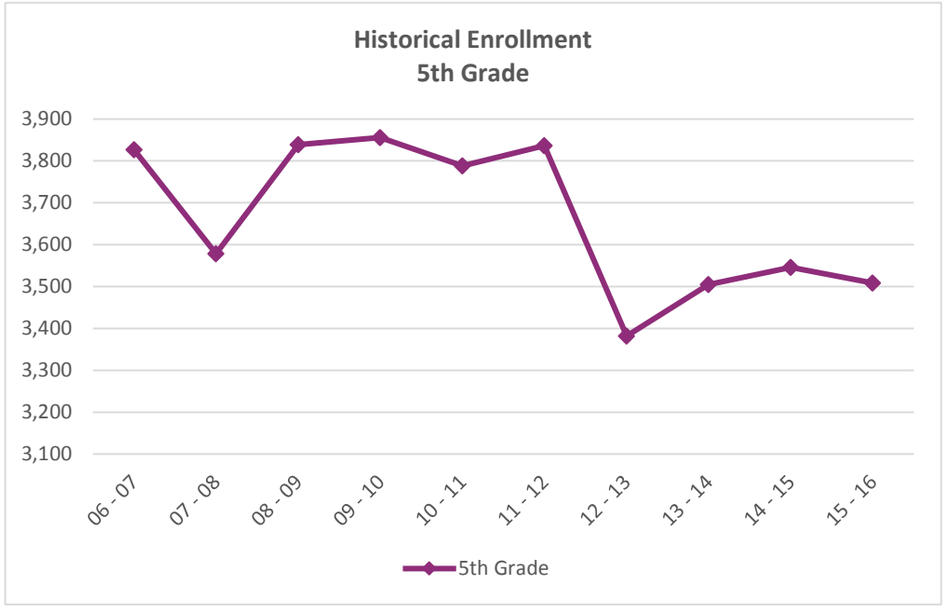


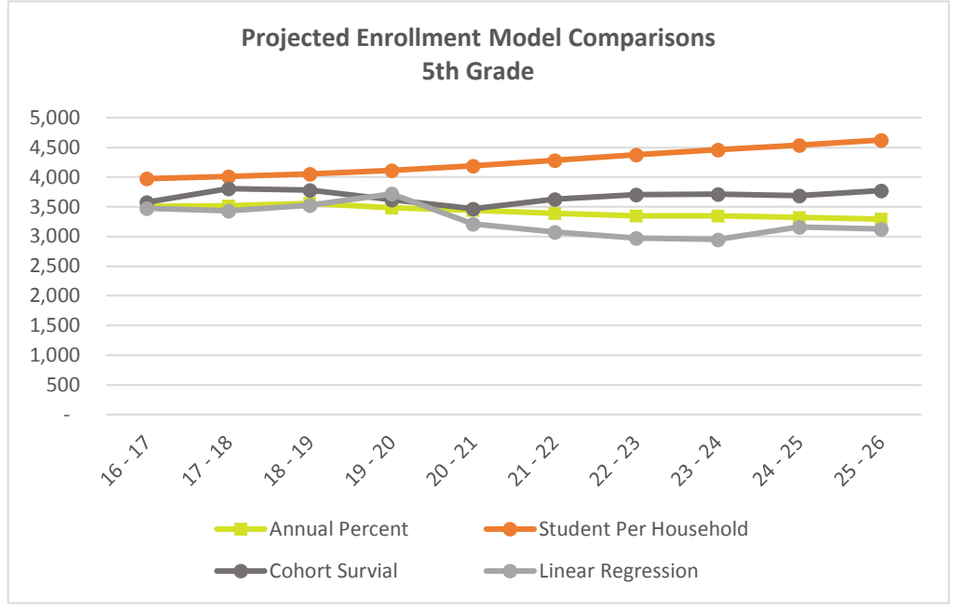


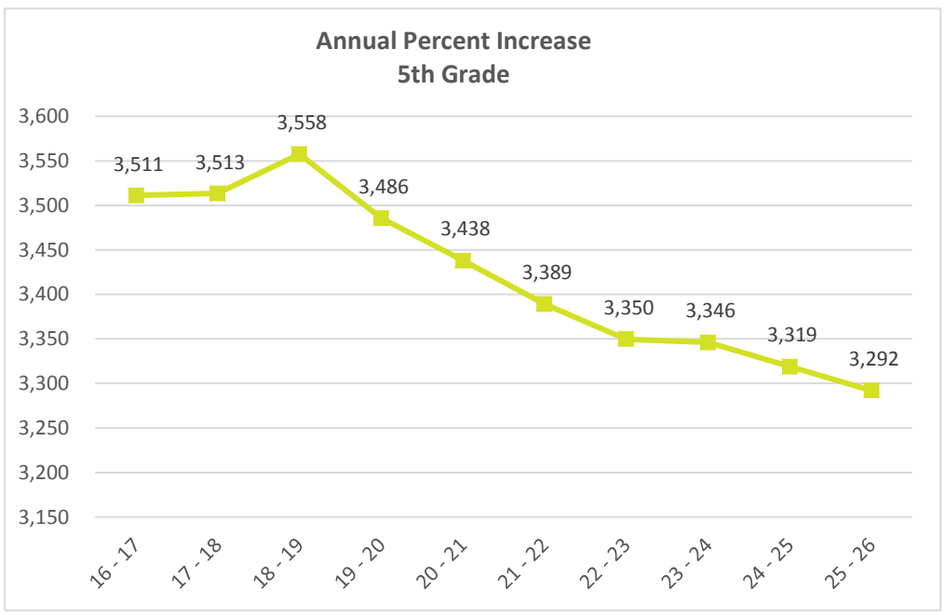


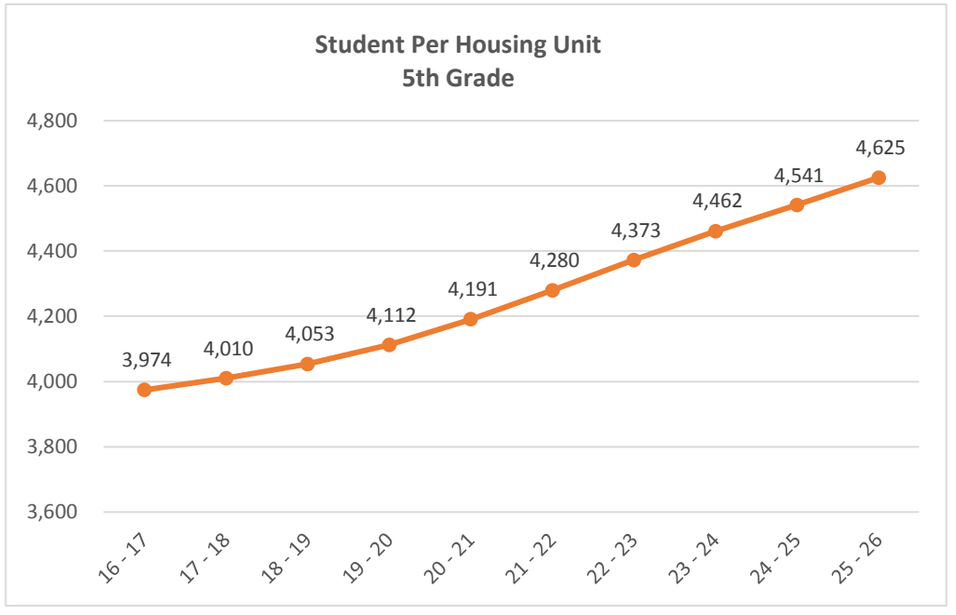
5th Grade	16 - 17	17 - 18	18 - 19	19 - 20	20 - 21	21 - 22	22 - 23	23 - 24	24 - 25	25 - 26
Annual Percent	3,511	3,513	3,558	3,486	3,438	3,389	3,350	3,346	3,319	3,292
Student Per Household	3,974	4,010	4,053	4,112	4,191	4,280	4,373	4,462	4,541	4,625
Cohort Survial	3,574	3,806	3,782	3,616	3,467	3,632	3,708	3,710	3,684	3,773
Linear Regression	3,472	3,435	3,528	3,718	3,213	3,074	2,969	2,951	3,158	3,128
Weighted Average	3,633	3,691	3,730	3,733	3,577	3,594	3,600	3,617	3,676	3,705

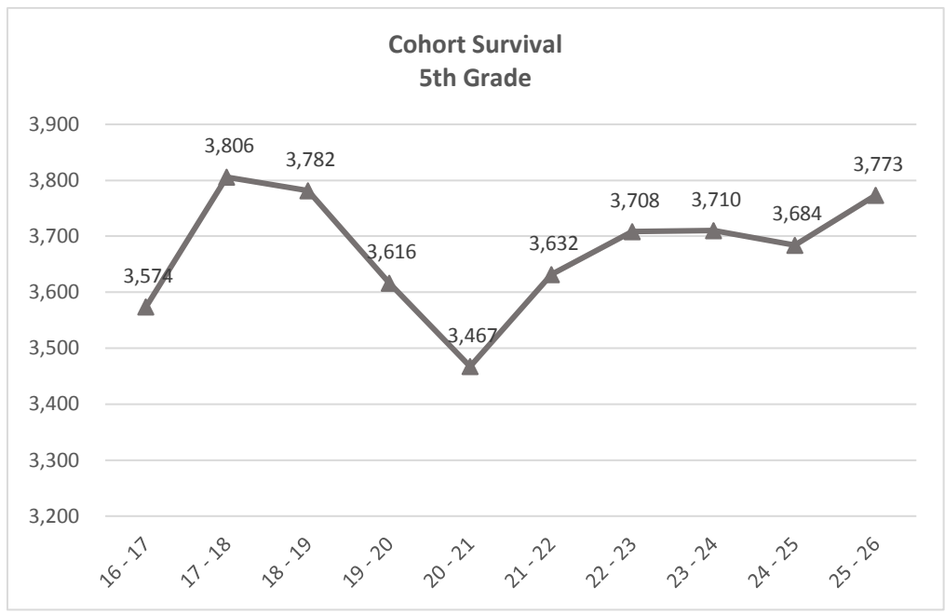
	06 - 07	07 - 08	08 - 09	09 - 10	10 - 11	11 - 12	12 - 13	13 - 14	14 - 15	15 - 16
5th Grade	3827	3578	3839	3856	3788	3836	3382	3505	3546	3509

