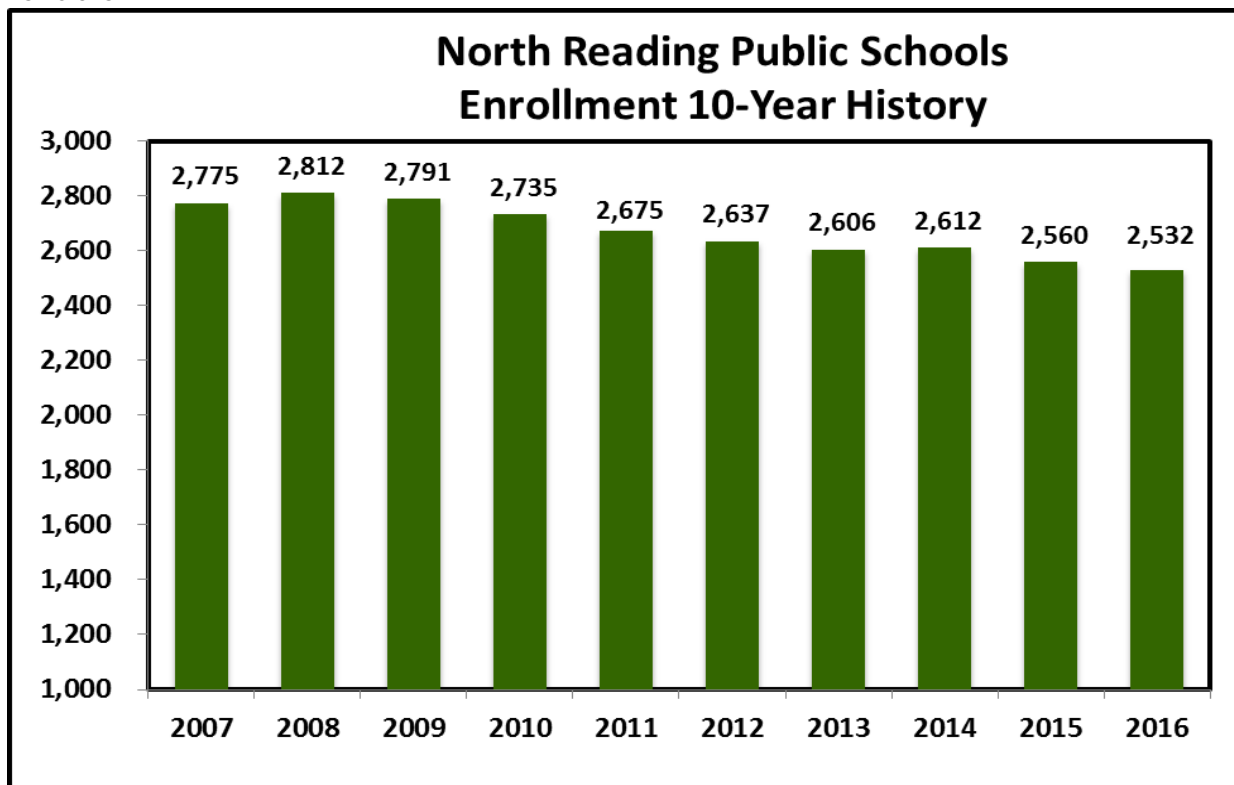


### THE COHORT SURVIVAL METHOD

The basic assumption of the Cohort Survival Method for predicting school enrollments is that what has happened in the past, will continue to happen in the future; that is, given the number of births, the net effect of all other influences on enrollment will remain proportionately the same. The basic technique requires calculating the ratio of the number of children in one grade in one year compared to the number of children who “survive” the year and enroll in the next grade the following year. Fluctuations in such data from year to year create a pattern from which an average survival rate can be calculated to project an enrollment. Basically, percentages are calculated from the historical enrollment data to determine a reliable percentage of increase or decrease in enrollment between any two grades. For example, if 100 students enrolled in Grade 1 in 2014-15, increased to 104 students in Grade 2 in 2015-16, the percentage of survival would have been 104% or a ratio of 1.04. Such ratios are calculated between each pair of grades or years in school over several recent years.

