DIFFERENCE IN PROJECTED VS. ACTUAL / ANTICIPATED ENROLLMENT

| Grade	20-21 Projected	20-21 Actual	Difference %
Pre-K	21	16	-23.81%
K	23	24	4.35%
1	12	13	8.33%
2	26	27	3.85%
3	19	19	0.00%
4	27	28	3.70%
5	32	31	-3.13%
6	37	40	8.11%
7	29	32	10.34%
8	33	33	0.00%
Total	259	263	1.54%

Grade	21-22 Projected	21-22 Actual	Difference %
Pre-K	21	26	23.81%
K	15	20	33.33%
1	24	26	8.33%
2	12	13	8.33%
3	26	29	11.54%
4	20	21	5.00%
5	30	32	6.67%
6	30	36	20.00%
7	38	36	-5.26%
8	29	33	13.79%
Total	245	272	11.02%

Grade	22-23 Projected	22-23 Anticipated*	Difference %
Pre-K	21	29	38.10%
K	17	22	29.41%
1	16	22	37.50%
2	24	26	8.33%
3	12	13	8.33%
4	27	32	18.52%
5	22	22	0.00%
6	28	33	17.86%
7	31	36	16.13%
8	38	35	-7.89%
Total	236	270	14.41%

*AS OF JUNE 2022

THE SHERMAN SCHOOL AND SHERMAN ENROLLMENT IN PUBLIC HIGH SCHOOLS PROJECTED TO 2029
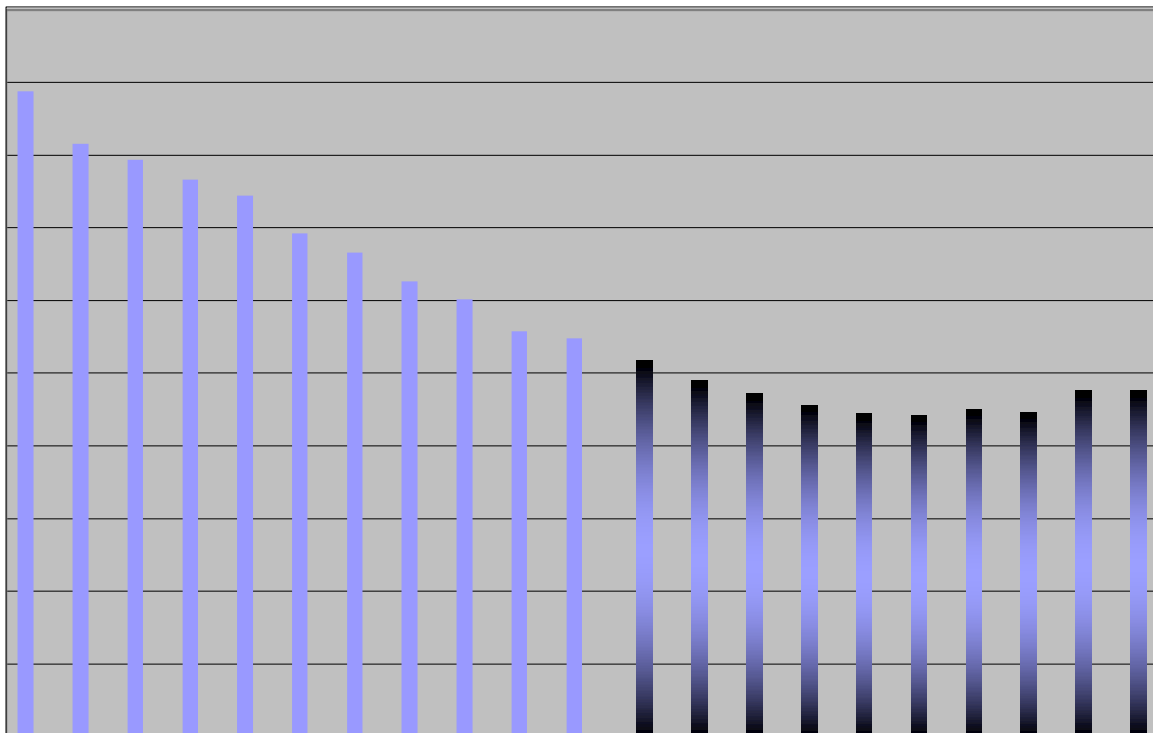
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February 3, 2020

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Introduction

This report is a ten-year projection of enrollment in grades PK-8 at the Sherman School and Sherman residents attending public schools in grades 9-12. It is based on enrollment on October 1 of the school year. The report includes 50 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, resident enrollment in other schools 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 at the Sherman School from 1970 to date.

Figure 1. Enrollment from 1970 to Date
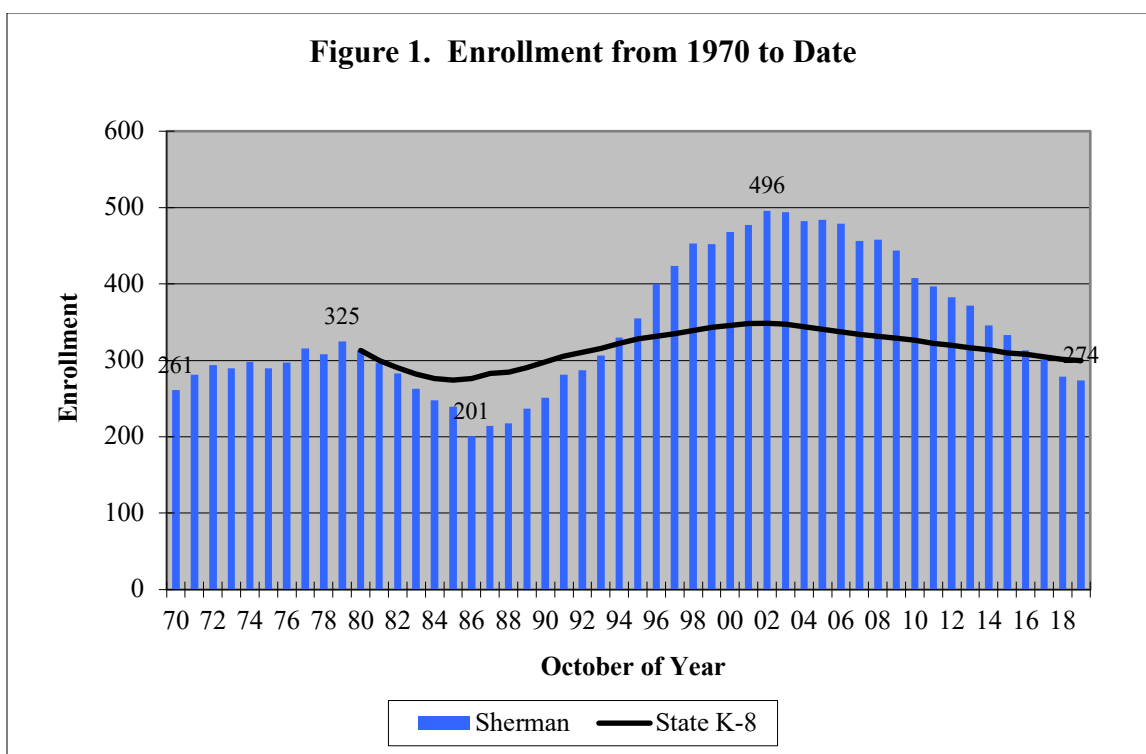
Enrollment at the Sherman School grew from 261 students in 1970 to 325 students in 1979. In those nine years, enrollment grew by 64 students or 24.5 percent. Enrollment then went on a short seven-year decline in which it fell by 124 students or 38.2 percent. Between 1986 and 2002 enrollment soared by 147 percent, growing from 201 to an all-time high of 496 students. Enrollment is now in the midst of a cycle of decline that so far has lasted 17 years. Enrollment has dropped by 222 students. The 274 students enrolled is 44.8 percent below the 2002 high. That is roughly the number enrolled in 1991.

Sherman's enrollment pattern is 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 before Sherman. It reached a secondary peak in 2002, the same year as Sherman. In those 17 years, state K-8 enrollment grew by 27.2 percent. Sherman's period of growth was the same length as the state's but much more intense. The state's public-school K-8 enrollment has been declining for 17 years. Between 2002 and 2019, it fell by 14.1 percent. Sherman's downturn started the same time as that of the state. The second decline in Sherman has been steeper than the state's. Had Sherman followed the state pattern of enrollment since 1980, it would have had 299 students in October of 2019 instead of the 274 that were enrolled on that date.