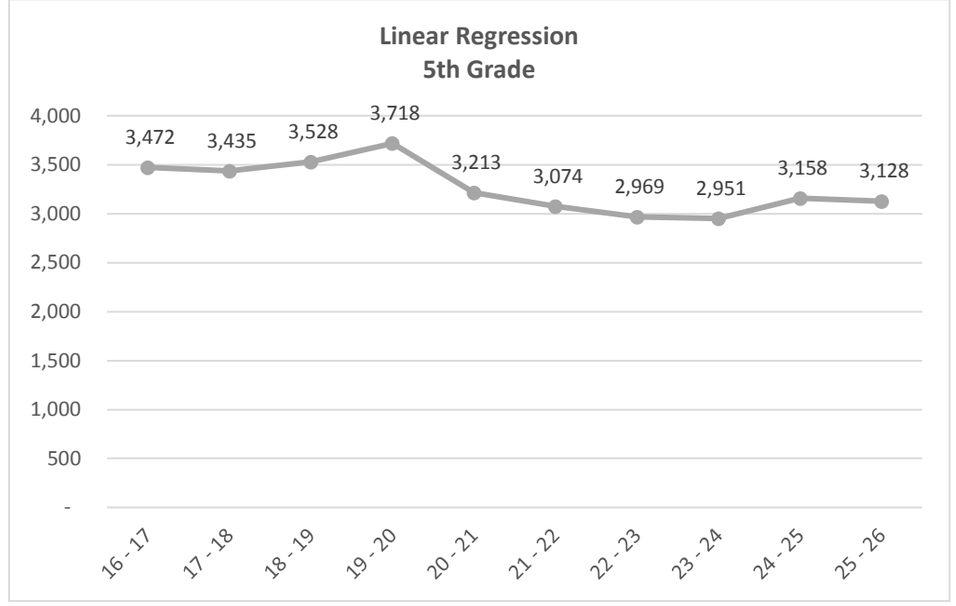






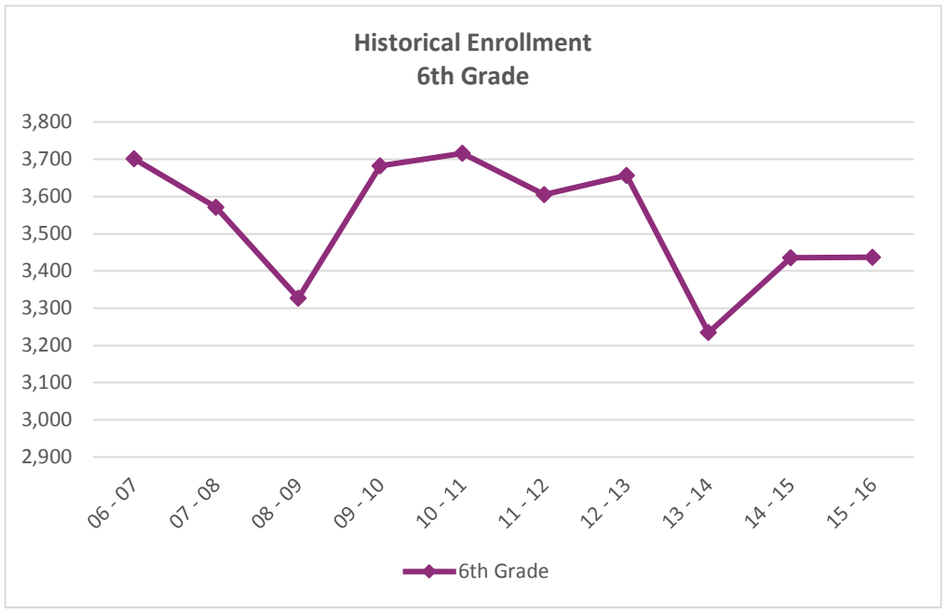


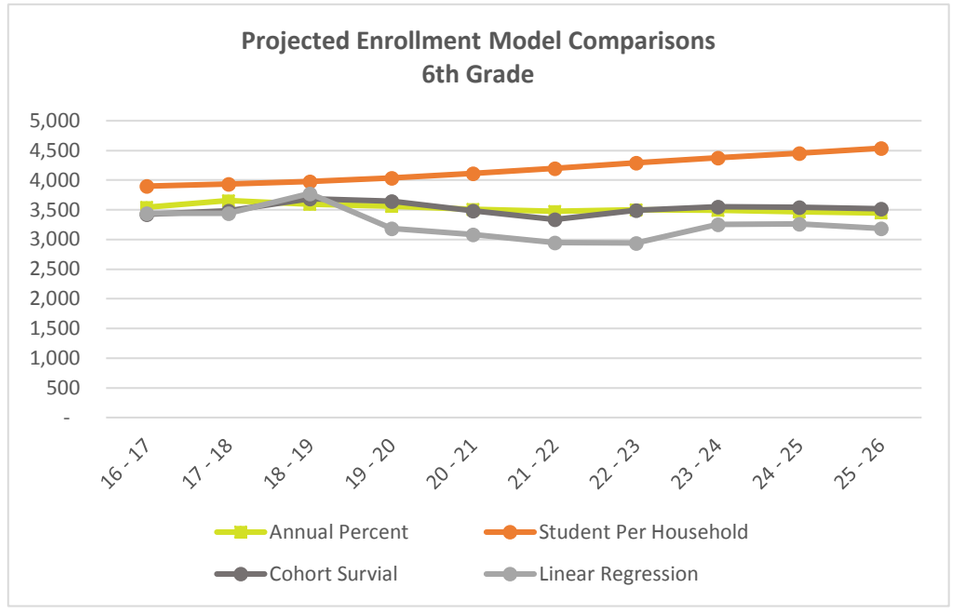


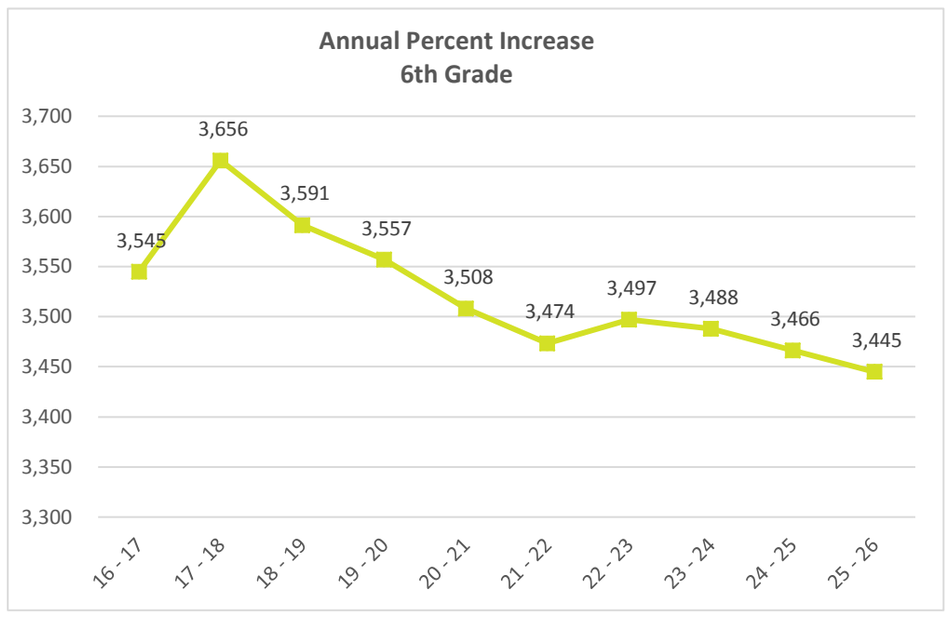


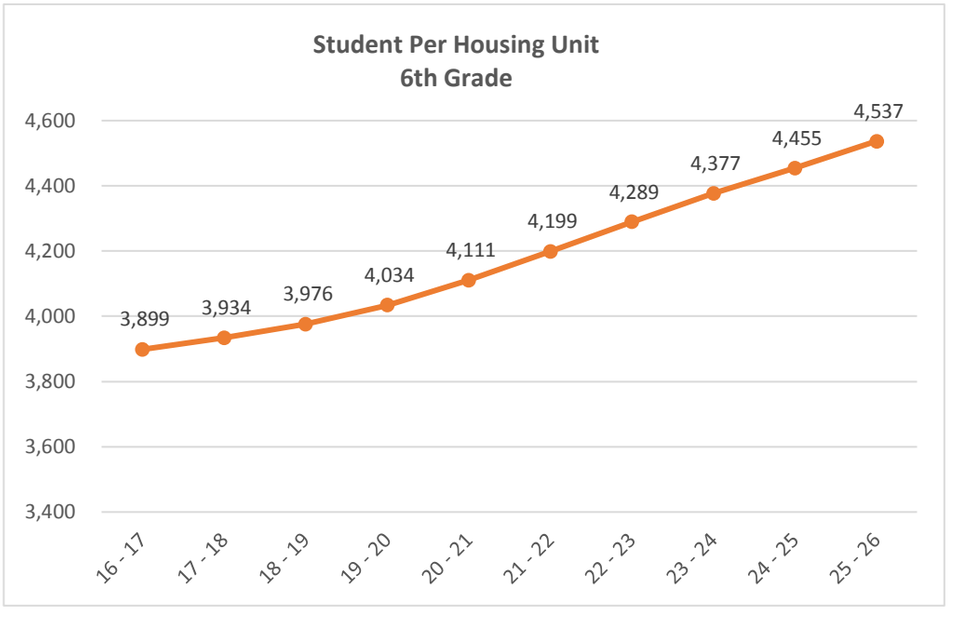
6th Grade	16 - 17	17 - 18	18 - 19	19 - 20	20 - 21	21 - 22	22 - 23	23 - 24	24 - 25	25 - 26
Annual Percent	3,545	3,656	3,591	3,557	3,508	3,474	3,497	3,488	3,466	3,445
Student Per Household	3,899	3,934	3,976	4,034	4,111	4,199	4,289	4,377	4,455	4,537
Cohort Survial	3,420	3,483	3,686	3,648	3,479	3,337	3,494	3,552	3,544	3,519
Linear Regression	3,439	3,441	3,775	3,188	3,083	2,949	2,941	3,257	3,265	3,187
Weighted Average	3,576	3,628	3,757	3,607	3,545	3,489	3,555	3,668	3,683	3,672

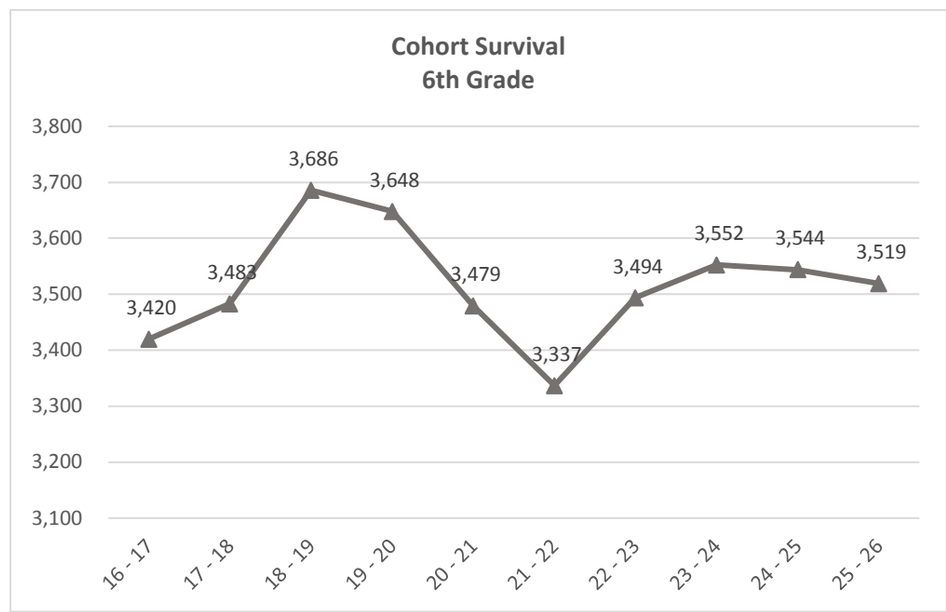
	06 - 07	07 - 08	08 - 09	09 - 10	10 - 11	11 - 12	12 - 13	13 - 14	14 - 15	15 - 16
6th Grade	3701	3571	3327	3683	3716	3605	3657	3234	3435	3437