A Cohort Survival Method was employed using a 3-year, 5-year, and 10-year historical database. Because North Reading’s inward and outward migration has remained relatively stagnant over the past ten years, the ten-year data base is considered more reliable.



Enrollment projections and analysis contained presented in this reports were conducted by the New England School Development Council (NESDEC) in October 2015.

Historical enrollment over the last ten years has remained relatively stable as the above chart indicates. Enrollment did peak in fiscal year 2008 and has slowly declined over the last several fiscal years until the district experienced a small increase in fiscal year 2014.

Proposed or planned residential development and/or turn over of homes in North Reading can impact the cohort numbers. It must be noted that the projected kindergarten enrollments have been adjusted to reflect typical incoming enrollments. Relying solely on birth rate five years earlier is not always accurate - this is due to the impact from the full-day kindergarten option now being available.

The two factors now at work which will have the greatest effect upon future enrollments are: a continuing decline in the number of births to North Reading residents and, to a greater degree, the possibility of a resumption of in-migration (which had slowed due to the real estate slowdown). In the decade from 2000-2009, North Reading averaged 160 births per year; more recently (and expected over the next 6-7 years) are about 119-154 births annually...averaging about 17 fewer per year than previously.

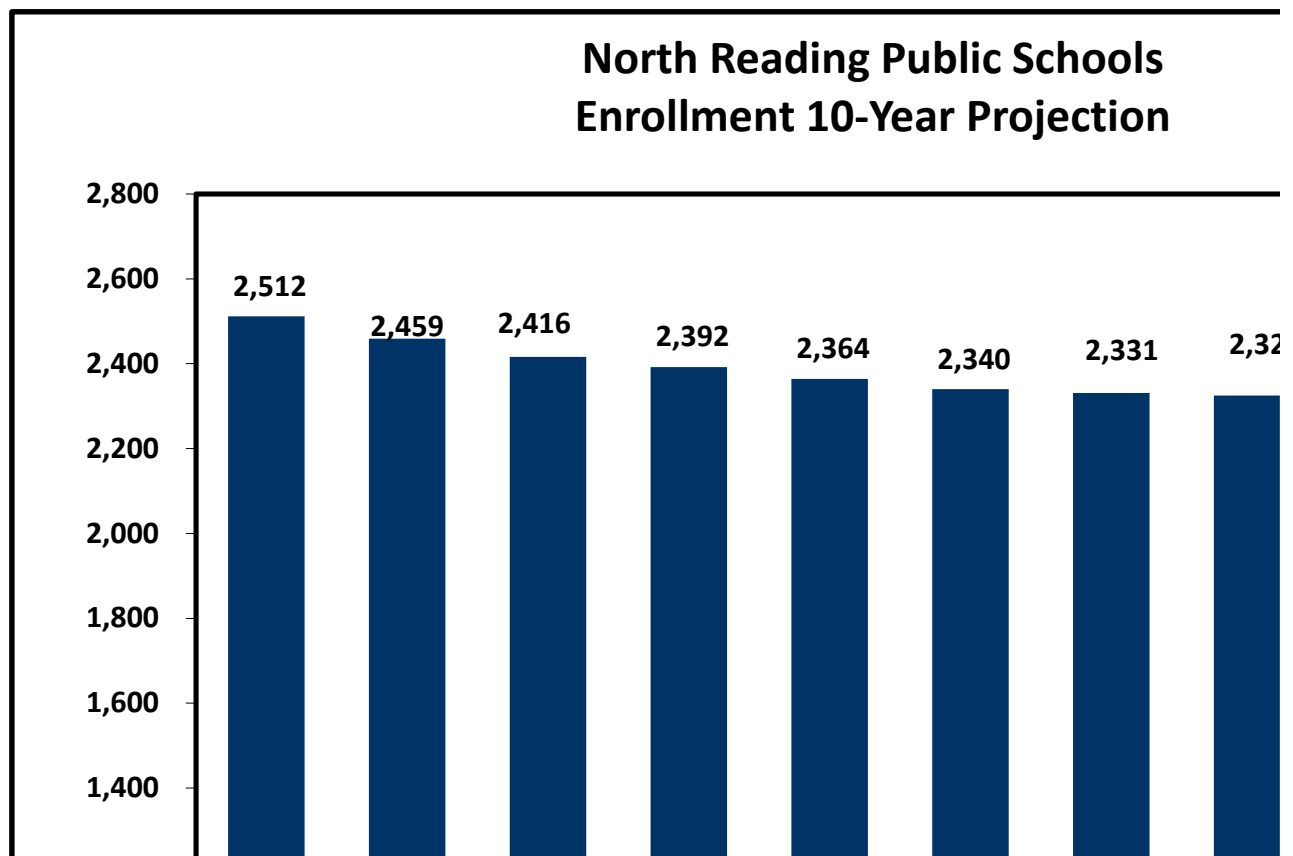
North Reading, over the past seven years, has registered about 115 Kindergarteners for every 100 births (five years previous), a relationship which has been generally steady. Although, with recent real estate activity, the future looks more like 118 kindergartners per 100 births will be more accurate. Grade 1 is expected to remain about 7% larger than the previous year's Kindergarten class.