Current Enrollment

Table 1 and Figure 2 provide a picture of where Sherman residents in grades PK-8 attended school in October of 2019. The non-public count is projected. They show that 93.2 percent of Sherman's elementary school-age residents attended the Sherman School in 2019. Twenty students, 6.8 percent of the school-age residents, attended non-public schools in state at parent expense. No PK-8 children attended a non-public special education program at the district's expense. No child attended a magnet or charter school; none attended another public school. There was one non-resident enrolled at the Sherman School in 2019. The projections in this report are based on the 274 students that attended the Sherman School on October 1, 2019.

Table 1. 2019 PK-8 Enrollment		
	Number	Percent
Residents		
A. Sherman Public	273	93.2%
B. Other Public	0	0.0%
C. Magnets	0	0.0%
D. Non-Public	*20*	*6.8%*
E. Spec. Ed. (NP)	0	0.0%
Total (A+B+C+D+E)	293	
F. Non-Residents	1	
Total Enrollment (A+F)	274	

Figure 2. K-8 Schools Attended by Town Residents, 2019

Town Public 93.2% · Other Public 0.0% · Magnet 0.0% · Non-Public 6.8% · Spec. Ed. (NP) 0.0%

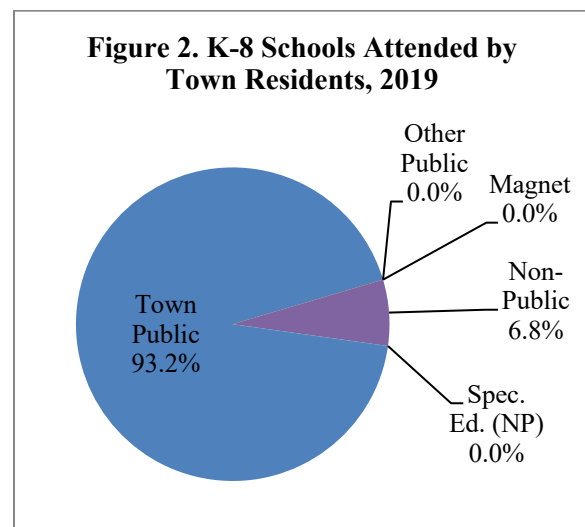Figure 3 shows the October 2019 grade-by-grade enrollment of students at the Sherman School. The children in pre-kindergarten programs are not shown. The largest class was grade 8 with 42 students. It was followed by grade 5 with 39 students. This year's kindergarten had the smallest enrollment, 11 students. It was followed by grade 2 with 19 students. This is the pattern for an irregular future decline.

Figure 3. Enrollment By Grade, 2019

Grade	Enrollment
K	11
1	26
2	19
3	26
4	29
5	39
6	28
7	33
8	42
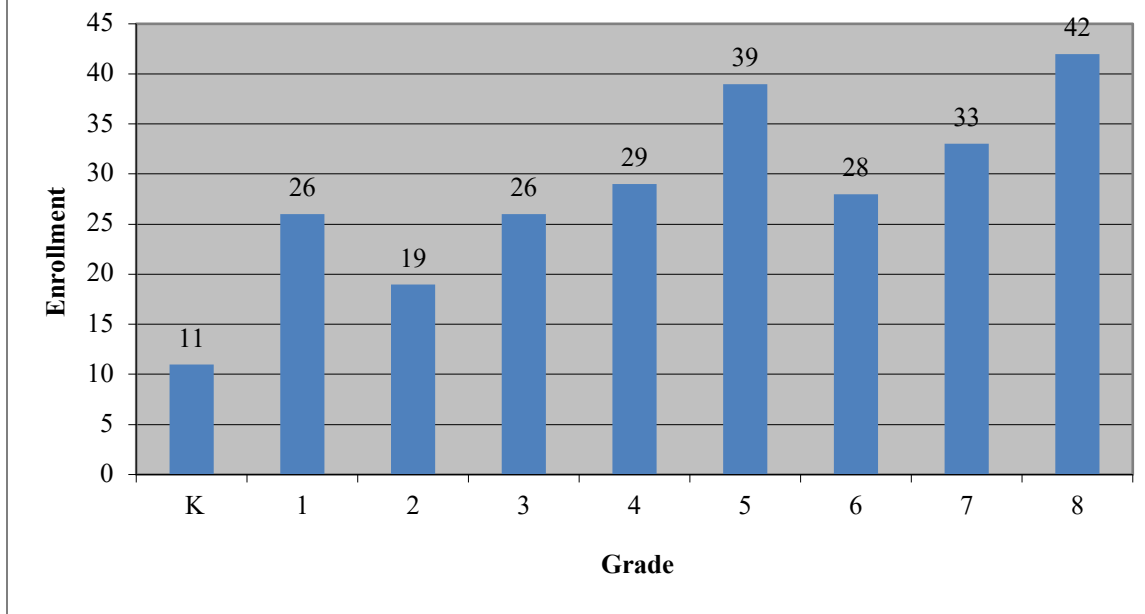
If current conditions continue, this year's kindergarten class of 11 students could have 13 students when it enters grade 8 in 2027. That would be well below the current enrollment for that grade. The lack of consistency, illustrated by the small enrollments in grade 2 and kindergarten, is a matter for concern regarding the reliability of the projection. 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 41 and the number of fourth graders last year was 40, then the growth rate is 1.025. 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 elementary projection were based on the five-year averages of the observed grade-to-grade growth. All four averages were fairly close. I also based the kindergarten projection on the five-year average of the components. It was the highest of the four I examined.

To extend the projection beyond four years, I needed to estimate births. The State Department of Public Health recorded 11 births to town residents in 2016. That is the last official count. The provisional counts of births were 14 in 2017 and 21 in 2018. I estimated there would be 17 births in 2019 from the 12 recorded in-state births through September, the relationship between October to December births compared to January to September births observed over the past five years and an average of two out-of-state birth observed in 2017 and 2018. To generate births in 2020 to 2024, I first calculated births in 2015, 2020 and 2025 from my estimated 2015 householder fertility rates in DRG C and the Connecticut State Center's 2017 projections of Sherman women of child-bearing ages in 2015, 2020 and 2025. The predicted births in 2015 exceeded the actual, so I used the growth in births from 2015 to 2020 and 2020 to 2025 applied to the two-year average of births starting in 2018 and 2019.

To project high school enrollment in public schools, I started with Sherman enrollment in the state's public schools, not just enrollment at the Sherman School. I used the five-year average of the annual growth rates. I projected kindergarten enrollment from the five-year average of the annual growth rates from births five-years prior. The breakdown by age that I used for the elementary projection was not available for elementary enrollment of Sherman residents in all public schools.

Enrollment data from 2009 to 2018 were taken from files provided by the Connecticut State Department of Education. The Sherman Central Office provided K-8 enrollment data for 2019. The Department provided 9-12 enrollment data in other schools in 2019.   Note that current district-level data on the Department's website may include special education students educated outside of the district and exclude students in a Detention Center. These are recent changes to the way the Department reports enrollment data. Projections require consistency. The data I have chosen for this analysis **exclude** special education students educated outside of the district and may **include** students in a Detention Center. (The average stay in a Detention Center is 11 days.) Enrollment data can change daily until an audited final file is closed. This process can take up to two years. Thus, it is possible that the enrollment data in this report could differ slightly from data in earlier reports and that may have been reported by the Board of Education to the public. Births from 1980 to 2019 were provided by the Healthcare Quality, Statistics, Analysis and Reporting Unit of the State Department of Public Health.
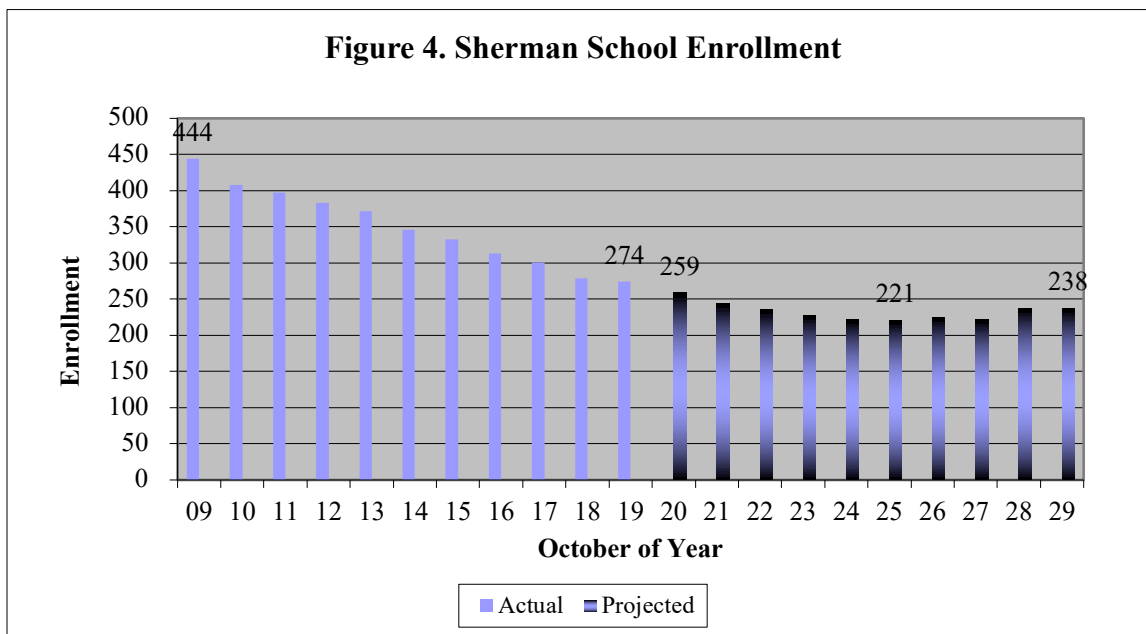
Sherman School Enrollment

Table 3 and Figure 4 present actual enrollment from 2009 to 2019 and projected enrollment through 2029 in grades PK-8 at the Sherman School. Enrollment at the school fell from 444 students in 2009 to 274 students in 2019. Between 2009 and 2019, enrollment declined by 170 students or 38.3 percent. State public school enrollment in grades K-8 fell 8.9 percent in that interval.