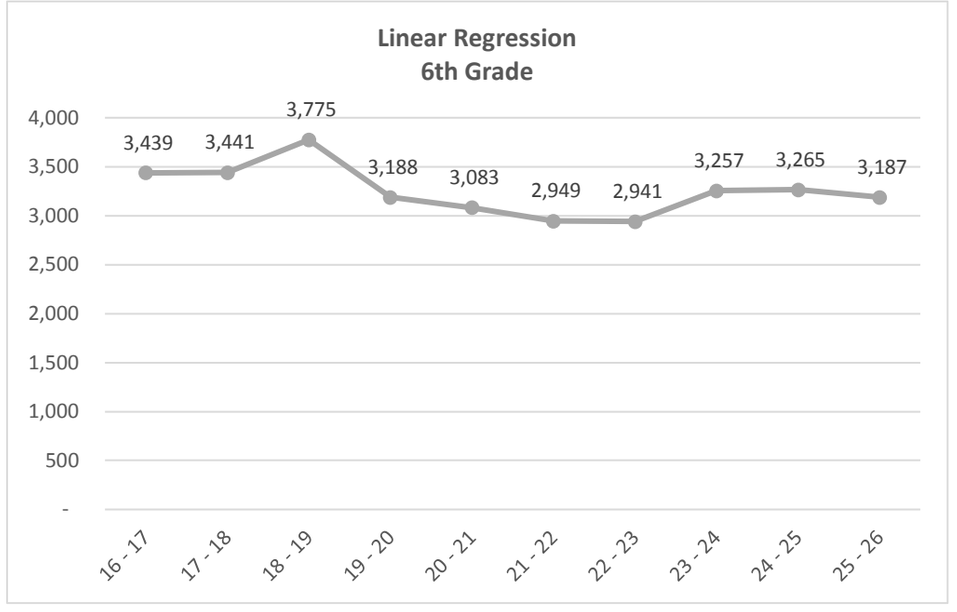






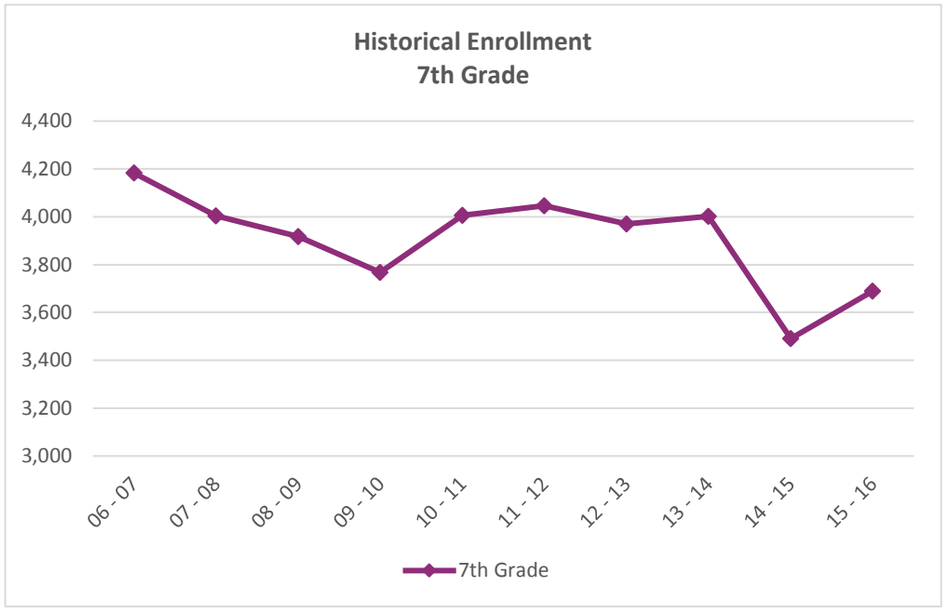


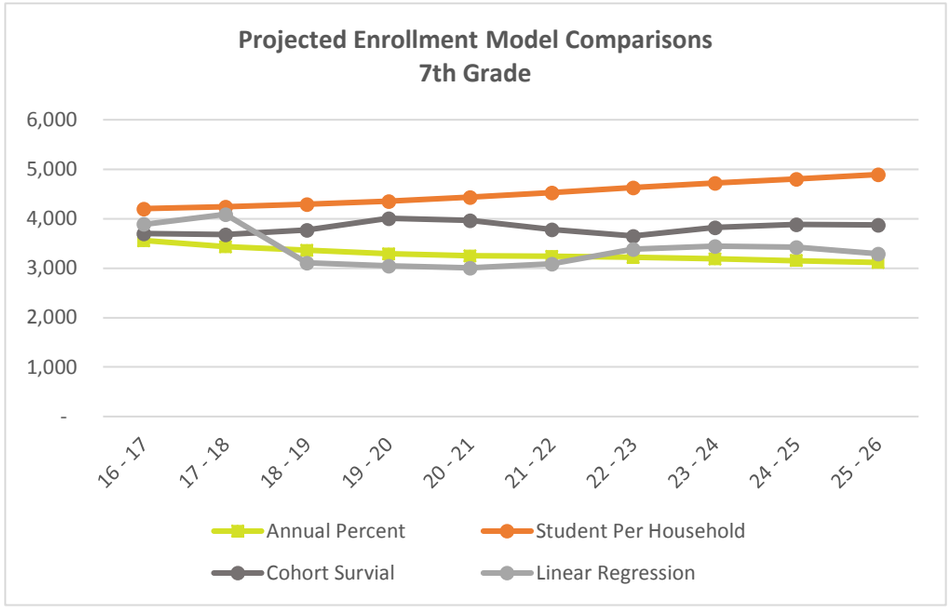


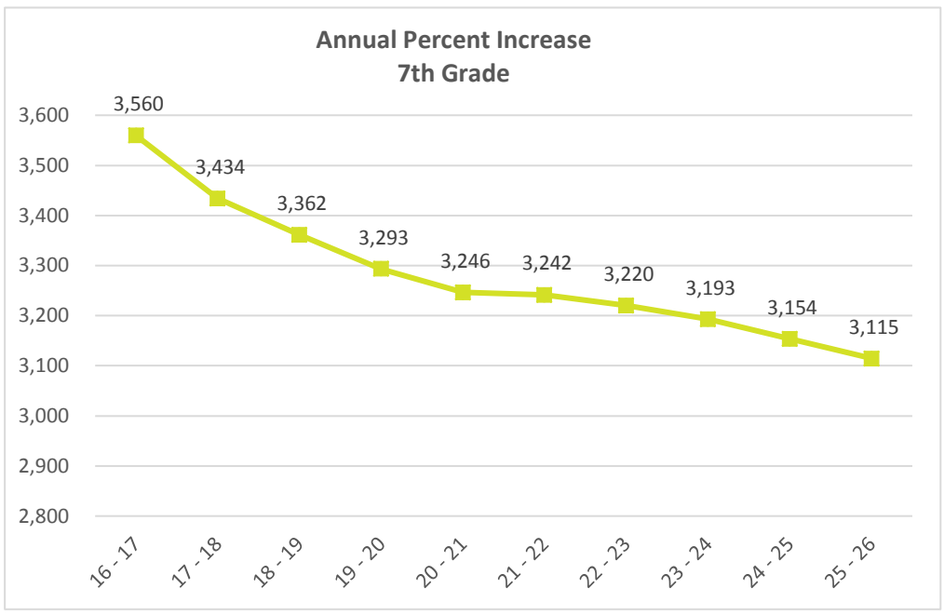


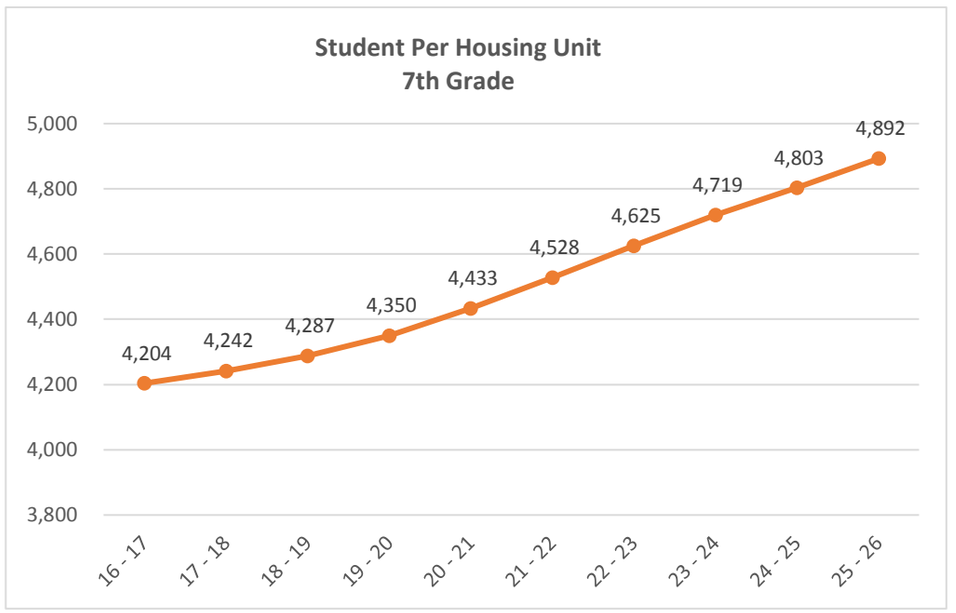
7th Grade	16 - 17	17 - 18	18 - 19	19 - 20	20 - 21	21 - 22	22 - 23	23 - 24	24 - 25	25 - 26
Annual Percent	3,560	3,434	3,362	3,293	3,246	3,242	3,220	3,193	3,154	3,115
Student Per Household	4,204	4,242	4,287	4,350	4,433	4,528	4,625	4,719	4,803	4,892
Cohort Survial	3,701	3,683	3,771	4,008	3,968	3,784	3,651	3,823	3,883	3,874
Linear Regression	3,889	4,088	3,104	3,044	3,006	3,086	3,387	3,443	3,421	3,296
Weighted Average	3,838	3,862	3,631	3,674	3,663	3,660	3,721	3,795	3,815	3,794

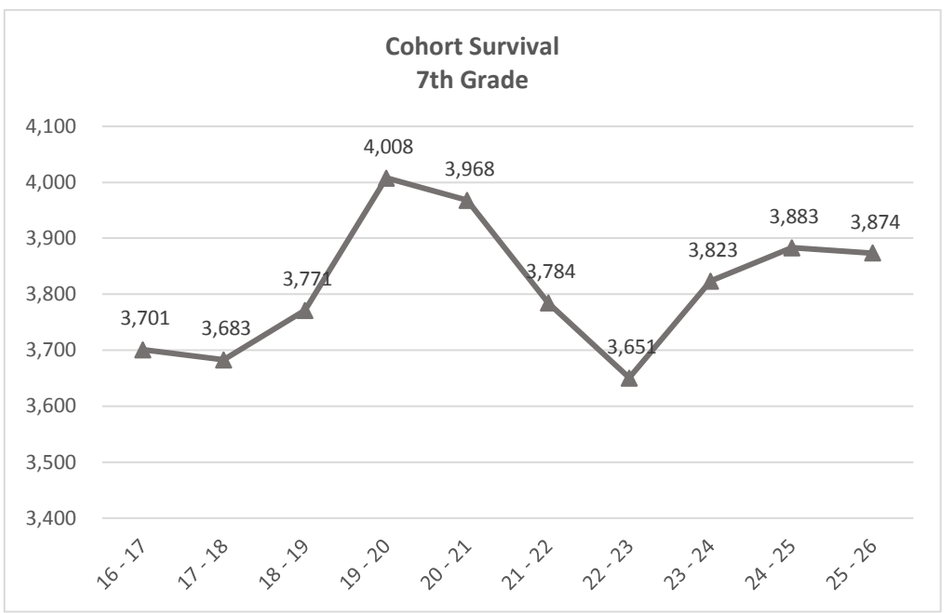
	06 - 07	07 - 08	08 - 09	09 - 10	10 - 11	11 - 12	12 - 13	13 - 14	14 - 15	15 - 16
7th Grade	4183	4005	3917	3767	4007	4046	3971	4002	3491	3690

