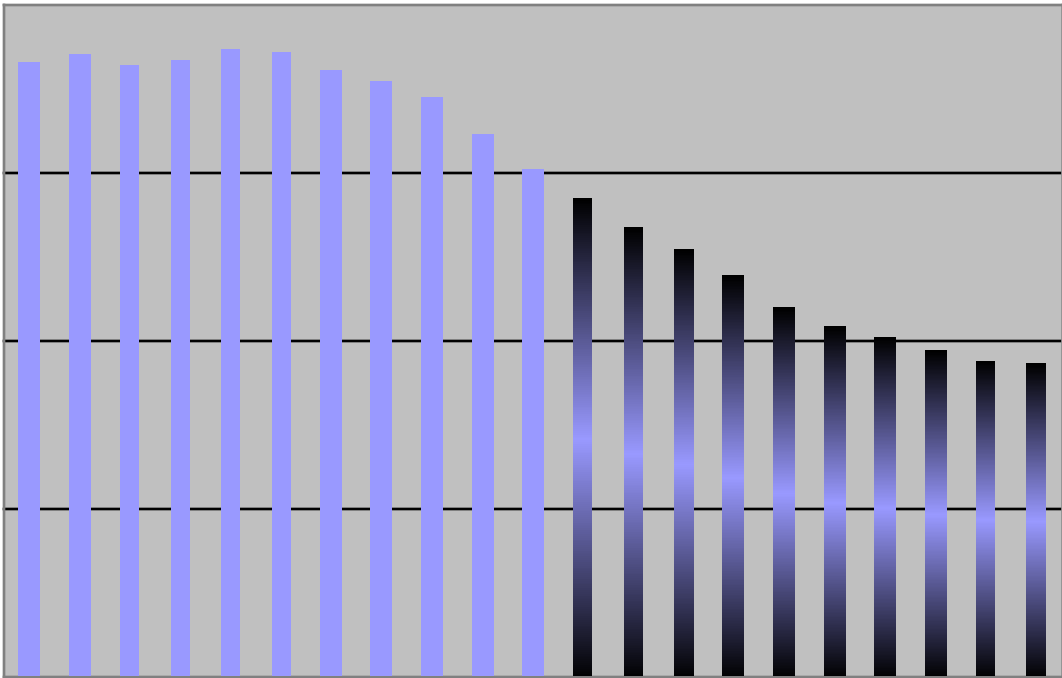


REDDING PUBLIC SCHOOLS ENROLLMENT PROJECTED TO 2023



Peter M. Prowda, PhD
28 Old Mill Court
Simsbury, CT 06070

(860) 658-9919
peteprowda@yahoo.com

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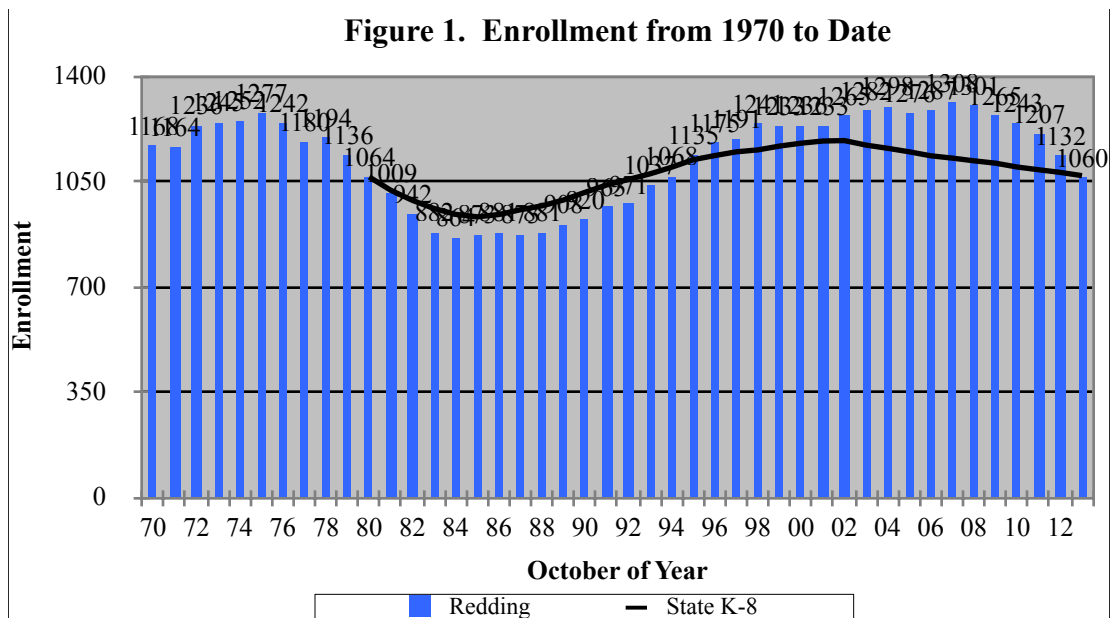
Introduction

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 44 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.



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 2013 enrollment was 1,060 students, 248 students (19.0 percent) below the 2007 peak.

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 11 years. Between 2002 and 2013, I project it will have fallen by 9.8 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 1,068 students in October of 2013 instead of the 1,060 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 2012, the latest data available. They show that 89.8 percent of Redding's elementary school-age residents attended the Redding Public Schools in 2012. An estimated 8.7 percent of the school-age residents attended non-public schools in state. Other school-age residents attended magnet schools (1.1 percent). Four children were reported as being home schooled. There were no non-residents enrolled in the Redding Public Schools in 2012. The projections in this report are based off of the 1,060 students who attended the Redding Public Schools in October, 2013. The equivalent figure below is the 1,132 students reported under the "Total Enrollment" category.

Table 1. 2012 Enrollment		
	Number	Percent
Residents		
A. Redding Public	1,132	89.8%
B. Other Public	0	0.0%
C. Magnets	14	1.1%
D. Non-Public	110	8.7%
E. Home Schooled	4	0.3%
Total (A+B+C+D+E)	1,260	
F. Non-Residents	0	
Total Enrollment (A+F)	1,132	

