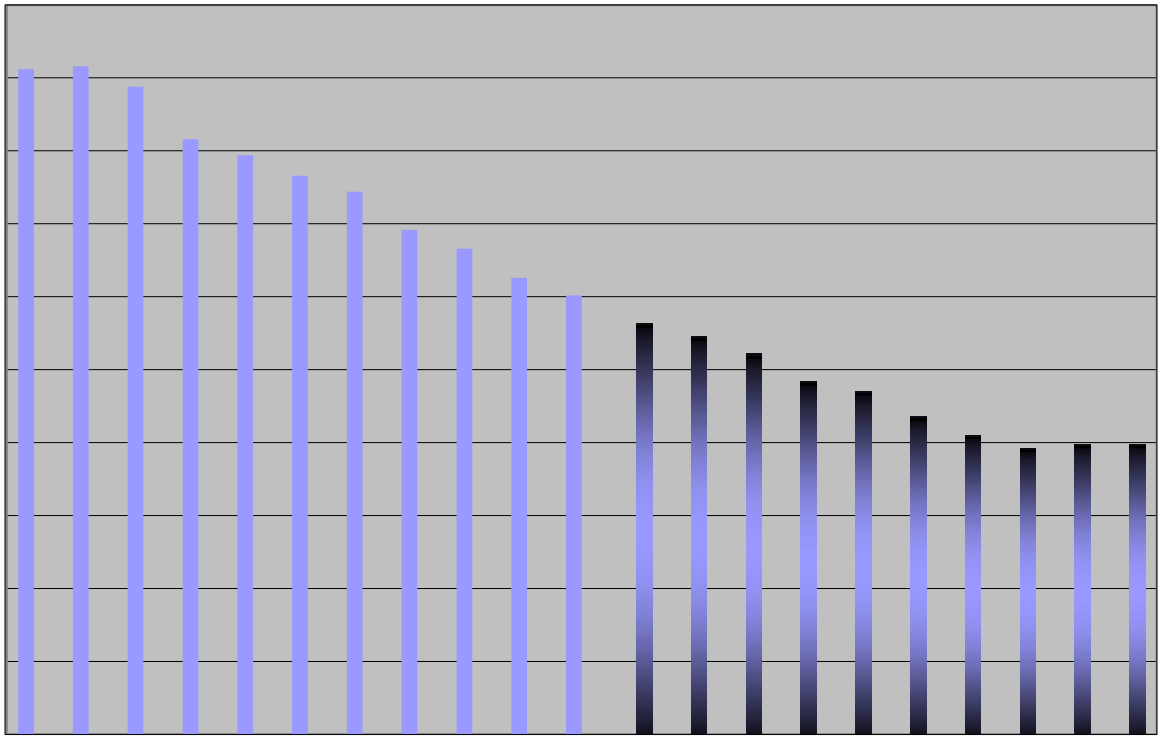
THE SHERMAN SCHOOL AND SHERMAN ENROLLMENT IN PUBLIC HIGH SCHOOLS PROJECTED TO 2027



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Introduction

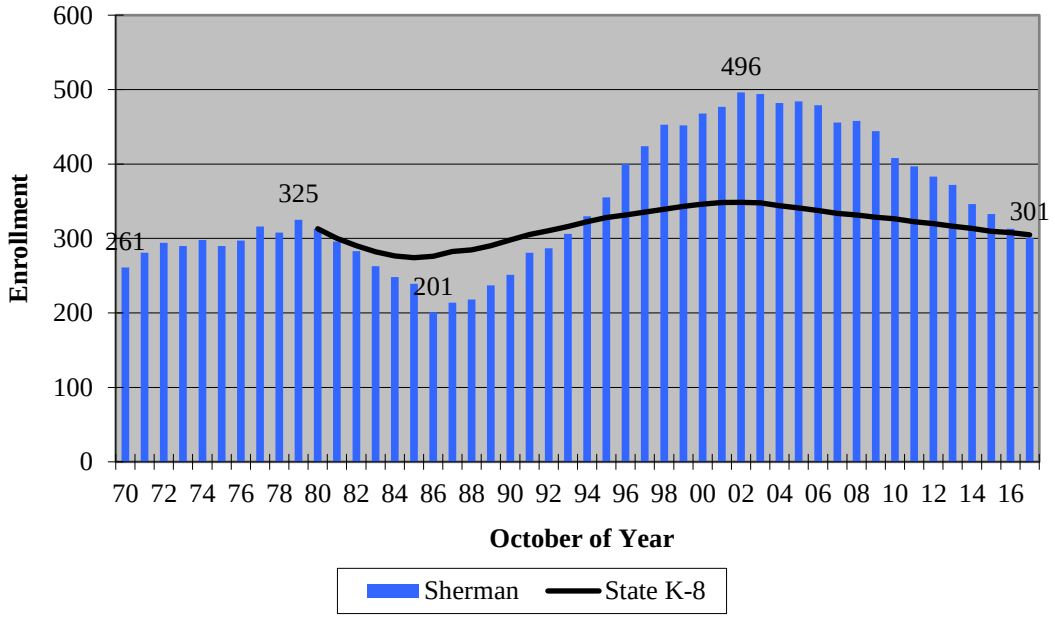
This report is a ten-year projection of enrollment in grades PK-8 at the Sherman School and Sherman residents attending public schools in grades 9-12. It is based on enrollment on October 1of the school year. The report includes 48 years of enrollment to place the projection into a wider historical perspective. 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 15 years. Enrollment has dropped by 195 students. The 301 students enrolled is 39.3 percent below the 2002 high. That is roughly the number enrolled in 1993.