Like many nearby communities, North Reading continues to experience enrollment fluctuations of in/out-migration in Grades 1- 8. The high school had experienced a consistent loss between 12-14% of students enrolling in grade 9 at the end of Grade 8. However, this trend has decreased in recent years to 7-8%, for reasons unrelated to the number of families moving into-/out-of town). Over the next three years, K-5 enrollments are forecasted to remain stable. Grades 6-8 is expected to decrease by 73 students, and the high school level is expected to decrease by 45 students all within the next three years. After that point these projections show flat enrollments in grade K-5, with fairly flat to slightly declining enrollment in grades 6-8; and a decline of 85 students in grades 9-12 as the smaller classes work their way up through the grades. However, it is very possible that as the real estate market increases, it will bring additional new families to North Reading which will have an impact on these projections in the outer years.

### History of Enrollment Projections vs. Actuals

You may wonder how enrollments projections have compared to our actual enrollment over the last several years. The chart below indicates that our historical projections using this method have been within 1% of actual enrollment. The last few years indicate that our actual enrollment have come in slightly higher than projected but are still very close to projected amounts.

FISCAL YEAR	2011	2012	2013	2014	2015	2016
PROJECTION	2,682	2,633	2,591	2,587	2,549	2,561
ACTUAL	2,675	2,636	2,606	2,612	2,560	2,532
CHANGE	-7	3	15	25	11	-29



Districtwide enrollment is expected to decline over the next decade. However, one should realize that it is very likely these patterns will not last as long as ten years. All