Figure 2. Schools Attended by Town Residents in Grades PK-8, 2012

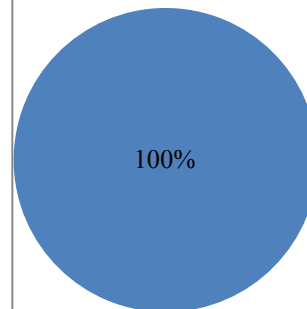
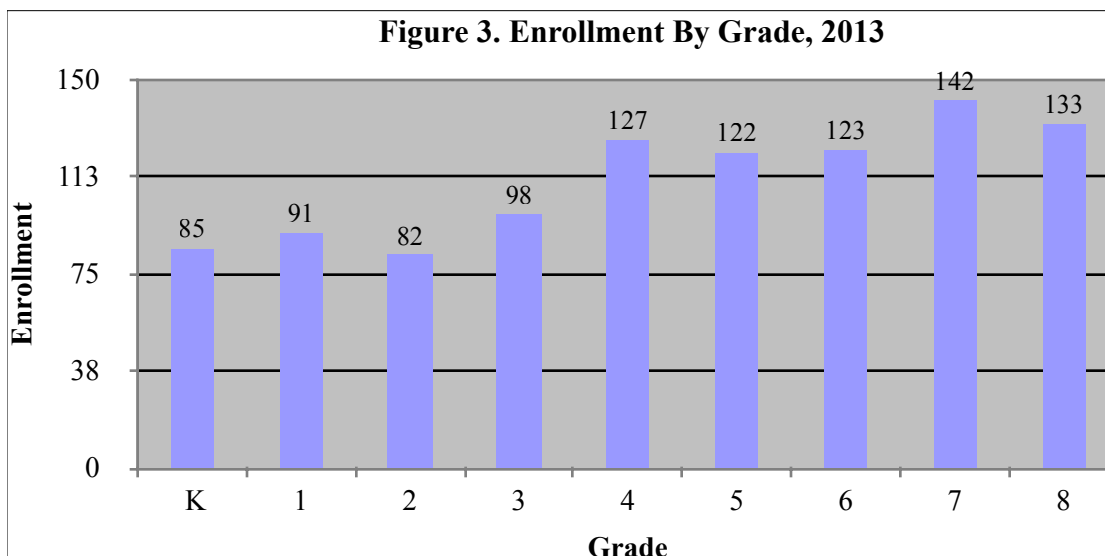


Figure 3 shows the October 2013 grade-by-grade enrollment of students in the Redding Public Schools. The children in pre-kindergarten programs are not shown. The largest class was Grade 7 with 142 students. It was followed by Grade 8 (133 students) and Grade 4 (127 students). This year's Second Grade class had the smallest enrollment, 82 students. It was followed by Kindergarten with 85 students and Grade 1 with 91 students. This is the pattern for future decline. If current conditions continue, this year's Kindergarten class of 85 students will have 88 students when it enters Grade 5 at John Read Middle School in 2018. That is well below the current enrollment for that grade and indicative of the impending enrollment decline at the 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 127 and the number of fourth graders last year was 125, then the growth rate is 1.016. 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.

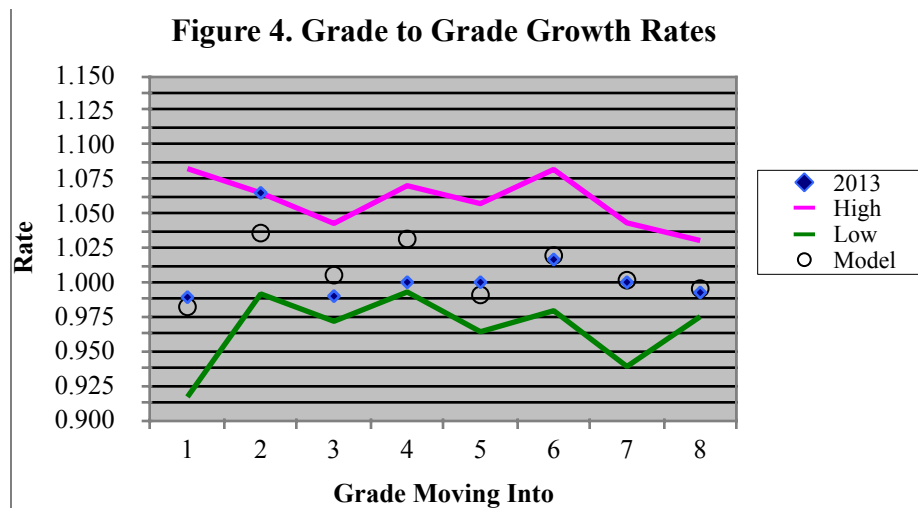
In the standard model, kindergarten enrollment is compared to births five years prior and some average of the observed growth or decline is used to project future kindergarten enrollment. My method breaks kindergarten enrollment into three parts: five-year olds; six-year olds entering kindergarten for 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 a weighted five-year average of the observed grade-to-grade growth. This was tied for highest of the four averages calculated. In kindergarten I used the weighted three-year average because it was the highest among the four I examined.

To extend the projection beyond four years, I need to estimate births. The State Department of Public Health recorded 57 births in 2011. That is the last official count. The preliminary count of births in 2012 was 43. In 2013, there were 29 in-state births recorded through September compared to 34 for the same period in 2012 and 42 in 2011. I added the average number of births between October and December of 2011 and 2012 and the average number of out-of-state births in those years to get an estimate of 41 births in 2013. Normally I apply the 2010 fertility rates from DRG A to the 2015 women of child-bearing age in Redding to estimate births in 2015. That calculation resulted in an estimate of only 40 births in 2015. I believe that is low and substituted that average number of births in 2011, 2012 and 2013 for births in 2015 to 2018. I set births in 2014 to the average of 2013 and 2015. This is a weak part of the model.

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 model growth rates for grades 1-4 appear to be in the middle or upper part of the ten-year range, while those for grades 5-8 appear to be in the middle or below. Five of the growth rates are above 1.000 and three are below, indicating a net migration into the Redding schools. The 2013 growth rate in Grade 2 was a ten-year high. The 2013 growth rates in grades 3 and 4 were near ten-year lows. Five of the model growth rates are close to the corresponding rate in 2013. In Grade 2 the model rate was lower than the 2013 rate, while in grades 3 and 4 they were lower. The average growth rate across grades 1-8 used in the projection was 1.008. The 2013 average was 1.007 while the 20-year median rate was 1.020.



Enrollment data from 2003 to 2012 were taken from the files of the Connecticut State Department of Education. The public school data are available on the Department's website at www.sde.ct.gov. Data for 2013 were provided by the Redding central office. All enrollment data after 2010 are subject to minor changes as they are reviewed and audited. Births from 1980 to 2013 were provided by the Healthcare Quality, Statistics, Analysis and Reporting Unit of the State Department of Public Health.