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 15 years. Between 2002 and 2017, it fell by 12.6 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 305 students in October of 2017 instead of the 301 that were enrolled on that date.

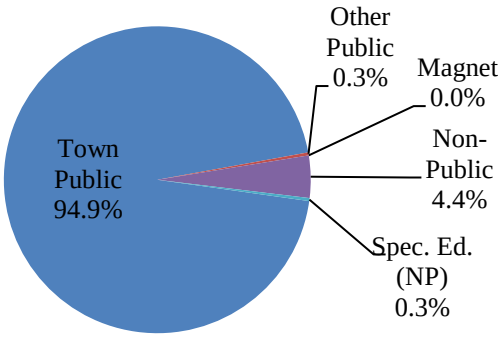
Current Enrollment

Table 1 and Figure 2 provide a picture of where Sherman residents in grades PK-8 attended school in October of 2017. They show that 94.9 percent of Sherman's elementary school-age residents attended the Sherman School in 2017. Fourteen students, 4.4 percent of the school-age residents, attended non-public schools in state at parent expense. One child (0.3 percent) attended a non-public special education program at the district's expense. No child attended a magnet or charter school; one attended another public school. There were two non-residents enrolled at the Sherman School in 2017. The projections in this report are based on the 301 students that attended the Sherman School in October, 2017.

Table 1. 2017 PK-8 Enrollment

	Number	Percent
Residents		
A. Sherman Public	299	94.9%
B. Other Public	1	0.3%
C. Magnets	0	0.0%
D. Non-Public	14	4.4%
E. Spec. Ed. (NP)	1	0.3%
Total (A+B+C+D+E)	315	
F. Non-Residents	2	
Total Enrollment (A+F)	301	