The enrollment decline of 38.3 percent in grades PK-8 at the Sherman School between 2009 and 2019 was larger than PK-8 enrollment at all similar (DRG C) districts in the area except Barkhamsted (-40.6 percent). The declines in Canton (-13.5 percent), Region 10 (-24.8 percent), Region 14 (-25.5 percent), New Hartford (-31.2 percent), Region 13 (-32.9 percent) and Region 12 (-33.5) were all smaller than Sherman's decline.

I project that next year's enrollment at the school will be about 15 students less than this year's as this year's 8th grade of 42 students exits and an incoming kindergarten class projected to be 23 students enters. The eight-year high for a school construction grant is 259 in 2020. I anticipate an enrollment low of 221 in 2025 followed by a rebound to about 240 students in 2029. This would be about 35 students or about 13 percent below the October 2019 count. Statewide, I have projected an 8.1 percent decrease in grade K-8 public school enrollment in that period. Over the ten-year projection period, I believe enrollment at the Sherman School could average about 235 students. This would be well below the average of 341 students observed over the past ten years.

These figures include pre-kindergarten children. In the past ten years, pre-kindergarten enrollment ranged from 13 to 33 children. There were 21 children enrolled in these programs in 2019. My projection model holds pre-kindergarten enrollment constant at 21 children.

Table 3. Sherman School Enrollment		
Year	Students	Percent Change
2009	444	
2010	408	-8.1%
2011	397	-2.7%
2012	383	-3.5%
2013	372	-2.9%
2014	346	-7.0%
2015	333	-3.8%
2016	313	-6.0%
2017	301	-3.8%
2018	279	-7.3%
2019	274	-1.8%
2020	259	-5.5%
2021	245	-5.4%
2022	236	-3.7%
2023	228	-3.4%
2024	222	-2.6%
2025	221	-0.5%
2026	225	1.8%
2027	223	-0.9%
2028	238	6.7%
2029	238	0.0%



Figure 4. Sherman School Enrollment

Sherman Enrollment in Public High Schools

Table 4 and Figure 5 present actual enrollment from 2009 to 2019 in grades 9-12 and projected future enrollment to 2029 of Sherman residents in public high schools in state. Sherman enrollment in grades 9-12 grew from 184 in 2009 to 202 in 2013 and then declined to 124 in 2019. That was a net loss of 60 students or 32.6 percent in the past ten years. In that period, public-school enrollment in grades 9-12 statewide declined 5.3 percent.

In 2019, there were 63 Sherman students at New Milford High, 31 at the regular and agriculture science programs at Shepaug High, 23 at New Fairfield High, six at Henry Abbot Technical High, and one at the agriculture science program at Nonnewaug High. About 51 percent of 9th graders chose New Milford High in 2019

I project that next year's public high school enrollment of Sherman residents will be the same as this year. By 2029, I think there could be less than 80 Sherman residents in public high schools in Connecticut. That would represent a ten-year decline of 45 students or almost 37 percent. I project that public-school enrollment in grades 9-12 statewide will decline by 8.8 percent in that period. Over the ten-year projection period, enrollment of Sherman residents in state public high schools could average 106 students compared to 173 students over the past ten years.

Table 4. Sherman Enrollment in Public High Schools		
Year	Students	Percent Change
2009	184	
2010	182	-1.1%
2011	193	6.0%
2012	196	1.6%
2013	202	3.1%
2014	198	-2.0%
2015	168	-15.2%
2016	175	4.2%
2017	149	-14.9%
2018	143	-4.0%
2019	124	-13.3%
2020	124	0.0%
2021	126	1.6%
2022	116	-7.9%
2023	120	3.4%
2024	110	-8.3%
2025	108	-1.8%
2026	100	-7.4%
2027	95	-5.0%
2028	79	-16.8%
2029	79	0.0%

Figure 5. Sherman Enrollment in Public High Schools
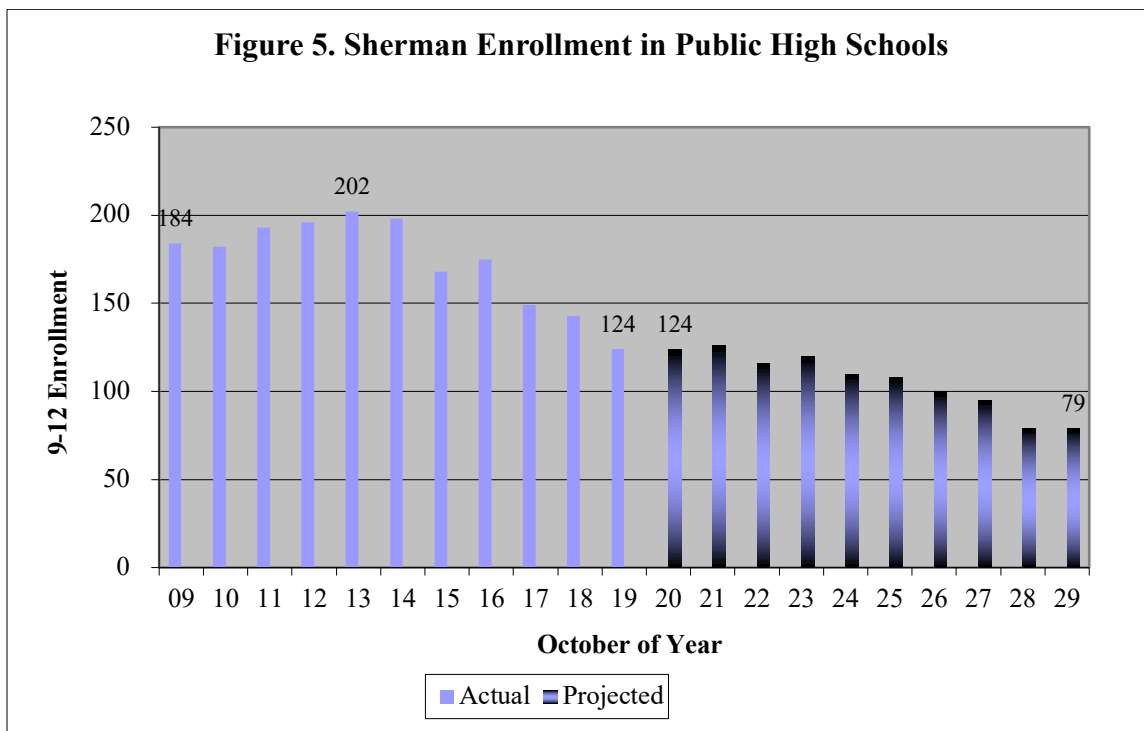
Factors Affecting the Projection

The primary reasons for enrollment change are births, kindergarten yield from the birth cohort and year-to-year migration.   Figure 6 presents the actual births from 1980 to 2016 and provisional and estimated births through 2024. Births ranged from a low of 11 in 2016 to a high of 47 in 2001. Provisional data indicate there will be 14 births in 2017 and 21 in 2018. From in-state births through September, I estimate there will be 17 births in 2019. In the five years from 2010 to 2014 (this fall's kindergarten through 4th graders) births averaged 16. Births in the 2015 through 2019 period will likely average 16. The projection in years 2025 to 2029 assumes an average of 19 births annually between 2020 and 2024. This is based, in part, on my estimation of DRG C 2017 fertility rates and the Connecticut State Data Center's 2017 projections of Sherman women of child-bearing ages.