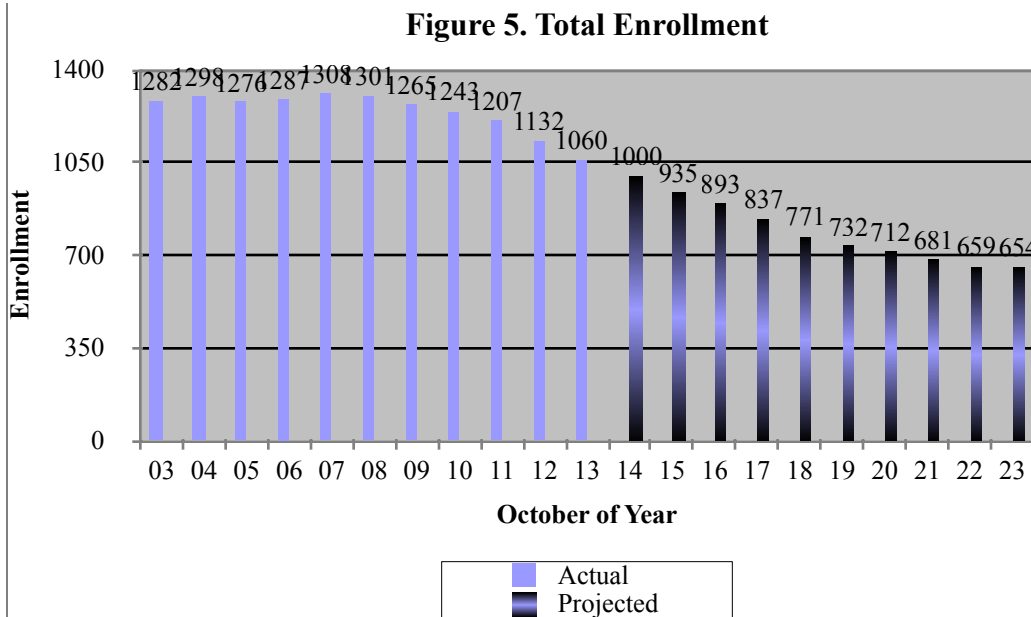
Total Enrollment

Table 1. Total Enrollment		
Year	Students	Percent Change
2003	1,282	
2004	1,298	1.2%
2005	1,276	-1.7%
2006	1,287	0.9%
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	1,000	-5.7%
2015	935	-6.5%
2016	893	-4.5%
2017	837	-6.3%
2018	771	-7.9%
2019	732	-5.1%
2020	712	-2.7%
2021	681	-4.4%
2022	659	-3.2%
2023	654	-0.8%

Table 2 and Figure 5 present the observed total enrollment in Redding from 2003 to 2013 and projected enrollment through 2023. Detailed grade-by-grade data may be found in Appendix A. Between 2003 and 2007 enrollment rose from 1,282 to 1,308 students. That marked the end of 23 years of enrollment growth. By 2013 it had fallen to 1,060 students. Between 2003 and 2013 there was a loss of 222 students or 17.3 percent. Statewide in that period, I have projected that grade K-8 public school enrollment decreased by 8.7 percent. Redding's decline of 10.5 percent between 2002 and 2012 (the latest comparable data available) was toward the bottom of grade PK-8 enrollment growth in similar districts in the region. Only Ridgefield's loss of 10.7 percent was greater. Enrollment grew by 10.1 percent in grades PK-8 in Darien and 2.0 percent in Westport. It declined 0.4 percent in New Canaan, 0.6 percent in Wilton, 5.5 percent in Easton and 8.2 percent in Weston.

I anticipate that the decline that began in 2008 will continue. Next year, I anticipate that total enrollment will fall by 60 students as a large Grade 8 exits and a small Kindergarten class enters. I project enrollment will fall below 1,000 students in 2015 and below 800 students in 2018. The last time the

district enrollment was below 800 students was c1964. At the projection's end, I believe that enrollment will be about 650 students. The total 10-year projected decline of about 400 students is 38 percent below the current enrollment. I have projected that K-8 enrollment statewide will be down 12.2 percent in that period. Your total enrollment should average about 790 students over the ten-year projection period. This compares to an average total enrollment of 1,238 students over the past ten years.



Redding Elementary School Enrollment

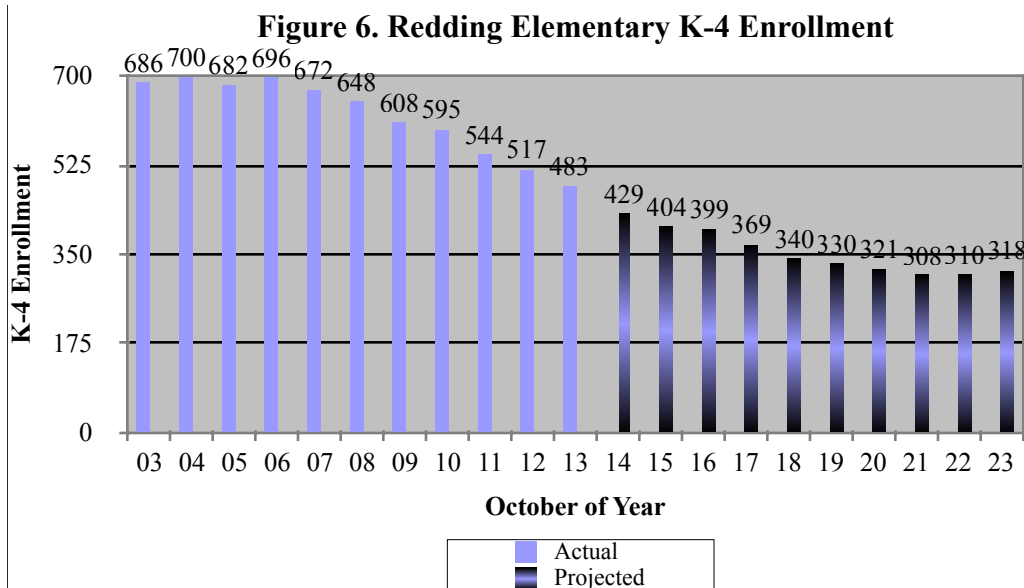
Table 3. Redding Elementary School Enrollment in K-4		
Year	Students	Percent Change
2003	686	
2004	700	2.0%
2005	682	-2.6%
2006	696	2.1%
2007	672	-3.4%
2008	648	-3.6%
2009	608	-6.2%
2010	595	-2.1%
2011	544	-8.6%
2012	517	-5.0%
2013	483	-6.6%
2014	429	-11.2%
2015	404	-5.8%
2016	399	-1.2%
2017	369	-7.5%
2018	340	-7.9%
2019	330	-2.9%
2020	321	-2.7%
2021	308	-4.0%
2022	310	0.6%
2023	318	2.6%

Table 3 and Figure 6 present actual enrollment from 2003 to 2013 and projected enrollment through 2023 in grades K-4 at the Redding Elementary School. Between 2003 and 2004, enrollment grew from 686 to 700 students. That marked the end of 21 years of enrollment growth. Enrollment has been on the decline since. By 2013, it was down to 483 students. In the past ten years, enrollment declined by 203 students or 29.6 percent. I project that state public school enrollment in grades K-4 will have fallen 8.1 percent in that interval.