Figure 2. K-8 Schools Attended by Town Residents, 2017



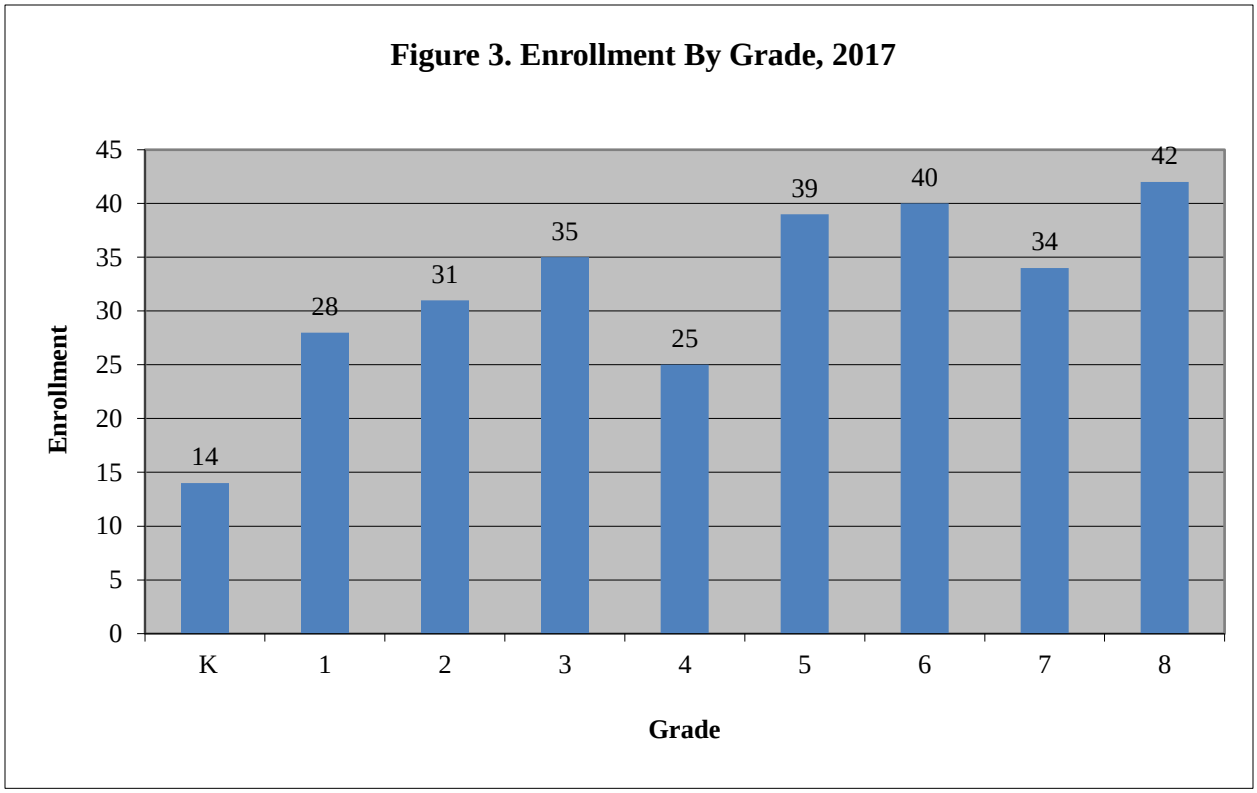


Figure 3 shows the October 2017 grade-by-grade enrollment of students at the Sherman School. The children in pre-kindergarten programs are not shown. The largest class was grade 8 with 42 students. It was followed by grade 6 with 40 students and grade 5 with 39. This year's kindergarten had the smallest enrollment, 14 students. It was followed by grade 4 with 25 students and grade 1 with 28 students. This is the pattern for an irregular future decline. If current conditions continue, this year's kindergarten class of 14 students could have 17 students when it enters grade 8 in 2025. That would be well below the current enrollment for that grade. The lack of consistency, illustrated by the small enrollments in grade 4 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 three-year averages of the observed grade-to-grade growth. This was the highest of the four averages calculated. I also based the kindergarten projection on the three-year average of the components. It also 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 15 births to town residents in 2014. That is the last official count. The provisional counts of births were 20 in 2015 and only 11 in 2016. I estimated there would be 14 births in 2017 from the 13 recorded in-state births through December and an average of one out-of-state birth observed in 2015 and 2016. To generate births in 2018 to 2022, 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 three-year average of births starting in 2015 to 2017.

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 three-year average of the annual growth rates. I projected kindergarten enrollment from the three-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 2007 to 2017 were taken from 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 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. The 2017 data were extracted from PSIS records on 2/6/2018. This represents the "Freeze 1" stage of the data cleaning. Only very minor changes should be anticipated until the counts are considered final. Births from 1980 to 2017 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 2007 to 2017 and projected enrollment through 2027 in grades PK-8 at the Sherman School. Enrollment at the school peaked at 458 students in 2008. By 2017, it was down to 301 students. Between 2007 and 2017, enrollment declined by 155 students or 34.0 percent. State public school enrollment in grades K-8 fell 8.7 percent in that interval.

Table 3. Sherman School Enrollment

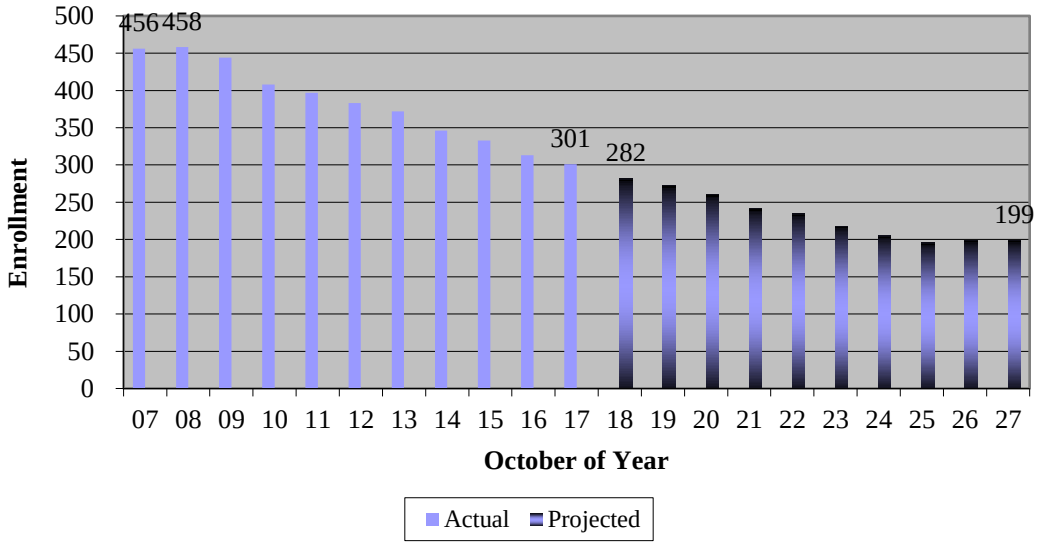
Year	Students	Percent Change
2007	456	
2008	458	0.4%
2009	444	-3.1%
2010	408	-8.1%
2011	397	-2.7%
2012	383	-3.5%
2013	372	-2.9%
2014	346	-7.0%
2015	333	-3.8%
2016	313	-6.0%
2017	301	-3.8%
2018	282	-6.3%
2019	273	-3.2%
2020	261	-4.4%
2021	242	-7.3%
2022	235	-2.9%
2023	218	-7.2%
2024	205	-6.0%
2025	196	-4.4%
2026	199	1.5%
2027	199	0.0%