Figure 6. Births Since 1980
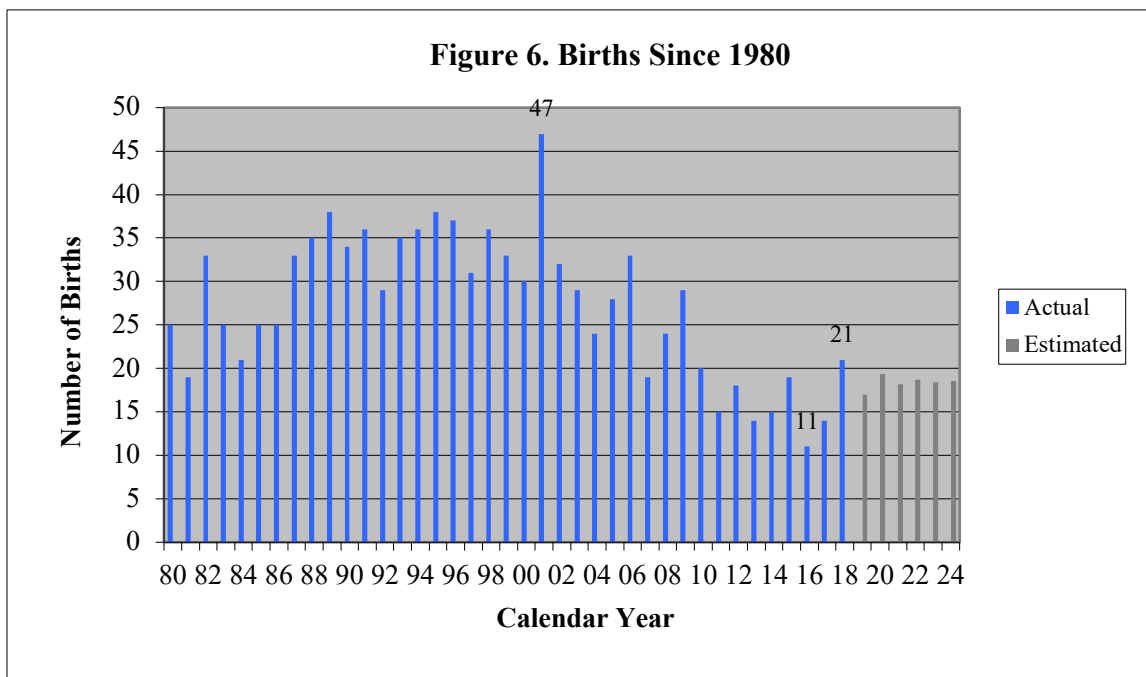
Figure 7 depicts the kindergarten yield five and six years later from the birth cohorts of 2004 to 2014 for Sherman residents attending kindergarten at The Sherman School. All years in the graph were impacted by full-day kindergarten. There were 14 births in 2013 and 22 Sherman children enrolled in Sherman kindergarten at age five in 2018 and an additional one who first enrolled in kindergarten at age six in 2019. That was a yield of 164 percent. The kindergarten yield from the birth cohort ranged from a low of 89 percent in 2012 to a high of 173 percent in 2011. The estimated yield for births in 2014 was only 82 percent. Note that 2014 yield is an estimate because we

Figure 7. Kindergarten Yield From Birth Cohort

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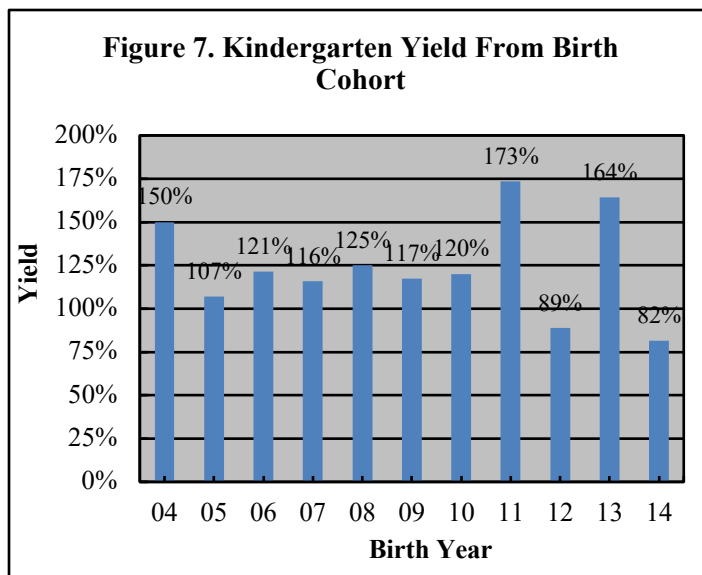
will not know the actual number of children who will enter kindergarten for the first time as six-year- olds until October 2020. Yields above 100 percent generally mean that parents move into town after giving birth elsewhere. Yields below 100 percent mean families with young children either choose a different school system (private or magnet school) or move out of Sherman. Sherman moved to full-day kindergarten in 2009 (the birth cohort of 2002). The average yield over the five-year look-back period was 125 percent.

Table 5 gives a history of enrollment in kindergarten since 2009 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 five-year average of births five and six years ago and retention. Thus, I estimated kindergarten from 107.3 percent of births five years ago, 17.7 percent of births six years ago, and 0.8 percent of current kindergarten students retained.

				Retained From Prior	- - - - Non-Retained - - - - Born 5-Years Prior		Born 6 Years	Percent	Yield From Births 5-Years	Yield From Births 6-Years	Total Yield From Birth
Year	Birth Year	Births	K	Year	Resident	Non-Resident	Prior	Retained	Prior	Prior	Cohort
2009	2004	24	38	0	33	0	5	0.0%	137.5%	17.2%	150.0%
2010	2005	28	29	2	24	0	3	5.3%	85.7%	12.5%	107.1%
2011	2006	33	40	1	33	0	6	3.4%	100.0%	21.4%	121.2%
2012	2007	19	27	0	20	0	7	0.0%	105.3%	21.2%	115.8%
2013	2008	24	24	0	22	0	2	0.0%	91.7%	10.5%	125.0%
2014	2009	29	36	0	28	0	8	0.0%	96.6%	33.3%	117.2%
2015	2010	20	27	1	20	0	6	2.8%	100.0%	20.7%	120.0%
2016	2011	15	28	0	24	0	4	0.0%	160.0%	20.0%	173.3%
2017	2012	18	14	0	12	0	2	0.0%	66.7%	13.3%	88.9%
2018	2013	14	26	0	22	0	4	0.0%	157.1%	22.2%	164.3%
2019	2014	15	11	0	10	0	1	0.0%	66.7%	7.1%	*81.6%*
3-Year Average								0.0%	93.6%	14.9%	111.6%
Weighted 3-Year Average								0.0%	96.8%	13.2%	110.4%
5-Year Average								**0.8%**	**107.3%**	**17.7%**	**125.6%**
Weighted 5-Year Average								0.2%	105.5%	15.0%	119.9%

**Table 5. Analysis of Kindergarten Enrollment**

The correlation between births and kindergarten enrollment five-year later since 1985 was a moderate 0.73. If this relationship were used to predict kindergarten enrollment, the estimate would have been off by an average of five 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.

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 have not been made available. 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.

Figure 8 gives a perspective of the grade-to-grade growth rates for students attending the Sherman School.   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. For example, in grade 2 the projection used a growth rate 1.011 from the prior year's grade 1 enrollment. In 2019 the rate was 1.118. Over the past ten years the rate has been as low as 0.893 and as high as 1.118. In general, the narrower the gap between the two lines is, the greater the accuracy of the projection.

The projection growth rates appear to be in the middle of the ten-year range. Grade 5 is more toward the top of the range and grade 6 is toward the bottom. Five of the growth rates are above 1.000 indicating a little net in-migration. The 2019 growth rates in grades 2, 5 and 7 were ten-year highs. The projection growth rates are fairly close to the corresponding rates in 2019. Grades 2, 3, 5, 6 and 7 were below the 2019 rates, while grades 1 and 4 were above. The average growth rate across grades 1-8 used in the projection was 1.022. The 2019 average was a high 1.051 while the 20-year median rate was 1.020.