I project that next year's enrollment at the school will be 50-55 students less than this year's as this year's 4th grade of 127 students exits and an incoming kindergarten class projected to be under 70 students enters. I anticipate enrollment will fall below 400 students in 2016. I could not determine when enrollment was last less than 400 students. I anticipate the bottom will come in 2021 or 2022 at about 310 students. By 2023, I expect the school's enrollment be close to 320 students. This will be about 165 students or about 34 percent below the October 2013 count. Statewide, I have projected a 9.8 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 353 students. This is well below the average of 615 students observed over the past ten years.

These figures exclude pre-kindergarten children. In the past ten years, pre-kindergarten enrollment ranged from 44 to 71 children. There were 57 children enrolled in these programs in 2013. My projection model holds pre-kindergarten enrollment constant at 57 children. This may be slightly optimistic given the recent decline in births.



John Read Middle School Enrollment

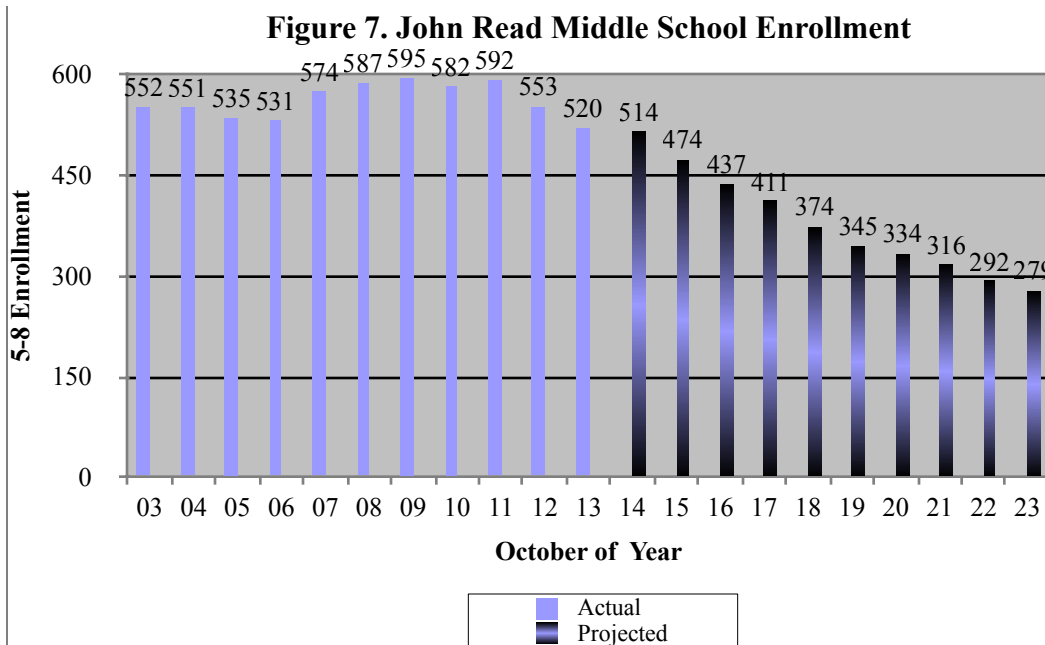
Table 4. John Read Middle School Enrollment		
Year	Students	Percent Change
2003	552	
2004	551	-0.2%
2005	535	-2.9%
2006	531	-0.7%
2007	574	8.1%
2008	587	2.3%
2009	595	1.4%
2010	582	-2.2%
2011	592	1.7%
2012	553	-6.6%
2013	520	-6.0%
2014	514	-1.2%
2015	474	-7.8%
2016	437	-7.8%
2017	411	-5.9%
2018	374	-9.0%
2019	345	-7.8%
2020	334	-3.2%
2021	316	-5.4%
2022	292	-7.6%
2023	279	-4.5%

Table 4 and Figure 7 present past enrollment from 2003 to 2013 in grades 5-8 and projected future enrollment to 2023 at the John Read Middle School. Between 2003 and 2013, the school's enrollment ranged from a low of 531 in 2006 to a high of 595 in 2009. Between 2003 and 2013 enrollment declined from 552 to 520 students. In those ten years, enrollment in grades 5-8 fell by 32 students or 5.8 percent. I project that public school enrollment in grades 5-8 statewide will have decreased 9.4 percent between 2003 and 2013.

I believe that next year's enrollment at John Read Middle School enrollment will be 5-10 students less than this year's. I project that enrollment will fall below 500 students in 2015 and below 400 students in 2018. The last time enrollment was below 400 students was 1992. By 2023, I anticipate that the school's enrollment will be about 280 students. The projected 2023 enrollment is about 240 students below the current level, a decline of about 46 percent. I project that public school enrollment in grades 5-8 statewide will decline by 15.0 percent in that period. Over the ten-year projection period, enrollment at

the John Read Middle School is expected to average nearly 380 students. This is below the average of 562 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.



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 2011 and preliminary and estimated births through 2018. Births ranged from a low of 48 in 2009 to a high of 111 in 1987 and 1998. There were 57 births in 2011. Preliminary data indicate there will be 43 births in 2012. That will be the new low. From recorded in-state births through September of 2013, I estimate there will be 41 births to Redding residents in 2013. In the 1990s there was an average of 92 births annually. In the five years from 2004 to 2008 (this fall's kindergarten through 4th graders) births averaged 71. Births in the 2009 through 2014 period will likely average only 48. The projection in years 2019 to 2023 assumes an average of 46 births annually between 2014 and 2018. This is based in part upon my assumption that births in that period will not change much from those between 2011 and 2013.

