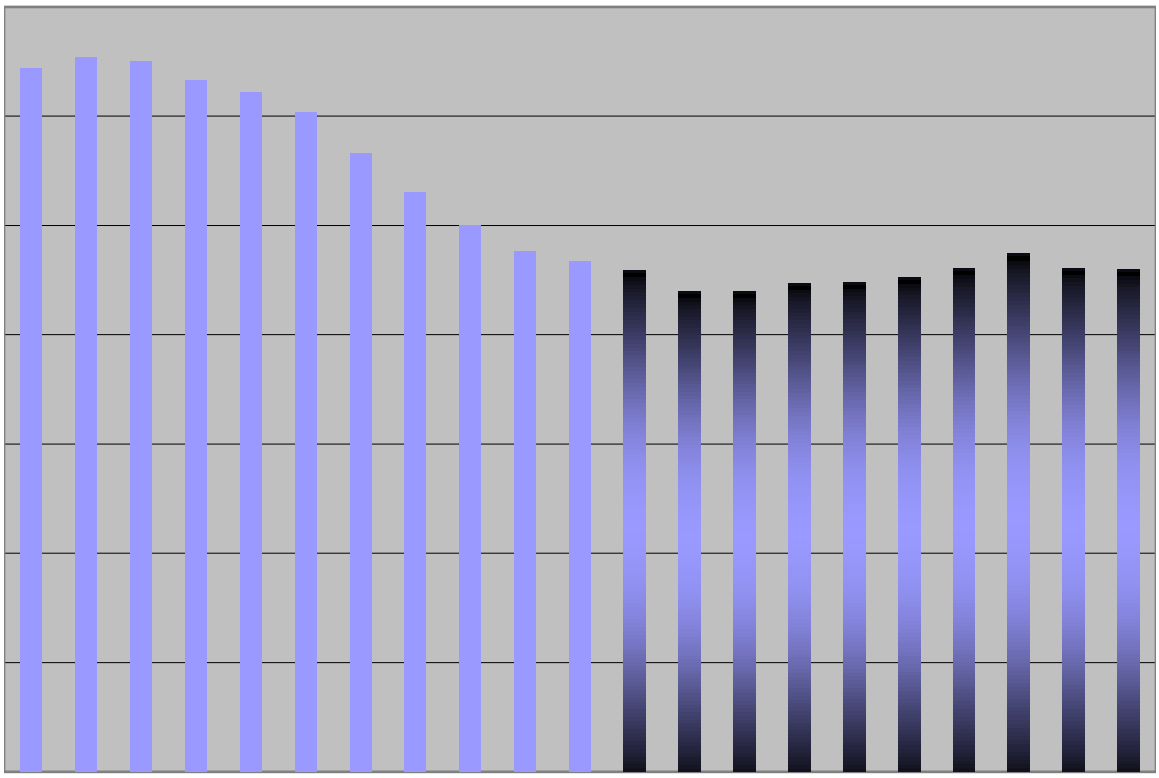
REDDING PUBLIC SCHOOLS
ENROLLMENT PROJECTED TO 2026



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Introduction

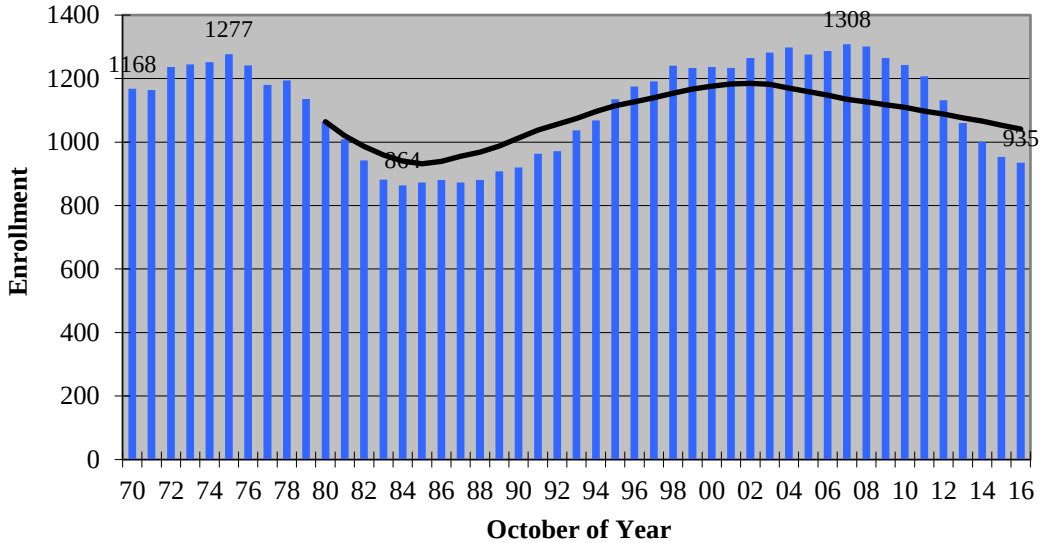
This report is a ten-year projection of enrollment for the Redding Public Schools. It is based on students attending the Redding Public Schools in October of the school year. The projection is divided into the two grade levels that represent how the Redding schools are organized: PK-4 and 5-8. The report includes 47 years of enrollment to place the projection into a wider historical perspective. One of the primary drivers of future enrollment is births to residents. The report examines births and their relationship to kindergarten enrollment. Several factors that influence school enrollment - town population, women of child-bearing age, the labor force, housing, non-public enrollment, non-resident enrollment and migration - are presented. Finally, the accuracy of earlier projections is examined.

Enrollment projections are a valuable planning tool. For budgeting the numbers can place requested expenditures into a per pupil context. This can inform the public about which expenditures represent continuing expenditures to support on-going programs and expenditures for school improvement and program expansion. They are an essential step in determining the staffing that will be needed in the future. This may facilitate the transfer of teachers from one grade to another or allow the hiring process to start earlier, which can increase the likelihood of attracting the best teachers in the marketplace. Projections are a critical and required step in planning for school facilities. The State of Connecticut requires eight-year projections by school as a critical component of determining the size of the project for which reimbursement is eligible. This report is appropriate for that purpose. In some communities the projection can determine the number of places they can make available to urban students as part of a regional desegregation effort.

Perspective

Enrollment projections typically use the most recent five years of data. While the most recent past is viewed as the best predictor of the near future, it is informative to look at a broader perspective. Figure 1 shows the enrollment in Redding from 1970 to date.

Figure 1. Enrollment from 1970 to Date



Enrollment in the Redding Public Schools rose from 1,168 in 1970 to 1,277 students in 1975. Between 1975 and 1984, enrollment fell to 864 students. In those nine years, enrollment declined by 413 students or 32.3 percent. Between 1984 and 2007 enrollment grew by 444 students, or 51.4 percent, and reached an all-time peak of 1,308 students. The 2016 enrollment was 935 students, 373 students (28.5 percent) below the 2007 peak. Enrollment was last near this level in 1990.

Redding's enrollment pattern is roughly similar to that of the state's public schools in grades K-8. I have tracked public school K-8 enrollment since 1980. Public school K-8 enrollment bottomed in 1985, one year after Redding. It reached a secondary peak in 2002. In those 17 years, state K-8 enrollment grew by 27.2 percent. Redding's period of growth was longer than the state's, and much more intense. The state's public school K-8 enrollment has been declining for 13 years and I anticipate it will decline this year. Between 2002 and 2016, I project it will have fallen by 12.2 percent. Redding's downturn started five years after the state's downturn. The second decline in Redding has been steeper than the state's. Had Redding followed the state pattern of enrollment since 1980, it would have had 1,041 students in October of 2016 instead of the 935 that were enrolled on that date.

Current Enrollment

Table 1 and Figure 2 provide a picture of where Redding residents in grades PK-8 attended school in October of 2015, the latest data available. They show that 87.7 percent of Redding's elementary school-age residents attended the Redding Public Schools in 2015. An estimated 10.9 percent of the school-age residents attended non-public schools in state. Other school-age residents attended magnet schools (1.3 percent) or another public school (0.1 percent). Four children were reported as being home schooled in 2012, the last year the state collected that information. Although Redding had several non-resident students enrolled in 2015 (mostly children of teachers), they are recorded as residents under the state's data system. The projections in this report are based on the 935 students who attended the Redding Public Schools on October 1, 2016. The equivalent figure below is the 953 students reported under the "Total Enrollment" category.