Figure 8. Grade to Grade Growth Rates

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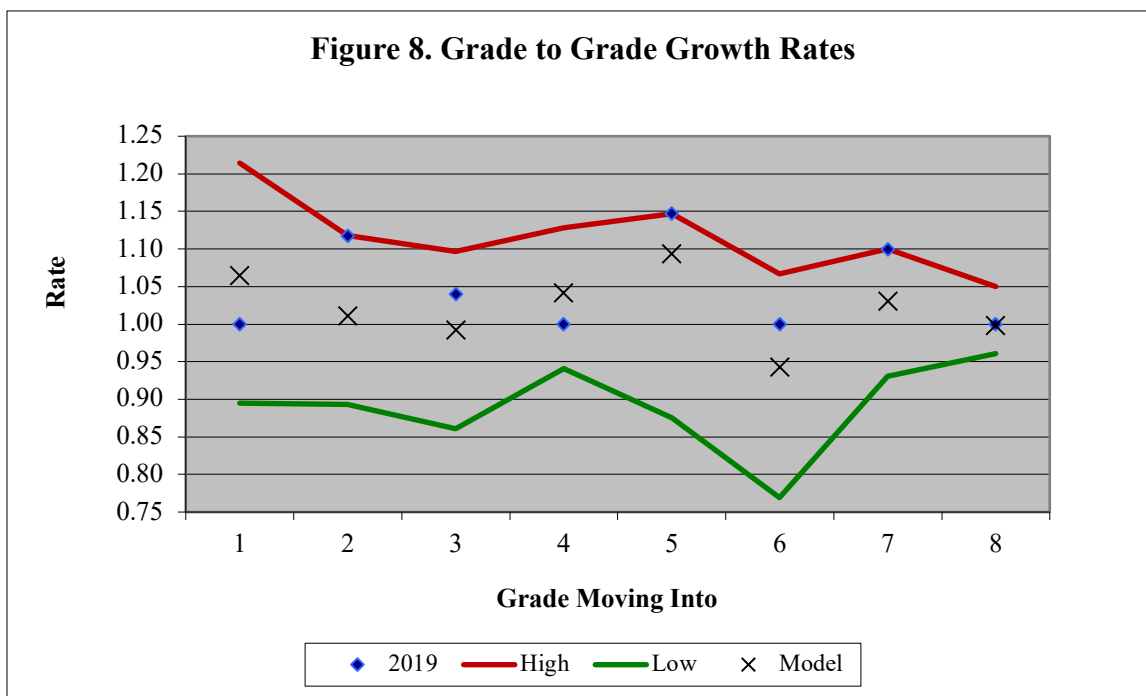
Context of the Projection

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; Sherman enrollment in public high schools and student migration.

Figure 9 presents the US Census Bureau estimate of Sherman population growth between July, 2010 and July of 2018. It was based, in part, on relative housing growth within the county. In that period, they estimated that town population increased by 27 people. The estimated population gain of 0.75 percent was 34th in the state. This compares to an estimated growth of -0.18 percent in Connecticut, +2.62 percent in Fairfield County and -1.56 percent in similar communities.

Figure 9. Estimated Population Growth, 2010 to 2018
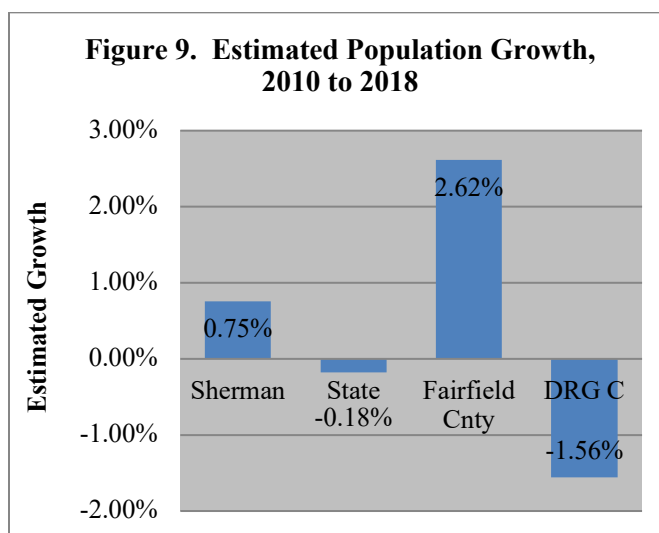
Figure 10 presents the Connecticut State Data Center's 2017 population projections for Sherman residents 0-19 years of age for the years 2015, 2020 and 2025. They projected that ages 0-4 would remain relatively unchanged. They projected the population ages 5-9 would decline from 171 children in 2015 to 131 children in 2020 and remain near that count in 2025. That would be about a 20 percent decline. They further projected that the number of children ages 10-14 would decline almost 38 percent between 2015 and 2025. Additionally, they projected the number of children ages 15-19 would decline over 45 percent between 2015 and 2025. This independent analysis is consistent with the enrollment decline projected in this report.

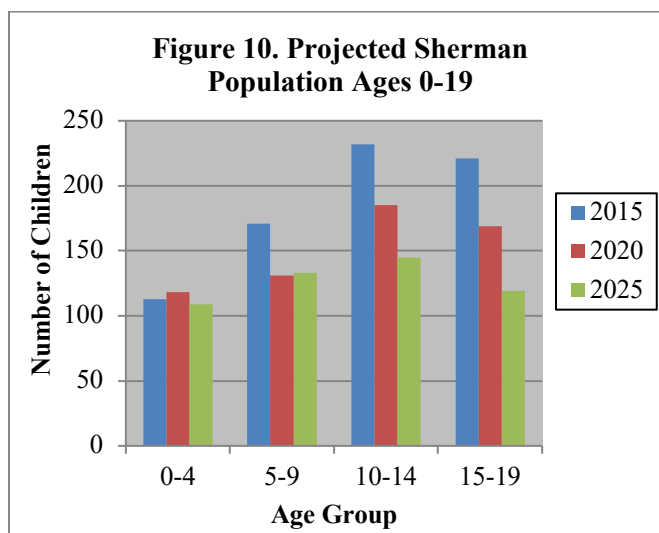Figure 10. Projected Sherman Population Ages 0-19

Figure 11 presents the Connecticut State Data Center 2017 projections of the number of Sherman women of child-bearing ages in 2015, 2020 and 2025. The Center has projected a 13 percent decline between 2015 and 2020 in the number of women 15-45 and a 13.8 percent decline between 2020 and 2025. However, in the key 30-34 age group, the Center projected the number of women would grow from 40 in 2015 to 46 in 2020 and 72 in 2025. The second highest birth rate in towns like yours is women ages 25-29. The Center projected the number in that age range would grow from 42 in 2015 to 66 in 2020 and then plummet to only 30 in 2025.
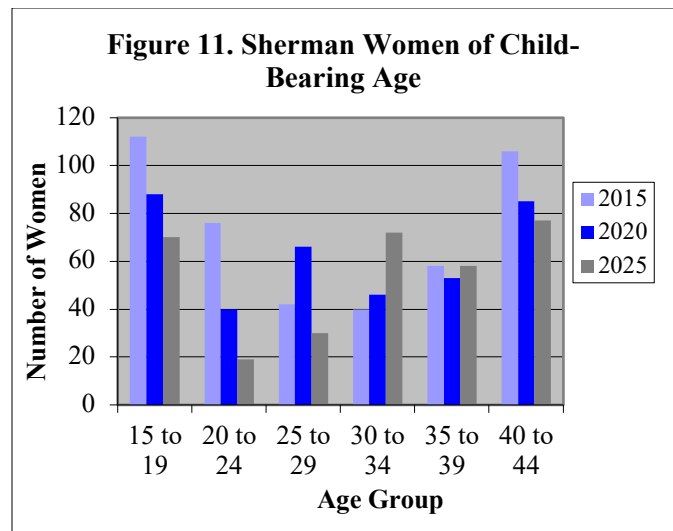
Figure 11. Sherman Women of Child-Bearing Age

Figure 12 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. I find it a very rough proxy of the number of school-age families. The Sherman labor force declined between 2010 and 2013, had a short period of growth from 2103 to 2016 and has declined recently. It grew an estimated 0.5 percent between 2010 and 2018. This was less than the 1.6 percent growth in Fairfield County but better than the loss of 0.3 percent statewide. The 2018 unemployment rate of 3.1 percent was down 4.2 percentage points from the 2010 high. The town rate is better than the state rate of 4.1 percent and similar to the Fairfield County rate of 4.0 percent.

Figure 12. Recent Changes in the Labor Force
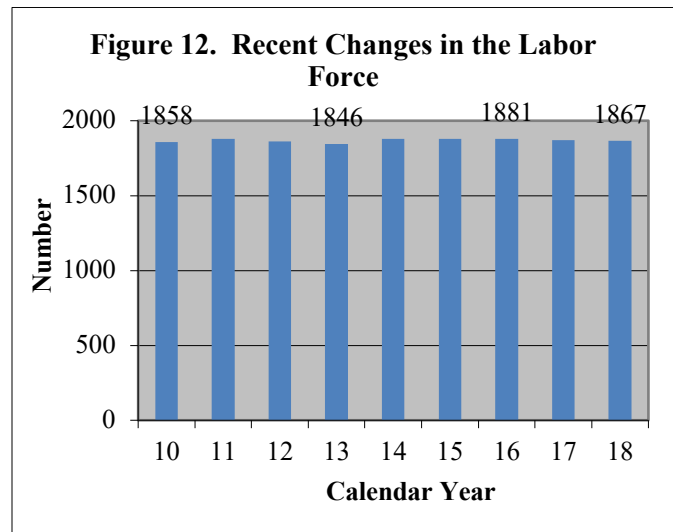
Figure 13 presents the net new housing units permitted from 2008 to 2018 from the State Department of Economic and Community Development. In the past ten years the number of net (of demolitions) new housing units permitted in Sherman ranged from a high nine in 2012 down to a low of -3 in 2016. There were three net new permits issued in 2018. In the five-year look-back period for this projection, there was an average of 2.4 net new housing units constructed.