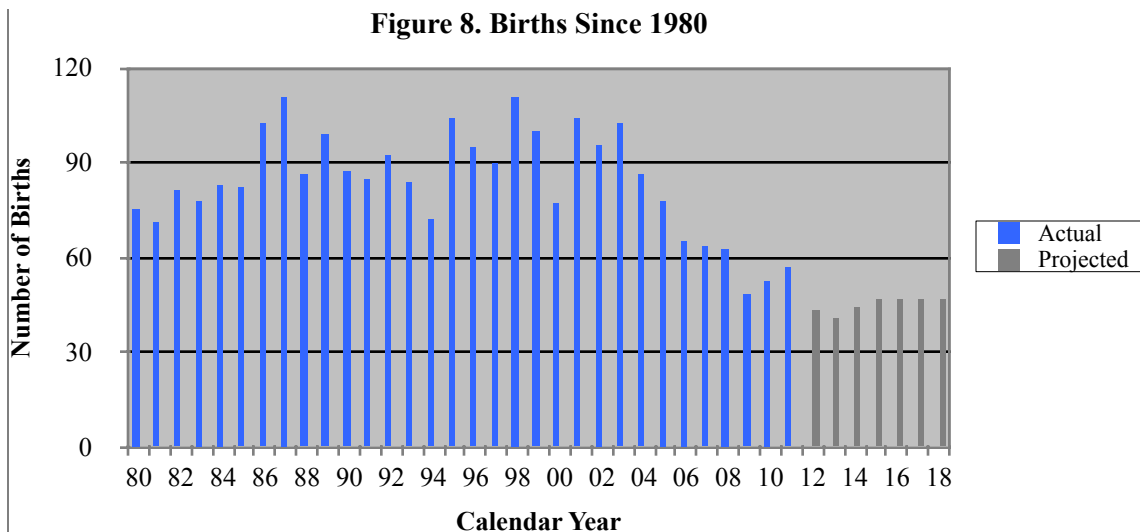


Figure 9 depicts the kindergarten yield five and six years later from the birth cohorts of 1998 to 2008 for Redding residents attending kindergarten in Redding. For example, there were 64 births in 2007 and 67 Redding children enrolled in Redding kindergarten at age five in 2012 and an additional 15 who first enrolled in kindergarten at age six in 2013. That is a yield of 138 percent. The kindergarten yield from the birth cohort ranged from a low of 100 percent in 2003 to a high of 139 percent in 2000. The estimated yield for births in 2008 is 126 percent. Note that 2008 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 2014. Yields above 100 percent generally mean that parents move into town after giving birth elsewhere. Redding's kindergarten is still extended-day. The average yield over the past three years was 130 percent.

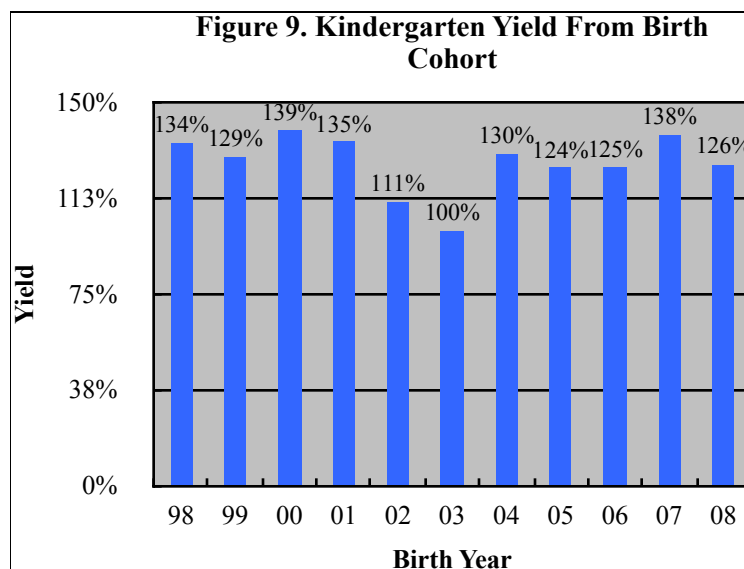


Table 5 gives a history of enrollment in kindergarten since 2003 and relates the components of kindergarten enrollment back

to the appropriate birth cohort. Retention is tied to the prior year's kindergarten enrollment. To estimate kindergarten enrollment, I used the weighted three-year average of births five and six years ago and retention. It was the highest of the four averages I examined. Thus I estimated kindergarten from 108.4 percent of births five years ago, 21.7 percent of births six years ago, and 4.3 percent of current Kindergarten students retained.

Table 5. Analysis of Kindergarten Enrollment

Year	Birth Year	Births	K	Retained ----- Non-Retained -----				Percent Retained	Yield From Births 5-Years Prior	Yield From Births 6-Years Prior	Total Yield From Birth Cohort
				From Prior Year	Born 5-Years Prior Resident	Non-Resident	Born 6 Years Prior				
2003	1998	111	139	0	128	0	11	0.0%	115.3%	12.2%	134.2%
2004	1999	100	138	2	115	0	21	1.4%	115.0%	18.9%	129.0%
2005	2000	77	109	2	93	0	14	1.4%	120.8%	14.0%	139.0%
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%	126.0%
3-Year Average								4.4%	107.8%	20.3%	129.4%
Weighted 3-Year Average								4.3%	108.4%	21.7%	129.6%
5-Year Average								3.0%	109.8%	17.2%	128.5%
Weighted 5-Year Average								3.7%	108.6%	19.7%	128.9%

The correlation between births and kindergarten enrollment five-year later since 1985 was a moderate 0.72. If this relationship were used to predict kindergarten enrollment, the estimate would have been off by an average of seven 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 matching up births from 1980 to 2008 with kindergarten enrollment in 1985 to 2013, the range of births was 63 to 111. Births after 2009 are estimated to run from 41 to 57 births. Essentially we have no past year of history of kindergarten enrollment when there are fewer than 60 births. We cannot know

whether our past experience will hold when there are relatively few births. I believe the three-year weighted average best covers this scenario, but caution still must be exercised.

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 2012. In that period, the town population is estimated to have grown by 126 people. The estimated population growth of 1.37 percent ranked it 26th in the state. This compares to an estimated growth of 0.42 percent in Connecticut, 1.69 percent in Fairfield County and 1.90 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. The 10.7 percent increase between 2000 and 2010 was the 27th ranked in the state.

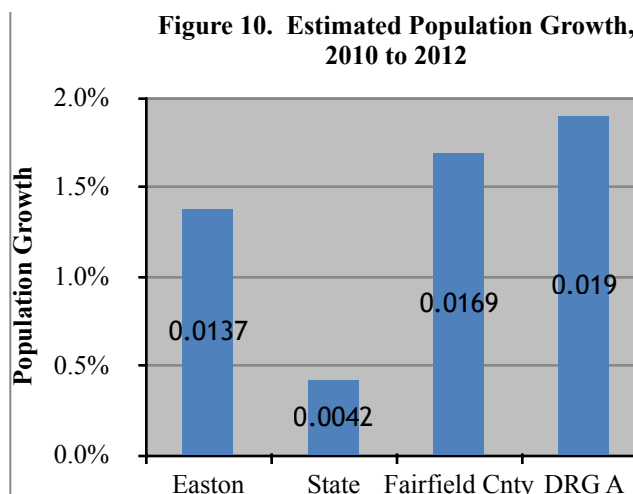


Figure 11 presents the Connecticut State Data Center's population projections for Redding residents 0-14 years of age in the years 2015 and 2020 along with the 2010 Census population. They project that population ages 0-4 will decline from 401 children in 2010 to about 205 children in 2015 and 2020. 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.

