SCHOOLS ENROLLMENT PROJECTIONS SUMMARY REPORT

MELROSE PUBLIC SCHOOLS

December 2018

Overview

The Edward J. Collins, Jr. Center for Public Management (Center) was engaged by the Melrose Public Schools to conduct a demographic study to review enrollment trends that affect space needs of the District.

The New England School Development Council (NESDEC) completed a similar study in September 2015 to provide a context for the community to consider school capacity needs and enrollment trends. The study included a review of historical data, including birth data, population growth, housing development, age cohort trends, and school enrollment. The study also included school enrollment projections based on actual enrollment data through the fall of school year 2015-2016 and actual annual birth data through 2013.

The goal of the Center's current study is to incorporate more recent data to capture changes since the prior report and to help build an understanding of any patterns of change.

Utilizing a cohort survival model, the Center's demographic update incorporates actual enrollment for the school years through 2018-2019 and birth data through 2017 to model actual outcomes within the Melrose Public Schools and make projections forward through 2020-2029. This final projection has allowed for the cohort survival data to be informed by specific community trends in population and housing variability that are impacting the community in patterns that are specific to Melrose.

Methodology

The Center worked with City and School staff to gather relevant data through state, local, and other data sources. The Cohort Survival methodology utilizes observed data from the recent past to predict the near term future, by following the pattern of incoming classes of students (cohorts) as they move up through the grades annually (survive).

The project team initiated the work in Melrose by looking at NESDEC's City and School Demographic Study from November 10, 2015 and compared their projections to actual enrollments. The project team observed that the NESDEC September 2015 report:

- Underestimated births by 14-36 from 2015-2018;
- Underestimated Kindergarten enrollments by 18-51 students from 2015-2018; and
- Underestimated PK-12 enrollment by 139-289 students from 2015-18.

The major fault in their projections was not having birth and Kindergarten enrollments for 2015-2018.

The Center project team developed projections using standard cohort survival ratio analysis. This analysis captures how many students in a given cohort progress to the next grade and becomes a useful summary of the net impact of in and out-migration. This "survival" is expressed as a ratio where values greater than 1.0 indicate net in-migration (increasing cohort size) and values less than 1.0 indicate net out-migration (decreasing cohort size).

The project team has incorporated actual Melrose enrollments for 2015-2018, which were significantly higher than the NESDEC projections from 2015, based on actual birth rates and Kindergarten enrollments, through October 2018 for school year 2018-19.

The District provided all current enrollments (October 1 Report to DESE), along with student transfer data (both in and out of the district), as well as housing data that the District maintains on students coming from various housing developments in the city:

- The transfer data was of limited use, since the District only tracks transfers out during the summer months and only tracks transfers in during the school year; in most years, the net impact on enrollments was negligible (see attached report on Melrose Transfers In and Out);
- Housing development data indicated that the number of students coming from these various developments was stable and not significant in terms of numbers (+/- 5% of total enrollment in the schools).

The project team also received data from the Office of Planning and Community Development with updates on housing development projects in the city:

- Data do not indicate that these new developments will contribute significantly to school enrollments, given their profile (i.e., most are studio and 1-bedroom dwellings that rarely yield students).

The project team has concluded that neither the transfers of students nor new housing developments have had a significant impact on enrollment, nor does the team believe that they will in the near future.

The project team then sought the perspective of realtors in Melrose to see if there were any changes in home ownership that might impact enrollment (e.g., older families with no children in the schools down-sizing and selling their homes to younger families that would enroll children in the schools):

- Anecdotal reports from major realtors in the community are that sales of larger, single family homes (i.e., those most likely to attract younger families) are at "an historic low";
- While this removes one possible source of new students in the district, it does represent a potential for new students in the future, if and when these types of larger homes begin to appear on the market.

Melrose subsequently asked NESDEC to update their projections, which they did on October 17, 2018. NESDEC's updated report now shows a marked difference in the enrollment projections for Melrose. These projections are moderately higher than the Center's projections and considerably higher than their own projections from 2015.

The project team chose to compare the Center's methodology to NESDEC's data to see why their projections are higher than the Center's:

- In calculating projected births, the project team uses the 5-year average of births from 2012 to 2016 (the last report available). (Verified through Massachusetts Department of Public Health, Office of Data Management and Outcomes Assessment)