Table 1. 2015 Enrollment

	Number	Percent
Residents		
A. Redding Public	953	87.7%
B. Other Public	1	0.1%
C. Magnets	14	1.3%
D. Non-Public	119	10.9%
Total (A+B+C+D)	1,087	
E. Non-Residents	0	
Total Enrollment (A+E)	953	

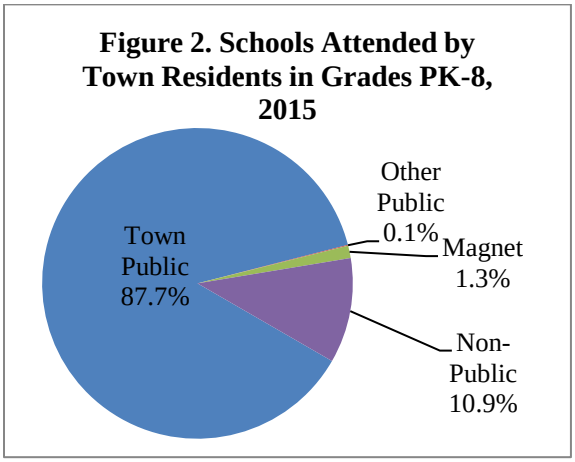
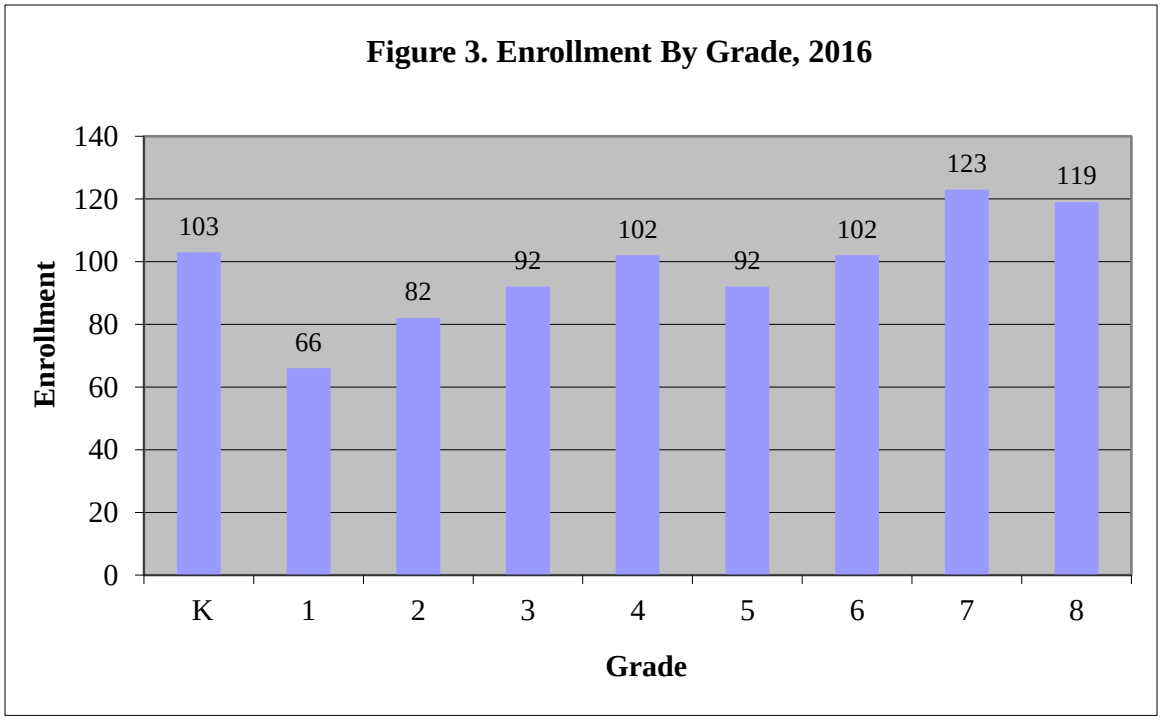


Figure 3 shows the October 2016 grade-by-grade enrollment of students in the Redding Public Schools. The children in pre-kindergarten programs are not shown. The largest class was grade 7 with 123 students. It was followed by grade 8 (119 students) and kindergarten (103 students). This year's grade 1 had the smallest enrollment, 66 students. It was followed by grade 2 with 82 students. If current conditions continue, this year's kindergarten class will have 133 students when it enters grade 5 in 2021 at John Read Middle School. The current year enrollment by grade is the starting point for this projection. How it moves forward is discussed below.



Projection Method

The projections in this report were generated using the cohort survival method. This is the standard method used by people running enrollment projections. For the grades above kindergarten, I compute grade-to-grade growth rates for ten years (see Appendix B). For example, if the number of fifth graders this year is 112 and the number of fourth graders last year was 110, then the growth rate is 1.018. A growth rate above 1.000 indicates that students moved in, transferred from a non-public school or they were retained. A growth rate below 1.000 indicates that students moved out, transferred or were not promoted from the prior grade. For each grade I calculate four different averages of the annual growth rates: a three-year average; a weighted three-year average; a five-year average and a weighted five-year average. I choose the average that seems to best fit the data. The average growth rate for a grade is applied to the enrollment from the prior grade. The projection builds grade by grade and year by year.

In the standard model, kindergarten enrollment is compared to births five years prior and some average of the observed growth or decline is used to project future kindergarten enrollment. My method breaks kindergarten enrollment into three parts: five-year olds; six-year olds entering kindergarten for the first time; and six-year old repeaters. Each component is analyzed separately and then combined to get total projected kindergarten. Kindergarten enrollment is notoriously difficult to predict. I feel that this component model can improve the predictability slightly.

The growth rates used in the projection in most cases were based on three-year averages of the observed grade-to-grade growth. This tied for highest of the four averages calculated. In kindergarten I used the 2016 figures in 2017 to cover the possibility of a second year of explosive growth and the two-year average for the years 2018 to 2016 because it best reflected enrollment growth based on a smaller number of births and the recent start of full-day kindergarten. Redding switched to full-day kindergarten in 2015. Normally I make an upward adjustment to the birth-to-kindergarten growth rate and a downward adjustment to the kindergarten-to-grade 1 growth rate when full-day kindergarten is introduced.

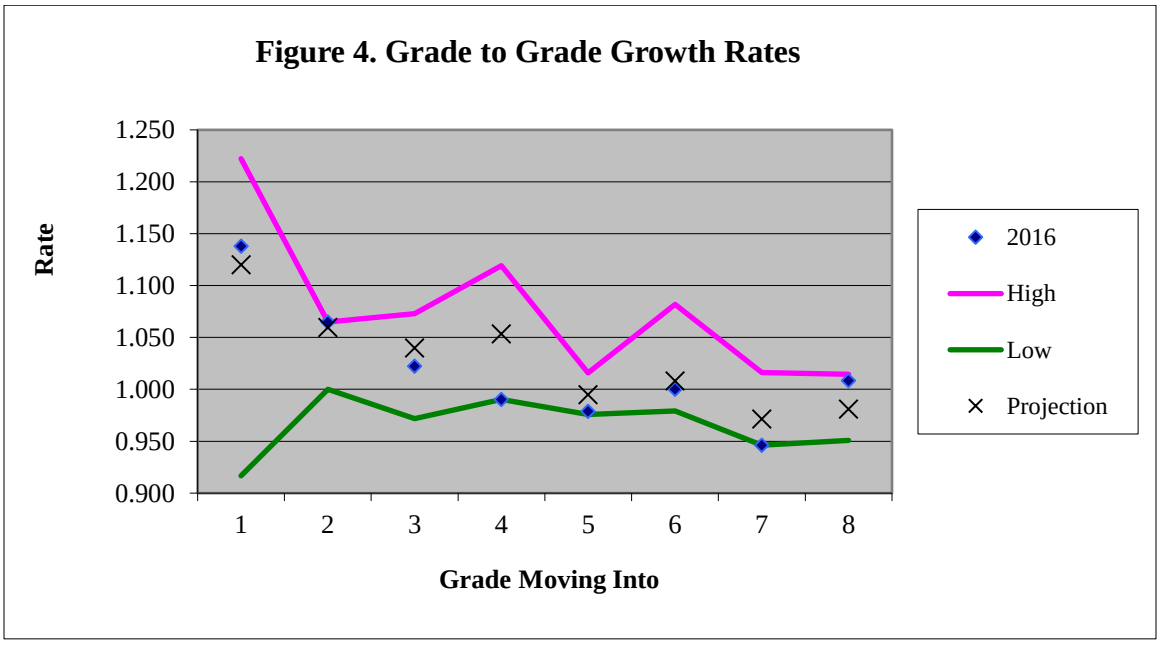
However, since I noticed no expected decrease in kindergarten to grade 1 growth in 2016, I made no such adjustment.