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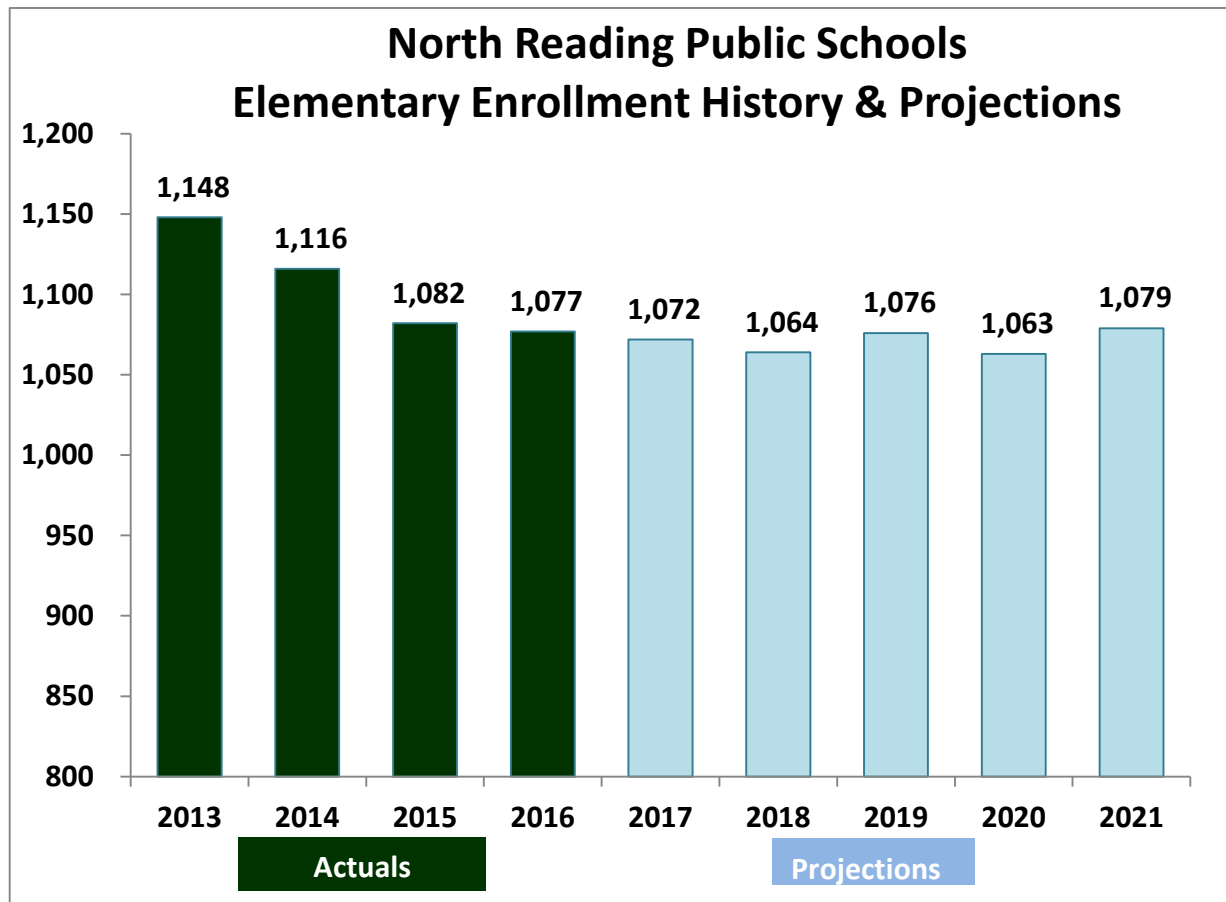
## ENROLLMENT PROJECTIONS

projections are most reliable in years #1-5; and less reliable in years #6-10. As soon as the economy and real estate situations improve in the region, additional in-migration may return to North Reading. During 2008-2013, many communities in the region sold only about 60-80% as many homes as in 2003-2007. In the case of North Reading, on average 161 single-family homes were sold between 2003 and 2007 - compared to only 105 homes in 2010. However, the pace quickened with 181 homes sold in 2013 and 171 homes in 2014. The pace in 2015 seems to be on the same trend with 127 homes sold through August. If this trend continues it will have an impact on these projections. Also, in 2013, 28 new homes were built in North Reading which is an incredible 39% increase over 2012 when just 17 new homes were built. As additional families move in, any forecasted declines will change and the projected decline will moderate.

