WESTON COMPREHENSIVE SCHOOL ENROLLMENT ANALYSIS & PROJECTIONS

SEPTEMBER 2017

PREPARED FOR:
WESTON PUBLIC SCHOOLS

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Introduction

In spring 2017, Weston Public Schools (WPS) contracted with Milone & MacBroom, Inc. to prepare comprehensive school enrollment projections for the district based on enrollment trends observed in the past 2 decades as well as available data on demographics and housing within the community. The projections in this report are meant to serve as a planning tool for the future to represent the most likely direction of Weston Public Schools' enrollment.

This report examines factors that influence school enrollments, including trends in demographics, births, migration, employment, and housing development and real estate. In discussing these trends, the report provides context for historic patterns in WPS' enrollments and a basis for developing future enrollment projections from the best available evidence and indicators. These projections are the product of the best available data at a given point in time and will provide the greatest degree of accuracy when applied to the near future. Through annual updates, enrollment projections can be fine-tuned to increase accuracy, providing Weston with an ongoing planning tool.

Demographic Overview

Demographic indicators of Weston's population are an important foundation for this enrollment analysis, yielding critical insights into how recent regional and national-scale demographic trends have played out in Weston. Data from the most recent Decennial Census and American Community Survey (ACS) was collected and reviewed to form the basis of this section.
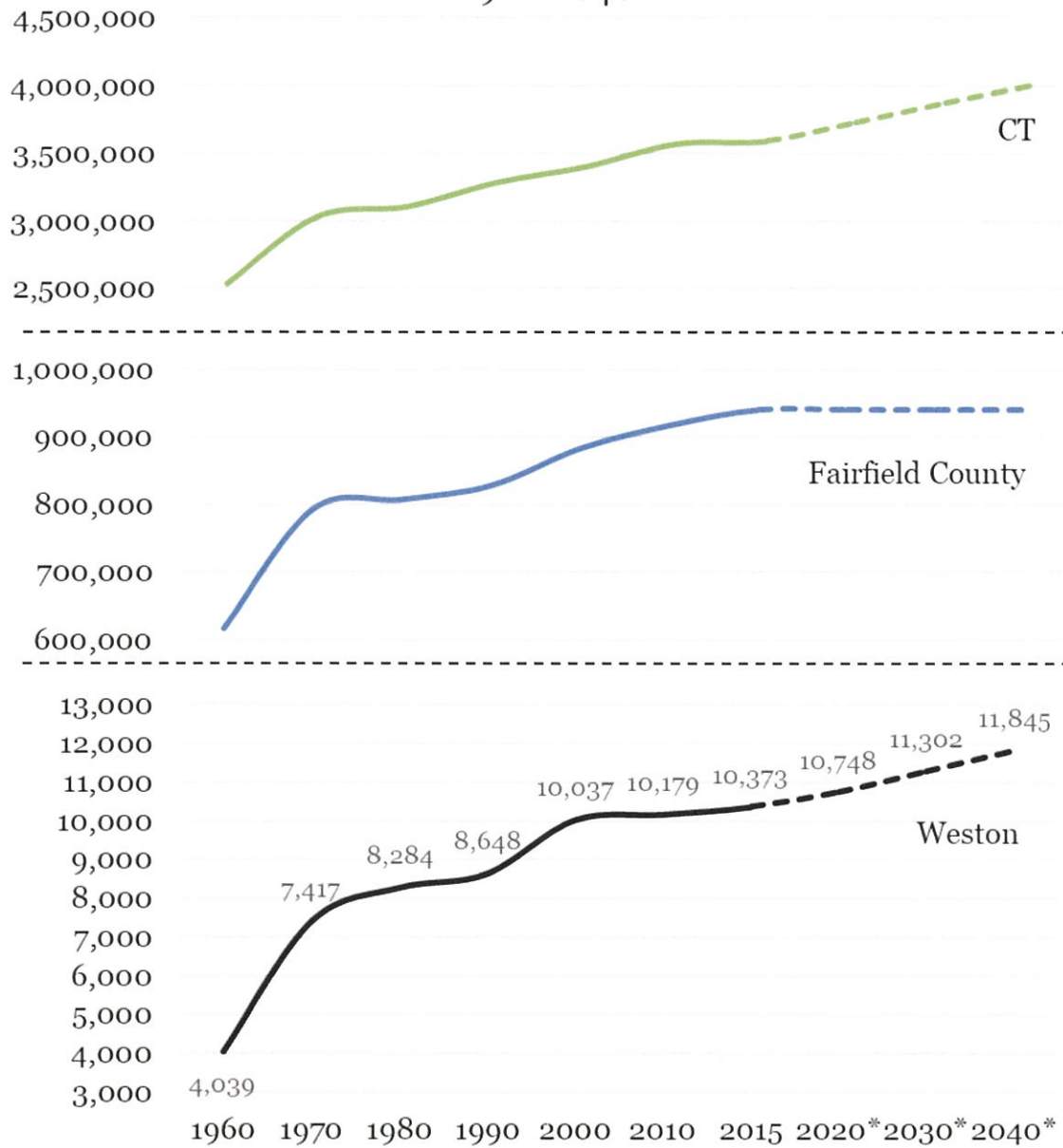
Weston's population is currently estimated to be 10,373 persons by the 2015 ACS, up slightly from 2010's Census count of 10,179 (see *Historic and Projected Total Population* graph). Historically, Weston experienced strong population growth during the 1960s and 70s and a second boom in the 1990s, but since 2000, growth has been muted, with a total population increase of just 3.3 percent since 2000. Because annual birthrates have declined steadily in Weston since 2000, much of this increase is likely attributable to in-migration and new homebuilding that has occurred since that time. Comparing Weston's growth to the Fairfield County region as a whole, the town was largely excluded from the significant growth that occurred since 2000.

Population projections prepared by the Connecticut Department of Transportation project a steady gain in Weston's population over the next 2 decades and beyond, to a projected total of 11,845 by 2040. However, these projections should be used with caution as methodologies based on trends occurring in the state as a whole may not adequately capture Weston's local conditions.

Weston's changing population since the year 2000 has impacted the distribution of age groups within the community. Like many Connecticut communities, Weston's median age has increased over time. As the *Weston Population Distribution* chart shows, Weston experienced overall declines in the population of young children and adults in the prime child-rearing years between 30 and 44 between 2000 and 2010. By contrast, age cohorts composed of older children and adults over the age of 50 grew in size. Figures for 2015 are less reliable in discerning changes in subpopulations due

to sampling methodology, but this data points toward a continuation of this trend. Accordingly, the town's median age rose from 39.7 years in 2000 to 43.4 in 2010 and 43.8 in 2015.

Historic and Projected Total Population 1960-2040

CT

Fairfield County

Weston

| | | | | | | 10,037 | 10,179 | 10,373 | 10,748 | 11,302 | 11,845 |

7,417 8,284 8,648

4,039

1960 1970 1980 1990 2000 2010 2015 2020* 2030* 2040*

Source: US Census 2000 & 2010, ACS 2010-2015; * indicates CT DOT projections.

These ongoing shifts in population have affected several subgroups with relevance to projecting future enrollments. The population of school-age children (defined as those ages 5 through 17) has increased by 5 percent from 2010 to 2015, faster than the population as a whole. Census Tract-level data indicates that this growth has occurred entirely in the southern half of town (south of Norfield, Steep Hill, and Kellogg Hill Roads), with a slight decrease in this population in the northern end of
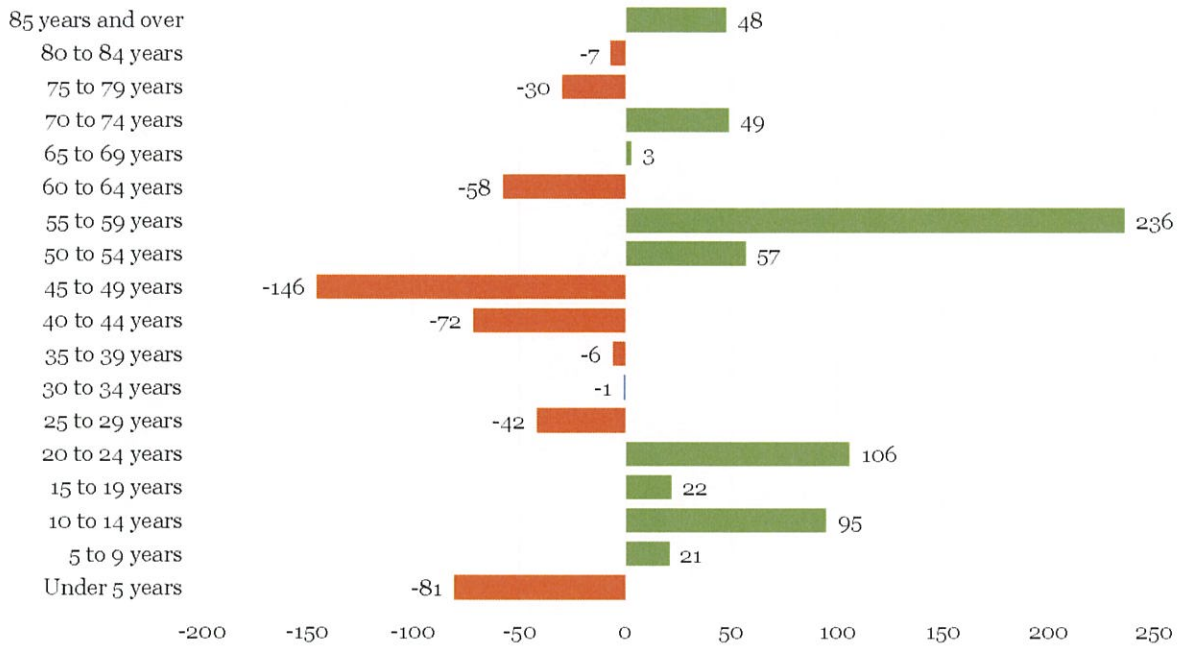
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town. This pattern aligns with anecdotal data suggesting that younger families are increasingly prioritizing proximity to services, transportation, and amenities in their home choices.