To extend the projection beyond four years, I need to estimate births. The State Department of Public Health recorded only 40 births in 2013. That is the last official count and the smallest count since I began tracking this in 1980. The preliminary counts of births were 56 in both 2014 and 2015. In 2016, there were 38 in-state births recorded through September compared to 38 for the same period in 2015 and 43 in 2014. I added the average number of births between October and December of 2014 and 2015 and the average number of out-of-state births in 2012 and 2013 (the latest data available) to get an estimate of 54 births in 2016. I set births in 2017 to 2021 at 55, the average of births in 2014 to 2016.

Figure 4 gives a perspective of the grade-to-grade growth rates for students attending the Redding schools. An "x" indicates the average growth rate used in this projection. The diamond is the growth observed between last year and this year. The upper line indicates the largest growth rate observed over the past ten years and the lower line, the lowest. In general, the narrower the gap between the two lines is, the greater the accuracy of the projection.

The growth rates in the elementary grades appear to be at the middle to upper end of the 10-year range while those in the middle school appear to be at the middle or lower end of the range. Five of the growth rates are above 1.000, indicating a net migration into the Redding schools. The 2016 growth rates in grades 2 and 5 were at or close to ten-year highs. The rates in grades 4, 5 and 7 were ten-year lows. Most of the projection growth rates were close to the corresponding rate in 2016; grade 4 was the exception. The average growth rate across grades 1-8 used in the projection was 1.029. That was higher than the rate in last year's projection. The 2016 average was 1.019, the same as the 20-year median.

Figure 4. Grade to Grade Growth Rates



Enrollment data from 2006 to 2015 were taken from earlier files provided by the Connecticut State Department of Education. Note that current district-level data on the Department's website may include special education students educated outside of the district and thus would not be appropriate for this analysis. Data for 2016 were provided by the Redding central office. All enrollment data after 2013 are subject to minor changes as they are reviewed and audited. Births from 1980 to 2016 were provided by the Healthcare Quality, Statistics, Analysis and Reporting Unit of the State Department of Public Health.

Total Enrollment

Table 2 and Figure 5 present the observed total enrollment in Redding from 2006 to 2016 and projected enrollment through 2026. Detailed grade-by-grade data may be found in Appendix A. Between 2006 and 2007, enrollment rose from 1,276 to 1,308 students. That marked the end of 23 years of enrollment growth. By 2016, it had fallen to 935 students. Between 2006 and 2016 there was a loss of 352 students or 27.4 percent. Statewide in that period, I have projected that grade K-8 public school enrollment decreased by 9.3 percent.

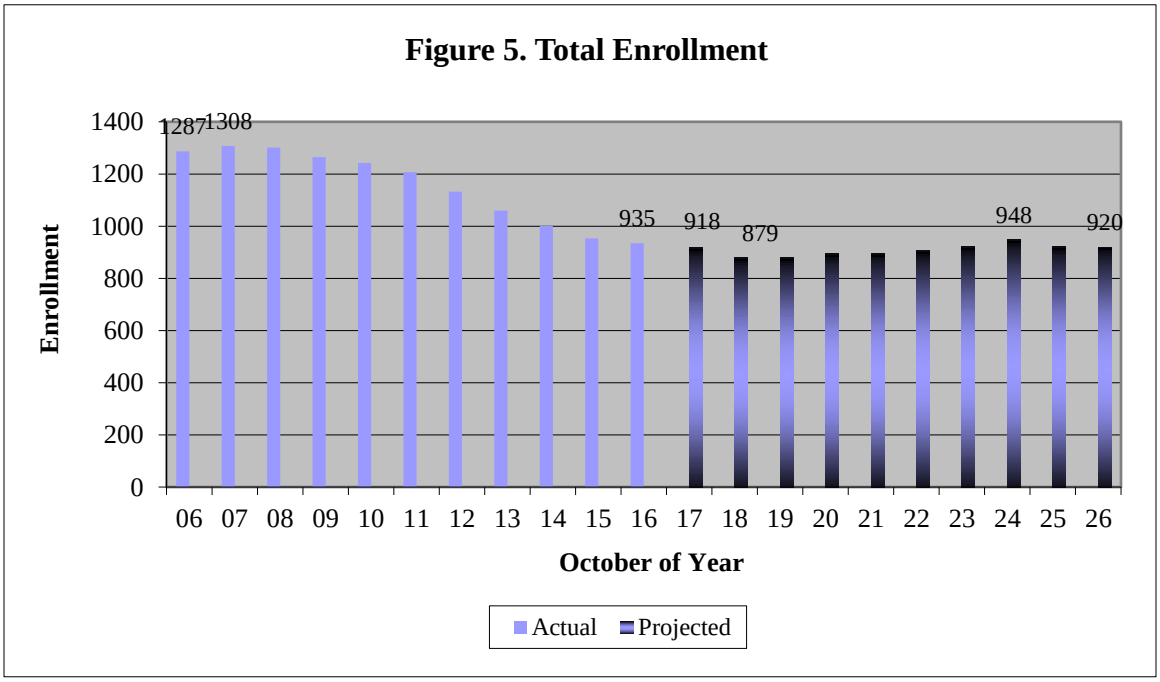
Table 2. Total Enrollment

Year	Students	Percent Change
2006	1,287	
2007	1,308	1.6%
2008	1,301	-0.5%
2009	1,265	-2.8%
2010	1,243	-1.7%
2011	1,207	-2.9%
2012	1,132	-6.2%
2013	1,060	-6.4%
2014	1,001	-5.6%
2015	953	-4.8%
2016	935	-1.9%
2017	918	-1.8%
2018	879	-4.2%
2019	879	0.0%
2020	894	1.7%
2021	896	0.2%
2022	905	1.0%
2023	921	1.8%
2024	948	2.9%
2025	922	-2.7%
2026	920	-0.2%

Redding's decline of 25.3 percent between 2005 and 2015 (the latest comparable data available) was the steepest PK-8 enrollment decline in similar districts in the region. Enrollment grew by 3.1 percent in grades PK-8 in Darien. The declines in New Canaan (-0.4 percent), Westport (-3.0 percent), Wilton (-10.1 percent), Weston (-14.8 percent), Ridgefield (-15.0 percent) and Easton (-20.2 percent) were all smaller than the decline in Redding.

I anticipate that the decline that began in 2008 may have two more years to run. Next year, I anticipate that total enrollment will fall by 15-20 students. I project an enrollment low of about 880 students in 2018 or 2019. Enrollment could approach 950 students in 2024 before settling at 920 students in 2026. The last time the district enrollment was below 900 students was 1988. The total 10-year projected decline of almost 20 students is less than two percent below the current enrollment. I have projected that K-8 enrollment statewide will be down 8.7 percent in that period. Your total enrollment should average about 910 students over the ten-year projection period. This compares to an average total enrollment of 1,141 students over the past ten years.

Figure 5. Total Enrollment



Redding Elementary School Enrollment

Table 3 and Figure 6 present actual enrollment from 2006 to 2016 and projected enrollment through 2026 in grades K-4 at the Redding Elementary School. Enrollment declined from 696 students in 2006 to 422 students in 2015 and then rebounded to 445 students in 2016. Peak enrollment in grades K-4 was 700 students in 2004. In the past ten years, enrollment declined by 251 students or 36.1 percent. I project that state public school enrollment in grades K-4 will have fallen 10.3 percent in that interval.