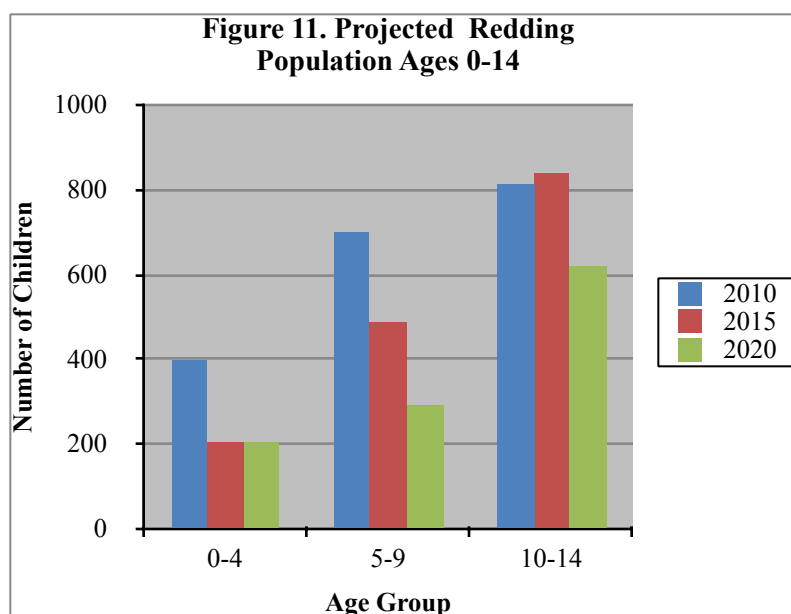


Figure 12 presents the number of women of child-bearing age from the 2000 and 2010 censuses and the Connecticut State Data Center projection for 2015. There were 77 births to Redding residents in 2000 and 53 in 2010. In communities such as yours, women in the 30-34 age group have the highest rate of births. The number of women in this group fell from 246 in 2000 to 103 in 2010. The Center projects it will be 72 in 2015. The second highest birth rate in communities like yours is women ages 35-39. The number in that age range dropped from 388 in 2000 to 217 in 2010. The Center projects it will fall to 137 in 2015. The 15-19 and 20-24 age groups did increase and are projected to increase, but these ages have relatively few births in your community.

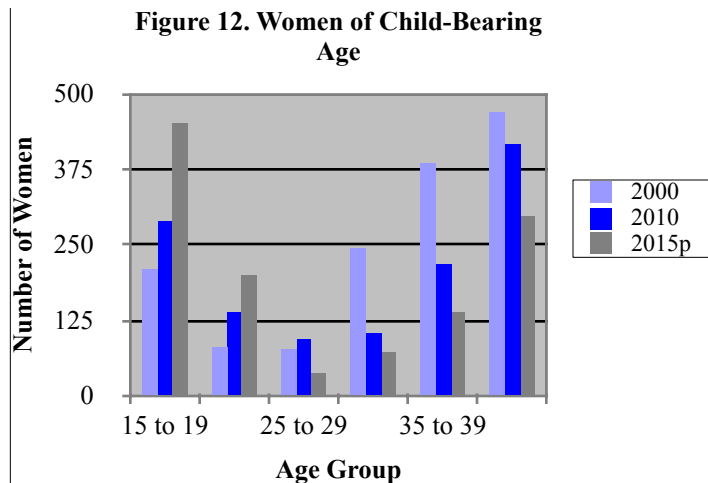


Figure 13 examines the number of people in the labor force from the US Department of Labor, Bureau of Labor Statistics. These are people 16 years of age or older working or actively seeking employment. Since it excludes most students and the elderly, I find it a very rough proxy of the number of school-age families. The Redding labor force increased 2.5 percent between 2008 and 2012. This was higher than the state (0.3 percent) and Fairfield County (1.4 percent). The 2012 unemployment level of 6.0 percent was down 0.1 percentage points from the 2010 high. The town rate is better than the state rate of 8.4 percent and the Fairfield County rate of 7.6 percent.

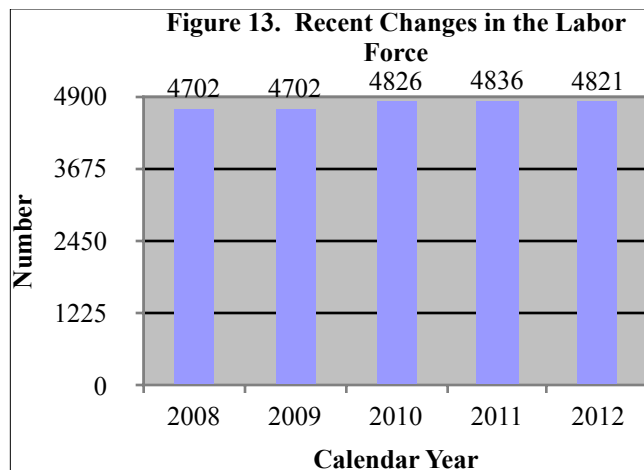


Figure 14 presents the net new housing units constructed from 2002 to 2012 from the State Department of Economic and Community Development. In the past ten years the number of net (of demolitions) new housing units constructed in Redding ranged from a high 125 in 2005 down to a low of -3 in 2011. There were permits for two new houses issued in 2012. In the five-year look-back period for this projection, there was an average of no 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.

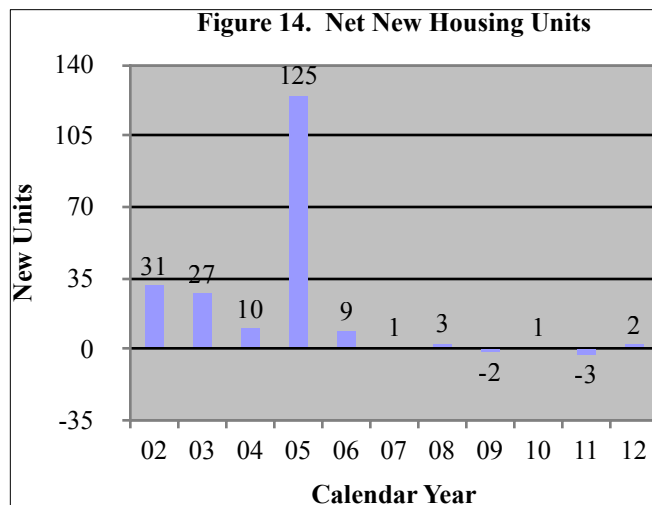


Figure 15 presents my estimate of the number of sales of existing homes. I derived it by taking the number of real estate transactions from The Warren Group/Commercial

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 214 in 2002. There were 93 existing houses sold in 2012. In the five-year look back period for the projection, there were 88 sales annually. Based on sales through September, I anticipate there will be 115 sales of existing houses in 2013.