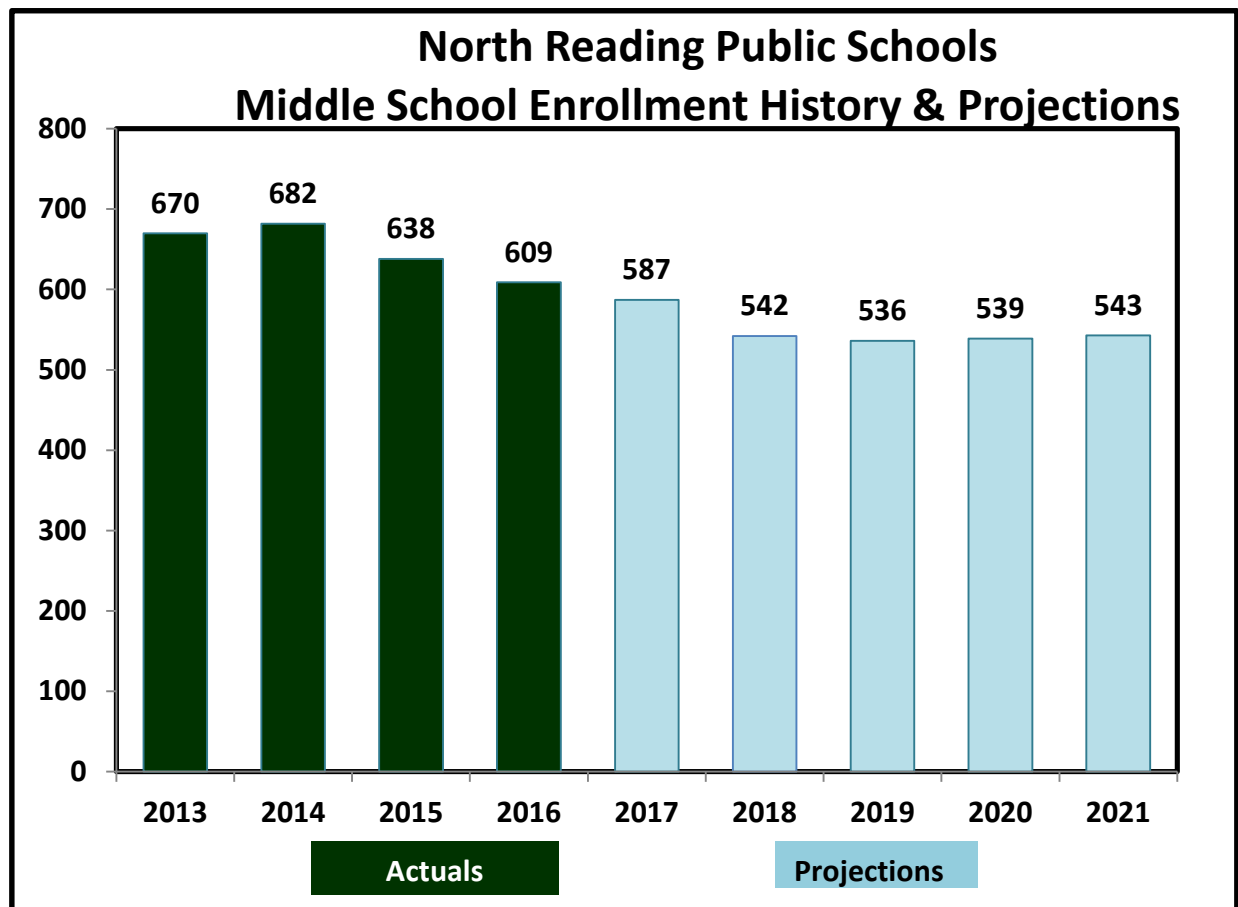
Projected Enrollment in Grade Combinations						
Year	PK-5	K-5	6-8	9-12	K-12	PK -12
2015-16 Act	1,122	1,077	609	801	2,487	2,532
2016-17 Proj	1,118	1,072	587	807	2,466	2,512
2017-18 Proj	1,111	1,064	542	806	2,412	2,459
2018-19 Proj	1,124	1,076	536	756	2,368	2,416
2019-20 Proj	1,112	1,063	539	741	2,343	2,392
2020-21 Proj	1,129	1,079	543	692	2,314	2,364
2021-22 Proj	1,126	1,075	547	667	2,289	2,340
2022-23 Proj	1,115	1,063	540	676	2,279	2,331
2023-24 Proj	1,149	1,096	525	651	2,272	2,325
2024-25 Proj	1,136	1,082	536	671	2,289	2,343
2025-26 Proj	1,135	1,080	531	680	2,291	2,346

The above chart shows projected in grade combinations over the next ten years. All projections are most reliable in the first five years and less reliable in years six through ten. Over the next three years, K-5 enrollments are forecasted to remain relatively stable. Grades 6-8 is expected to decrease by 73 students; and the high school level to remain above 800 at about 807 students over the next two years before experiencing a decline. After that point these projections show fairly flat, or slightly decreasing, enrollment in Grades K-5, with further decreases in Grades 6-12 - as smaller classes work their way up through the grades. However it is important to note that it is highly likely that because real estate turnover rates are increasing as described above, it will bring new families with school age children to North Reading, which will impact the projections.