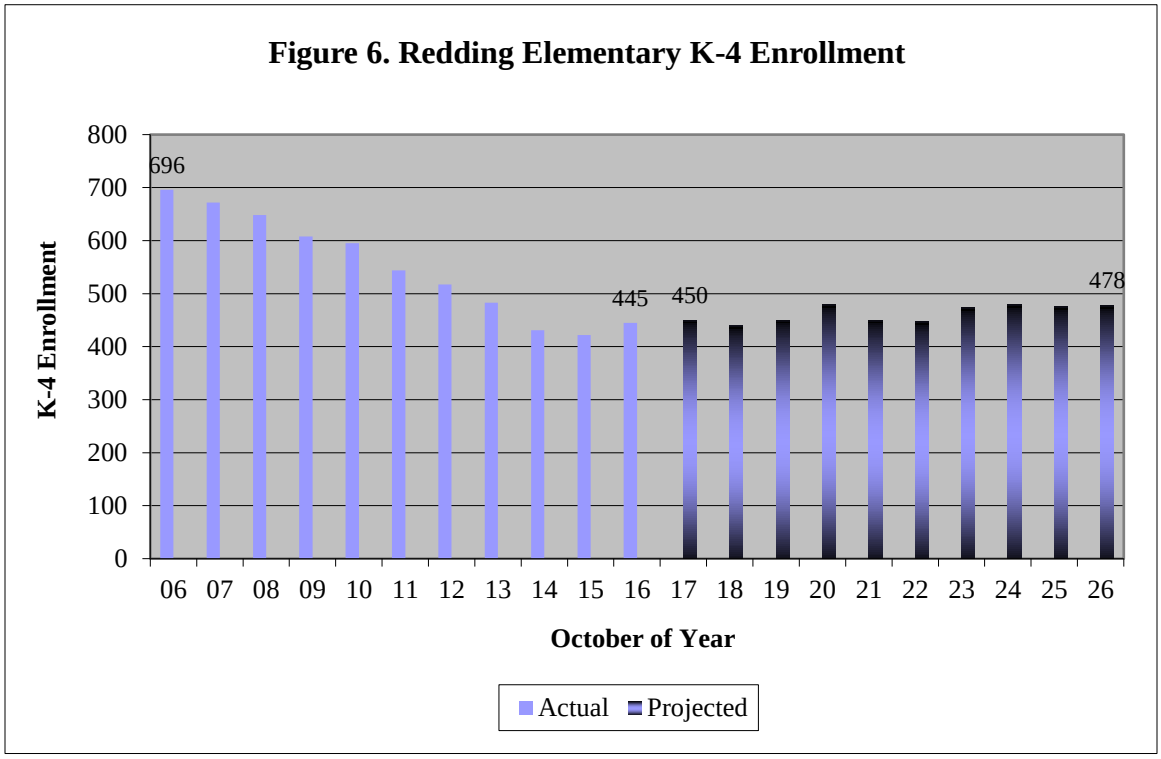
I project that next year's enrollment at the school will be five students less than this year's. If families with pre-school age children continue to move in, I anticipate enrollment will approach 480 students by 2024 and remain there through 2026. This will be 30-35 students or about seven percent above the October 2016 count. Statewide, I have projected a 5.3 percent decrease in grade K-4 public school enrollment in that period. Over the ten-year projection period, I believe K-4 enrollment at the Redding Elementary School will average about 460 students. This is well below the average of 537 students observed over the past ten years.

These figures exclude pre-kindergarten children. In the past ten years, pre-kindergarten enrollment ranged from 54 to 71 children. There were 54 children enrolled in these programs in 2016. My projection model holds pre-kindergarten enrollment constant at 54 children. This may be slightly optimistic given the recent decline in births.

Table 3. Redding Elementary School Enrollment in K-4

Year	Students	Percent Change
2006	696	
2007	672	-3.4%
2008	648	-3.6%
2009	608	-6.2%
2010	595	-2.1%
2011	544	-8.6%
2012	517	-5.0%
2013	483	-6.6%
2014	431	-10.8%
2015	422	-2.1%
2016	445	5.5%
2017	450	1.1%
2018	439	-2.4%
2019	450	2.5%
2020	480	6.7%
2021	450	-6.3%
2022	447	-0.7%
2023	474	6.0%
2024	479	1.1%
2025	476	-0.6%
2026	478	0.4%

Figure 6. Redding Elementary K-4 Enrollment



John Read Middle School Enrollment

Table 4 and Figure 7 present past enrollment from 2006 to 2016 in grades 5-8 and projected future enrollment to 2026 at the John Read Middle School. Between 2006 and 2009, the school's enrollment grew from 531 to 595 students. By 2016, enrollment had retreated to 436 students. Between 2006 and 2016, enrollment in grades 5-8 fell by 95 students or 17.9 percent. I project that public school enrollment in grades 5-8 statewide will have decreased 8.1 percent between 2006 and 2016.

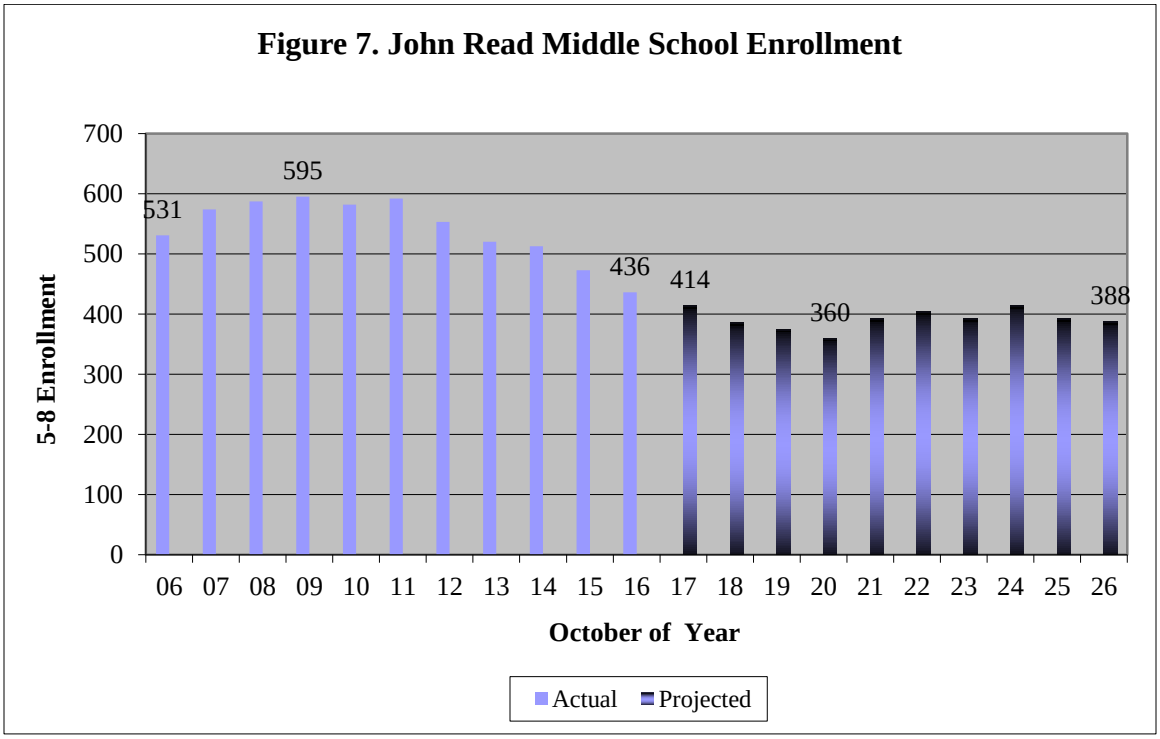
Table 4. John Read Middle School Enrollment

Year	Students	Percent Change
2006	531	
2007	574	8.1%
2008	587	2.3%
2009	595	1.4%
2010	582	-2.2%
2011	592	1.7%
2012	553	-6.6%
2013	520	-6.0%
2014	513	-1.3%
2015	473	-7.8%
2016	436	-7.8%
2017	414	-5.0%
2018	386	-6.8%
2019	375	-2.8%
2020	360	-4.0%
2021	392	8.9%
2022	404	3.1%
2023	393	-2.7%
2024	415	5.6%
2025	392	-5.5%
2026	388	-1.0%

I believe that next year's enrollment at John Read Middle School will be 20-25 students less than this year's. I project that enrollment will fall below 400 students in 2018. The last time enrollment was below 400 students was 1992. I anticipate an enrollment low of 360 students in 2020. By 2026, I anticipate an enrollment recovery that could approach 390 students. The projected 2026 enrollment is about 50 students below the current level, a decline of 11 percent. I project that public school enrollment in grades 5-8 statewide will decline by 12.8 percent in that period. Over the ten-year projection period, I project enrollment at the John Read Middle School will average about 390 students. This is below the average of 543 students observed in grades 5-8 over the past ten years.

All the students who will enter this school over the next ten years have been born. It is now just a matter of the net migration into Redding and the percentage of parents who choose the public schools that will determine this school's enrollment.

Figure 7. John Read Middle School Enrollment



Factors Affecting the Projection

The primary reasons for elementary enrollment change lie in the births and yield from the birth cohort. Figure 8 presents the births from 1980 to 2013 and preliminary and estimated births through 2021. Births ranged from a low of 40 in 2013 to a high of 111 in both 1987 and 1998. Preliminary data indicate there will be 56 births in both 2014 and 2015. From recorded in-state births through September of 2016, I estimate there will be 54 births to Redding residents in that year. In the 1990s there was an average of 92 births annually. In the five years from 2007 to 2011 (this fall's kindergarten through 4th graders) births averaged 57. Births in the 2012 through 2016 period will likely average only 50. The projection in years 2022 to 2026 assumes an average of 55 births annually between 2017 and 2021. This is based in part upon my assumption that births in that period will not change much from those in 2014 to 2016.