Weston Population Distribution 2000 and 2010

Source: US Census 2000 and 2010.

□ Female 2010   □ Male 2010   ■ Female 2000   ■ Male 2000
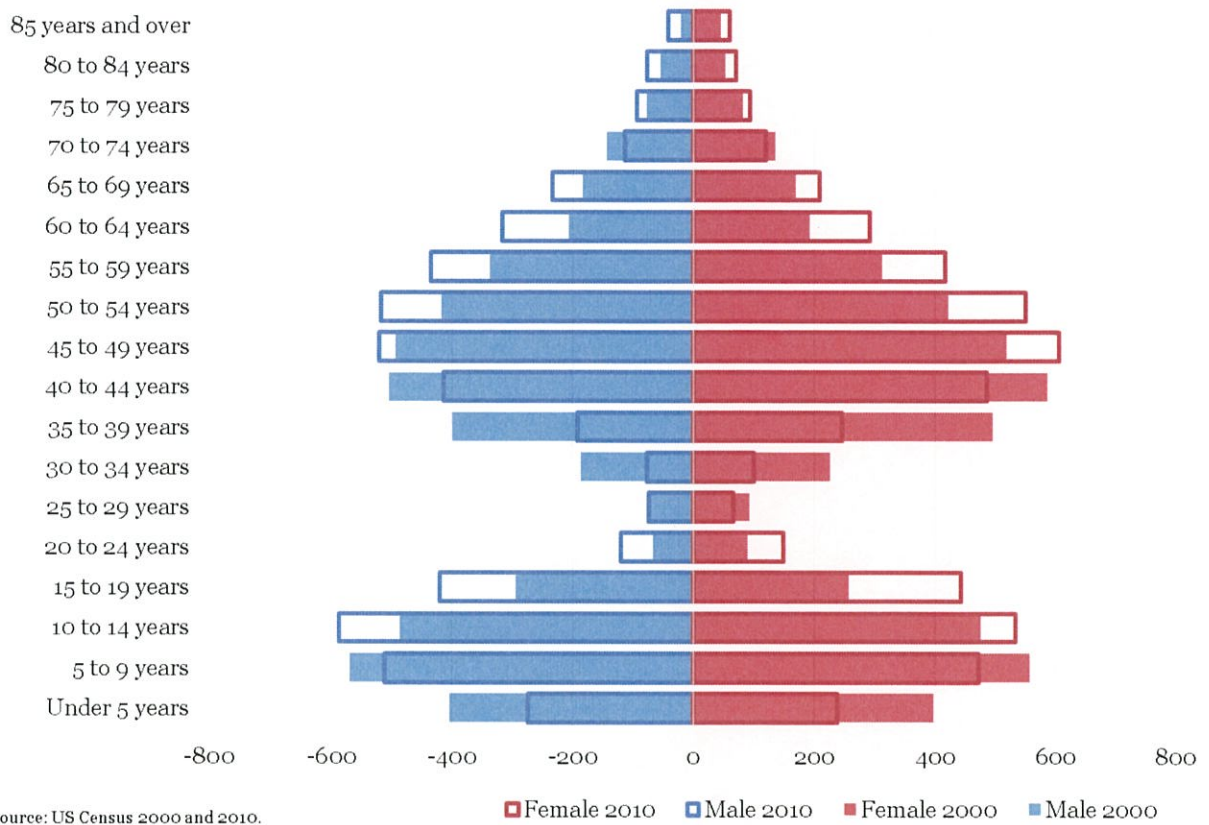
Another demographic subgroup of interest is the population of women of child-bearing age, here defined as those between 18 and 44 years of age. The size of this population experienced a sharp decline of 27.6 percent from 2000 to 2010 but remained very stable from 2010 to 2015, indicating that in-migration has kept pace with aging out and out-migration from this cohort.

Total Population Change 2010-2015

| Age Group	Value
85 years and over	48
80 to 84 years	-7
75 to 79 years	-30
70 to 74 years	49
65 to 69 years	3
60 to 64 years	-58
55 to 59 years	236
50 to 54 years	57
45 to 49 years	-146
40 to 44 years	-72
35 to 39 years	-6
30 to 34 years	-1
25 to 29 years	-42
20 to 24 years	106
15 to 19 years	22
10 to 14 years	95
5 to 9 years	21
Under 5 years	-81

Source: US Census 2010 and ACS 2010-2015.

Employment Trends

Weston currently is experiencing low rates of unemployment closely aligned with that of its peer communities. Weston's average unemployment rate has tracked 2 percentage points lower than the State of Connecticut's over the past 12 years and as of 2016 stood at 4.1 percent, indicating essentially full employment in the community. Weston's labor market is closely tied to both New York City and shoreline employment centers such as Stamford, Norwalk, and Westport, which together make up a slight majority of Weston's estimated 3,600 daily commuters.

A historical pattern observed in many desirable communities has been a generalized inverse relationship between the unemployment rate and school enrollments. That is, as economic conditions improve and unemployment rates decline, enrollments tend to increase as rates of in-migration and births increase. Conversely, periods of increased unemployment depress these factors, leading to lower enrollments. While this pattern can be observed in Weston prior to and during the Great Recession to about 2011, it no longer appears to hold over the past 5 years as a steady rise in employment has coincided with a continued decline in WPS enrollments. This pattern is shown in the following graph.

Local Unemployment and WPS Enrollment, 2005 - 2015

Weston Annual Unemp.   Weston Historic Enrollment
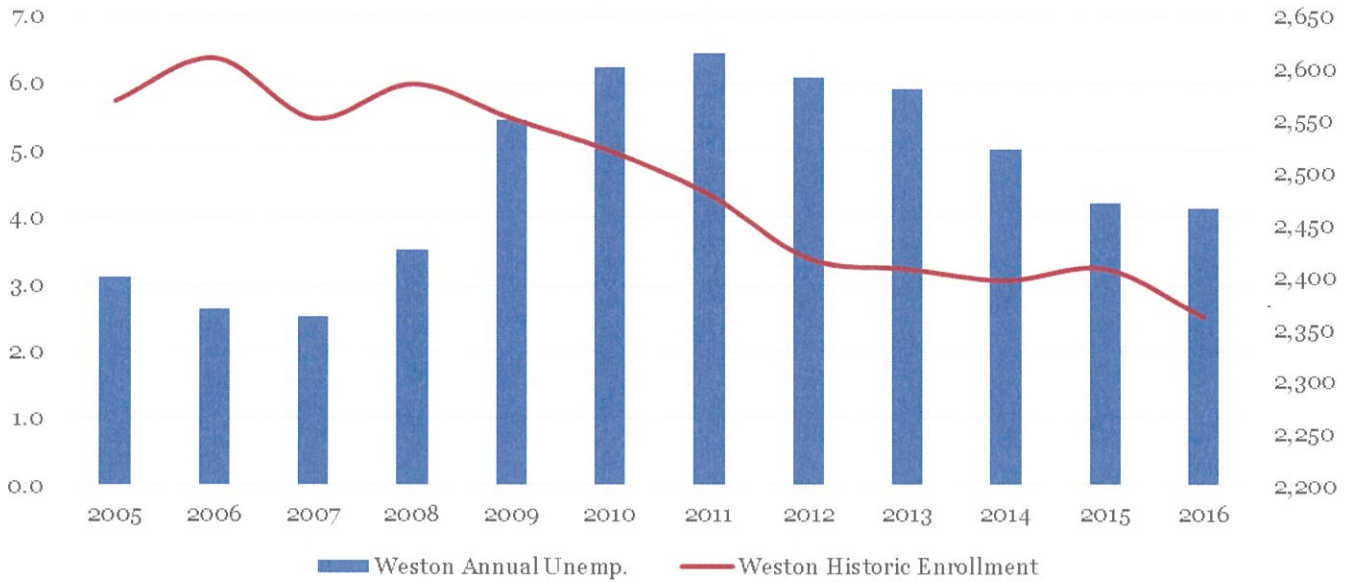
Birth Trends and Projections

Following a peak in 2001, births in Weston experienced a precipitous decline that has continued to obtain to the present day without any clear indications of recovery to date. This decline clearly predated the Great Recession, which coincided with declining births in many area communities.