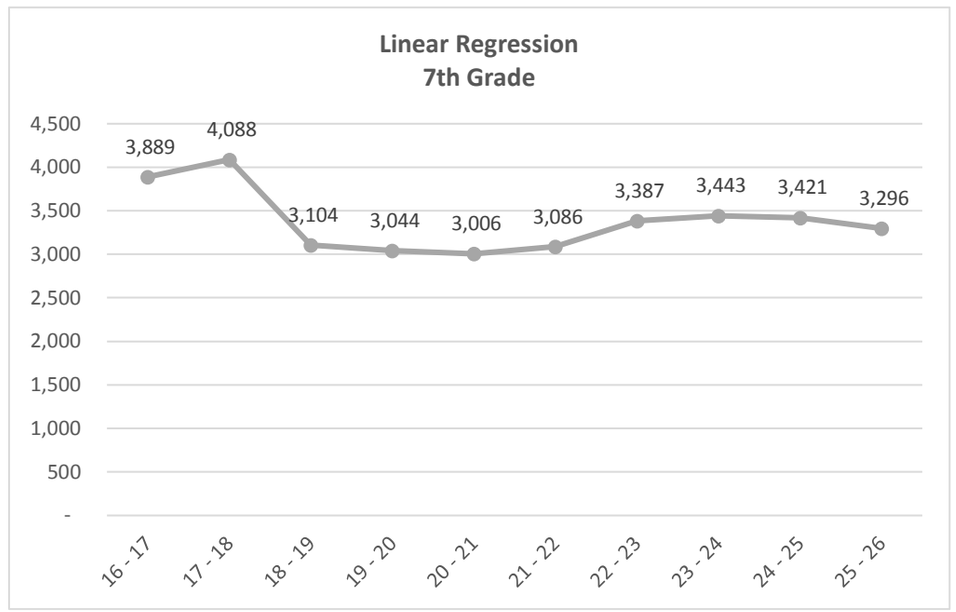






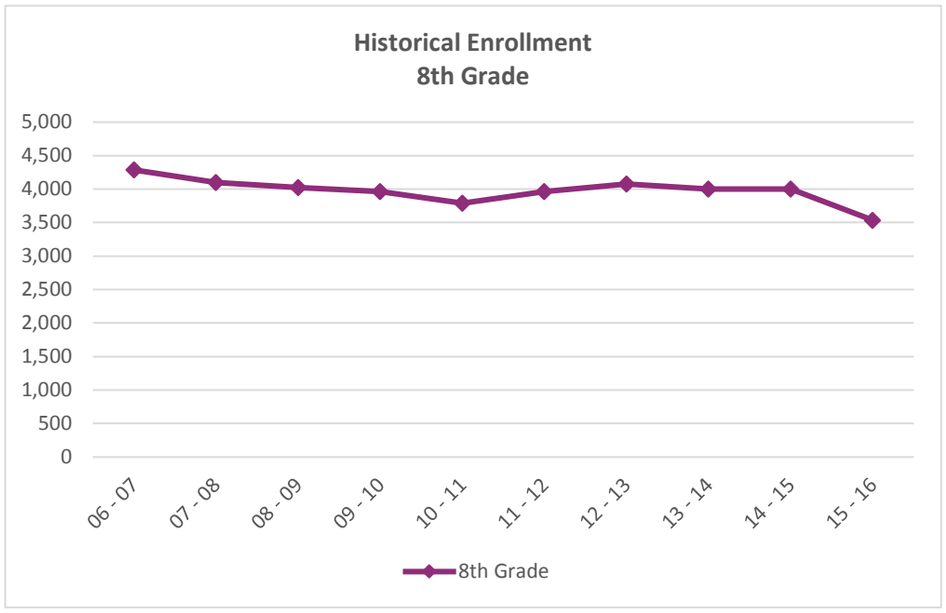


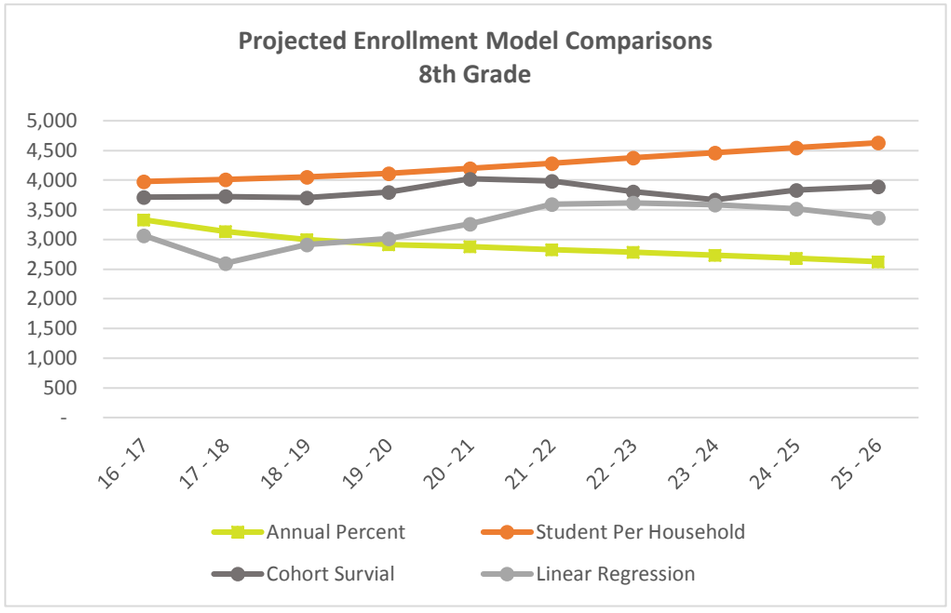


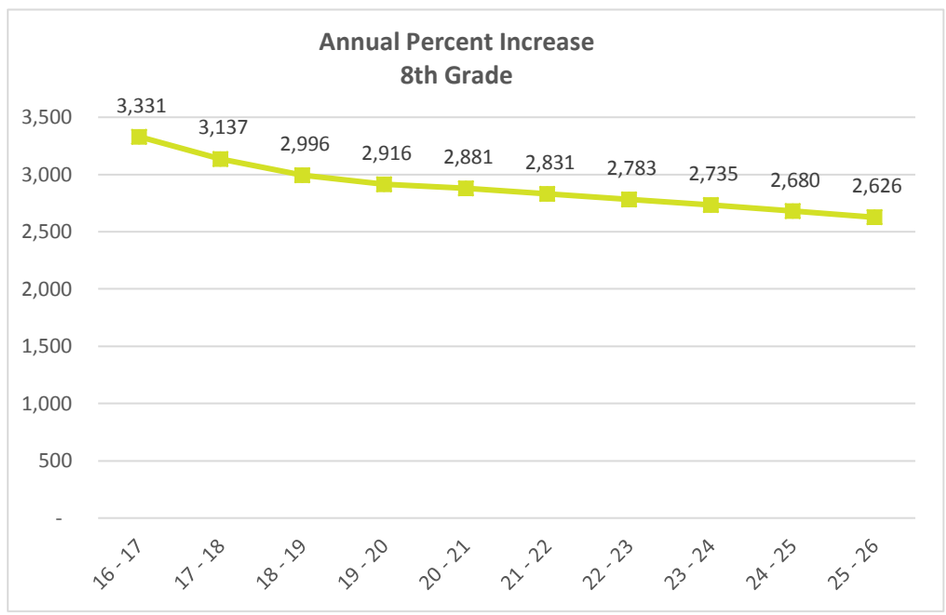


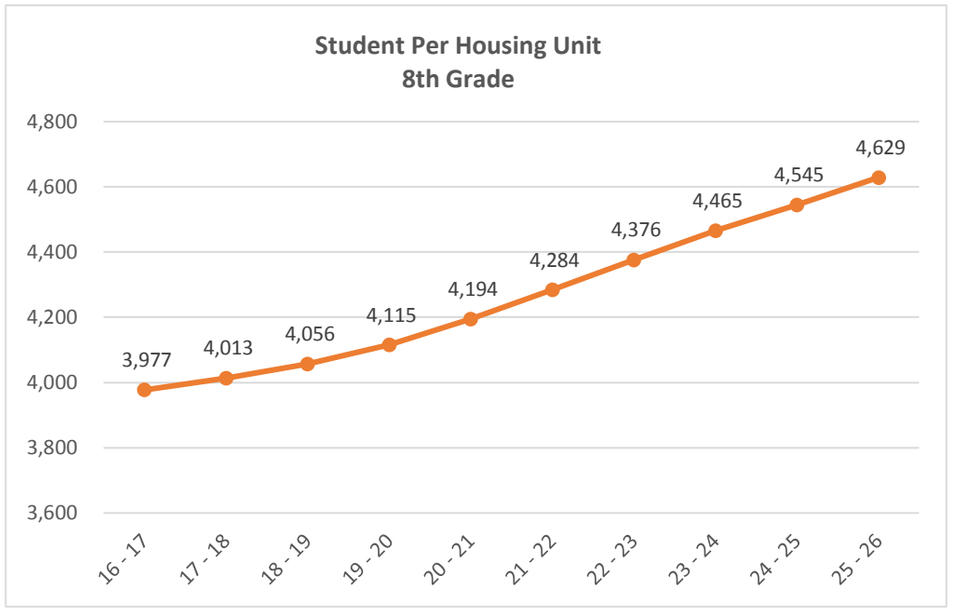
8th Grade	16 - 17	17 - 18	18 - 19	19 - 20	20 - 21	21 - 22	22 - 23	23 - 24	24 - 25	25 - 26
Annual Percent	3,331	3,137	2,996	2,916	2,881	2,831	2,783	2,735	2,680	2,626
Student Per Household	3,977	4,013	4,056	4,115	4,194	4,284	4,376	4,465	4,545	4,629
Cohort Survial	3,715	3,726	3,709	3,798	4,023	3,985	3,804	3,669	3,832	3,892
Linear Regression	3,068	2,600	2,917	3,012	3,263	3,595	3,616	3,584	3,521	3,361
Weighted Average	3,523	3,369	3,419	3,460	3,590	3,674	3,645	3,613	3,644	3,627

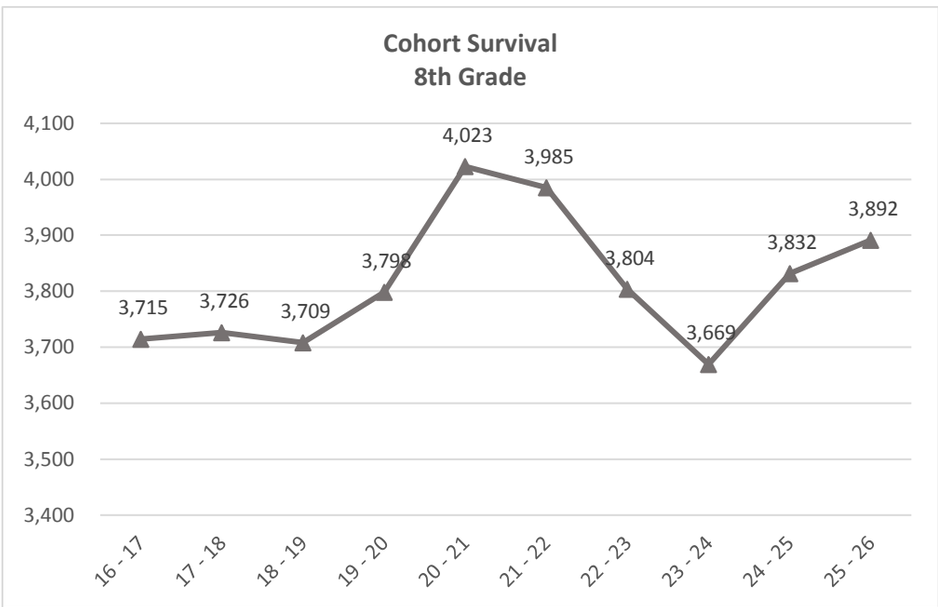
	06 - 07	07 - 08	08 - 09	09 - 10	10 - 11	11 - 12	12 - 13	13 - 14	14 - 15	15 - 16
8th Grade	4286	4096	4024	3960	3791	3966	4078	4001	4004	3536