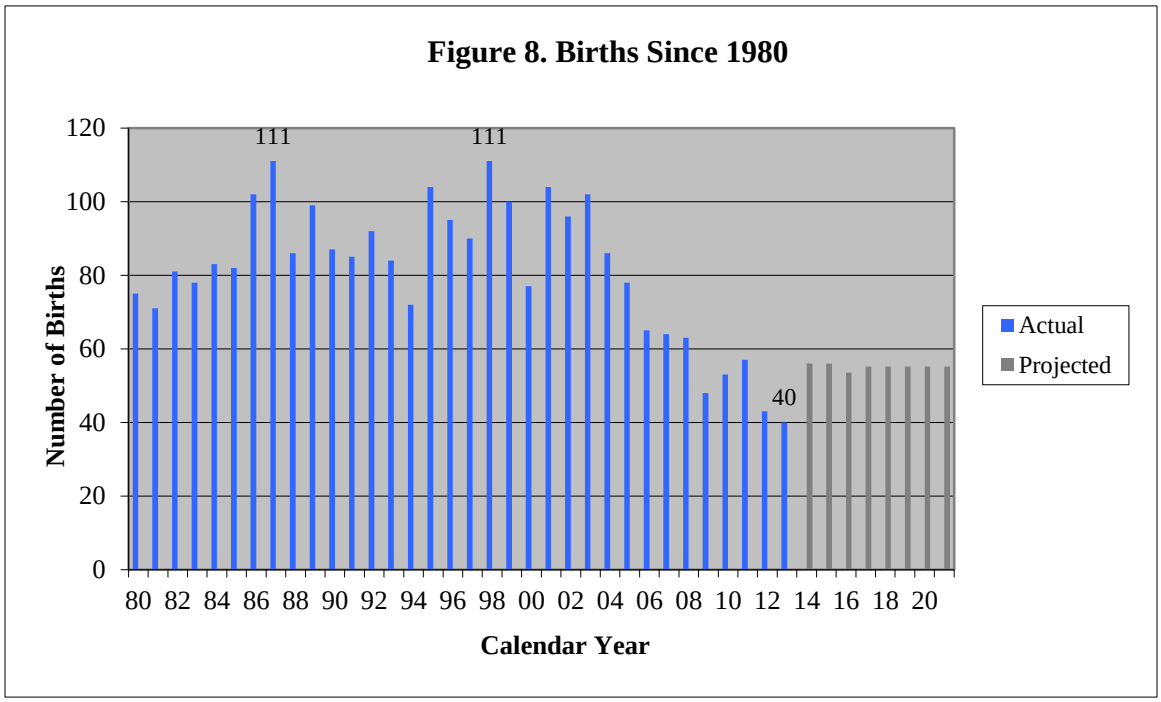
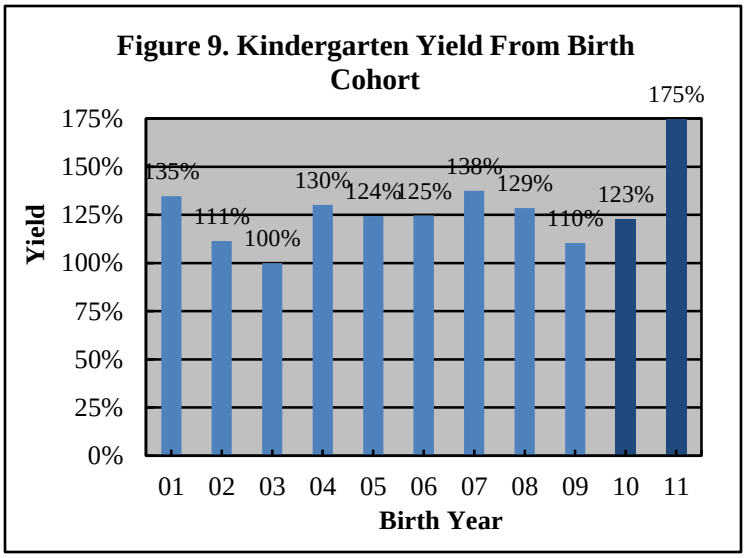


Figure 9 depicts the kindergarten yield five and six years later from the birth cohorts of 2001 to 2011 for Redding residents attending kindergarten at Redding Elementary. The dark blue indicates the change from extended- to full-day kindergarten. There were 53 births in 2010 and 49 Redding children enrolled in Redding kindergarten at age five in 2015 and an additional 16 who first enrolled in kindergarten at age six in 2016. That is a yield of 123 percent. The kindergarten yield from the birth cohort ranged from a low of 100 percent in 2003 to a high of 138 percent in 2007. The estimated yield for births



in 2011 is a whopping 174 percent. Note that 2011 yield is an estimate because we will not know the actual number of children who will enter kindergarten for the first time as six-year olds until October 2017. Yields above 100 percent generally mean that parents move into town after giving birth elsewhere. The average yield over the past two years was 149 percent. The median over the past 15 was 129 percent.

Table 5 gives a history of enrollment in kindergarten since 2006 and relates the components of kindergarten enrollment back to the appropriate birth cohort. Retention is tied to the prior year's kindergarten enrollment. To estimate kindergarten enrollment, I used the 2016 percentages of births five and six years ago and retention in 2017 and the two-year averages of these figures for 2018-2026. This aggressive approach should limit the possibility of having to hire a kindergarten teacher over the summer. The two-year average reflects kindergarten enrollment when births were relatively low and when full-day kindergarten was in effect. Thus I estimated kindergarten from 123.6 percent of births five years ago, 21.8 percent of births six years ago, and 2.5 percent of current kindergarten students retained for most of the projection period.

Table 5. Analysis of Kindergarten Enrollment

Year	Birth Year	Births	K	Retained From Prior Year	- - - - Non-Retained - - - - Born 5-Years Prior Resident	Non-Resident	Born 6 Years Prior	Percent Retained	Yield From Births 5-Years Prior	Yield From Births 6-Years Prior	Total Yield From Birth Cohort
2006	2001	104	136	2	118	2	14	1.8%	113.5%	18.2%	134.6%
2007	2002	96	114	1	90	1	22	0.7%	93.8%	21.2%	111.5%
2008	2003	102	110	1	88	4	17	0.9%	86.3%	17.7%	100.0%
2009	2004	86	114	2	100	2	14	1.8%	116.3%	13.7%	130.2%
2010	2005	78	97	1	84	0	12	0.9%	107.7%	14.0%	124.4%
2011	2006	65	84	4	67	0	13	4.1%	103.1%	16.7%	124.6%
2012	2007	64	92	5	73	0	14	6.0%	114.1%	21.5%	137.5%
2013	2008	63	85	3	67	0	15	3.3%	106.3%	23.4%	128.6%
2014	2009	48	63	2	47	0	14	2.4%	97.9%	22.2%	110.4%
2015	2010	53	58	3	49	0	6	4.8%	92.5%	12.5%	122.6%
2016	2011	57	103	0	87	0	16	**0.0%**	**152.6%**	**30.2%**	***174.4%***
3-Year Average								2.4%	115.8%	22.0%	135.8%
Weighted 3-Year Average								2.0%	123.5%	23.0%	146.5%
5-Year Average								3.4%	113.3%	22.2%	134.7%
Weighted 5-Year Average								2.6%	116.9%	22.4%	139.2%
2-yr								**2.5%**	**123.6%**	**21.8%**	**148.5%**

The correlation between births and kindergarten enrollment five-year later since 1985 was a moderate 0.78. If this relationship were used to predict kindergarten enrollment, the estimate would have been off by an average of nine children annually over the past ten years. The cohort survival method, even with my breakout into five-year olds, six-year old delayed entrants and children retained, cannot overcome the underlying unpredictability of kindergarten enrollment from earlier births.

In only 2014 and 2015 were there data points to examine kindergarten enrollment from a cohort of less than 55 births. Full-day kindergarten was introduced last year. I expect there will be from 40 to 56 births annually after 2011. We have only one year of past of history of full-day kindergarten enrollment when there are fewer than 55 births. We cannot know whether our past experience will hold when there are relatively few births. I believe the two-year average best covers this scenario, but caution still must be exercised.

The "Connecticut Early Childhood Report on Changing the Kindergarten Date," mandated by Public Act 14-39, recommended that the start date for kindergarten be moved back to October 1st phased in one month increments over the course of three years. It further recommended the elimination of the section of C.G.S Sec. 10-184 which allows parents the option of not enrolling their age-eligible child. Funds for the implementation were not made available during the 2015-16 session of the General Assembly. Unless the state's fiscal situation changes for the better or a court intervenes, I do not believe this common sense change will be implemented. Once implemented, the changes will very slightly decrease the size of your kindergarten class for three years and increase your pre-kindergarten enrollment. This change is not built into this projection, but will be built into future projections once the implementation date is set.