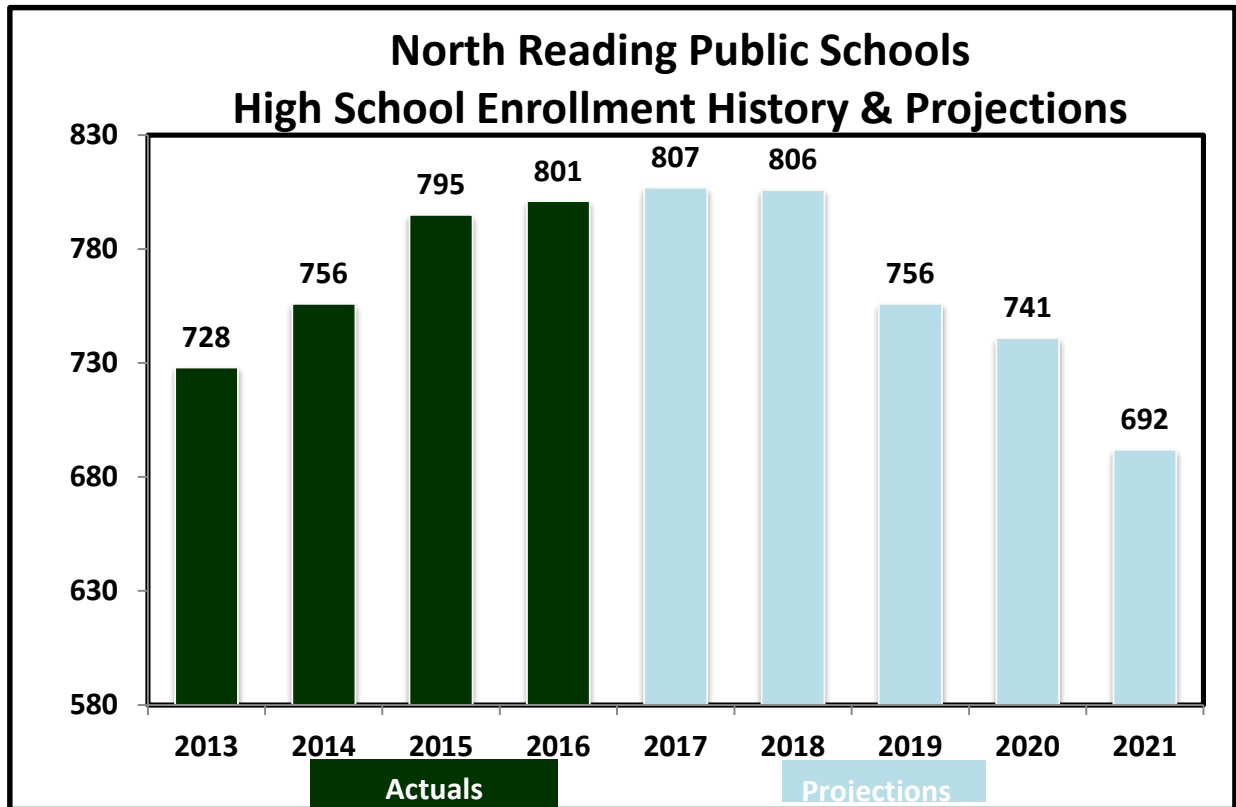
Enrollment projections and analysis contained presented in this reports were conducted by the New England School Development Council (NESDEC) in October 2015.



Elementary enrollment (K-5), next school year is projected to be 1,072 system-wide. This is a slight decrease of 5 students. As evidenced by the chart above, long term enrollment projections at the elementary level are anticipated to remain relatively stable. Over the next two years, K-5 enrollments are forecast to decline by only a total of 13 students. After that point these projections show enrollment increasing slightly in FY19 and then decreasing again in FY 20.



Middle School enrollment is also expected to decline by 22 students next school year; as a result, no additional staff will be necessary to address student enrollment. Over the next three years, it is anticipated that grades 6-8 will decline by a total of 73 students. As you can see by the above chart, long term enrollment projections indicate the middle school enrollment, which reached a 10 year peak in 2014, will continue to decline until FY2020. The opposite is true at the high school level over the next two years, as enrollment is expected to rise through fiscal year 2018.



High School enrollment is expected to continue to remain over 800 the next two fiscal years, reaching a peak in fiscal year 2017 at 807. The opening of the new building has contributed to a higher survival ratio of 8<sup>th</sup> grade students moving into ninth grade as well. Next year it is anticipated the high school will have an additional 6 students. After fiscal year 2018, it is expected that the high school will experience a decline in enrollment.