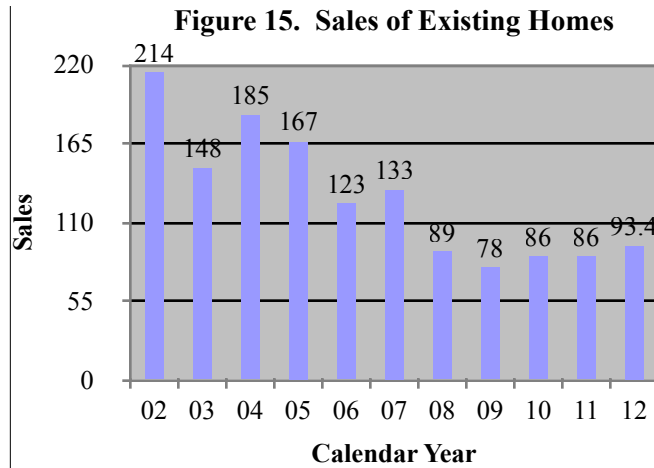


Figure 16 presents the non-public enrollment in grades PK-8 over the past ten years for students from the town of Redding. The data are from the records of the Connecticut State Department of Education. Non-public enrollment ranged from a high of 192 students in 2002 and 2003 to a low of 108 students in 2010. There were 110 students enrolled in 2012. In the past ten years, enrollment in the non-public schools decreased by 82 students or 43 percent. The 2012 enrollment represented 8.8 percent of all PK-8 students from Redding. That is down from the 2002 peak of 13.1 percent. I expect the non-public enrollment in 2013 from Redding will be up about 10 students from 2012.

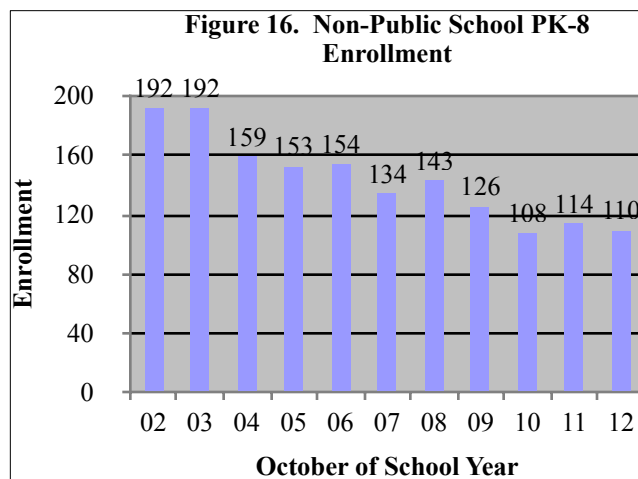


Figure 17 presents the number of Redding residents who attended public school in grades PK-8 outside of Redding between 2002 and 2012. The number ranged from one in 2005 to 20 in 2008. In 2012, the 14 students attending other public schools all attended Danbury's Western Connecticut Academy of International Studies Elementary Magnet School.

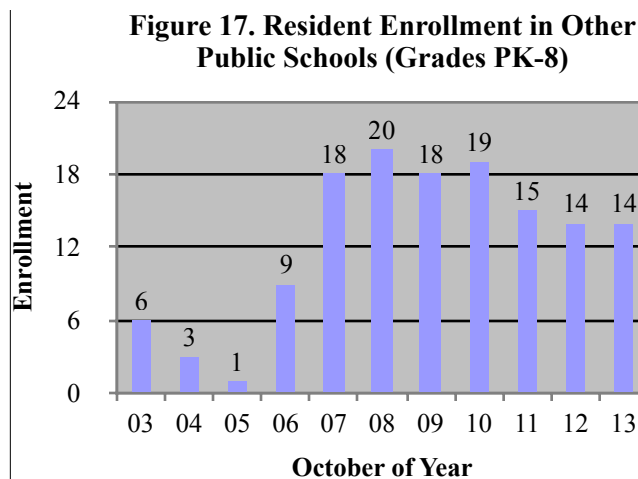
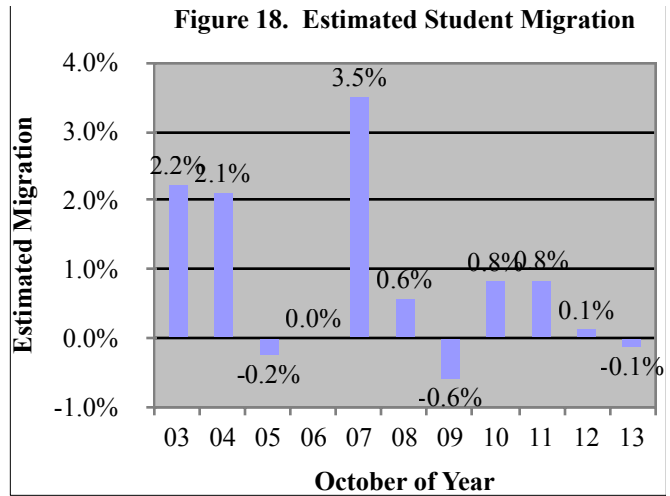


Figure 18 presents the estimated migration of students to and from Redding. Estimated migration ranged from a low of -0.6 percent in 2009 to a high of +3.5 percent in 2007. The estimated migration, which is adjusted for students attending other public schools, was -0.1 percent in 2013. The data behind these figures may be found in Appendix B. The average migration over the five-year look-back period for the projection was +0.23 percent. The last time the five-year average was lower than that was 1994. The median five-year rate over the past 20 years was +1.04 percent. This means that the projection will underestimate enrollment if migration patterns return to normal.

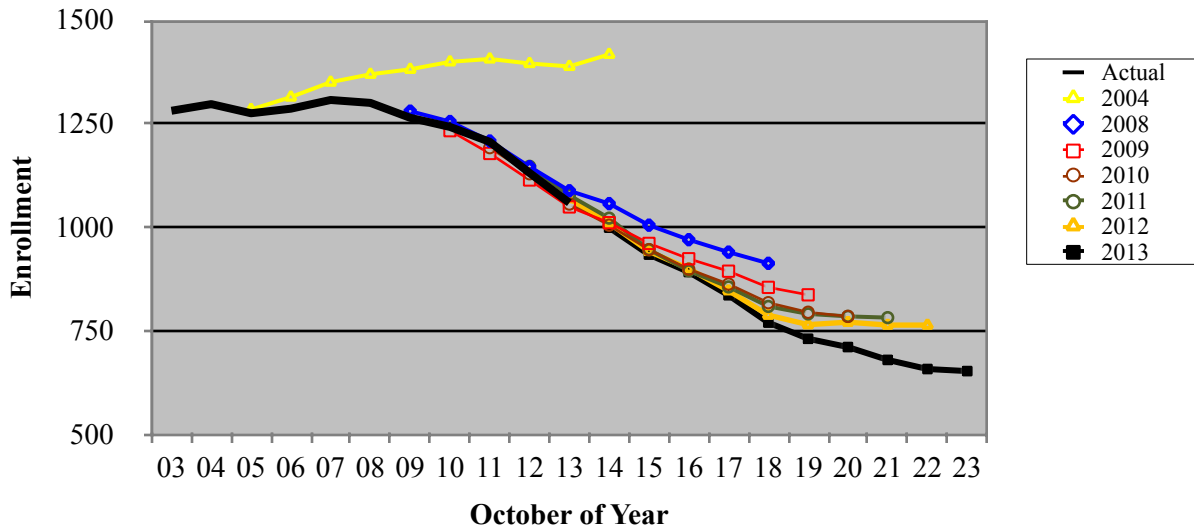


Prior Projections of Enrollment

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 2003. Last year's projection was 10 students (0.9 percent) above this year's enrollment of 1,060. The five other enrollment projections that I did between 2003 and 2011 had one-year error rates that averaged 1.1 percent. The two projections done between 2003 and 2008 had a five-year error rate of 6.0 percent, which is 1.2 percent annualized.