Context of the Projection

The cohort-survival method needs only births and a few years of recent enrollment data to generate a projection. Mathematically, nothing else matters. But enrollment changes do not occur in a vacuum. Events and policies in the district, community and region all have some bearing on enrollment. Remember that a basic assumption of the cohort-survival method is that the recent past can be a good predictor of the near future. It is incumbent for every receiver of a projection to determine what events happened in the past five years and whether they are likely to change. Analyzing how the factors underlying the projection changed in the prior year can be an important step in this process.

To assist in this endeavor, this report examines several factors that could affect enrollment: town population; women of child-bearing age; people in the labor market; new home construction; sales of existing homes; non-public enrollment, Redding enrollment in other public schools and student migration.

Figure 10 presents the US Census Bureau estimate of Redding population growth between July, 2010 and July of 2015. It is based, in part, on relative housing growth within the county. In that period, the town population is estimated to have grown by 119 people. The estimated population growth of 1.30 percent was 36th largest in the state. This compares to an estimated growth of 0.31 percent in Connecticut, 3.08 percent in Fairfield County and 3.43 percent in similar communities. The 2010 census data show that from April 2000 to April 2010 Redding's population grew from 8,270 to 9,158 people. The 888-person growth was the largest since the decade of the 1970s.

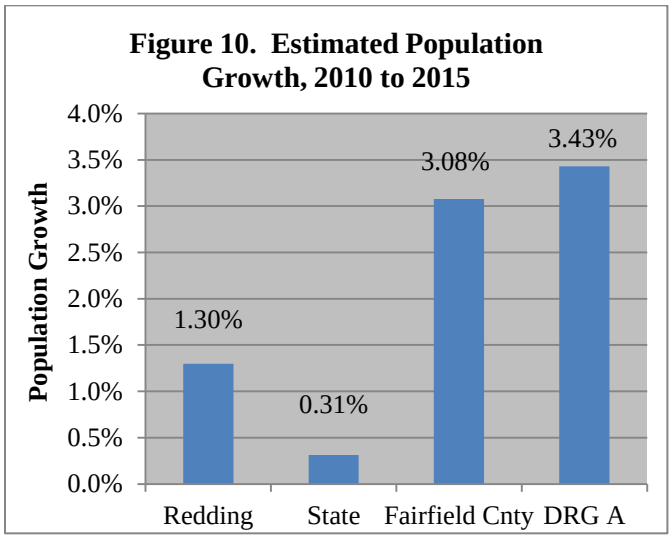


Figure 11 presents the Connecticut State Data Center's population projections for Redding residents 0-14 years of age in the years 2015 and 2020 along with the 2010 Census population. They project that population ages 0-4 will decline from 401 children in 2010 to about 205 children in 2015 and 2020. They project the population ages 5-9 will decline from 703 children in 2010 to 488 children in 2015 and to 293 children in 2020. That is a ten-year loss of 59 percent. The number of children ages 10-14 is projected to increase slightly between 2010 and 2015 and then decline. This independent analysis is consistent with the enrollment decline projected in this report.

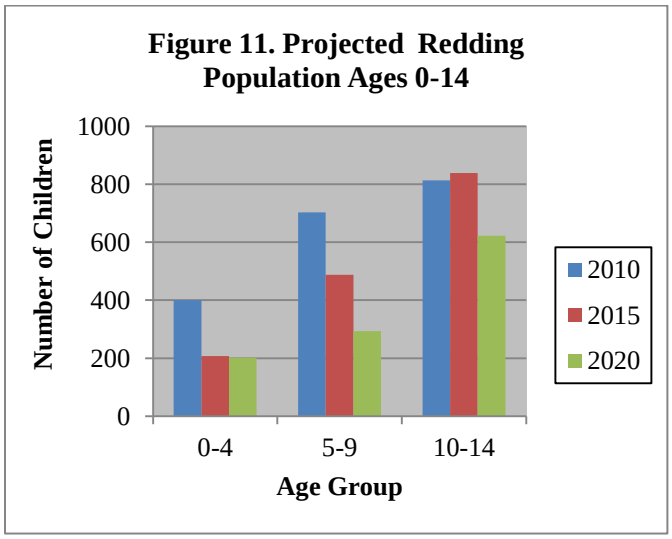


Figure 12 presents the number of women of child-bearing age from the 2010 census and the Connecticut State Data Center projections for 2015 and 2020. There were 53 births to Redding residents in 2010 and 56 in 2015. In communities such as yours, women in the 30-34 age group have the highest rate of births. There were 103 women in this group in 2010. The Center projects there will be 72 in 2015 and 28 in 2020. The second highest birth rate in communities like yours is women ages 35-39. There were 217 women in that age range in 2010. The Center projects the number will fall to 137 in 2015 and 106 in 2020. The Center further projects growth in both the 15-19 and 20-24 age groups. However, these ages have relatively few births in your community.

Figure 12. Women of Child-Bearing Age

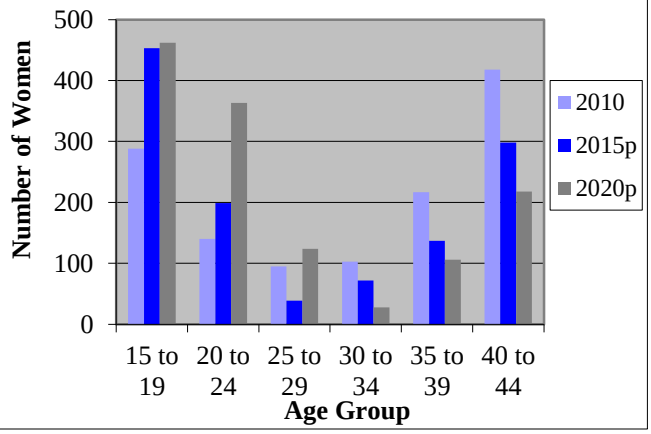


Figure 13 examines the number of people in the labor force from the US Department of Labor, Bureau of Labor Statistics. These are people 16 years of age or older working or actively seeking employment. The Redding labor force increased an estimated 0.7 percent between 2010 and 2015. This was higher than the state (-1.2 percent), but lower than Fairfield County (+0.9 percent). The 2015 unemployment level of 4.2 percent was down 2.1 percentage points from the 2010 high. The town rate is better than the state rate of 5.6 percent and the Fairfield County rate of 5.3 percent.

Figure 13. Recent Changes in the Labor Force

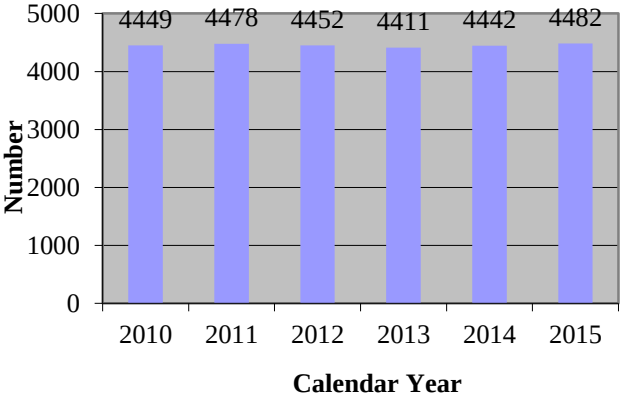


Figure 14 presents the net new housing units constructed from 2005 to 2015 from the State Department of Economic and Community Development. In the past ten years the number of net (of demolitions) new housing units constructed in Redding ranged from a high 125 in 2005 down to a low of -3 in 2011. There were four net new permits for issued in 2015. In the three-year look-back period for this projection, there was an average of two net new housing units constructed. The 2010 census indicated that Redding had 3,811 housing units of which 91.1 percent were occupied in April 2010. About 36 percent of the households had children under 18.

Figure 14. Net New Housing Units

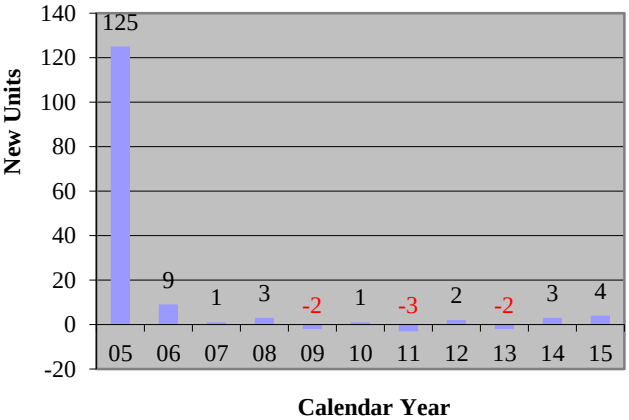


Figure 15 presents my estimate of the number of sales of existing homes. I derived it by taking the number of real estate transactions from The Warren Group/Commercial Record and subtracting the number of new single-family housing units authorized. This is an estimate because of the lag between the time a new house is authorized and it is sold. The estimated number of sales of existing homes ranged from a low of 78 in 2009 to a high of 167 in 2005. There were 129 existing houses sold in 2015. In the three-year look back period for the projection, there were 114 sales annually. Based on sales through September, I anticipate there will be close to 135 sales of existing houses in 2016.