Weston Historic Births
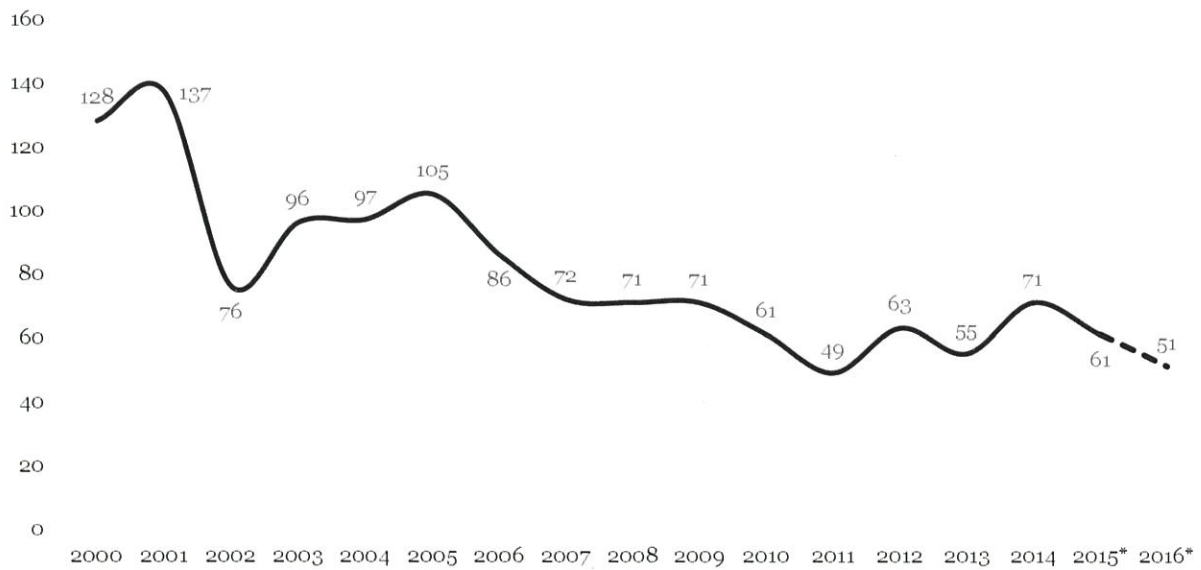
Source: CTDPH (March 2017); * indicates preliminary birth counts

While many Fairfield County communities have observed at least modest recoveries in birthrates since the nadir of the Recession, Weston has yet to see a clear pattern of increasing births in the community. While 2014 saw an increase in local births from the 2010 – 2013 period, preliminary reported figures for 2015 and 2016 indicate that this uptick has not been sustained. The continued trend of low local births is a major force in current and expected future patterns in the District's enrollments.

Projecting future enrollments over a 10-year horizon (through 2026-27) requires that in addition to known births data 5 years of projected births are needed. To generate these birth projections, we start by examining the relationship between births and two sets of economic indicators: local and regional unemployment rates and historic housing sales. Both of these indicators are logically connected to births as the condition of the housing market dictates the accessibility of the community to young families likely to have children while unemployment rates (as an indicator of the overall strength of the labor market) may influence family planning decisions. The relationship between these variables and the number of births in town is examined both for same-year and lagged variations of each indicator.

Using a backwards elimination procedure, the regression equation that best balances predictive accuracy and simplicity was found and used as the basis for birth projections under low, medium, and high economic growth assumptions based on changes in average annual unemployment rates and home sales.

$$Births = (Sales_{Year-2} * 0.422) + (Weston\ Unemp._{Year-1} * -28.31) + (CT\ Unemp._{Year-1} * 19.62)$$

The low, medium, and high scenarios assume a range of unemployment rates and home sales as the local and national economy faces uncertainty in how long the post-2009 economic expansion will be sustained. The chart below shows the range of local and regional employment rates and home sales that form the basis of the high, medium, and low scenarios.

Projection Assumptions by Scenario

	Low Growth	Med. Growth	High Growth
Annual Births	48 - 62	62 - 64	62 - 83
Weston Unemp.	4.3 - 5.5	3.5 - 3.9	2.8 - 3.8
CT Unemp.	5.6 - 7.0	4.5 - 5.1	4.0 - 5.0
Annual Home Sales	140 - 162	170 - 180	178 - 220

Although sales and unemployment rates are not likely to follow a steady, linear trend as assumed in these projections, the low-, medium-, and high-growth scenarios provide a range of likely projections under a range of economic conditions. By the last year of projected births (2021), our low-growth scenario projects 48 annual births while the high-growth scenario projects 83.

Housing

Weston's housing stock was estimated at 3,674 housing units by the Decennial Census in 2010, up approximately 140 units from the stock that existed in 2000. ACS estimates indicate growth of another 127 units (or 3.5 percent growth in overall housing stock) from 2010 to 2015. However, this estimate appears to overstate the true rate of growth in the town's housing stock as permitting data indicates only 40 units were approved during this time period. The difference between these data points is likely attributable to the ACS's sampling methodology.

Housing Units and Households, 2000-2015

	Weston				
				Change 2010-2015	
	2000	2010	2015	Number	%
Total Population	10,037	10,179	10,373	194	1.9%
Total Housing Units	3,532	3,674	3,801	127	3.5%
Total Occupied Housing Units	3,312	3,379	3,379	0	0.0%
Owner Over 65 Occupied Housing Units	577	652	730	78	12.0%
Total Households	3,312	3,379	3,379	0	0.0%
Family Households	2,811	2,854	2,874	20	0.7%
With Own Children Under 18	1,649	1,647	1,711	64	3.9%
Married Couple Family	2,597	2,557	2,657	100	3.9%
With Own Children Under 18	1,511	1,482	1,573	91	6.1%
Female Householder, No husband Present	166	222	170	-52	-23.4%
With Own Children Under 18	109	125	105	-20	-16.0%
Non-Family Households	501	525	505	-20	-3.8%
Householder Living Alone	372	421	453	32	7.6%
Householder 65 Years and Over	161	196	219	23	11.7%
Average Household Size	3	3.0	3.1	0.1	3.3%
Average Family Size	3.3	3.3	3.4	0.1	3.0%

Source: U.S Census 2000 and 2010, ACS 2010-2015

Focusing on the universe of occupied homes in the community, some 730 of 3,379 units are occupied by homeowners age 65 or older. This population has grown from 17.4 percent of households to 21.6 percent since 2000, indicating a growing stock of homes with greater turnover potential over the next 10 years if and when older homeowners elect to downsize to easier-to-maintain homes with closer access to amenities. However, slight growth in the number of family households in town indicates that in-migration of families with children is continuing on net.

Owner-occupants make up the majority of Weston's households, with renters constituting just 6 percent of occupied housing units in town. Rental properties are more common in the southern half of Weston and have very low vacancy rates (less than 5 percent townwide).

Weston Housing Sales and Permitting Activity, 1996 - 2016
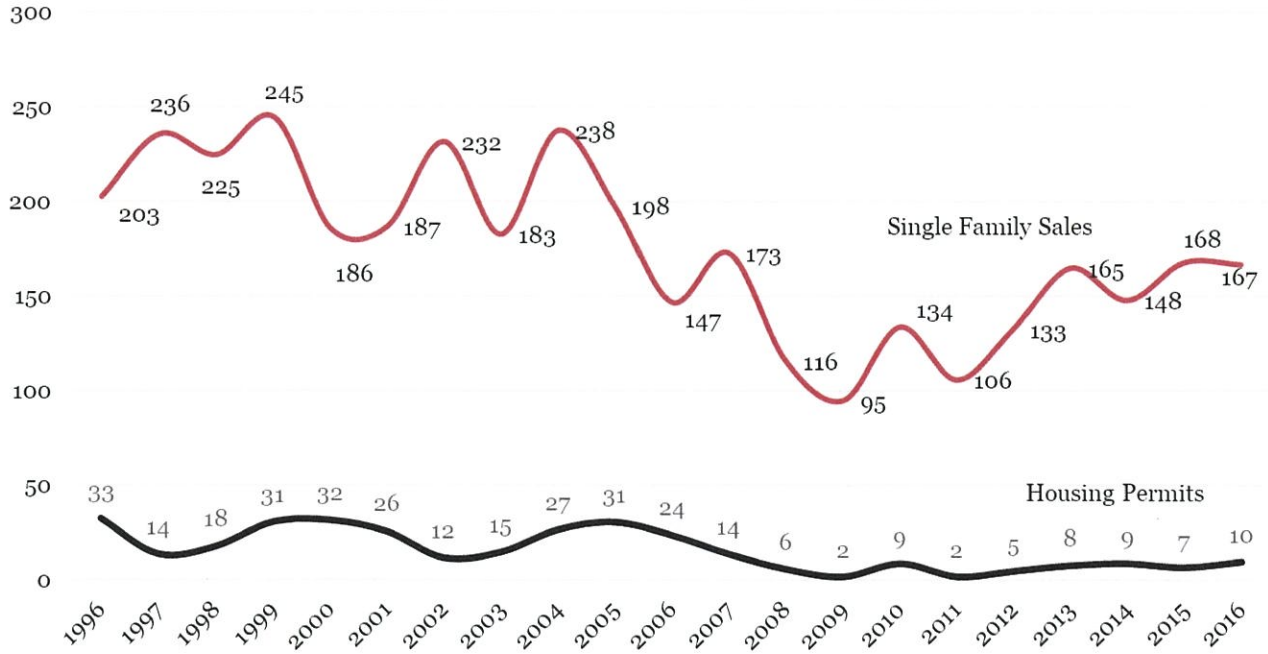

Source: CT DECD and The Warren Group, 2017

Since the downturn that began slightly before the Great Recession, Weston's housing market experienced a strong rebound through the early 2010s but has stabilized in the past several years with single-family sales in the mid 160s annually. Housing sales continue to outpace new permitting activity by a factor of 10 or more as the high levels of existing inventory available on the market continue to inhibit new development. Additionally, approximately 23 permits that have been issued are not yet available for occupancy. Given these conditions, there is no indication that new building activity will soon return to the elevated levels experienced in the late 1990s through the mid 2000s.