Figure 13. Net New Housing Units
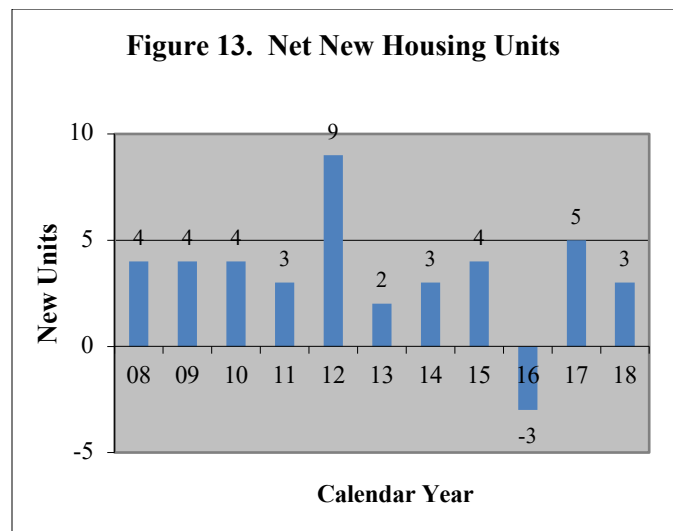
Figure 14 presents my estimate of the number of sales of existing single-family homes and condos. I derived it by taking the number of real estate transactions from The Warren Group/Commercial Record and subtracting the prior year's number of new single-family housing units authorized. The estimated number of sales of existing homes ranged from a low of 15 in 2008 to a high of 68 in 2018. In the five-year look back period for the projection, there were 55 sales annually.

Figure 14. Sales of Existing Single-Family Homes and Condominiums
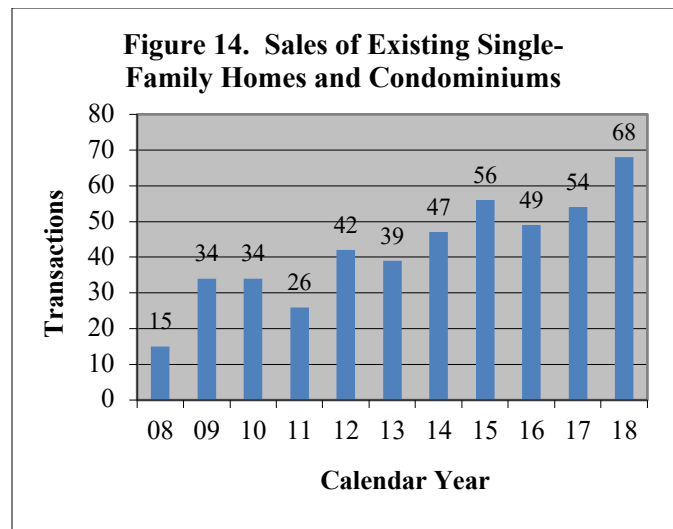
Figure 15 presents the non-public enrollment in grades PK-8 over the past ten years for students from the town of Sherman. The data are from the records of the Connecticut State Department of Education. Non-public enrollment ranged from a low of nine students in 2010 to a high of 18 students in 2018. In most districts I have observed significant declines in the past ten years. In the past ten years, enrollment in the non-public schools grew from 10 to 18 students. The 2018 enrollment represented 6.1 percent of all PK-8 students from Sherman. That was the highest level recorded since the start of my tracking this in 1996.

Figure 15. Non-Public K-8 School Enrollment
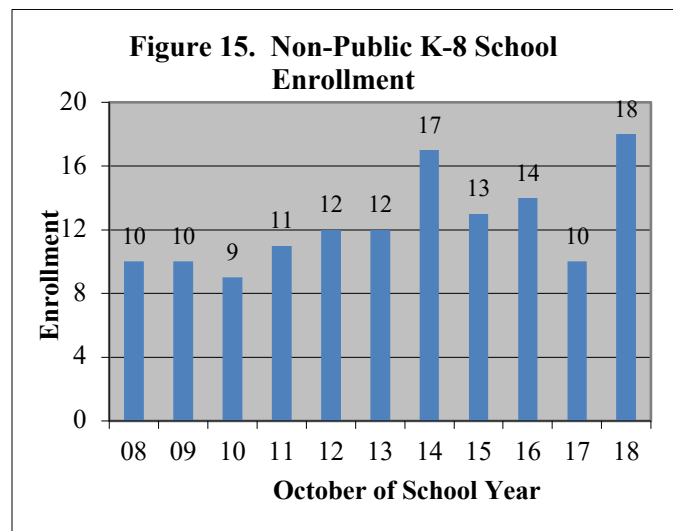
Figure 16 presents the number of Sherman residents who attended public high schools in Connecticut from 2009 to 2019. Sherman does not operate its own high school. In 2019, 51 percent attended New Milford High, 25 percent attended Region 12, and 18.5 percent attended New Fairfield High. A little less than five percent attended Abbot State Technical High School, and one percent attended the agriculture science program at Nonnewaug High.

Figure 16. Sherman Enrollment in Public High Schools
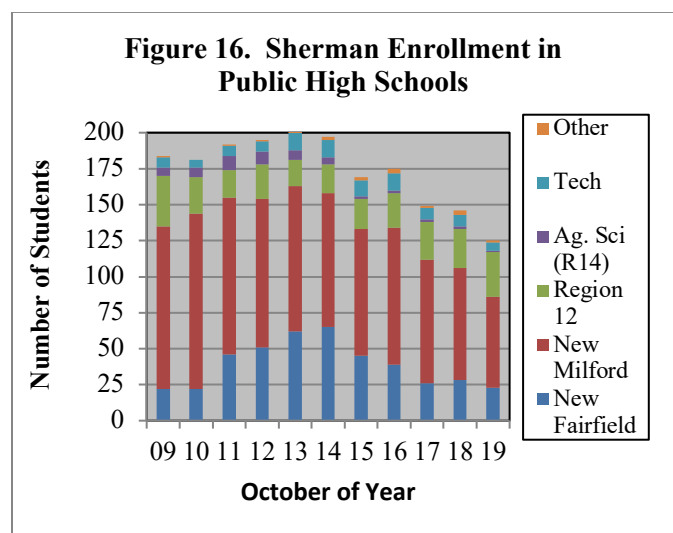
Figure 17 presents the estimated migration of students to and from Sherman. It includes students attending other public schools, but not non-public schools. Estimated migration ranged from a low of -4.3 percent in 2018 to a high of +5.5 percent in 2015. The estimated migration was 5.4 percent in 2019. The data behind these figures may be found in Appendix B. The average migration over the five-year look-back period of the projection was +0.99 percent. This rate has been exceeded 20 times in the past 30 years. The median five-year rate over the past 20 years was +1.31 percent.

Figure 17. Estimated Student Migration
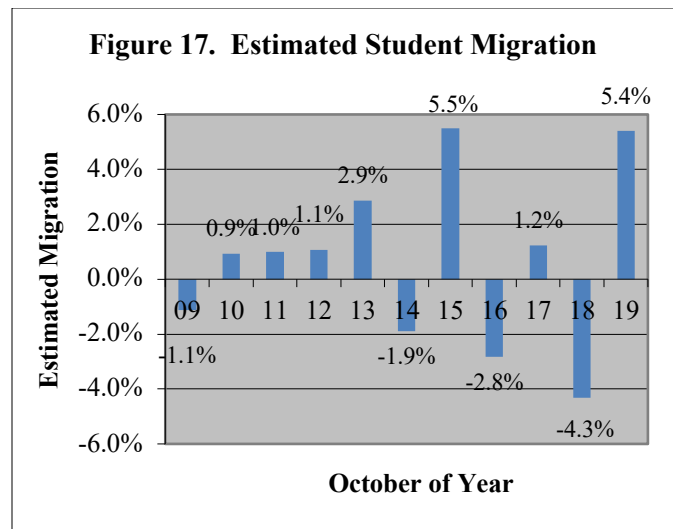
Prior Projections of Enrollment

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 18 presents the enrollment projections that I have run since 1998. The four projections had one-year error rates that averaged 2.5 percent. The three early projections had an average five-year error rate of 7.4 percent, which is 1.4 percent annualized. My 2017 projection is running seven students high in grades K-8 after two years. That analysis projected a 2019 enrollment in grades K-8 of 260 students; the actual enrollment was 253. That is an annual error rate of 1.4 percent.