The enrollment decline of 34 percent in grades PK-8 at the Sherman School was larger than PK-8 enrollment at most similar (DRG C) districts in the area. Only the 35.9 percent drop in Region 12 was larger. The declines in Canton (-9.5 percent), Region 10 (-23.9 percent), Region 14 (-25.7 percent), New Hartford (-26.1 percent), Region 13 (-28.3 percent) and Barkhamsted (-30.7 percent) were all smaller than Sherman's decline.

I project that next year's enrollment at the school will be about 20 students less than this year's as this year's 8th grade of 42 students exits and an incoming kindergarten class projected to be under 20 students enters. I anticipate enrollment could fall below 250 students in 2021 and be about 200 students in 2027. This would be about 100 students or about 34 percent below the October 2017 count. Statewide, I have projected a 7.0 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 230 students. This would be well below the average of 376 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 13 children enrolled in these programs in 2017. My projection model holds pre-kindergarten enrollment constant at 13 children.

Figure 4. Sherman School Enrollment



Sherman Enrollment in Public High Schools

Table 4 and Figure 5 present actual enrollment from 2007 to 2017 in grades 9-12 and projected future enrollment to 2027 of Sherman residents in public high schools in state. Sherman enrollment in grades 9-12 grew from 190 in 2007 to 202 in 2013 and then declined to 149 in 2017. That was a net loss of 41 students or 21.6 percent in the past ten years. In that period, public school enrollment in grades 9-12 statewide declined 5.6 percent.

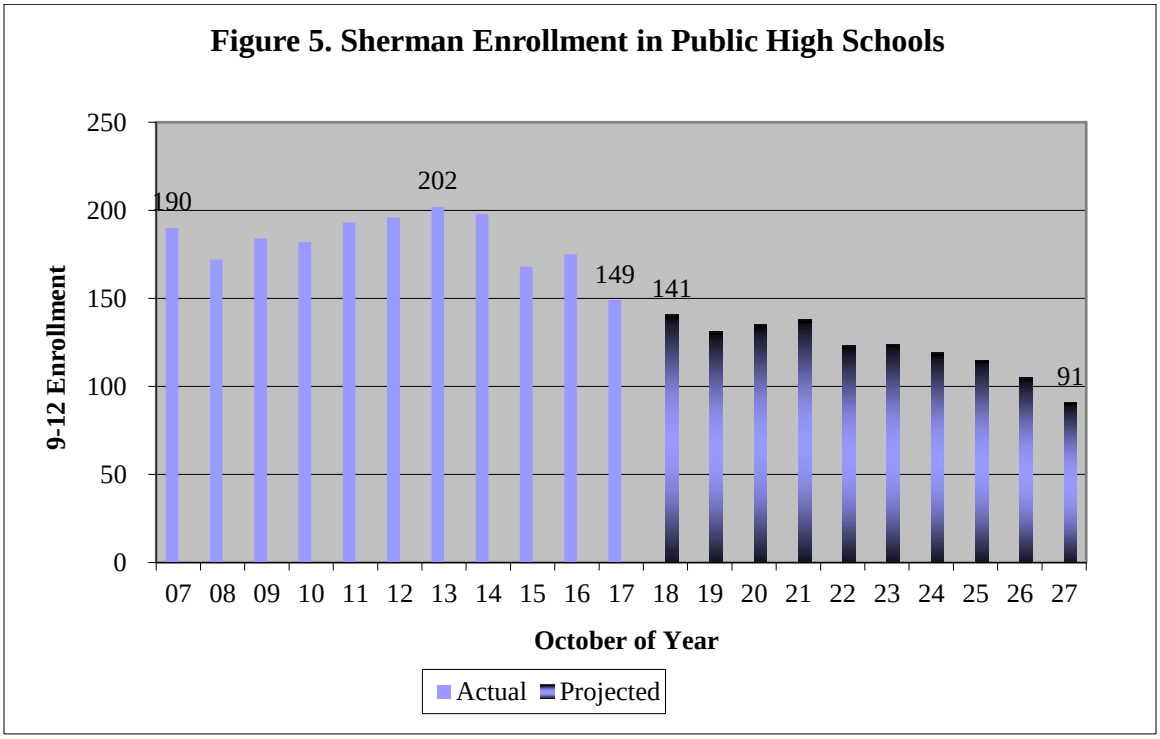
In 2017, there were 86 Sherman students at New Milford High, 26 each at New Fairfield and Shepaug High Schools, eight at Henry Abbot Technical High, two at the agriculture science program at Nonnewaug High and one at Housatonic Valley Regional High. About 3/4ths of 9th graders chose New Milford High in 2017