Last year's projection for Redding is running 0.9 percent high. In that analysis, I projected that K-4 enrollment would be 488 students in 2013. The actual enrollment of 483 was five students less than projected. The projection was high by 1.0 percent. I projected that enrollment in grades 5-8 would be 520 students in 2013. That happened to be the actual enrollment. The 2012 projection kept pre-kindergarten enrollment constant at 62 children. The actual 2013 enrollment was 57 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 2004. I found for the 67 district-level projections that I ran in 2004 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). Among the 72 high school projections run, the median projection was 3.1 percent high (0.4 percent per year). 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. I project the loss will be 38 percent from 1,060 in 2013 to about 650 students in 2023. Your total enrollment should average about 790 students over the ten-year projection period. Enrollment in grades K-4 at the Redding Elementary School is projected to fall from its current level of 483 to 320 students in 2023. The enrollment at the projection's end will be about 165 students or about 34 percent below the October 2013 count. Over the ten-year projection period, I believe K-4 enrollment at the Redding Elementary School will average about 350 students. There were 520 students enrolled at the John Read Middle School in October 2013. I project there will be only 280 students enrolled in 2023. The projected 2023 enrollment is about 240 students below the current level, a decline of about 46 percent. Over the ten-year projection period, I project that enrollment at the John Read Middle School will average 380 students.

This report is projecting a significant decline in enrollment. It is critical to remember that a projection is just a moving forward of recent trends. Is the forecast too severe? In the five years from 2004 to 2008 (this fall's kindergarten through 4th graders) births averaged 71. Births in the 2009 through 2013 period will average only 48. I set births in 2015 to the average of births in 2011, 2012 and 2013 because my normal calculation of births from the Connecticut State Data Center projection of Redding women of child-bearing ages in 2015 and my calculation of 2010 fertility rates from similar communities (DRG A) was, in my opinion, too low. This opens a weakness in the projection of elementary enrollments starting in 2019. Based on data from the past three years, I projected that there will be a growth of 29.6 percent future growth between births and kindergarten enrollment five years later. This must be viewed with extreme caution as we have no history of birth to kindergarten growth when births are less than 60 (as will likely be the case in 2009 on). This is a second weak point of the model. The average of the grade-to-grade growth rates across grades 1-8 that I used to grow future enrollment was 1.008. The annual growth rates averaged 1.007 in 2013 and the median over the last 20 years was 1.020. Taking these three key factors into consideration, I think it is very possible that the elementary enrollment will come in slightly higher 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 extended-day; retention policies will not change; limited enrollment of Redding residents in magnet schools and participation in the Open Choice program. The projection assumes the following population growth factors will not change appreciably: births will average 46 over the 2014 to 2018 period, a 29.6 percent increase between the number of births and subsequent kindergarten enrollment and a student migration of +0.23 percent. Additionally, 17 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 no new housing units constructed annually and 88 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 2023

School Year	Birth Year	Births	K	1	2	3	4	5	6	7	8	PreK	K-4	5-8	Total
2003-04	1998	111	139	138	136	135	138	119	130	146	157	44	686	552	1,282
2004-05	1999	100	138	152	140	131	139	144	125	132	150	47	700	551	1,298
2005-06	2000	77	109	146	153	141	133	134	147	118	136	59	682	535	1,276
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
Projected															
2014-15	2009	48	69	83	94	82	101	126	124	123	141	57	429	514	1,000
2015-16	2010	53	71	68	86	94	85	100	128	124	122	57	404	474	935
2016-17	2011	57	76	70	70	86	97	84	102	128	123	57	399	437	893
2017-18	2012	43	62	75	73	70	89	96	86	102	127	57	369	411	837
2018-19	2013	41	56	61	78	73	72	88	98	86	102	57	340	374	771
2019-20	2014	44	59	55	63	78	75	71	90	98	86	57	330	345	732
2020-21	2015	47	63	58	57	63	80	74	72	90	98	57	321	334	712
2021-22	2016	47	64	62	60	57	65	79	75	72	90	57	308	316	681
2022-23	2017	47	64	63	64	60	59	64	81	75	72	57	310	292	659
2023-24	2018	47	64	63	65	64	62	58	65	81	75	57	318	279	654

¹ Births from 1998 to 2012 from the State Department of Public Health. Births in 2012 are preliminary.

Births in 2013 were estimated from in-state births through September. Births in 2015 were set to the average of 2011, 2012 and 2013 births.

² Based on the three-year weighted averages of births 5- and 6-years ago and retention.

Appendix B. Growth from Grade to Grade across Years

October of Year	Grade Moved Into from Prior Year										Average Grades 1-8	Estimated Migration
	K	1	2	3	4	5	6	7	8	PreK		
2004	1.380	1.094	1.014	0.963	1.030	1.043	1.050	1.015	1.027		1.030	2.11%
2005	1.416	1.058	1.007	1.007	1.015	0.964	1.021	0.944	1.030		1.006	-0.25%
2006	1.308	1.083	1.027	0.993	0.993	1.015	1.037	0.939	1.008		1.012	0.00%
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	0.12%
2013	1.349	0.989	1.065	0.990	1.000	1.000	1.017	1.000	0.993		1.007	-0.13%
3-Year Ave.	1.360	0.972	1.042	1.008	1.029	0.992	1.026	1.003	0.994		1.008	
Weighted 3-Year	1.369	0.969	1.044	1.004	1.026	0.992	1.015	1.004	0.990		1.006	
5-Year Ave.	1.330	0.994	1.027	1.002	1.034	0.992	1.018	0.999	1.000		1.008	
Weighted 5 year	1.346	0.982	1.036	1.005	1.031	0.991	1.019	1.001	0.995		1.008	
Enrollment Multiplier		0.982	1.036	1.005	1.031	0.991	1.019	1.001	0.995	1.000	1.008	

¹ Adjusted for Redding residents enrolled in other public schools.