Single Family Homes Sales - Weston and Surrounding Towns, 1997-2016
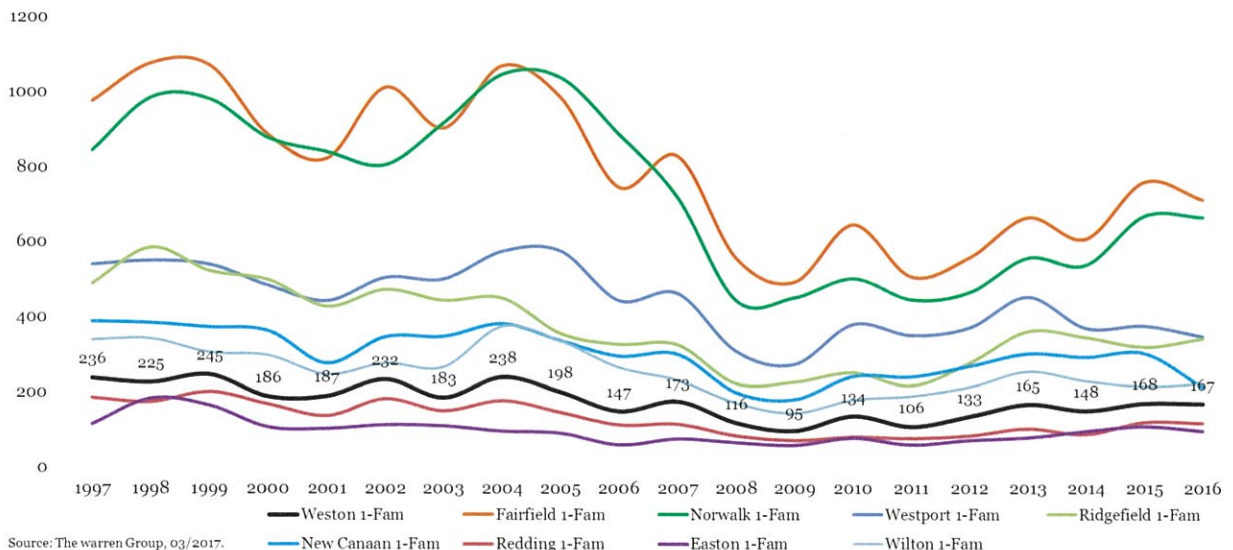
Source: The warren Group, 03/2017.

Single Family Median Sales Prices of Weston and Surrounding Towns, 1997-2016
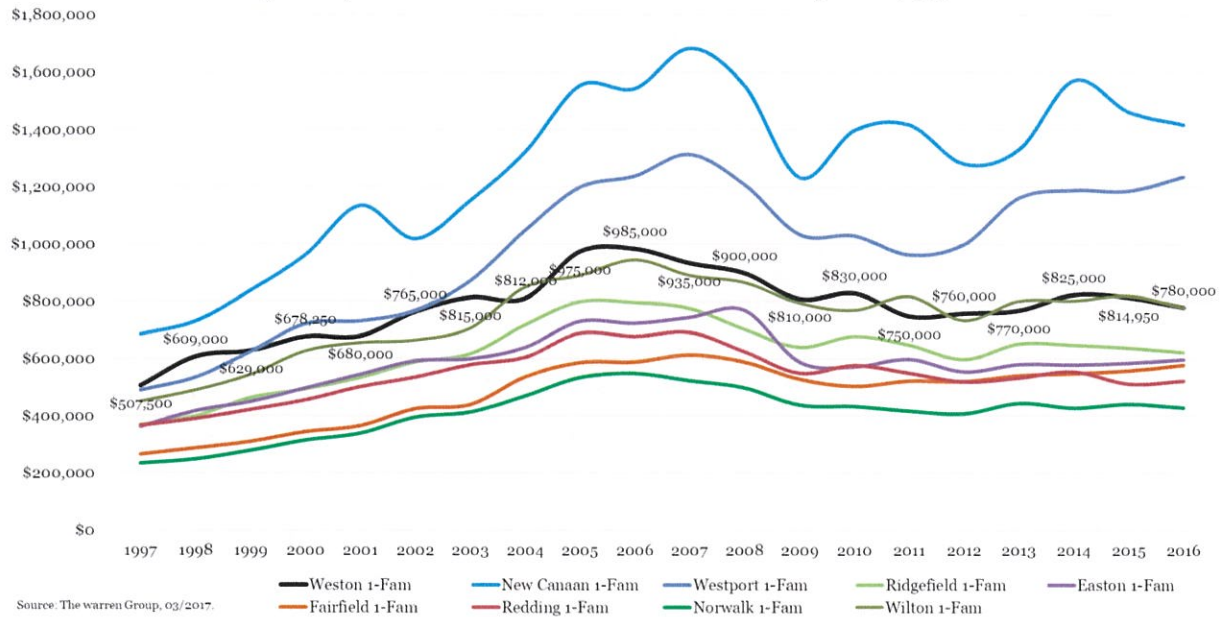
Source: The warren Group, 03/2017.

Comparing Weston's housing market to neighboring communities, the median home sold in Weston in 2016 went for $780,000, above the median prices of many of its central Fairfield County neighbors. Prices have historically trended below those of Westport and New Canaan and at a similar level to Wilton. Compared to higher-priced Westport and New Canaan, Weston's home prices have been less volatile, especially in the wake of the housing market crash in the late 2000s.

Additional information on current and future development trends was provided by Weston's Land Use Director, who reported that Weston's Planning and Zoning Commission has not approved any subdivisions of substantial scale since 2004. Most newly approved residential projects are of a small scale (three units or fewer) while potential future projects that are known to the town would yield fewer than 10 units and may not come to market for some time. Additionally, teardown activity is relatively limited, indicating that replacement of older stock with newer units that may be more suitable for families is not currently driving changes in Weston's market. Potential changes to land use regulations could drive up the potential of the town's remaining residential land, but planning efforts and proposed language that would enable cluster housing options have not been met with positive community reception to date.

A planning document from 2015, "Crafting a Strategic Plan for Weston's Future," examined the community's potential for new residential development from the standpoint of overall population change as well as impacts on WPS enrollment trends. The buildout analysis conducted in this planning effort identified potential sites that would yield just 85 new single-family homes under Weston's existing zoning. While this estimate is lower than some prior analyses would suggest, the report notes that building beyond this level would necessitate building on parcels with challenging site conditions. Given the low level of development potential identified here, it is unlikely that new residential development will be a significant driver of enrollment change in Weston.