Figure 15. Sales of Existing Homes

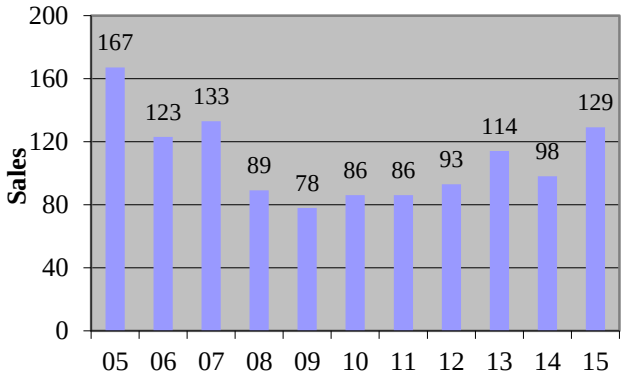


Figure 16 presents the non-public enrollment in grades PK-8 over the past ten years for students from the town of Redding. The data are from the records of the Connecticut State Department of Education. They include students in non-public special education facilities. Non-public enrollment ranged from a high of 154 students in 2006 to a low of 108 students in 2010. There were 119 students enrolled in 2015. In the past ten years, enrollment in the non-public schools decreased by 34 students or 22 percent. The 2015 enrollment represented 10.5 percent of all PK-8 students from Redding. That is down from 11.6 percent in 2013. I expect the non-public enrollment in 2016 from Redding will be down about five students.

Figure 16. Non-Public School PK-8 Enrollment

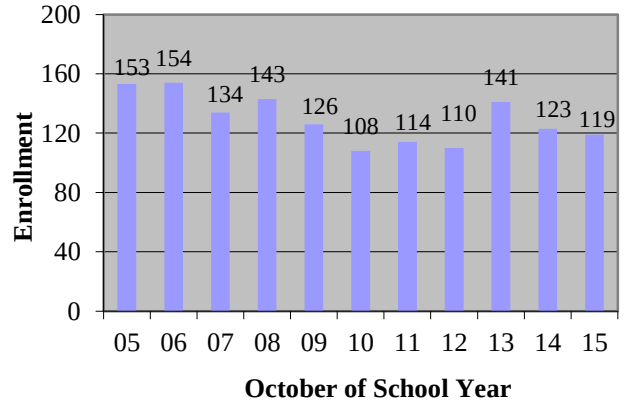


Figure 17 presents the number of Redding residents who attended public school in grades PK-8 outside of Redding between 2006 and 2016. The number ranged from nine in 2006 to 20 in 2008. In 2016, there was a preliminary count of 11 students enrolled in other public schools. They attended Danbury's Western Connecticut Academy of International Studies Elementary Magnet School.

Figure 17. Resident Enrollment in Other Public Schools (Grades PK-8)

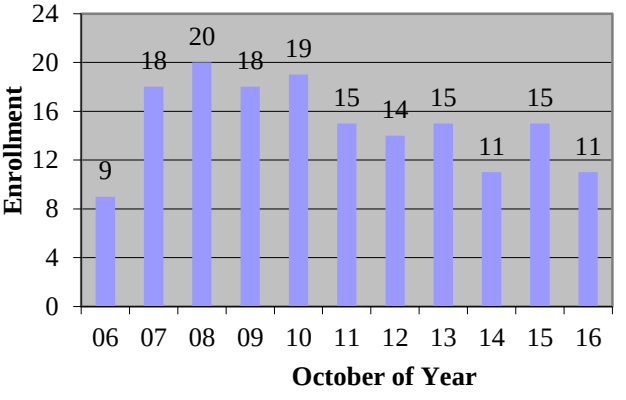
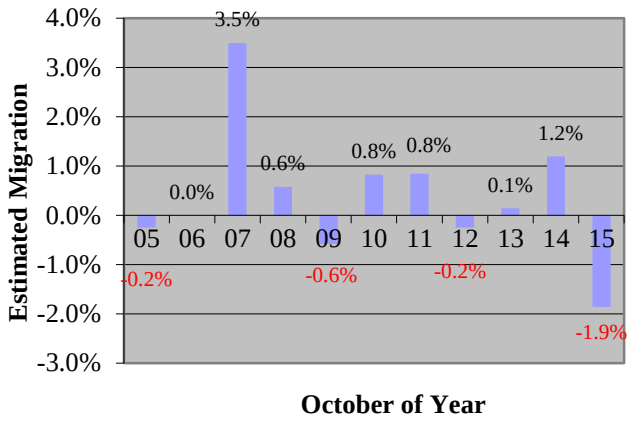


Figure 18 presents the estimated migration of students to and from Redding. It has been adjusted for students attending other public schools, but not students attending non-public schools. Estimated migration ranged from a low of -1.9 percent in 2016 to a high of +3.5 percent in 2007. The data behind these figures may be found in Appendix B. The average migration over the three-year look-back period for the projection was -0.17 percent. The median three -year rate over the past 20 years was +0.89 percent. This means that the projection will underestimate enrollment if migration patterns return to normal.

Figure 18. Estimated Student Migration

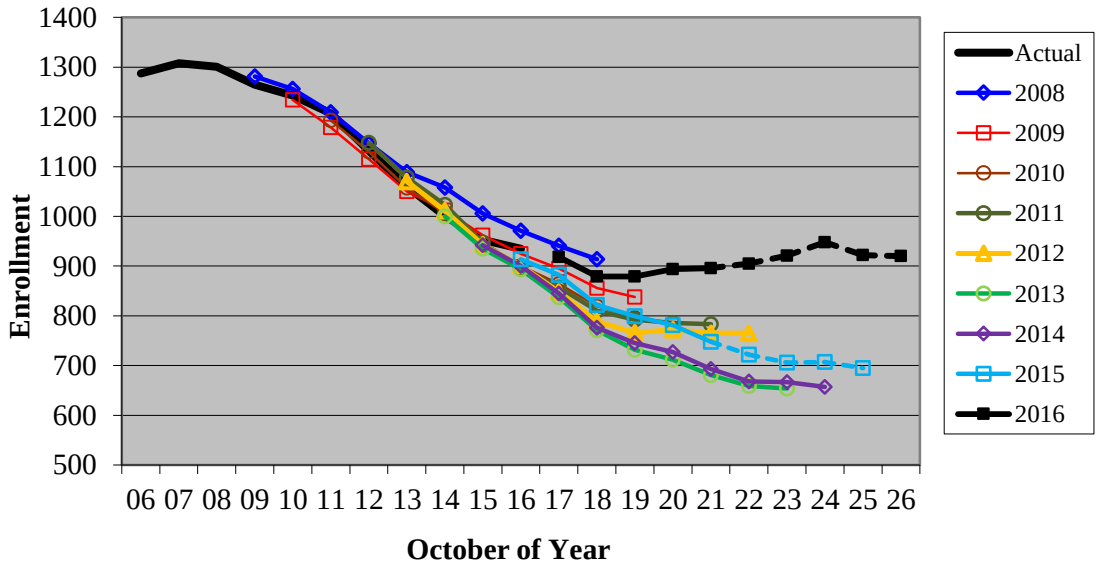


Prior Projections of Enrollment

The cohort-survival projection method works by moving forward the pattern of recent events that are subsumed within the grade-by-grade enrollment. This works very well when communities and outside forces are stable. One way to know if that assumption is valid is to examine how past projections have fared. Figure 19 presents the enrollment projections that I have run for Redding since 2006. Last year's projection was 21 students (2.2 percent) below this year's enrollment of 935. The seven other enrollment projections that I did between 2006 and 2014 had one-year error rates that averaged 1.0 percent. The four projections done between 2006 and 2011 had a five-year error rate of 2.2 percent, which is 0.43 percent annualized.

Last year's projection for Redding is running 2.3 percent low. In that analysis, I projected that K-4 enrollment would be 415 students in 2016. The actual enrollment of 445 was 30 students more than projected. The projection was low by 6.7 percent. Most of the error was in the projection of kindergarten. I projected that enrollment in grades 5-8 would be 441 students in 2016. The actual enrollment of 436 students was five students less than projected. The projection was high by 1.2 percent. The 2015 projection kept pre-kindergarten enrollment constant at 58 children. The actual 2016 enrollment was 54 children.