I project that next year's public high school enrollment of Sherman residents will be about ten less than this year. By 2027, I think there could be only 90 Sherman residents in public high schools in Connecticut. That would represent a ten-year decline of almost 60 students or almost 39 percent. I project that public school enrollment in grades 9-12 statewide will decline by 8.1 percent in that period. Over the ten-year projection period, enrollment of Sherman residents in state public high schools could average a little more than120 students compared to 182 students over the past ten years.

Table 4. Sherman Enrollment in Public High Schools

Year	Students	Percent Change
2007	190	
2008	172	-9.5%
2009	184	7.0%
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	141	-5.4%
2019	131	-7.1%
2020	135	3.1%
2021	138	2.2%
2022	123	-10.9%
2023	124	0.8%
2024	119	-4.0%
2025	115	-3.4%
2026	105	-8.7%
2027	91	-13.3%

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 2014 and provisional and estimated births through 2022. Births ranged from a low of 14 in 2013 to a high of 47 in 2001. There were 15 births in 2014, the latest official count. Preliminary data indicate there will be 20 births in 2015 and 11 in 2016. From in-state births through December, I estimate there will be 14 births in 2017. In the five years from 2008 to 2012 (this fall's kindergarten through 4th graders) births averaged 21. Births in the 2013 through 2017 period will likely average 15. The projection in years 2023 to 2027 assumes an average of 14 births annually between 2018 and 2022. This is based, in part, on my estimation of DRG C 2015 fertility rates and the Connecticut State Data Center's 2017 projections of Sherman women of child-bearing ages.

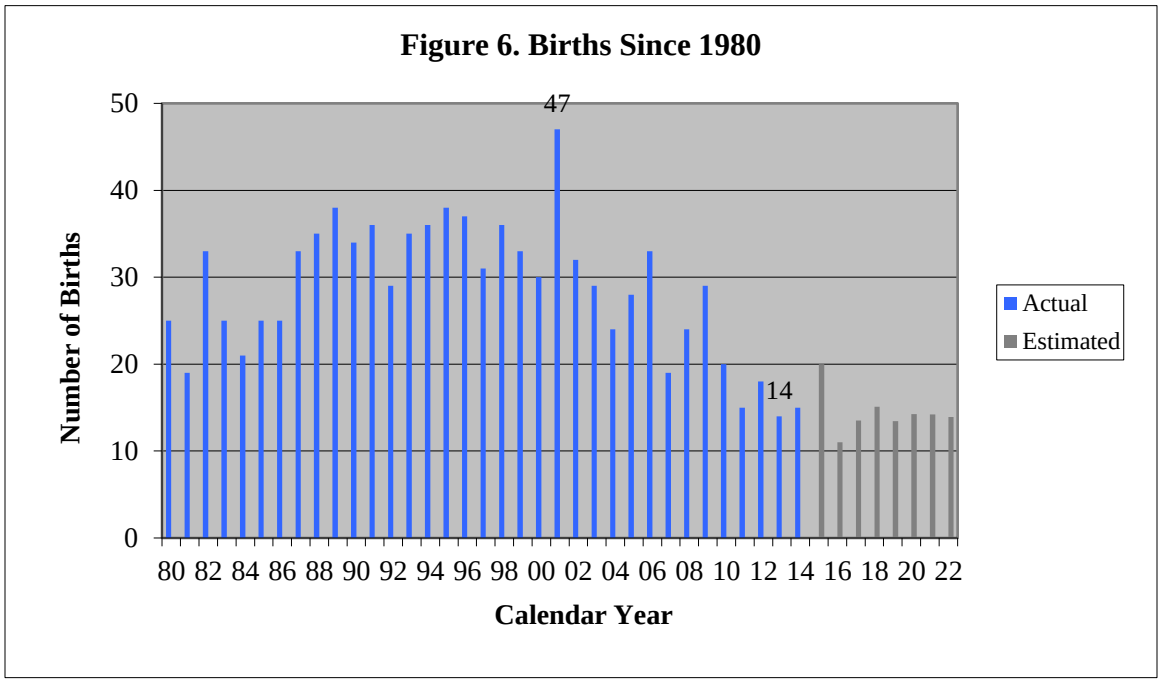
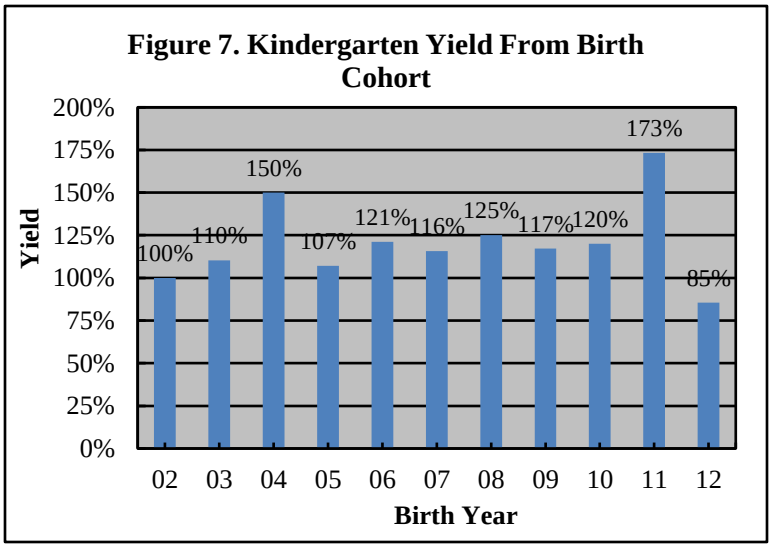