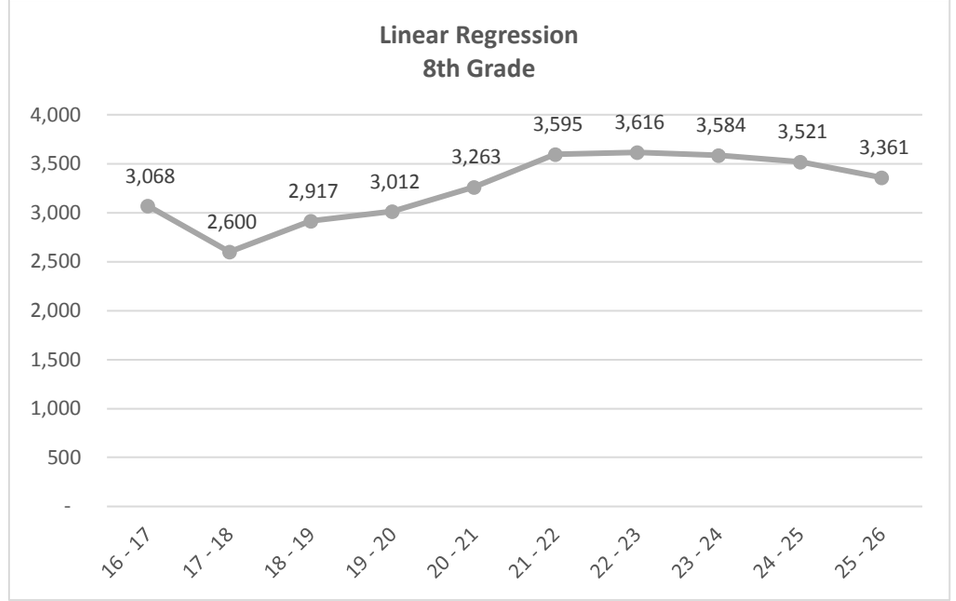






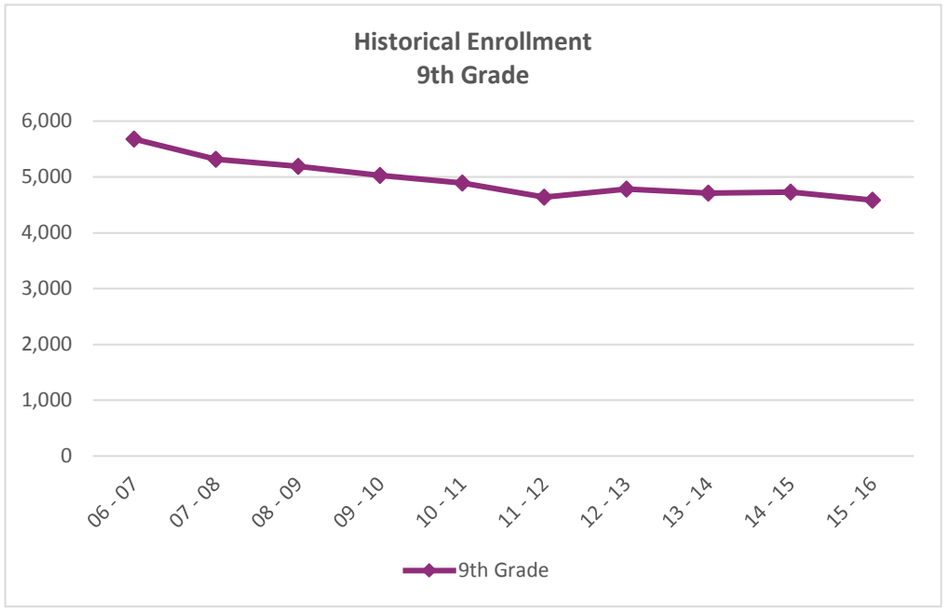


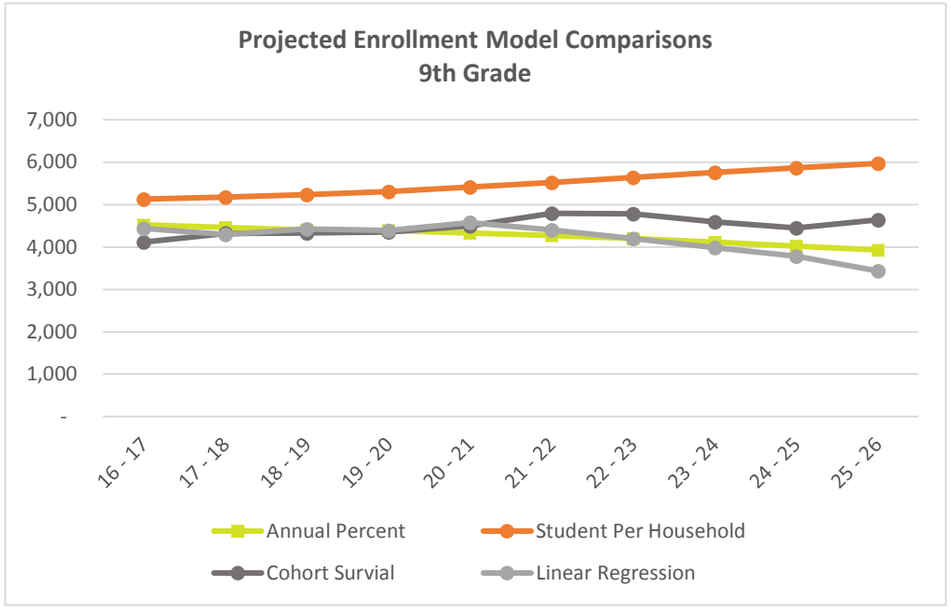


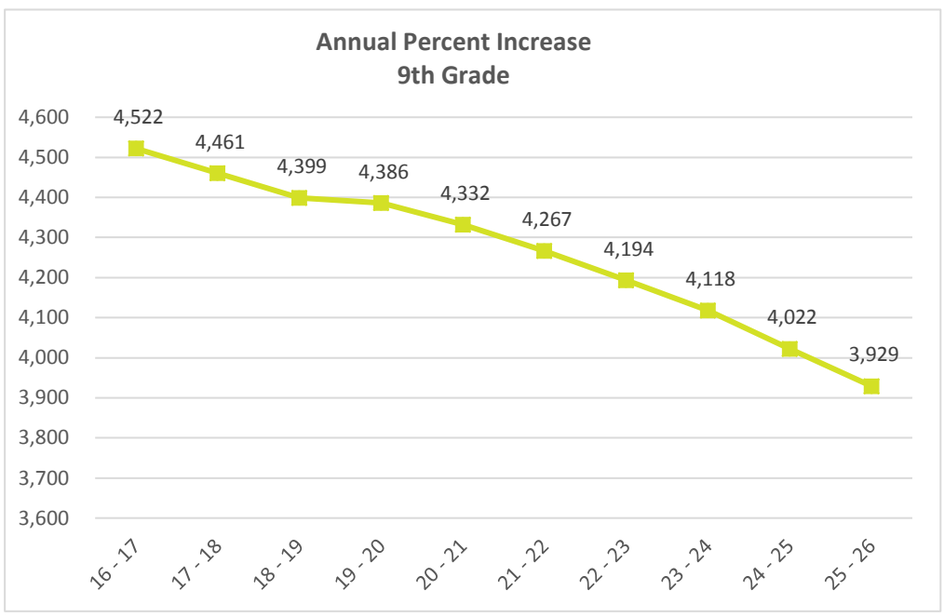


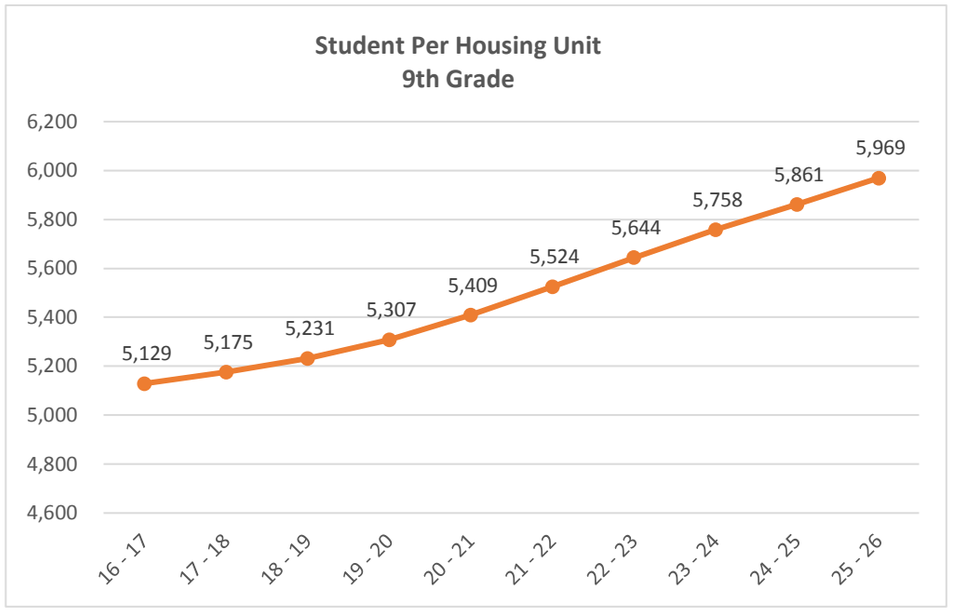
9th Grade	16 - 17	17 - 18	18 - 19	19 - 20	20 - 21	21 - 22	22 - 23	23 - 24	24 - 25	25 - 26
Annual Percent	4,522	4,461	4,399	4,386	4,332	4,267	4,194	4,118	4,022	3,929
Student Per Household	5,129	5,175	5,231	5,307	5,409	5,524	5,644	5,758	5,861	5,969
Cohort Survial	4,115	4,323	4,326	4,347	4,492	4,792	4,780	4,595	4,446	4,643
Linear Regression	4,437	4,290	4,420	4,385	4,574	4,401	4,202	3,985	3,785	3,435

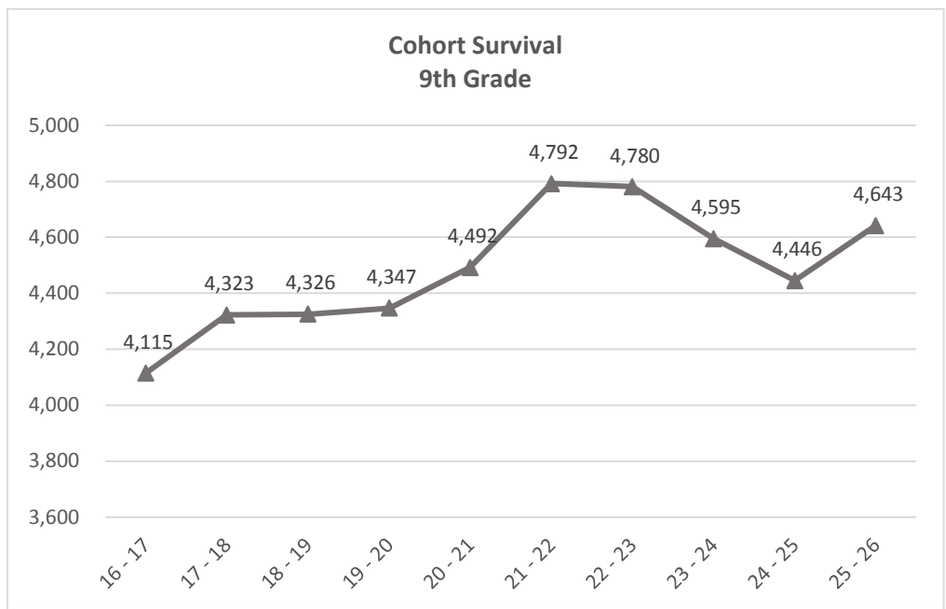
	06 - 07	07 - 08	08 - 09	09 - 10	10 - 11	11 - 12	12 - 13	13 - 14	14 - 15	15 - 16
9th Grade	5679	5315	5186	5030	4889	4641	4783	4712	4731	4584