Melrose Births (2012-2016 and Average)
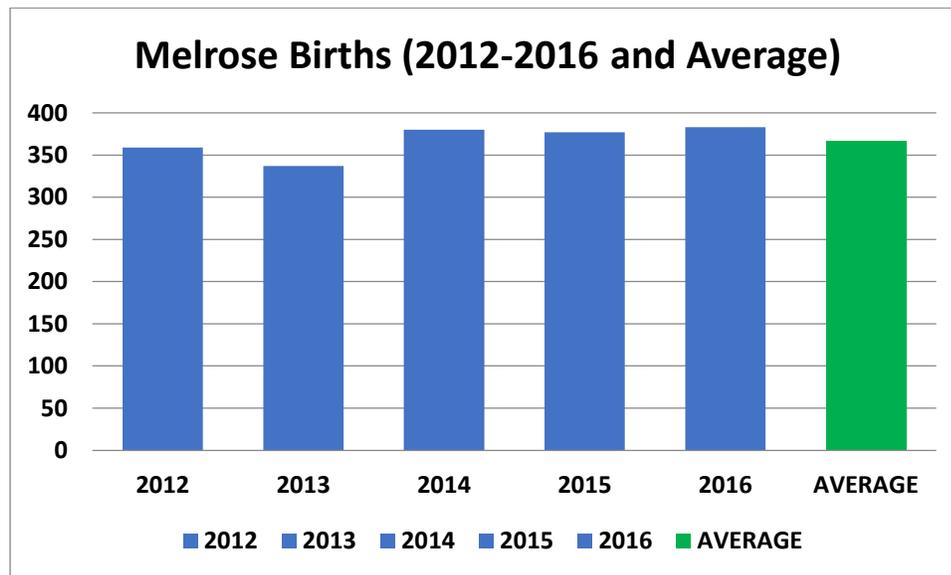
NESDEC projects a higher birth rate than this 5-year average that does not appear to be based on any formulaic calculation.

- In calculating enrollment into Pre-K, the project team used a 4-year average of the survival ratio of births to Pre-K, due to the anomaly in 2014 when the birth survival rate was 1.06, compared with every other year, which had rates below 1.0. The project team did check both the birth data for 2009 and the enrollment data for 2014 to confirm births at 295 and enrollment at 313, and both were accurate as reported by DPH and DESE. Using a 4-year average results in a 0.89 survival ratio, while using a 5-year average would increase the ratio to 0.92.

NESDEC used a 1.0 student increase in Pre-K enrollment from 2018-2028 (from 290 to 300 over ten years – no formula used).

- In calculating Kindergarten enrollment, the Center project team used the standard cohort survival ratio of 1.04 against the Pre-K numbers.

NESDEC's Kindergarten enrollment appears to be using a 0.95 survival ratio against births and not against Pre-K enrollment. Since births were higher than Pre-K enrollments (except for 2014), that would cause NESDEC's projections to be higher, even though the Center's survival ratio is higher Pre-K to K (1.04), since the Center project team used Pre-K enrollment and not births as the basis for calculation.

Thus, NESDEC projects a higher birth rate and projects Kindergarten enrollment based on births and not Pre-K enrollment, which explains why their projections are higher than the Center's.

Findings

The Center project team's projection indicates that the Elementary schools will feel the impact of enrollment growth for the next 2 to 3 years (FY21-FY22), as existing cohorts in the low three hundreds advance into 4th and 5th grade. The Center's projection shows a leveling off at the elementary level after that time, if the current birth rates and housing growth/turnover rates continue.

The Middle School should experience the greatest growth over the next 5-year period (through FY24), as existing cohorts of 253-273 are replaced by cohorts in the low three hundreds. This represents growth of approximately 170 students in this five year period, which would be growth of more than 20%.

The High School will be impacted more slowly as the larger cohorts are currently in the Elementary school lower grades. Historical cohort survival indicates that the High School will begin to feel the impact of enrollment pressure in FY25. Historically there has been a significant drop in cohort survival, between 8th and 9th Grades, which has averaged 0.89 in the past five years. It is important to note that this pattern may be changing. In each of the last five years the survival rate has increased by at least 1%. This has been documented by Melrose School Department data showing high school age students returning to the High School. Going forward it would be important for the department to be gathering additional information from families to better understand the decisions that are affecting this pattern.

The District should continue to update enrollment projections on an annual basis to monitor how closely future actual enrollments match these projections. It is not too early to have discussions about whether the capacity of the current High School facility could accommodate 1,100-1,200 students, but it is too early to use the existing data to make any High School projections with reasonable confidence.

- Extending the Center's projections out to 10 years from the original 7 years results in a continued enrollment growth, but the longer the timeframe, the less reliable the data is at the out years.

The Center's projections show moderate growth in enrollment of 619 students over the next decade as compared to NESDEC's 2018 revised projections of 850 students (see chart below). The project team qualifies these projections based on the current state of the housing market that could be disrupted if sales of larger, single family homes were to become more prevalent than the current market, which is at a low point according to brokers in the area.

YEAR	NESDEC	UMB	Difference
2018-19	3,945	3,945	0
2019-20	4,040	3,980	-60
2020-21	4,119	4,030	-89
2021-22	4,230	4,111	-119
2022-23	4,319	4,193	-126
2023-24	4,421	4,277	-144
2024-25	4,518	4,351	-167
2025-26	4,601	4,415	-186
2026-27	4,685	4,478	-207
2027-28	4,757	4,535	-222
2028-29	4,795	4,564	-231

It's important to note that any projections beyond five years at the elementary level are suspect, as they cannot include actual birth data – by definition those students haven't been born yet. The data used in years 6-10 is essentially a repeat of prior year patterns at the elementary level.

Data for years 6-10 can, however, be helpful to identify patterns at the Middle and High School level as those cohorts are already enrolled and moving through the system. As noted previously, a change in the 8th to 9th grade cohort survival percentage could push High School enrollment upward in the out-years.