Enrollment History and Trends

Since 2001-02, Weston experienced steady growth to a peak in 2006-07 followed by fairly steady year-over-year declines from the 2009-10 school year to the present. The following charts and figures show enrollment trends for grades K-12 in WPS broken down by grade groupings. Elementary enrollments were a bellwether of overall enrollment declines, with PK-2 enrollments peaking simultaneously in 2006-07 alongside districtwide enrollments. In the following years, PK-2 enrollment declined until 2012-13; since that time, declines have slowed significantly though 2016-17 enrollments were the lowest on the post-2000 record. Intermediate grade-level enrollments peaked and began declining a few years later in 2009-10 and the following years. Middle school (grades 6-8) experienced a peak in 2003-04 and 2004-05, a decline through the late 2000s and recovery in the early 2010s, and a second peak in 2012-13. Since the second peak, enrollments declined through 2015-16 and held steady in the following year.
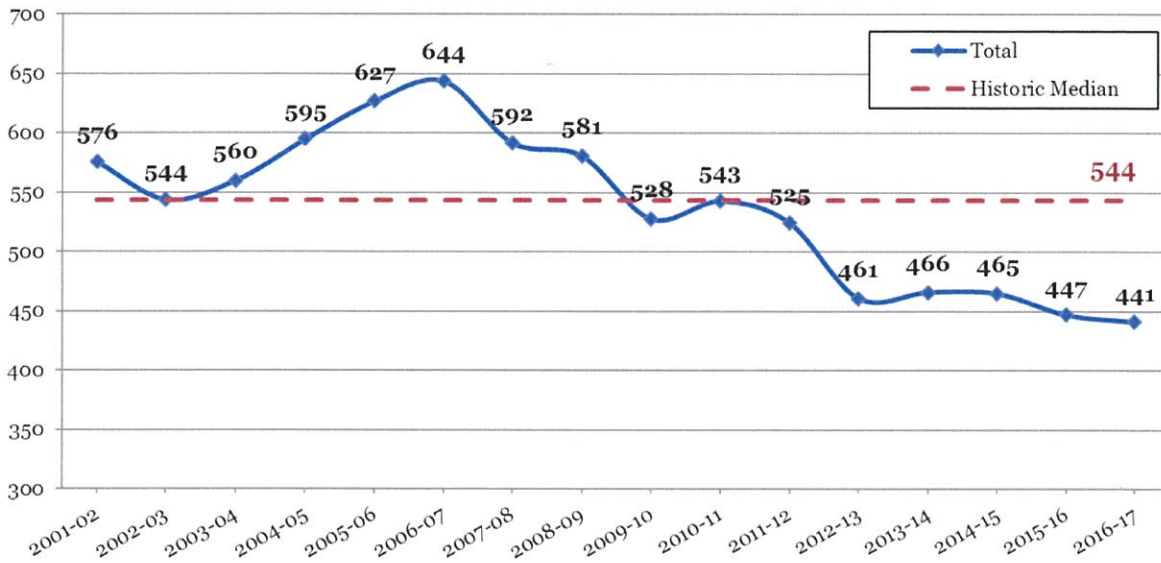
At the high-school grade level, enrollments have not yet begun significant declines as Weston's high school saw peak enrollments in 2015-16. A decline from that peak occurred in 2016-17, but enrollments remain well above the historic median. Examining the individual grade cohorts, 2016-17 saw the largest graduating class on recent record exit the system, to be replaced by the second-smallest rising freshman cohort since 2003-04.

Weston Public School Enrollment History
Kindergarten through 12th Grade

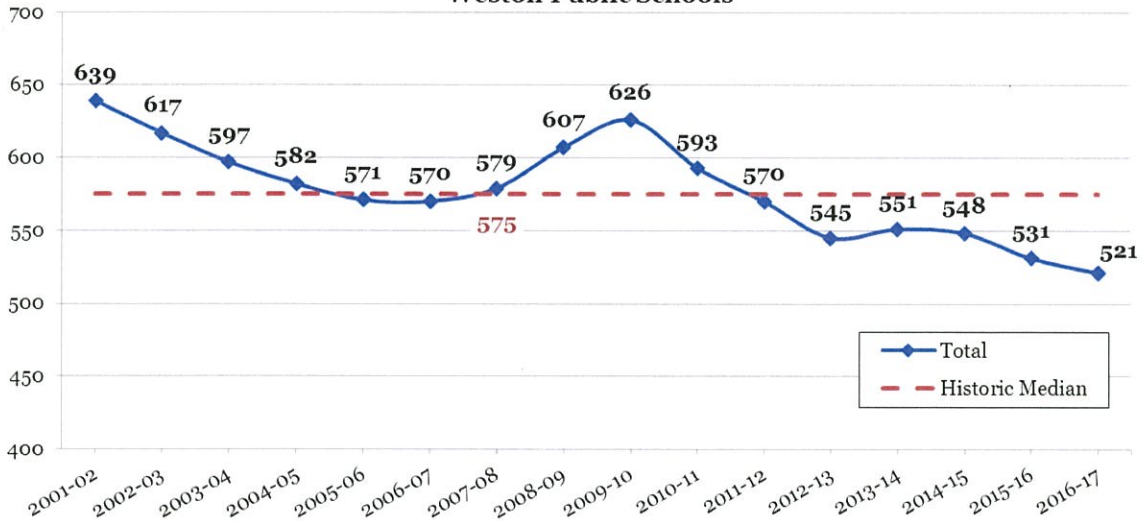| School Year	Birth Year	Births	K	1	2	3	4	5	6	7	8	9	10	11	12	PK
2001-02	1996	114	158	210	193	201	226	212	217	181	176	176	135	129	138	15
2002-03	1997	114	159	170	194	193	201	223	221	209	187	173	175	137	133	21
2003-04	1998	146	187	163	181	194	195	208	218	215	210	180	167	173	131	29
2004-05	1999	129	184	204	176	184	201	197	211	226	206	206	169	167	171	31
2005-06	2000	128	182	194	213	174	191	206	199	201	232	212	201	163	163	38
2006-07	2001	137	210	194	200	210	174	186	208	191	201	225	207	197	167	40
2007-08	2002	76	146	220	191	196	213	170	188	203	192	197	219	197	185	35
2008-09	2003	96	166	159	220	202	194	211	183	190	210	196	206	214	198	36
2009-10	2004	97	158	171	160	214	203	209	217	181	202	208	191	193	206	39
2010-11	2005	105	159	166	178	170	216	207	211	215	181	195	205	186	192	40
2011-12	2006	86	162	156	177	180	173	217	211	207	211	170	193	203	189	30
2012-13	2007	72	115	157	163	180	186	179	221	208	207	210	173	188	205	26
2013-14	2008	71	136	135	175	174	183	194	190	214	214	214	209	170	180	20
2014-15	2009	71	140	150	146	185	177	186	203	188	212	201	207	206	167	29
2015-16	2010	61	124	141	157	161	186	184	190	209	186	218	208	206	213	25
2016-17	2011	49	128	143	145	163	173	185	187	194	205	189	213	206	206	25

State Department of Education - Public School Information System, Summary Report for 2001-02 to 2011-12; CT CeDar 2012-13 to 2015-16; CT EdSight 2016-17

Elementary (PK-2nd) Enrollments
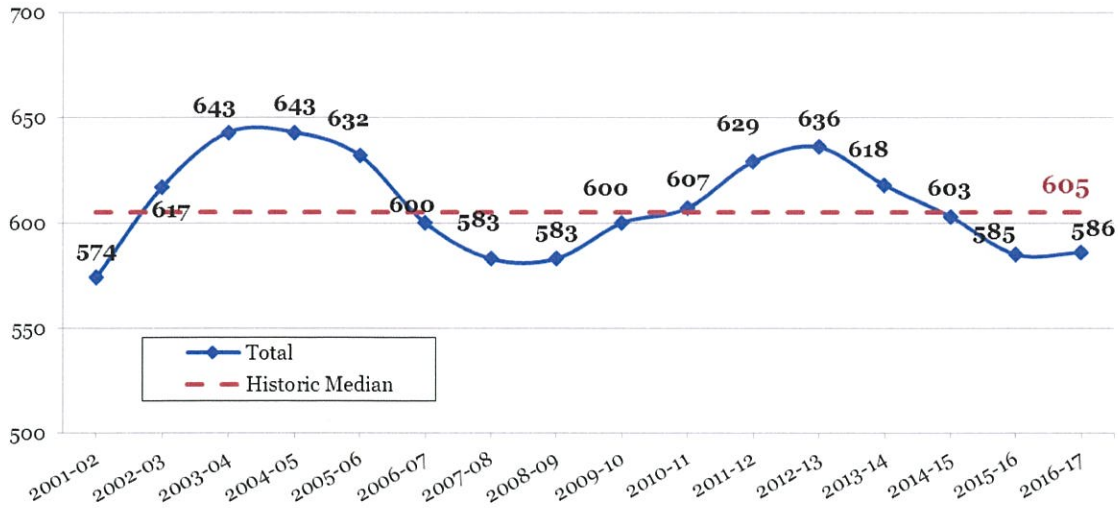## Weston Public Schools

Data points (by year):
- 2001-02: 576
- 2002-03: 544
- 2003-04: 560
- 2004-05: 595
- 2005-06: 627
- 2006-07: 644
- 2007-08: 592
- 2008-09: 581
- 2009-10: 528
- 2010-11: 543
- 2011-12: 525
- 2012-13: 461
- 2013-14: 466
- 2014-15: 465
- 2015-16: 447
- 2016-17: 441

Historic Median: 544

Legend: Total, Historic Median

Sources: CT Dept. of Education CeDar, and Weston Public Schools

Intermediate (3rd - 5th) Enrollments
Weston Public Schools

Data points (by year):
- 2001-02: 639
- 2002-03: 617
- 2003-04: 597
- 2004-05: 582
- 2005-06: 571
- 2006-07: 570
- 2007-08: 579
- 2008-09: 607
- 2009-10: 626
- 2010-11: 593
- 2011-12: 570
- 2012-13: 545
- 2013-14: 551
- 2014-15: 548
- 2015-16: 531
- 2016-17: 521