Figure 18. Prior Projections of Enrollment
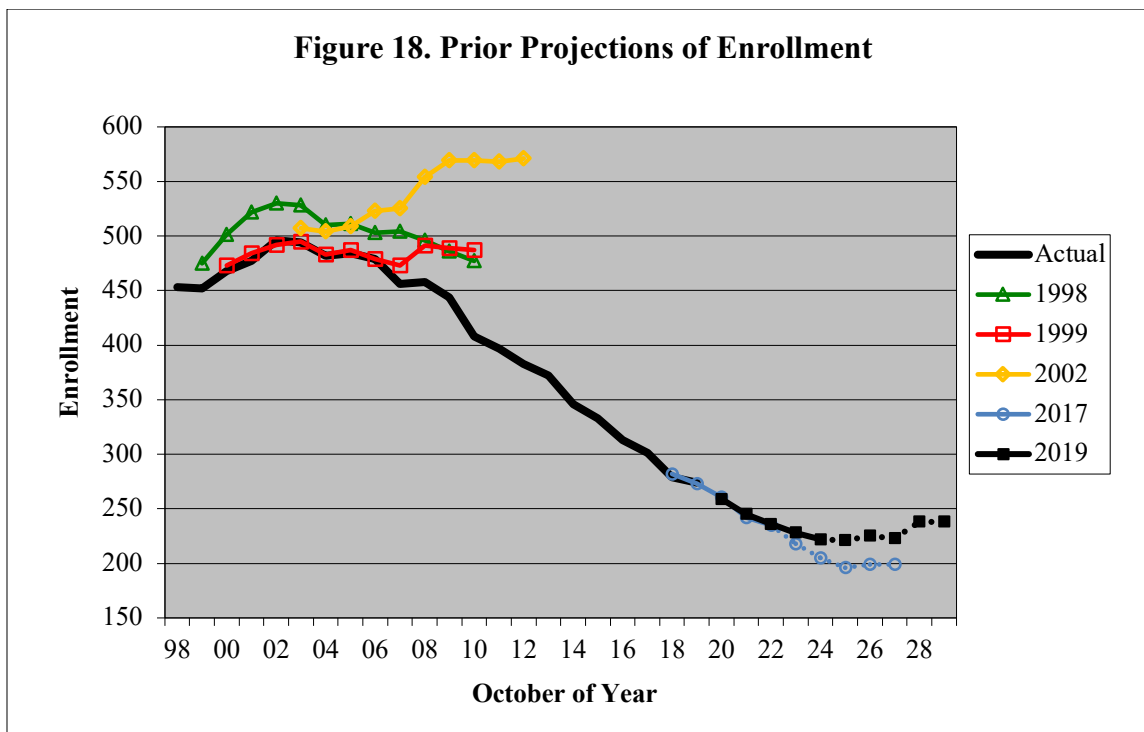
Over the past forty years, I have found the cohort-survival method provides estimates that are sufficiently accurate for intermediate-range policy planning. The eight-year planning horizon for school construction grants is at the limit of the useful accuracy of the method. The method usually does not attempt to predict the future. Its key assumption is that the near future will be like the recent past. For example, projections done in the late 2000s did not anticipate the recession of 2010. Some policy changes such as the reduction of grade 9 retentions or dropouts can be built into a new projection. It is necessary that every receiver of a projection to identify planned changes so that they can be built into a projection.

Summary

I project that enrollment at the Sherman School could fall from 274 students in 2019 to 221 students in 2025 and then rebound to almost 240 students in 2029. Between 2019 and 2029 the projected decline would be about 35 students or 13 percent. Over the ten-year projection period, I believe enrollment at the Sherman School could average 234 students compared to 341 students over the 2010 to 2019 period. For school construction grant purposes, the eight-year high would be 259 students in 2020.

I project that public high school enrollment of Sherman residents could decline from 124 students in 2019 to about 75 students in 2029. That would represent a ten-year decline of over 45 students or about 38 percent. Over the ten-year projection period, enrollment of Sherman residents in state public high school should average 104 students compared to 173 students over the past ten years.

This report is projecting a moderate decline in enrollment ending in 2025. 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 2010 to 2014 (this fall's kindergarten through 4th graders) births averaged 16. Births in the 2015 through 2019 period will average 16. Based on 2017 DRG C estimated fertility rates for women in households and the Connecticut State Data Center's 2017 projections of Sherman women of child-bearing ages in 2015, 2020, and 2025. I believe births between 2020 and 2024 will average 19. Based on data from the past five years, I projected that there will be a gain of 26 percent between births and kindergarten enrollment five years later. The average of the grade-to grade growth rates across grades 1-8 that I used to grow future enrollment was 1.022. The grade-by-grade growth rates averaged 1.051 in 2019 and the median over the last 20 years was 1.020. Taking these three key factors into consideration, I think that the projected elementary enrollment will be close to future enrollment.

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; and no enrollment of Sherman residents in magnet schools. The projection assumes the following population growth factors will not change appreciable: births will average 17 over the 2020 to 2024 period, a 26 percent increase between the number of births and subsequent kindergarten enrollment and a student migration of +0.99 percent. Additionally, about 15 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 2-3 new housing units constructed annually and 55 sales of existing single-family homes and condominiums.

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 these 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 Sherman and then make adjustments as necessary.

School Year	Birth Year	Births[1]	K[2]	1	2	3	4	5	6	7	8	PreK	K-8	PK-8
Appendix A. Sherman Enrollment Projected by Grade to 2029														
2009-10	2004	24	38	30	35	48	54	48	48	59	62	22	422	444
2010-11	2005	28	29	34	31	35	47	52	50	50	59	21	387	408
2011-12	2006	33	40	31	38	31	35	45	52	51	51	23	374	397
2012-13	2007	19	27	43	32	39	32	33	48	52	49	28	355	383
2013-14	2008	24	24	30	43	34	44	28	35	49	52	33	339	372
2014-15	2009	29	36	26	31	37	32	41	28	38	49	28	318	346
2015-16	2010	20	27	36	27	34	41	36	43	30	37	22	311	333
2016-17	2011	15	28	30	35	24	37	42	34	40	29	14	299	313
2017-18	2012	18	14	28	31	35	25	39	40	34	42	13	288	301
2018-19	2013	14	26	17	25	29	34	28	30	42	34	14	265	279
2019-20	2014	15	11	26	19	26	29	39	28	33	42	21	253	274
Projected														
2020-21	2015	19	23	12	26	19	27	32	37	29	33	21	238	259
2021-22	2016	11	15	24	12	26	20	30	30	38	29	21	224	245
2022-23	2017	14	17	16	24	12	27	22	28	31	38	21	215	236
2023-24	2018	21	25	18	16	24	13	30	21	29	31	21	207	228
2024-25	2019	17	22	27	18	16	25	14	28	22	29	21	201	222
2025-26	2020	19	24	23	27	18	17	27	13	29	22	21	200	221
2026-27	2021	18	23	26	23	27	19	19	25	13	29	21	204	225
2027-28	2022	19	23	24	26	23	28	21	18	26	13	21	202	223
2028-29	2023	18	23	24	24	26	24	31	20	19	26	21	217	238
2029-30	2024	19	23	24	24	24	27	26	29	21	19	21	217	238

[1] Births from 2004 to 2018 from the State Department of Public Health. Births in 2017 and 2018 are provisional. Births in 2019 were estimated from in-state births through September. Births in 2020-24 were based on DRG C 2017 estimated householder fertility rates and the Connecticut State Data Center's 2017 projection of 2015, 2020 and 2025 Sherman women of child-bearing ages.
[2] Based on the three-year averages of births 5- and 6-years ago and retention.