Figure 7 depicts the kindergarten yield five and six years later from the birth cohorts of 2002 to 2012 for Sherman residents attending kindergarten in Sherman. All years in the graph were impacted by full-day kindergarten. There were 15 births in 2011 and 24 Sherman children enrolled in Sherman kindergarten at age five in 2016 and an additional two who first enrolled in kindergarten at age six in 2017. That was a yield of 173 percent. The kindergarten yield from the birth cohort ranged from a low of 100



percent in 2002 to a high of 173 percent in 2011. The estimated yield for births in 2012 was only 86 percent. Note that 2012 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 2018. 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 2007 (the birth cohort of 2002). The average yield over the three-year look-back period was 126 percent.

Table 5 gives a history of enrollment in kindergarten since 2007 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 three-year average of births five and six years ago and retention. Thus I estimated kindergarten from 105.7 percent of births five years ago, 18.8 percent of births six years ago, and 1.1 percent of current kindergarten students retained.

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
2007	2002	32	33	0	28	0	5	0.0%	87.5%	10.6%	100.0%
2008	2003	29	31	0	27	0	4	0.0%	93.1%	12.5%	110.3%
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%	*85.4%*
3-Year Average								**1.1%**	**105.7%**	**18.8%**	**126.3%**
Weighted 3-Year Average								0.5%	103.3%	16.8%	120.5%
5-Year Average								0.7%	100.0%	20.6%	124.2%
Weighted 5-Year Average								0.6%	103.9%	19.1%	122.7%

The correlation between births and kindergarten enrollment five-year later since 1985 was a moderate 0.68. 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.