Historic Median: 575

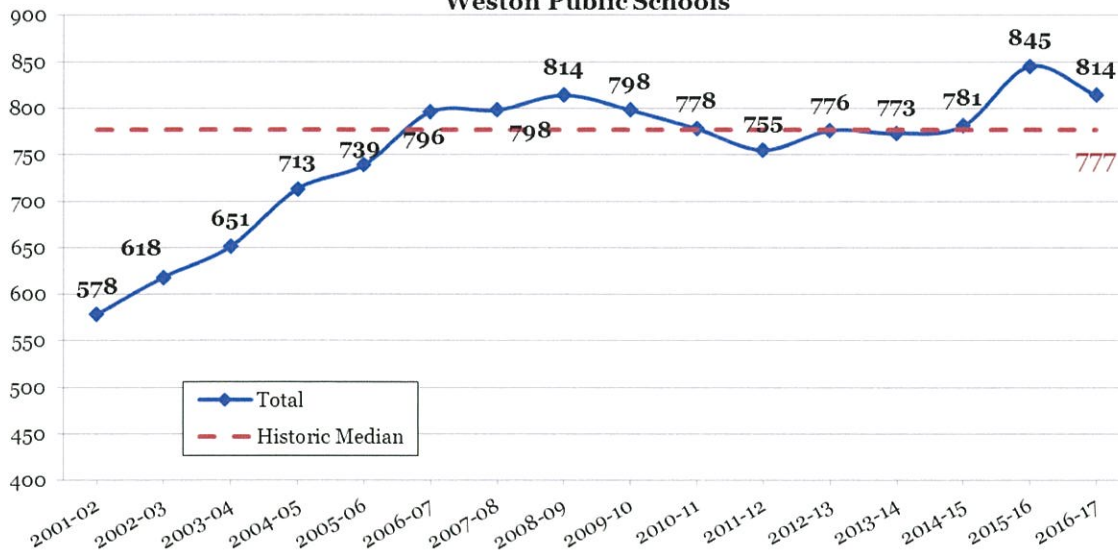Legend: Total, Historic Median

Sources: CT Dept. of Education CeDar, and Weston Public Schools

Middle (6th-8th) Enrollments
Weston Public Schools

Sources: CT Dept. of Education CeDar, and Weston Public Schools

## High (9th-12th) Enrollments
Weston Public Schools

Sources: CT Dept. of Education CeDar, and Weston Public Schools

Private and Other Public Enrollment

Data on Weston resident enrollment in private schools and other (non-WPS) public school systems is limited as the Connecticut Department of Education's most recent available data on out-of-district attendance is current only to 2013-14. Historically, local enrollment in nonpublic schools has accounted for approximately 350 students across all grades, or about 8 percent of all resident students. Private school enrollments declined slightly in 2009-10 but recovered relatively quickly.

By contrast, enrollment in other public programs is very limited, with 20 or fewer residents enrolled annually at public schools outside of Weston.

Resident Students Attending Private School

Source: CT Dept. of Ed.   ■ K-2 ■ 3-5 ■ 6-8 ■ 9-12 —— % of All Res. Students
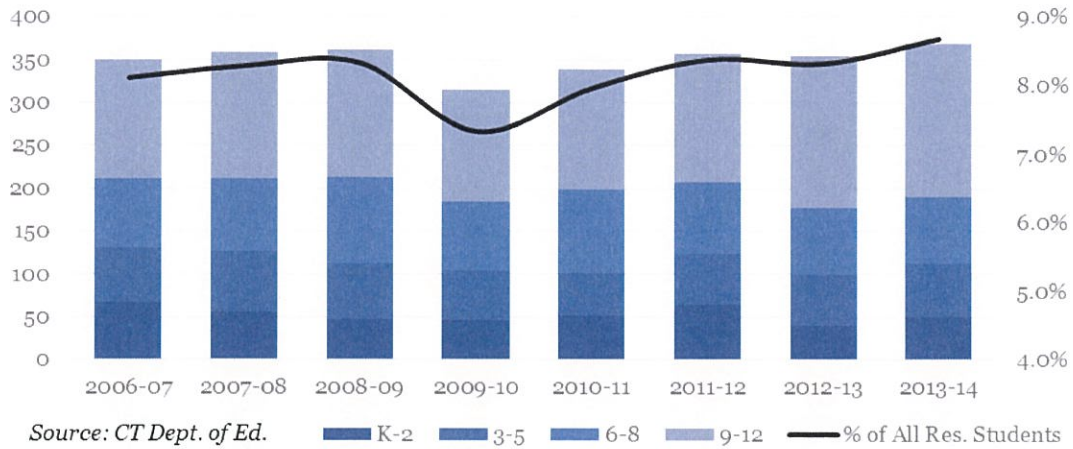
Resident Students Attending Other Public Schools

Source: CT Dept. of Ed.   ■ K-2 ■ 3-5 ■ 6-8 ■ 9-12 —— % of All Res. Students
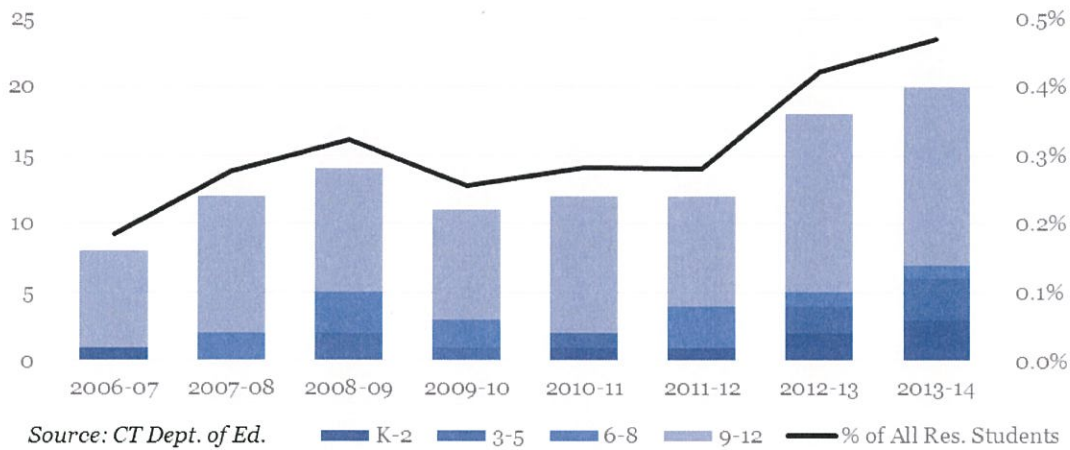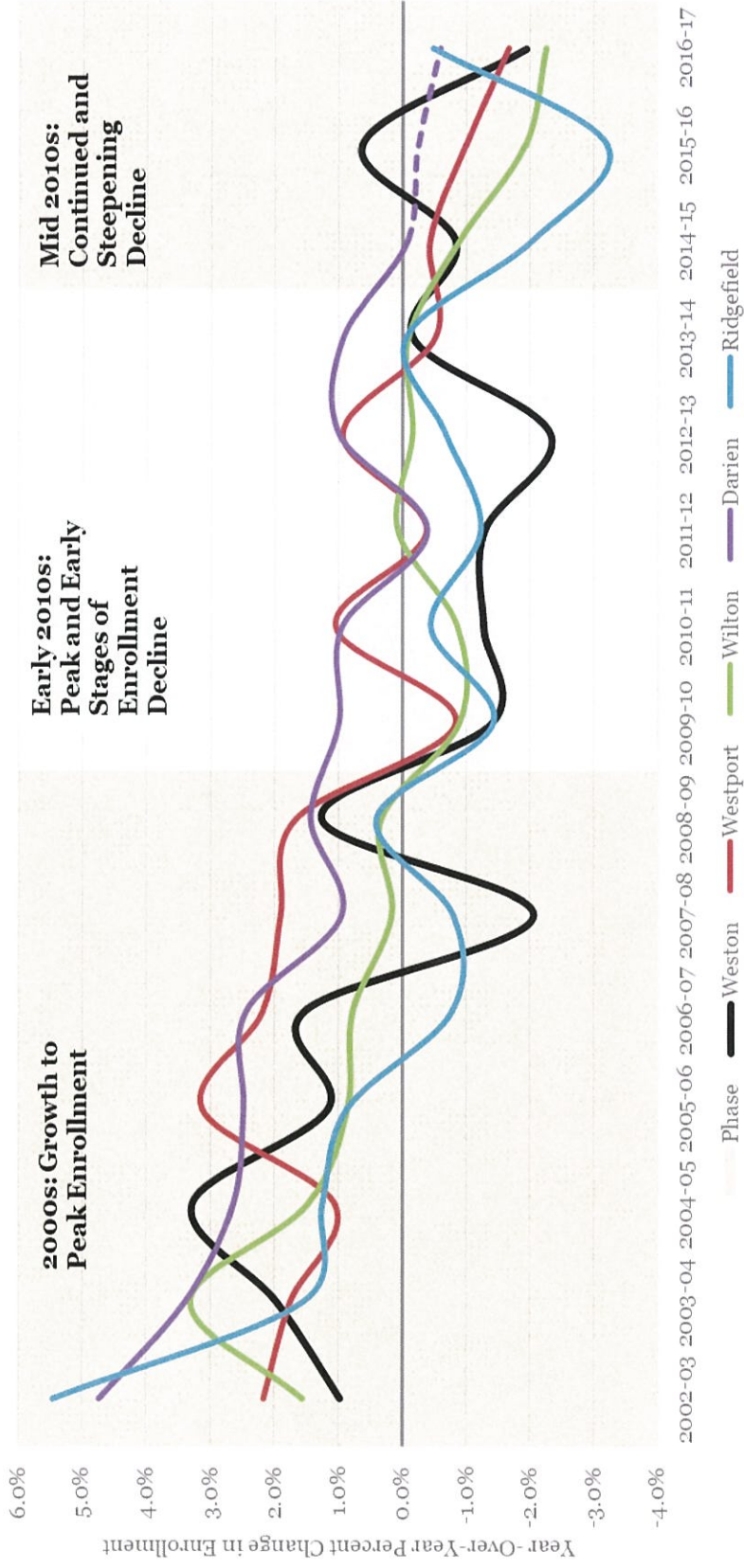
Regional School Enrollment Trends