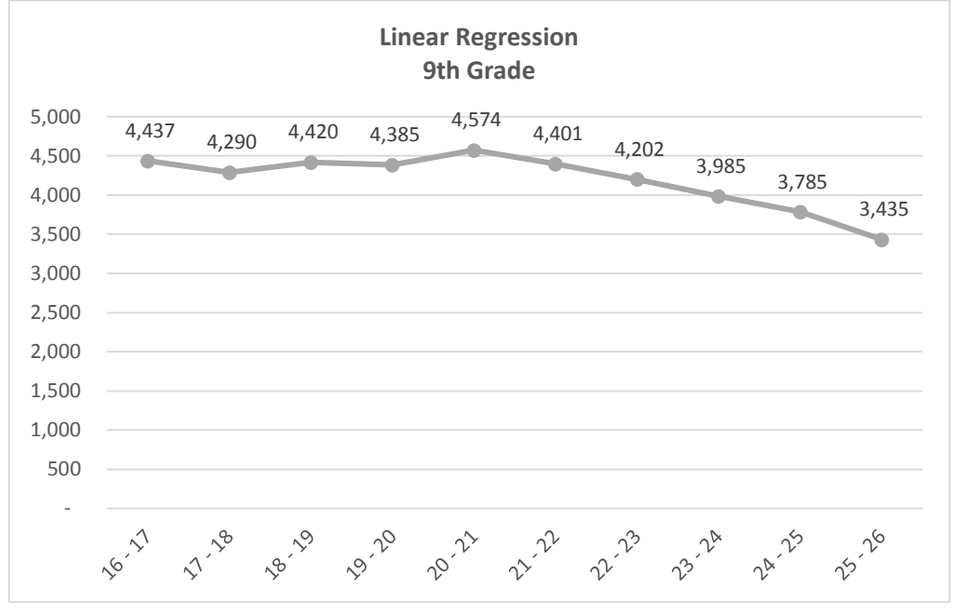






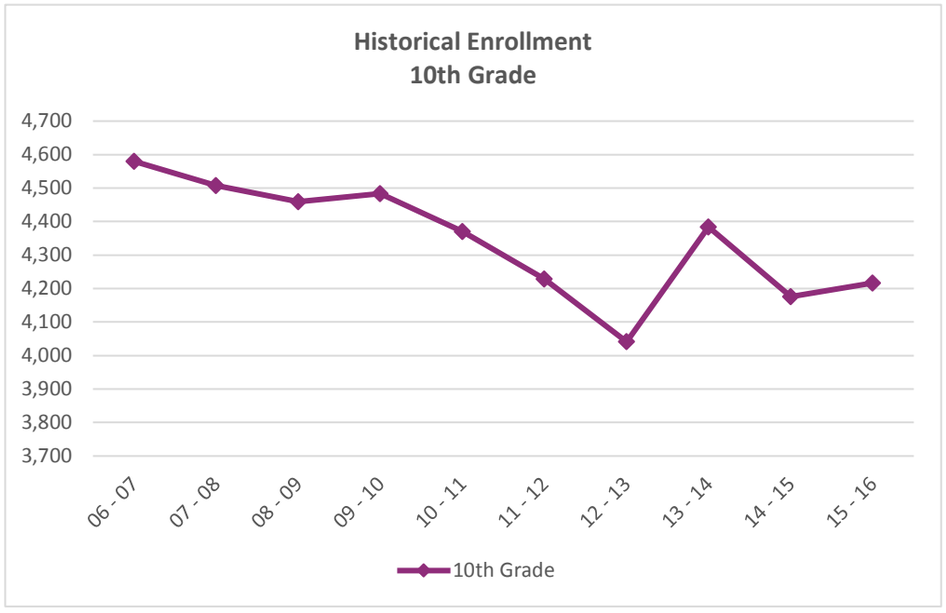


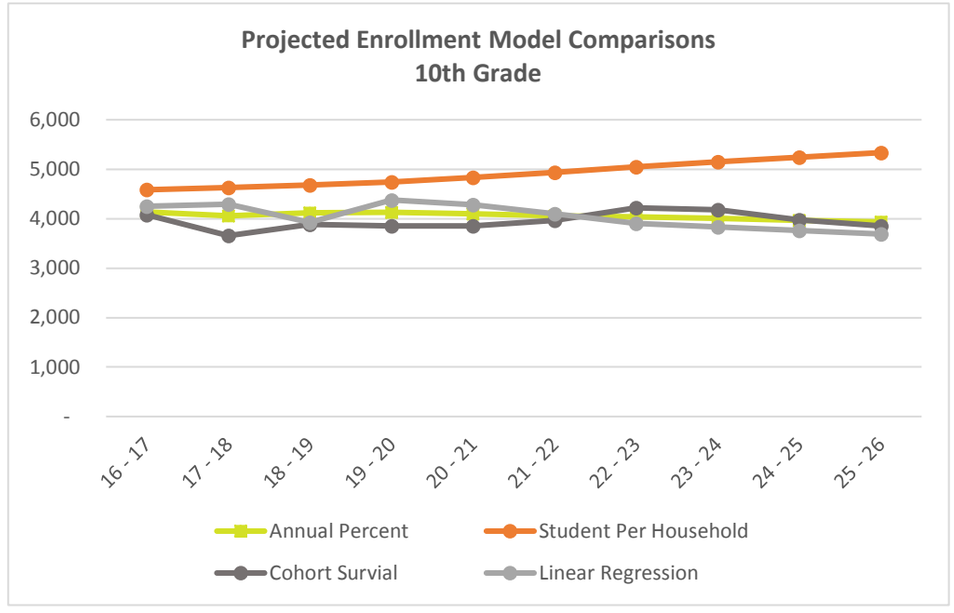


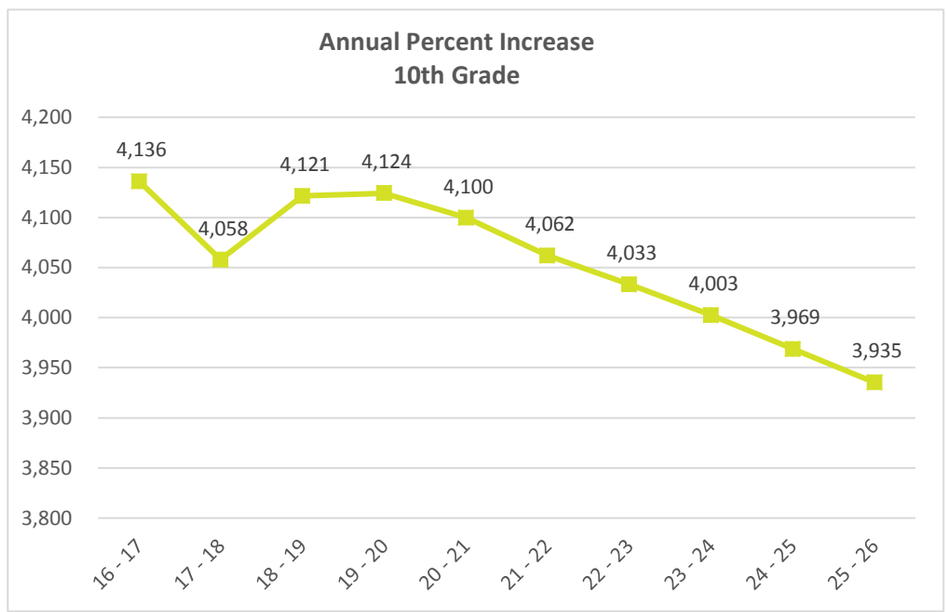


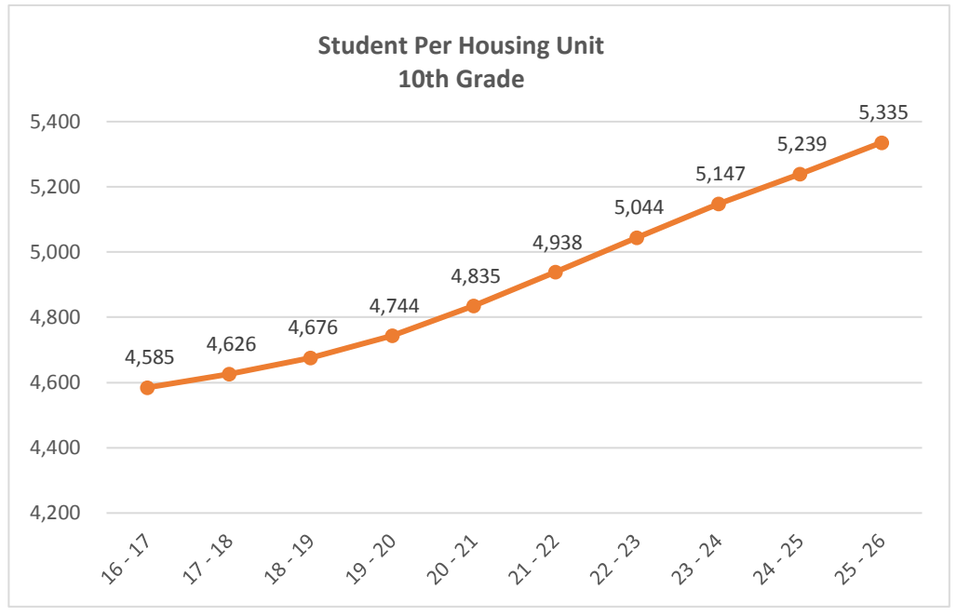
10th Grade	16 - 17	17 - 18	18 - 19	19 - 20	20 - 21	21 - 22	22 - 23	23 - 24	24 - 25	25 - 26
Annual Percent	4,136	4,058	4,121	4,124	4,100	4,062	4,033	4,003	3,969	3,935
Student Per Household	4,585	4,626	4,676	4,744	4,835	4,938	5,044	5,147	5,239	5,335
Cohort Survial	4,074	3,657	3,882	3,855	3,851	3,966	4,219	4,184	3,980	3,851
Linear Regression	4,256	4,296	3,923	4,379	4,287	4,094	3,901	3,830	3,766	3,690

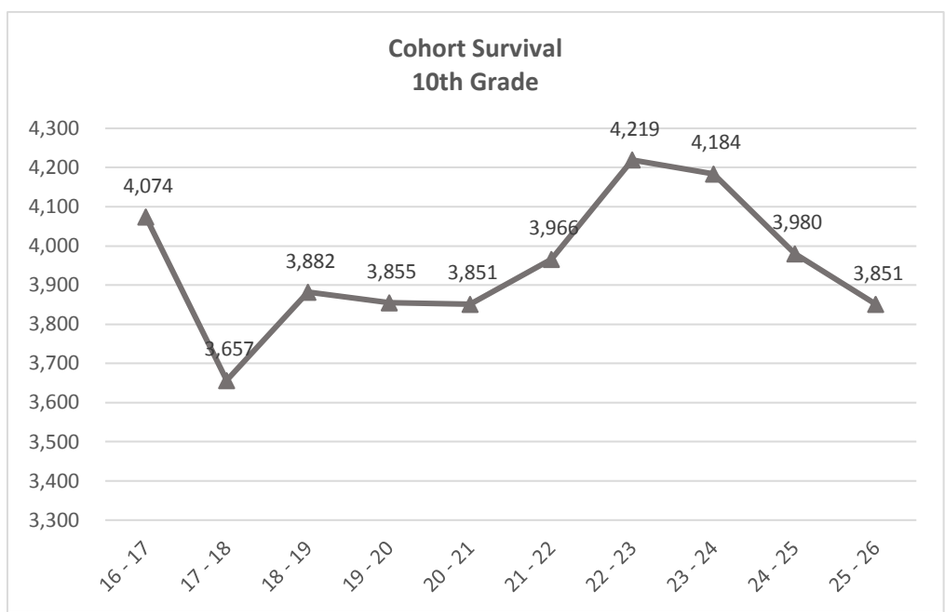
	06 - 07	07 - 08	08 - 09	09 - 10	10 - 11	11 - 12	12 - 13	13 - 14	14 - 15	15 - 16
10th Grade	4580	4508	4460	4484	4370	4228	4041	4384	4176	4216