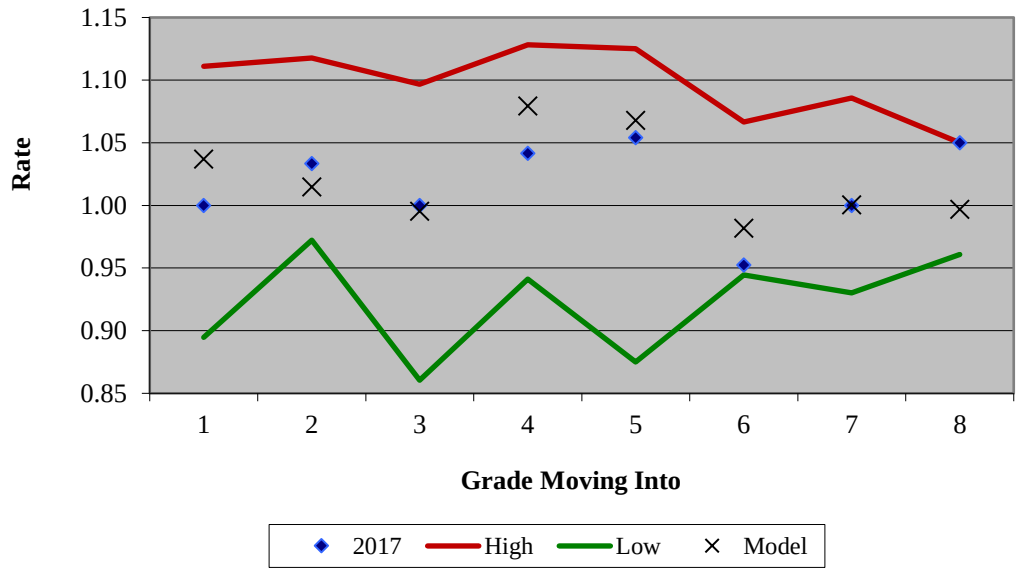
The "Connecticut Early Childhood Report on Changing the Kindergarten Date," mandated by Public Act 14-39, recommended that the start date for kindergarten be moved back to October 1st phased in one month increments over the course of three years. It further recommended the elimination of the section 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. 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. Grades 4 and 5 are 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 slight in-migration. The 2017 growth rate in grade 8 was at a ten-year high. The projection growth rates are fairly close to the corresponding rates in 2017. Grades 1 and 4 were above the 2017 rates, while grade 8 was below. The average growth rate across grades 1-8 used in the projection was 1.022. The 2017 average was 1.016 while the 20-year median rate was 1.020.

Figure 8. Grade to Grade Growth Rates



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 2016. It was based, in part, on relative housing growth within the county. In that period, they estimated that town population increased by 53 people. The estimated population gain of 1.48 percent was 24th in the state. This compares to an estimated growth of -0.10 percent in Connecticut, +2.66 percent in Fairfield County and -1.34 percent in similar communities.

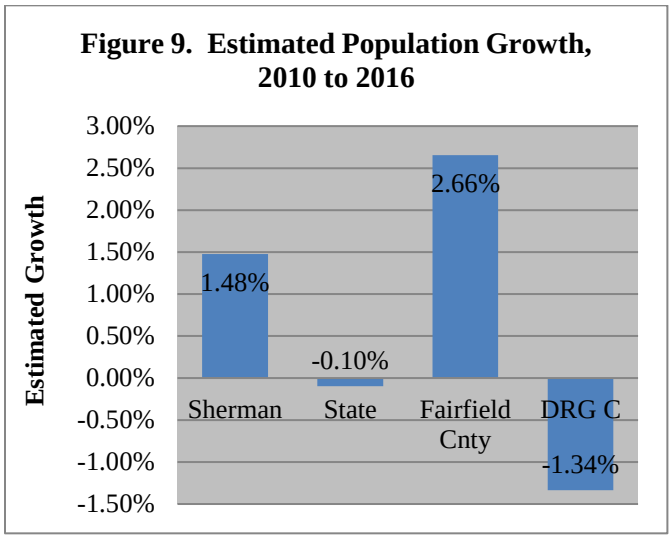


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Figure 10 presents the Connecticut State Data Center's 2017 population projections for Sherman residents 0-19 years of age for the years 2015, 2020 and 2025. They projected that ages 0-4 would remain relatively unchanged. They projected the population 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.

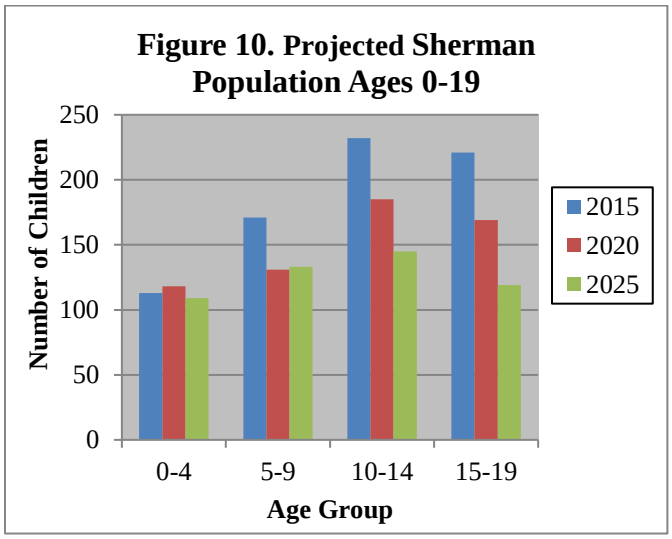


Figure 11 presents the Connecticut State Data Center 2017 projections of the number of Sherman women of child-bearing ages from 2015, 2020 and 2025. There were 20 births to Sherman residents in 2015. Women 30-34 have the highest rate of births in towns like yours. The Center projected the number of women in this group 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. They further projected that between 2015 and 2025 the number of women 15-24 and 40-44 would decline fairly sharply. Women these ages have relatively few births in your community.