Weston's patterns of enrollment change mirror many peer districts. For comparison purposes, we examined trends in enrollment changes across similar Lower Fairfield County towns with comparable socioeconomic profiles and educational programs. A similar pattern can be observed across these districts, with a dominant pattern of sustained year-of-year enrollment growth through the early 2000s, districts reaching enrollment peaks and beginning to see limited growth or declines in the first several years of the 2010s, and declines becoming more rapid across most districts in the most recent years of enrollment on record.

Compared to these peer districts, Weston's enrollment peaked early, in 2006-07, and saw larger year-over-year enrollment declines than most during the early 2010s than most. The general alignment of these trends indicates that while the idiosyncrasies of Weston's enrollment change may be driven by

particular local factors the overall pattern is attributable to conditions that prevail across the region and beyond.

Historic K-12 Enrollment Change: Selected DRG A Districts

2000s: Growth to Peak Enrollment

Early 2010s: Peak and Early Stages of Enrollment Decline

Mid 2010s: Continued and Steepening Decline

Year-Over-Year Percent Change in Enrollment

6.0%
5.0%
4.0%
3.0%
2.0%
1.0%
0.0%
-1.0%
-2.0%
-3.0%
-4.0%

2002-03 2003-04 2004-05 2005-06 2006-07 2007-08 2008-09 2009-10 2010-11 2011-12 2012-13 2013-14 2014-15 2015-16 2016-17

Phase — Weston — Westport — Wilton — Darien — Ridgefield

Source: CT DOE CeDar and EdSight databases, MMI district-level projections (medium scenarios)
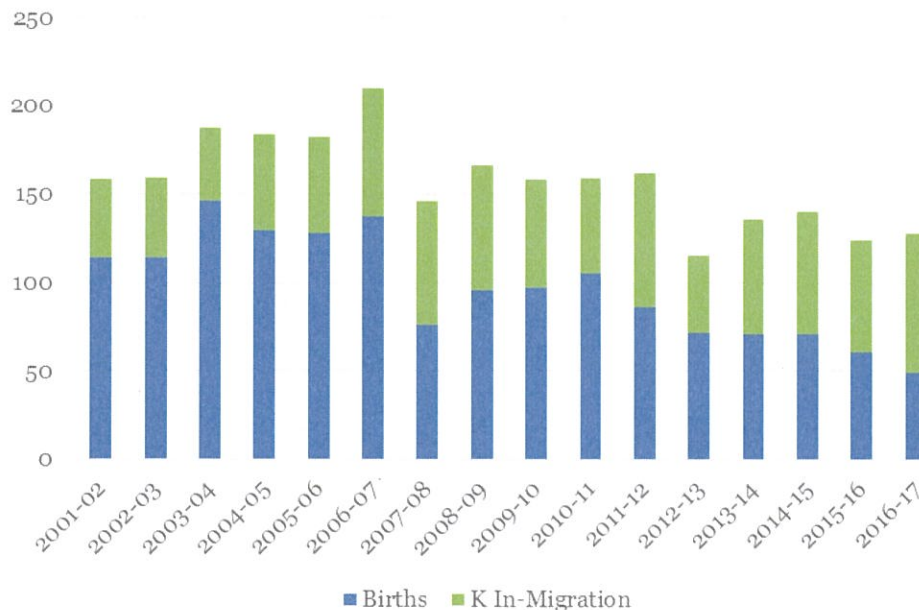
Kindergarten Enrollment Trends and Migration

Weston's kindergarten enrollments have declined below historic averages in the past several years. From 2001-02 to 2011-12, most years yielded about 160 – 190 kindergarten students in each entering cohort to the system, with a peak of 210 students in 2006-07. After a precipitous decline in 2012-13, which saw just 115 students enter at K, the last 4 years have seen about 125 – 140 K enrollments annually. With fewer students entering the system at the lower grades, declines in the system's overall size are inevitable unless substantial net in-migration occurs at higher grade levels.

Projecting student enrollment requires an estimate of new kindergarten enrollments for each year in the projection horizon. This projection is typically based off births in the community 5 years prior, with adjustments for the rate of net in- or out-migration of families with pre-school-age children. Historically, predicting the size of future kindergarten cohorts has been challenging in Weston due to low local birthrates and high levels of in-migration of these types of families.

This challenge has been magnified in recent years as the birth-K ratio has risen from approximately 1.5 (indicating a 50 percent increase in the size of incoming classes relative to local births, or 1/3 of all kindergarten students being born outside of Weston) to 2.61 (equivalent to a 161 percent increase from the local birth count).

Birth vs. Kindergarten In-Migration

An additional analysis of births and kindergarten enrollments was conducted to better understand the independent effects of births, migration, and other factors in composing each entering kindergarten class. We compared a set of address-matched student enrollment records against two other address-matched databases—local birth records and housing sales—to determine the proportion of K records that could be matched against each.

Over the past 4 years, an average of 34 percent of kindergarten enrollments could be directly matched to a Weston birth record. A closer examination of 2016-17 enrollments showed just 25 percent of kindergarten students matching a birth record, with an additional 59 percent matched to a home sale in the previous 5 years. The remaining 16 percent of students not accounted for under this methodology may be attributable to a variety of factors, including students in rental housing, students who moved within Weston before entering school, students living with extended family, and any discrepancies between these sets of records. Conversely, births that could not be matched to an enrollment record may either indicate out-migration or students attending non-WPS schools.

Under these circumstances, the traditional method of using a single ratio of births to kindergarten enrollments is error prone. Because this method ties estimated migration directly to births, a kindergarten enrollment projection based on it may be misleading as small changes in local births results are magnified. As detailed below, an alternative approach to projecting kindergarten enrollments was used to avoid these pitfalls.

Enrollment Projections

Methodology

The cohort-survival methodology, with some modifications, was used to calculate all projections in this report. This is a standard methodology for projecting populations and student enrollments and relies on the recent past as a predictor of the future. It works well for stable populations, including those that are growing or declining at a steady rate.

Persistency ratios were calculated from historical and current enrollments to determine growth or loss in a grade cohort as it progresses through the school system. Persistency ratios of 1.00 mean that the cohort remains the same as it advances from one grade to the next. A persistency ratio of 1.05 means the cohort increased by 5 percent or a class of 100 gained five additional students the next year. Enrollment data from 2001-02 through 2016-17 was used to develop the grade-to-grade persistency ratios shown in the table on the following page. Birth-K ratios are also shown on this table for information only as an alternative method was used to project kindergarten enrollments.

Persistency ratios account for the various factors affecting enrollments, including housing development and sales, economic conditions, student transfers, and mobility into and out of a school district; however, they function best in a system that has stable trends – whether steadily increasing, decreasing, or remaining flat. As noted above, Weston's birth-K persistency ratio has risen dramatically since the mid 2000s, from 1.28 in 2003-04 to 2.61 in 2016-17. A slight increase in persistency ratios from grade to grade can also be observed although this effect is much less pronounced.