Appendix B. Growth from Grade to Grade across Years

October of Year	K	1	2	3	4	5	6	7	8	Average Grades 1-8	Estimated Migration[1]
				Grade Moved into from Prior Year							
2010	1.036	0.895	1.033	1.000	0.979	0.963	1.042	1.042	1.000	0.994	0.93%
2011	1.212	1.069	1.118	1.000	1.000	0.957	1.000	1.020	1.020	1.023	1.00%
2012	1.421	1.075	1.032	1.026	1.032	0.943	1.067	1.000	0.961	1.017	1.06%
2013	1.000	1.111	1.000	1.063	1.128	0.875	1.061	1.021	1.000	1.032	2.86%
2014	1.241	1.083	1.033	0.860	0.941	0.932	1.000	1.086	1.000	0.992	-1.89%
2015	1.350	1.000	1.038	1.097	1.108	1.125	1.049	1.071	0.974	1.058	5.49%
2016	1.867	1.111	0.972	0.889	1.088	1.024	0.944	0.930	0.967	0.991	-2.82%
2017	0.778	1.000	1.033	1.000	1.042	1.054	0.952	1.000	1.050	1.016	1.24%
2018	1.857	1.214	0.893	0.935	0.971	1.120	0.769	1.050	1.000	0.994	-4.33%
2019	0.733	1.000	1.118	1.040	1.000	1.147	1.000	1.100	1.000	1.051	5.39%
3-Year Ave.	1.123	1.071	1.015	0.992	1.004	1.107	0.907	1.050	1.017	1.020	
Weighted 3-Year	1.115	1.071	1.029	0.998	0.997	1.123	0.915	1.067	1.008	1.026	
5-Year Ave.	1.317	**1.065**	**1.011**	**0.992**	**1.042**	**1.094**	**0.943**	**1.030**	**0.998**	1.022	
Weighted 5 year	1.234	1.072	1.016	0.988	1.020	1.103	0.925	1.042	1.004	1.021	
Enrollment Multiplier		1.065	1.011	0.992	1.042	1.094	0.943	1.030	0.998		

x
[1] Based on enrollment in grades 2-8 one year compared to enrollment in grades 1-7 the prior year with an adjustment for
  Sherman residents enrolled in other public schools and non-residents in Sherman schools.

	Birth								**K-8**
School Year	**Year**	**Births[1]**	**K**	**1**	**2**	**3**	**4**	**5**	**Total**
2009-10	2004	24	38	30	35	48	54	48	422
2010-11	2005	28	29	34	31	35	47	53	388
2011-12	2006	33	40	31	38	31	35	45	374
2012-13	2007	19	27	43	32	39	32	33	356
2013-14	2008	24	24	30	44	35	44	28	342
2014-15	2009	29	36	26	31	39	33	42	322
2015-16	2010	20	27	36	27	34	42	37	313
2016-17	2011	15	28	30	35	24	37	43	300
2017-18	2012	18	14	28	31	35	25	39	289
2018-19	2013	14	26	17	25	29	34	28	265
2019-20	2014	15	11	26	19	26	29	39	253
Projected									
2020-21	2015	19	25	12	26	19	27	32	239
2021-22	2016	11	14	27	12	26	20	30	225
2022-23	2017	14	18	15	27	12	27	22	217
2023-24	2018	21	28	20	15	27	12	30	212
2024-25	2019	17	22	29	20	15	28	13	205
2025-26	2020	19	25	24	29	20	16	31	207
2026-27	2021	18	24	27	24	29	21	17	212
2027-28	2022	19	25	25	27	24	30	23	212
2028-29	2023	18	24	26	25	27	25	33	227
2029-30	2024	19	24	26	26	25	28	27	225

Projection Growth Rates		1.317 [2]	1.065	1.011	0.992	1.036	1.093	
Annual Growth Rates								**Estimated Migration[3]**
2010		1.036	0.895	1.033	1.000	0.979	0.981	0.93%
2011		1.212	1.069	1.118	1.000	1.000	0.957	1.00%
2012		1.421	1.075	1.032	1.026	1.032	0.943	1.06%
2013		1.000	1.111	1.023	1.094	1.128	0.875	2.86%
2014		1.241	1.083	1.033	0.886	0.943	0.955	-1.89%
2015		1.350	1.000	1.038	1.097	1.077	1.121	5.49%
2016		1.867	1.111	0.972	0.889	1.088	1.024	-2.81%
2017		0.778	1.000	1.033	1.000	1.042	1.054	1.65%
2018		1.857	1.214	0.893	0.935	0.971	1.120	-4.31%
2019		0.733	1.000	1.118	1.040	1.000	1.147	5.37%
3-Year Ave.		1.123	1.071	1.015	0.992	1.004	1.107	
Weighted 3-Year		1.115	1.071	1.029	0.998	0.997	1.123	
5-Year Ave.		**1.317**	**1.065**	**1.011**	**0.992**	**1.036**	**1.093**	
Weighted 5-year		1.234	1.072	1.016	0.988	1.018	1.103	

[1] Births from 2004 to 2018 from the State Department of Public Health. Births in 2017 and 2018 are provisional.
Births in 2019 were estimated from in-state births through September. Births in 2020-24 were based on DRG C 2017 estimated householder fertility rates and the Connecticut State Data Center's 2017 projection of 2015, 2020 and 2025 Sherman women of child-bearing ages.
[2] Based on three-year average of births five-years prior.
[3] Based on a comparison of enrollment in grades 2-8 one year and 1-7 the prior year.

School Year	6	7	8	9	10	11	12	9-12 Total	Sherman K-12
Appendix D. Sherman Enrollment in Public Schools Projected to 2029: Grades 6-12									
2009-10	48	59	62	44	41	47	52	184	606
2010-11	50	50	59	53	42	40	47	182	570
2011-12	52	51	51	58	52	45	38	193	567
2012-13	48	53	49	44	56	51	45	196	552
2013-14	35	49	53	48	42	57	55	202	544
2014-15	28	38	49	50	45	48	55	198	520
2015-16	43	30	37	39	45	44	40	168	481
2016-17	34	40	29	31	47	52	45	175	475
2017-18	40	34	43	29	32	44	44	149	438
2018-19	30	42	34	36	26	36	45	143	408
2019-20	28	33	42	26	36	26	36	124	377
Projected									
2020-21	36	29	33	36	26	37	25	124	363
2021-22	30	37	29	28	36	27	35	126	351
2022-23	28	31	37	25	28	37	26	116	333
2023-24	20	29	31	31	25	29	35	120	332
2024-25	28	21	29	26	31	26	27	110	315
2025-26	12	29	21	25	26	32	25	108	315
2026-27	29	12	29	18	25	27	30	100	312
2027-28	16	30	12	25	18	26	26	95	307
2028-29	21	16	30	10	25	19	25	79	306
2029-30	31	22	16	25	10	26	18	79	304

	6	7	8	9	10	11	12		Estimated Migration[2]
Projection Growth Rates[1]	0.928	1.030	1.003	0.847	1.007	1.039	0.945		
Annual Growth Rates									
2010	1.042	1.042	1.000	0.855	0.955	0.976	1.000		0.93%
2011	0.981	1.020	1.020	0.983	0.981	1.071	0.950		1.00%
2012	1.067	1.019	0.961	0.863	0.966	0.981	1.000		1.06%
2013	1.061	1.021	1.000	0.980	0.955	1.018	1.078		2.86%
2014	1.000	1.086	1.000	0.943	0.938	1.143	0.965		-1.89%
2015	1.024	1.071	0.974	0.796	0.900	0.978	0.833		5.49%
2016	0.919	0.930	0.967	0.838	1.205	1.156	1.023		-2.81%
2017	0.930	1.000	1.075	1.000	1.032	0.936	0.846		1.65%
2018	0.769	1.050	1.000	0.837	0.897	1.125	1.023		-4.31%
2019	1.000	1.100	1.000	0.765	1.000	1.000	1.000		3.41%
3-Year Ave.	0.900	1.050	1.025	0.867	0.976	1.020	0.956		
Weighted 3-Year	0.911	1.067	1.013	0.828	0.971	1.031	0.982		
5-Year Ave.	**0.928**	**1.030**	**1.003**	**0.847**	**1.007**	**1.039**	**0.945**		
Weighted 5-year	0.915	1.042	1.009	0.843	1.000	1.040	0.967		

[1] Based on three-year averages of annual grade-to-grade rates.
[2] Based on a comparison of enrollment in grades 2-8 one year and 1-7 the prior year.

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Jeff Melendez,
Superintendent/Principal,
The Sherman School

The differences between the October 2019 report and the February 2020 report are the following: 1) I corrected my error of double-counting the non-resident 5th grade student; 2) I based 2019 births on in-state births through September instead of through June; and 3) I based high school enrollment on the information provided to the state by the school enrolled instead of the preliminary information you originally provided. I also updated some contextual information that supported but did not affect the projection. These changes were all done at no additional cost to the district.

The revised report resulted in several minor changes. The 8-year peak enrollment for a school construction grant is now 259 students in 2020 instead of 260. The projected enrollment in 2029 is now 238 students instead of 226 students. I now expect the number of high school students will peak at 126 in 2021 and fall to 79 in 2029. In the earlier report the peak was 126 and the enrollment in 2029 was 78 students.

Since the February report was written, the State Department of Public Health has updated in-state births in 2019. The end-of-year tally is 17 births, the number I used in the February report.

If you have any more questions, do not hesitate to contact me.

Peter M. Prowda