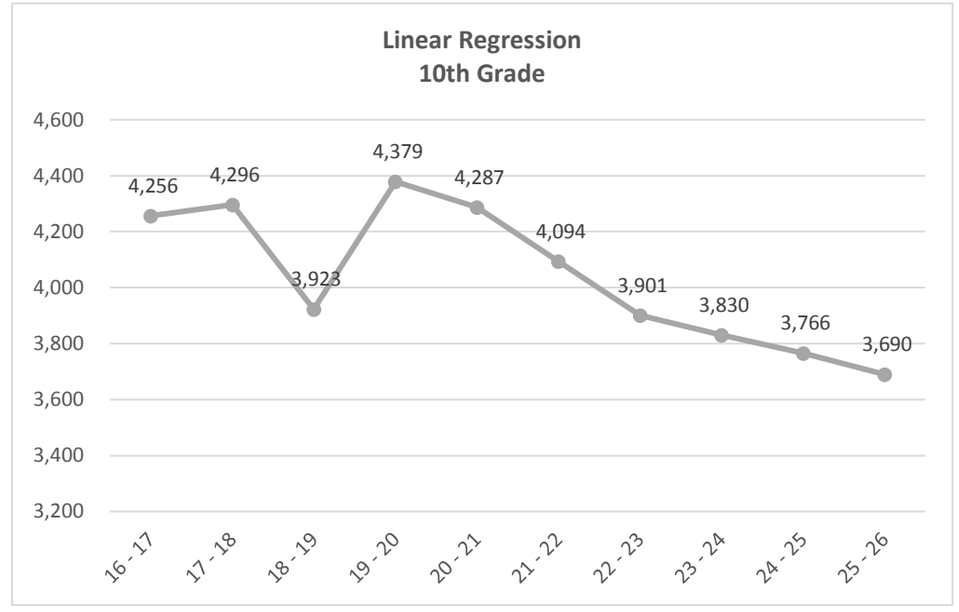






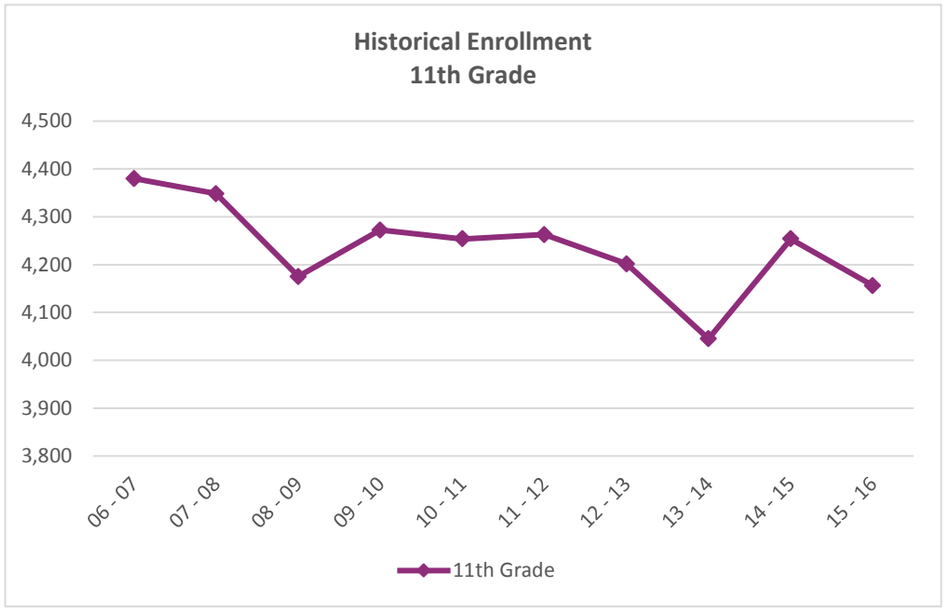


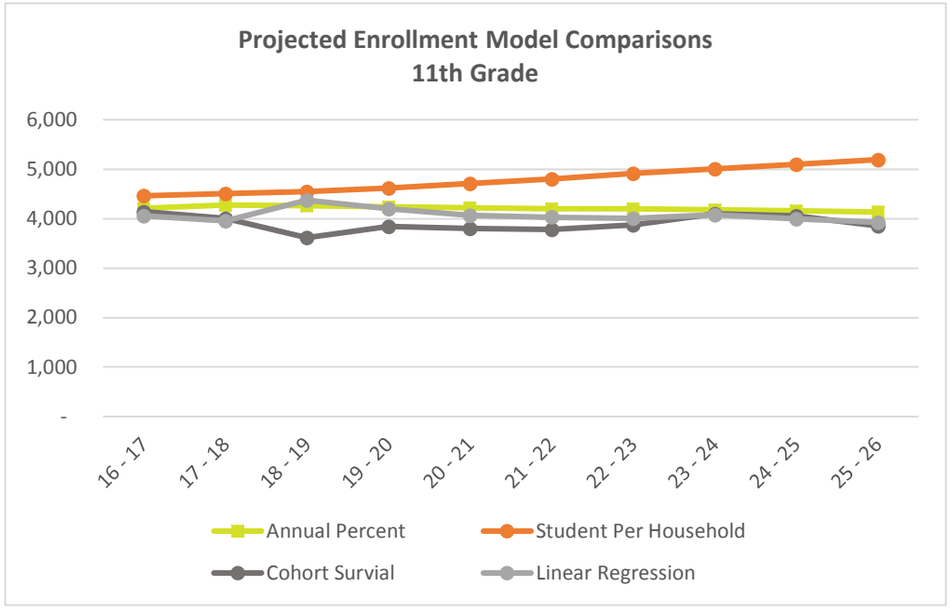


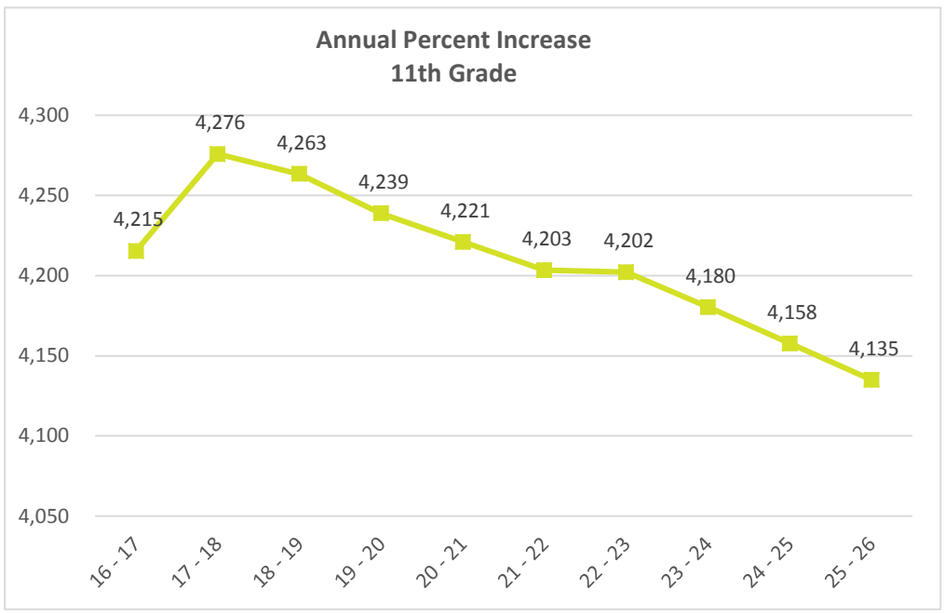


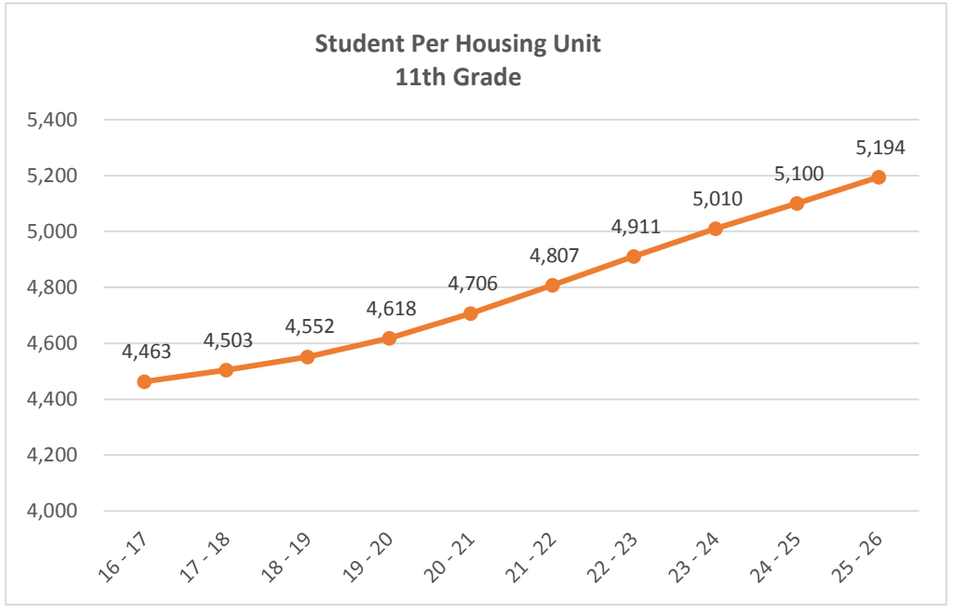
11th Grade	16 - 17	17 - 18	18 - 19	19 - 20	20 - 21	21 - 22	22 - 23	23 - 24	24 - 25	25 - 26
Annual Percent	4,215	4,276	4,263	4,239	4,221	4,203	4,202	4,180	4,158	4,135
Student Per Household	4,463	4,503	4,552	4,618	4,706	4,807	4,911	5,010	5,100	5,194
Cohort Survial	4,143	4,004	3,616	3,843	3,805	3,777	3,877	4,097	4,053	3,855
Linear Regression	4,058	3,960	4,374	4,203	4,071	4,032	4,004	4,078	3,994	3,925

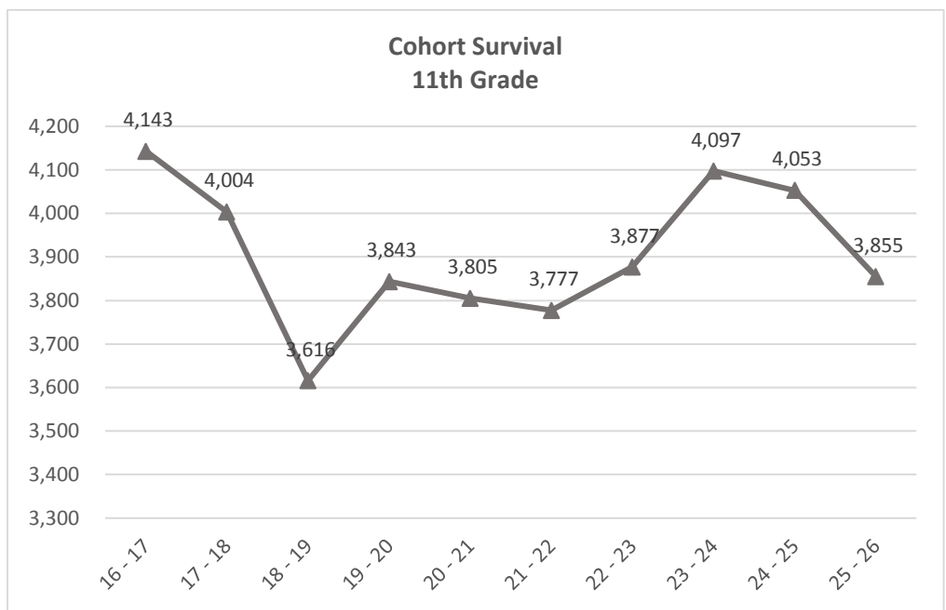
	06 - 07	07 - 08	08 - 09	09 - 10	10 - 11	11 - 12	12 - 13	13 - 14	14 - 15	15 - 16
11th Grade	4380	4348	4175	4272	4254	4263	4202	4045	4254	4156