Kindergarten through 12th Grade Persistency Ratios by School Year 2002-03 to 2016-17														
Year	Birth-K	K-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	Migration Estimate (2-7 to 3-8)
2002-03	1.3947	1.0759	0.9238	1.0000	1.0000	0.9867	1.0425	0.9631	1.0331	0.9830	0.9943	1.0148	1.0310	0.33%
2003-04	1.2808	1.0252	1.0647	1.0000	1.0104	1.0348	0.9776	0.9729	1.0048	0.9626	0.9653	0.9886	0.9562	-0.08%
2004-05	1.4264	1.0909	1.0798	1.0166	1.0361	1.0103	1.0144	1.0367	0.9581	0.9810	0.9389	1.0000	0.9884	1.16%
2005-06	1.4219	1.0543	1.0441	0.9886	1.0380	1.0249	1.0102	0.9526	1.0265	1.0291	0.9757	0.9645	0.9760	0.67%
2006-07	1.5328	1.0659	1.0309	0.9859	1.0000	0.9738	1.0097	0.9598	1.0000	0.9698	0.9764	0.9801	1.0245	-1.18%
2007-08	1.9211	1.0476	0.9845	0.9800	1.0143	0.9770	1.0108	0.9760	1.0052	0.9801	0.9733	0.9517	0.9391	-0.60%
2008-09	1.7292	1.0890	1.0000	1.0576	0.9898	0.9906	1.0765	1.0106	1.0345	1.0208	1.0457	0.9772	1.0051	2.50%
2009-10	1.6289	1.0301	1.0063	0.9727	1.0050	1.0773	1.0284	0.9891	1.0632	0.9905	0.9745	0.9369	0.9626	2.17%
2010-11	1.5143	1.0506	1.0409	1.0625	1.0093	1.0197	1.0096	0.9908	1.0000	0.9653	0.9856	0.9738	0.9948	1.35%
2011-12	1.8837	0.9811	1.0663	1.0112	1.0176	1.0046	1.0193	0.9810	0.9814	0.9392	0.9897	0.9902	1.0161	0.17%
2012-13	1.5972	0.9691	1.0449	1.0169	1.0333	1.0347	1.0184	0.9858	1.0000	0.9953	1.0176	0.9741	1.0099	1.37%
2013-14	1.9155	1.1739	1.1146	1.0675	1.0167	1.0430	1.0615	0.9683	1.0288	1.0338	0.9952	0.9827	0.9574	2.81%
2014-15	1.9718	1.1029	1.0815	1.0571	1.0172	1.0164	1.0464	0.9895	0.9907	0.9393	0.9673	0.9856	0.9824	1.86%
2015-16	2.0328	1.0071	1.0467	1.1027	1.0054	1.0395	1.0215	1.0296	0.9894	1.0283	1.0348	0.9952	1.0340	2.86%
2016-17	2.6122	1.1532	1.0284	1.0382	1.0745	0.9946	1.0163	1.0211	0.9809	1.0161	0.9771	0.9904	1.0000	1.84%
Long Term Avg.	1.7242	1.0611	1.0372	1.0238	1.0178	1.0152	1.0242	0.9885	1.0064	0.9889	0.9874	0.9804	0.9918	
5-Year Avg.	2.0259	1.0813	1.0632	1.0565	1.0294	1.0257	1.0328	0.9988	0.9979	1.0026	0.9984	0.9856	0.9967	
3-Year Avg.	2.2056	1.0878	1.0522	1.0660	1.0324	1.0169	1.0281	1.0134	0.9870	0.9946	0.9931	0.9904	1.0054	

An estimate of migration was calculated on the basis of year-to-year changes in cohorts at the most stable grade levels in order to determine the degree to which migration in and out of the school system has affected enrollments and persistency ratios. Migration in each year was estimated as a ratio of 2nd to 7th grade enrollments in the previous year to 3rd to 8th grade enrollments in the following year; these grade levels traditionally have the greatest level of stability—for example, minimal movement in and out of private school generally takes place in these grades. A gain in enrollment during these years indicates in-migration into the district while a loss indicates out-migration whether due to a change in residence, transfer to or from private school, or other circumstances. Migration during this period has been positive in most years of data available, with relatively strong in-migration rates in the last 5 years.

As with all projections, the projections presented below are built on a number of parameters and assumptions that drive the model. Among these assumptions are that full-day kindergarten will remain in place, that no significant changes in deployment of pre-kindergarten programs will be made, that recent private school enrollment trends will remain stable, and that housing and employment assumptions at the districtwide level will prove accurate.

Kindergarten Projection Model

At the kindergarten grade level, a different projection methodology was used to account for the unusual circumstances of very high birth-K persistency ratios. Instead of multiplying births by the birth-K persistency ratio to estimate each future year's kindergarten cohort, a regression-based estimate was developed based on historical births, home sales, and kindergarten enrollment data. This adjustment to the standard methodology incorporates home sales as an additional variable to predict future enrollments and to better differentiate the effects of births and migration on the final total of students matriculating into the system each year.

The regression model selected for use in projecting kindergarten enrollments was based on births 5 years prior and same-year home sales; metrics of the model's fit and significance were very good (R^2 = 0.987, variable $p \approx 0.01$). The final regression equation is as follows:

$$K_{Yr} = (Births_{Yr-5} * 0.779) + (Five\_Yr\_Sales_{Yr} * 0.093)$$

Feeding known and assumed future-year conditions (detailed in the table below) into this model yielded estimated cohort sizes for each of Weston's next 10 incoming kindergarten classes. This data is then fed into the cohort-survival model in order to project the future course of these cohorts of students as they age through the system. As both home sales and births in the latter half of these projections are based on unknown future data, the kindergarten projections will be most accurate in the first half of the projection horizon.

	Scenario Parameters		
	Low	Medium	High
Annual Births	48 - 62	62 - 64	62 - 83
Annual Home Sales	140 - 162	170 - 180	178 - 220

Historic and Projected K Enrollment, 2001-02 to 2021-22
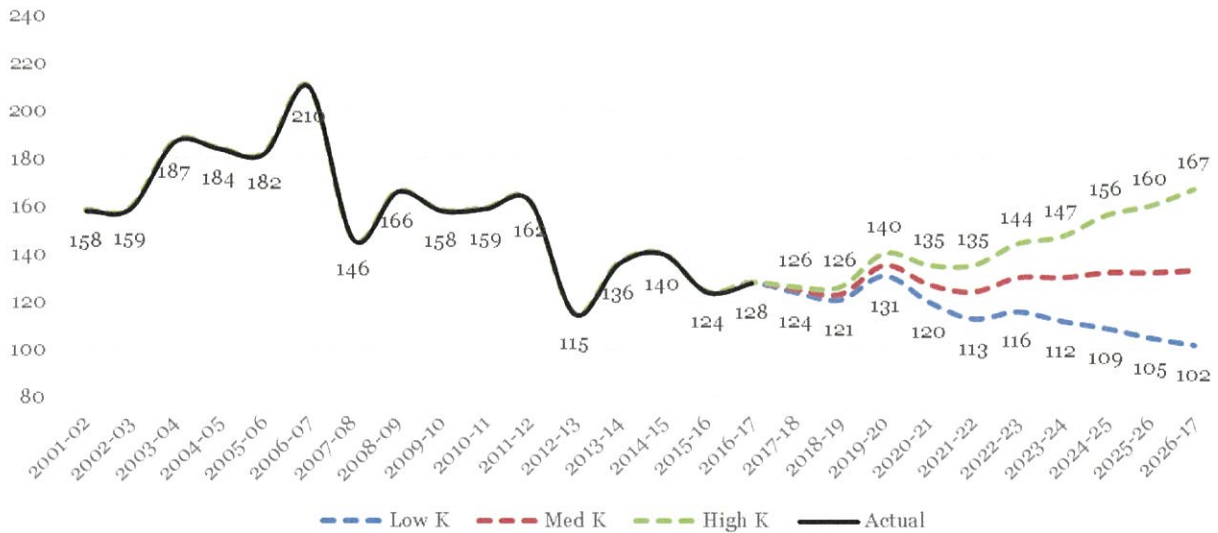
Projection Scenarios

We prepared low, medium, and high projections based on different sets of assumptions regarding economic conditions, births, and persistency ratios. The high-projection model is predicated on economic growth, declining unemployment, and an upturn in the local housing market as drivers for increased birth estimates and persistency ratios, leading to higher enrollment projections. The low-growth model, by contrast, is predicated on a future economic downturn affecting both migration and fertility over the next several years. The following table shows the anticipated change in births, home sales, and unemployment assumed under our three different growth models from 2017 to 2021, the 5 years in which birth projections are necessary.

Projection Assumptions by Scenario

	Low Growth	Med. Growth	High Growth
Annual Births	48 - 62	62 - 64	62 - 83
Weston Unemp.	4.3 - 5.5	3.5 - 3.9	2.8 - 3.8
CT Unemp.	5.6 - 7.0	4.5 - 5.1	4.0 - 5.0
Annual Home Sales	140 - 162	170 - 180	178 - 220

These projections are also built on the regression-based model of kindergarten enrollments discussed above. These projections are directly incorporated as the projected number of kindergarten enrollments for each year and then progress through the grades according to each scenario's grade-to-grade persistency ratios.

Three sets of projected enrollments provide a range of possible future scenarios for WPS. The low scenario puts forward a pessimistic outlook based on a scenario of economic decline, with both migration and births softening relative to recent trends at the same time, and is therefore unlikely to occur. The medium projection scenario depicts a continuation of the status quo of slow but steady growth in labor and housing markets, yielding limited changes in local conditions. The high projection model is predicated on considerably stronger growth driving a substantial uptick in both births and in-migration. In our judgment, the medium growth scenario presents the most appropriate model for long-term projections over the 10-year planning horizon of this study. However, birth and migration trends should be monitored carefully into the future to ensure that changing conditions that may impact the trajectory of Weston's enrollments are taken into account and adjusted for appropriately.