Figure 19. Prior Projections of Redding Enrollment



In my work I have found the cohort-survival method provides estimates that are sufficiently accurate for intermediate-range policy planning. The eight-year planning horizon for school construction grants is at the limit of the useful accuracy of the method. I analyzed the eight-year accuracy of the district projections from across the state that I ran in 2006. I found for the 67 district-level projections that I ran in 2006 the median projection was 5.5 percent high in predicting 2012 enrollment. That is an annual error rate of 0.7 percent. The absolute error rate (regardless of whether it was high or low) averaged 8.6 percent. That error was less than five percent in 46 percent of the projections and more than 15 percent in 15 percent of the projections. Among the 87 elementary projections run, the median projection was 9.5 percent high (1.1 percent annually). Among the 70 middle school projections run, the median projection was 8.2 percent high (1.0 percent annually). This illustrates what an economic downturn can do to projections run with the cohort-survival method.

Summary

I project that total enrollment will continue to decline, but at a relatively slow rate. I project the loss will be less than two percent from 935 students in 2016 to 920 students in 2026. Your total enrollment should average about 910 students over the ten-year projection period. Enrollment in grades K-4 at the Redding Elementary School is projected to grow from its current level of 445 to almost 480 students in 2026. That will be 30 students or seven percent above the October 2016 count. Over the ten-year projection period, I believe K-4 enrollment at the Redding Elementary School will average almost 460 students. There were 436 students enrolled at the John Read Middle School in October 2016. I project there will be only 390 students enrolled in 2026. The projected 2026 enrollment is about 50 students below the current level, a decline of about 11 percent. Over the ten-year projection period, I project that enrollment at the John Read Middle School will average about 390 students.

This report is projecting a possible end to the decline in enrollment. It is critical to remember that a projection is just a moving forward of recent trends. Is the forecast too optimistic? In the five years from 2007 to 2011 (this fall's kindergarten through 4th graders) births averaged 57. Births in the 2012 through 2016 period will average only 50. That should result in a near-term decline. I set births in 2017 to 2022 at 55 annually, the average of 2014 to 2016. That will keep future enrollments level. The growth from births to Redding residents in 2011 to kindergarten enrollment in 2016 was extraordinary and unexpected. We don't currently know if that was an aberration or the start of a trend. To protect against a second year like that, I kept the high 2016 rates in 2017. Thereafter I used a two-year average because of the introduction of full-day kindergarten in 2015. These aggressive growth rates will push future enrollment upward. This projected kindergarten growth must be viewed with extreme caution as we have only two years of history of birth to kindergarten growth when births are less than 55 (as will likely be the case in 2011 on). The average of the grade-to grade growth rates across grades 1-8 that I used to grow future enrollment was 1.029. The annual growth rates averaged 1.019 in 2016 as was the median over the last 20 years. Taking these three key factors into consideration, I think it is very possible that the elementary enrollment may come in lower than the report has projected.

These projections are based upon several key assumptions revolving around the notion that the recent past is a good predictor of the near future. The projection assumes that the following school policies will continue: kindergarten will remain full-day; retention policies will not change; limited enrollment of Redding residents in magnet schools and no participation in the Open Choice program. The projection assumes the following population growth factors will not change appreciable: births will average 55 over the 2017 to 2021 period, a 49 percent increase between the number of births and subsequent kindergarten enrollment and a student migration of -0.07 percent. Additionally, 13 percent of parents will start their children in kindergarten at age six (or have had a special education child held in pre-school for an extra year); there will be two new housing units constructed annually and 114 sales of existing homes.

It is important to remember that the cohort survival method relies on observed data from the recent past. Its key assumption is that those conditions will persist. It does not try to predict when the economic conditions might change. We cannot know today how long current conditions will continue. This projection should be used as a starting point for local planning. Examine the factors and assumptions underlying the method. You know your community best. Apply your knowledge of the specific conditions in Redding and then make adjustments as necessary.

Appendix A. Redding Enrollment Projected By Grade to 2026

School Year	Birth Year	Births[1]	K[2]	1	2	3	4	5	6	7	8	PreK	K-4	5-8	Total
2006-07	2001	104	136	118	150	152	140	135	139	138	119	60	696	531	1,287
2007-08	2002	96	114	134	117	152	155	148	141	145	140	62	672	574	1,308
2008-09	2003	102	110	120	141	122	155	157	146	138	146	66	648	587	1,301
2009-10	2004	86	114	112	120	137	125	156	154	145	140	62	608	595	1,265
2010-11	2005	78	97	118	113	122	145	122	161	153	146	66	595	582	1,243
2011-12	2006	65	84	98	124	114	124	145	132	160	155	71	544	592	1,207
2012-13	2007	64	92	77	99	127	122	121	142	134	156	62	517	553	1,132
2013-14	2008	63	85	91	82	98	127	122	123	142	133	57	483	520	1,060
2014-15	2009	48	63	85	96	84	103	129	124	125	135	57	431	513	1,001
2015-16	2010	53	58	77	90	103	94	102	130	118	123	58	422	473	953
2016-17	2011	57	103	66	82	92	102	92	102	123	119	54	445	436	935
Projected															
2017-18	2012	43	83	115	70	85	97	101	93	99	121	54	450	414	918
2018-19	2013	40	61	93	122	73	90	97	102	90	97	54	439	386	879
2019-20	2014	56	79	68	99	127	77	90	98	99	88	54	450	375	879
2020-21	2015	56	83	88	72	103	134	77	91	95	97	54	480	360	894
2021-22	2016	54	80	93	93	75	109	133	78	88	93	54	450	392	896
2022-23	2017	55	82	90	99	97	79	108	134	76	86	54	447	404	905
2023-24	2018	55	82	92	95	103	102	79	109	130	75	54	474	393	921
2024-25	2019	55	82	92	97	99	109	101	80	106	128	54	479	415	948
2025-26	2020	55	82	92	97	101	104	108	102	78	104	54	476	392	922
2026-27	2021	55	82	92	97	101	106	103	109	99	77	54	478	388	920

[1] Births from 2001 to 2015 from the State Department of Public Health. Births in 2014 and 2015 are preliminary.
Births in 2016 were estimated from in-state births through September. Births in 2017-21 were set to the average of 2014 to 2016 births.
[2] Based on the 2016 growth from births 5- and 6-years ago and retention in 2017 and subsequently the two-year averages.

Appendix B. Growth from Grade to Grade across Years

	Grade Moved Into from Prior Year											
October of Year	**K**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**PreK**	**Average Grades 1-8**	**Estimated Migration[1]**
2007	1.188	0.985	0.992	1.013	1.020	1.057	1.044	1.043	1.014		1.021	3.49%
2008	1.078	1.053	1.052	1.043	1.020	1.013	0.986	0.979	1.007		1.019	0.58%
2009	1.326	1.018	1.000	0.972	1.025	1.006	0.981	0.993	1.014		1.001	-0.58%
2010	1.244	1.035	1.009	1.017	1.058	0.976	1.032	0.994	1.007		1.016	0.82%
2011	1.292	1.010	1.051	1.009	1.016	1.000	1.082	0.994	1.013		1.022	0.84%
2012	1.438	0.917	1.010	1.024	1.070	0.976	0.979	1.015	0.975		0.996	-0.25%
2013	1.349	0.989	1.065	0.990	1.000	1.000	1.017	1.000	0.993		1.007	0.13%
2014	1.313	1.000	1.055	1.024	1.051	1.016	1.016	1.016	0.951		1.016	0.14%
2015	1.094	1.222	1.059	1.073	1.119	0.990	1.008	0.952	0.984		1.051	1.20%
2016	1.807	1.138	1.065	1.022	0.990	0.979	1.000	0.946	1.008		1.019	-1.86%
3-Year Ave.	1.405	**1.120**	**1.060**	**1.040**	**1.053**	**0.995**	**1.008**	**0.971**	**0.981**		1.029	
Weighted 3-Year	1.487	1.143	1.061	1.039	1.043	0.989	1.005	0.960	0.991		1.029	
5-Year Ave.	1.400	1.053	1.051	1.027	1.046	0.992	1.004	0.986	0.982		1.018	
Weighted 5 year	1.432	1.098	1.058	1.032	1.043	0.992	1.006	0.973	0.986		1.024	
Enrollment Multiplier		1.120	1.060	1.040	1.053	0.995	1.008	0.971	0.981			

[1] Adjusted for Redding residents enrolled in other public schools.