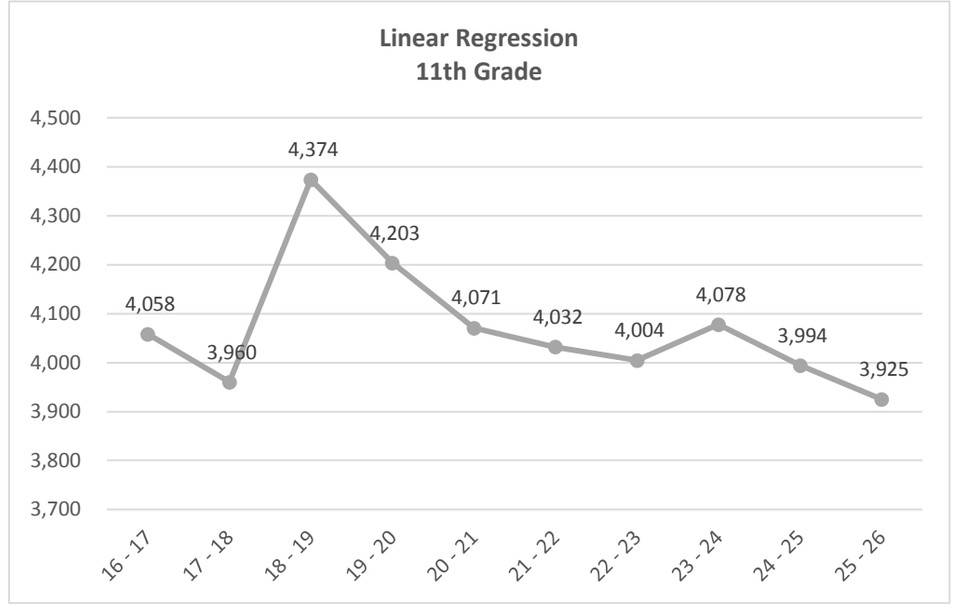






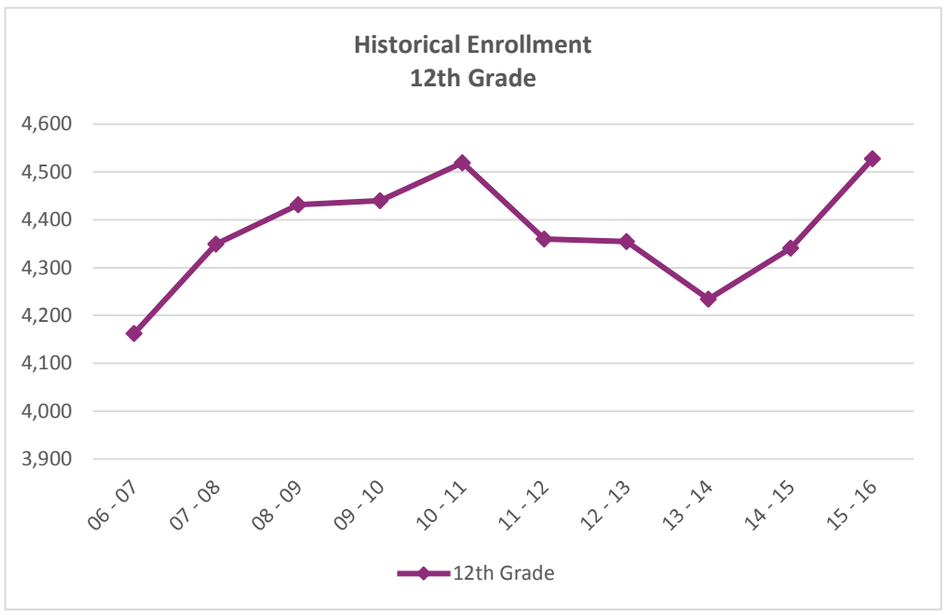


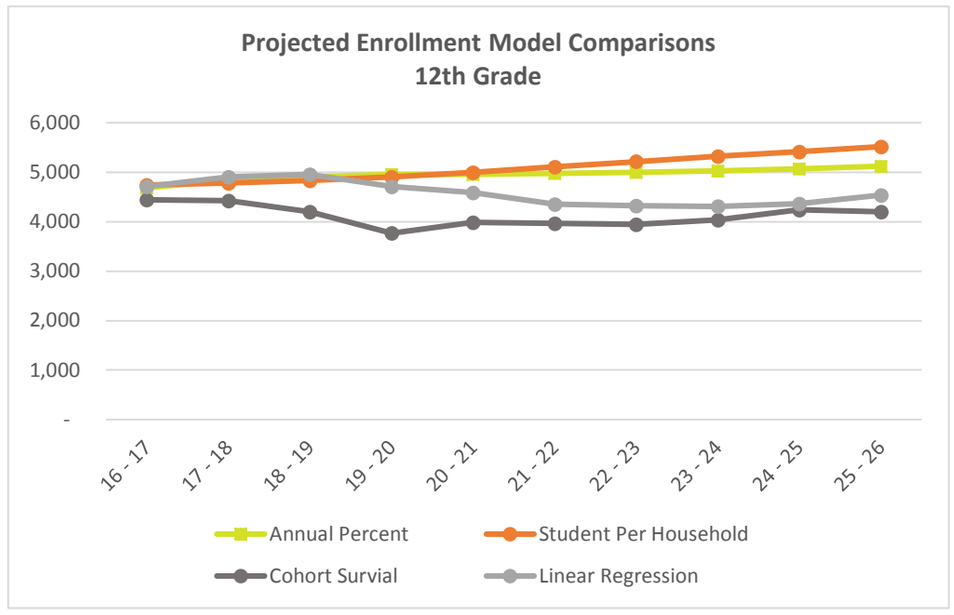


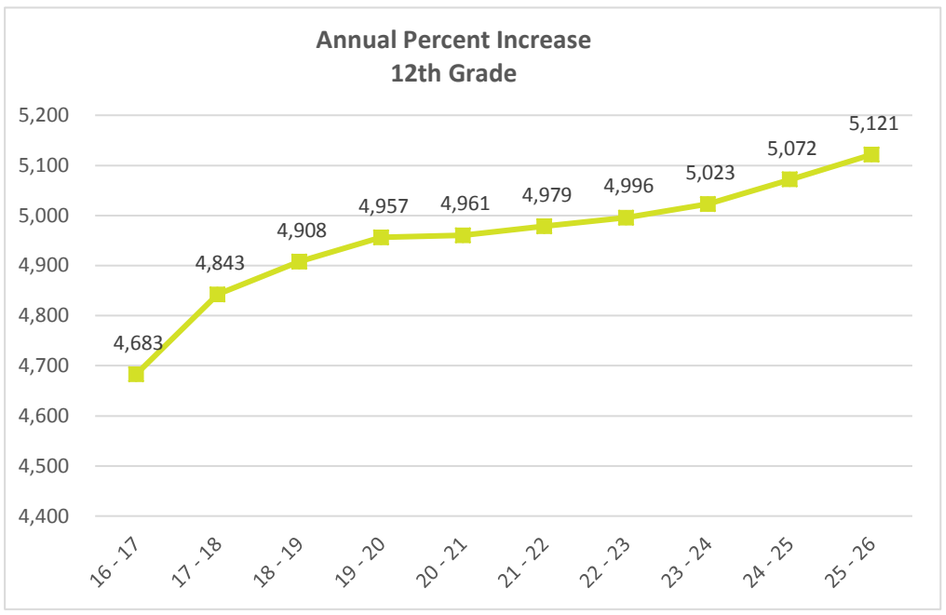


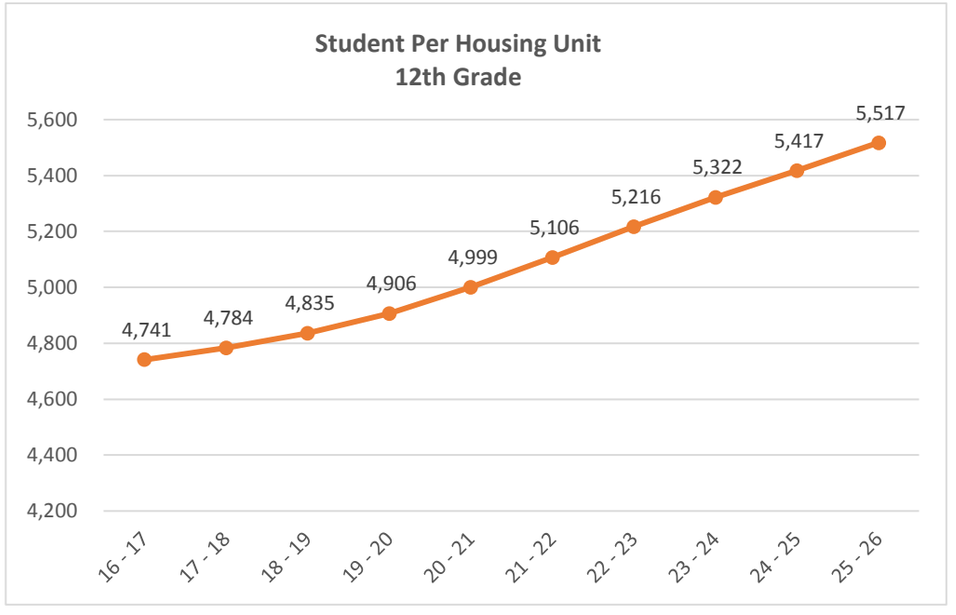
12th Grade	16 - 17	17 - 18	18 - 19	19 - 20	20 - 21	21 - 22	22 - 23	23 - 24	24 - 25	25 - 26
Annual Percent	4,683	4,843	4,908	4,957	4,961	4,979	4,996	5,023	5,072	5,121
Student Per Household	4,741	4,784	4,835	4,906	4,999	5,106	5,216	5,322	5,417	5,517
Cohort Survial	4,442	4,428	4,197	3,767	3,991	3,964	3,946	4,038	4,245	4,199
Linear Regression	4,715	4,902	4,956	4,709	4,589	4,357	4,319	4,308	4,367	4,533

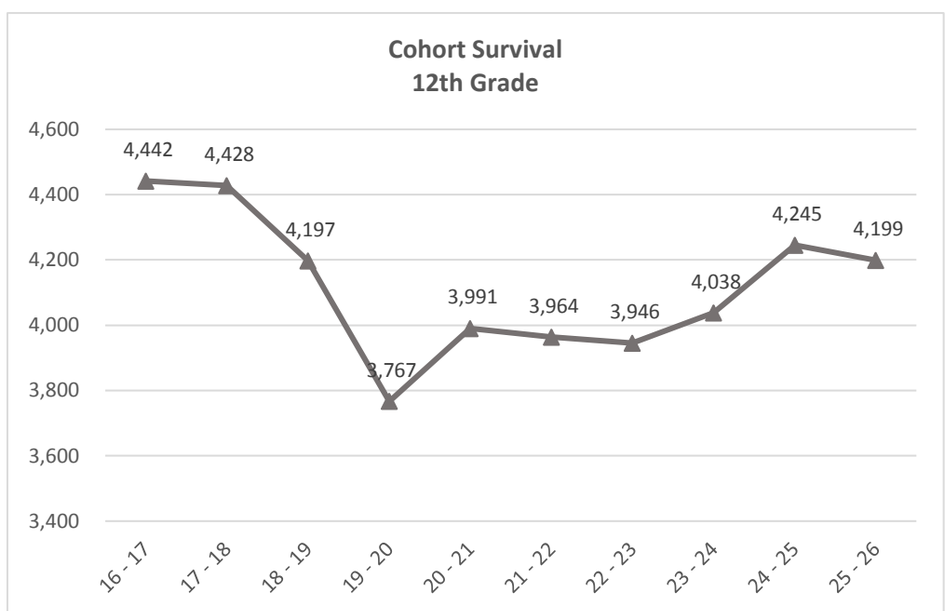
	06 - 07	07 - 08	08 - 09	09 - 10	10 - 11	11 - 12	12 - 13	13 - 14	14 - 15	15 - 16
12th Grade	4162	4349	4432	4440	4519	4360	4355	4234	4341	4528

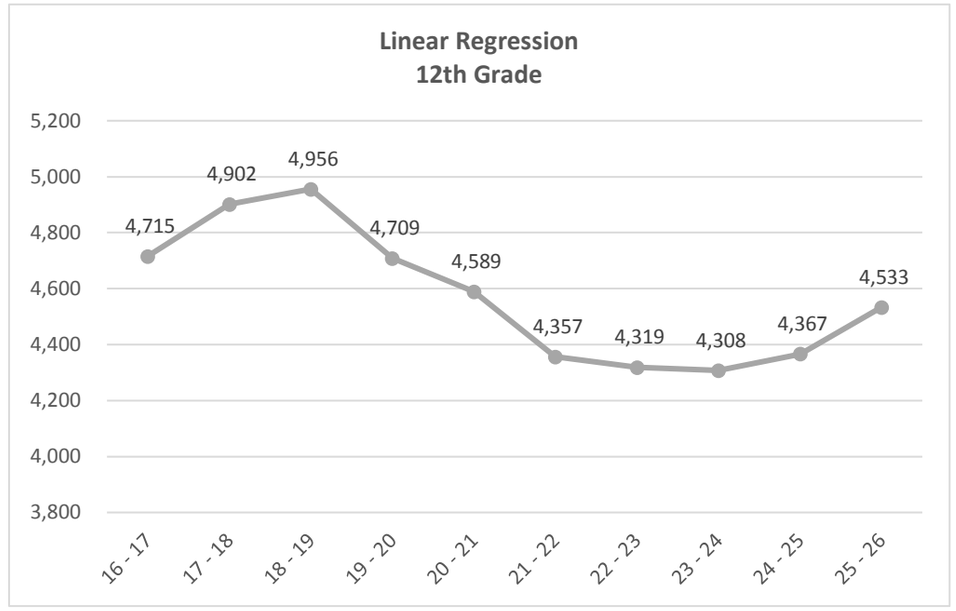












APPENDIX B

PERCENT IN CHANGE OF POPULATION

CHANGE IN PERCENT OF POPULATION
2010 TO 2014 ESTIMATE
(BY AGE SEGMENT)

AGE SEGMENT	% OF 2010 POPULATION	% OF 2014 est. POPULATION	CHANGE IN % OF POPULATION
Under 5	5.2%	5.3%	1.1%
5 to 9	4.3%	4.4%	0.4%
10 to 14	4.3%	4.2%	-2.3%
15 to 19	8.1%	7.8%	-3.7%
20 to 24	14.3%	12.5%	-12.2%
25 to 34	20.7%	22.0%	6.3%
35 to 44	12.5%	12.5%	-0.2%
45 to 54	11.4%	11.3%	-0.3%
55 to 59	4.9%	5.0%	2.5%
60 to 64	4.2%	4.5%	8.4%
65 to 74	5.3%	5.6%	4.9%
75 to 84	3.3%	3.2%	-1.2%
85 and over	1.5%	1.6%	7.4%