Figure 11. Sherman Women of Child-Bearing Age

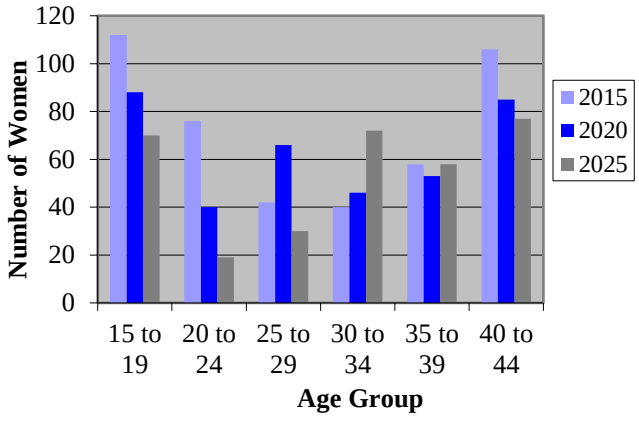


Figure 12 examines the number of people in the labor force from the US Department of Labor, Bureau of Labor Statistics. These are people 16 years of age or older working or actively seeking employment. I find it a very rough proxy of the number of school-age families. The Sherman labor force grew an estimated 3.2 percent between 2010 and 2016. This was greater than the growth of 1.6 percent in Fairfield County and the loss of 1.0 percent statewide. Preliminary data indicates an improvement in 2017. The 2016 unemployment rate of 4.0 percent was down 3.1 percentage points from the 2010 high. The town rate is better than the state rate of 5.1 percent and similar to the Fairfield County rate of 4.8 percent.

Figure 12. Recent Changes in the Labor Force

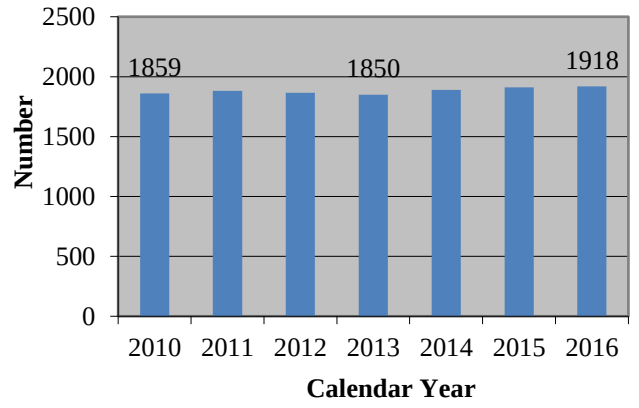


Figure 13 presents the net new housing units constructed from 2006 to 2016 from the State Department of Economic and Community Development. In the past ten years the number of net (of demolitions) new housing units constructed in Sherman ranged from a high nine in 2012 down to a low of -3 in 2016. In the three-year look-back period for this projection, there was an average of one net new housing unit constructed. The 2010 census indicated that Sherman had 1,388 housing units of which 32.9 percent were occupied in April 2010. About 97 percent of the occupied households had children under 18.

Figure 13. Net New Housing Units

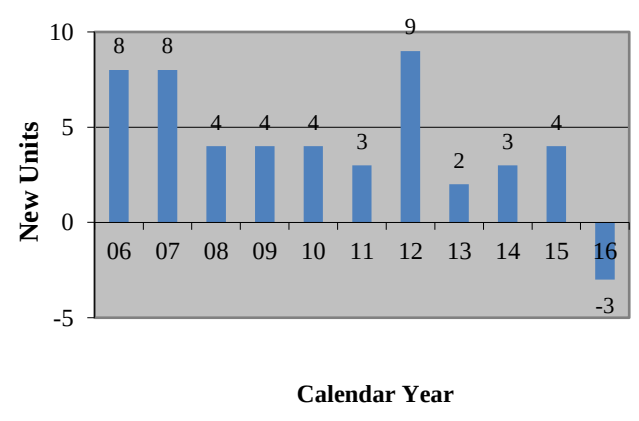


Figure 14 presents my estimate of the number of sales of existing homes. I derived it by taking the number of real estate transactions from The Warren Group/Commercial Record and subtracting the number of new single-family housing units authorized. This is an estimate because of the lag between the time a new house is authorized and it is sold. The estimated number of sales of existing homes ranged from a low of 31 in 2011 to a high of 62 in 2017. In the three-year look back period for the projection, there were 61 sales annually.

Figure 14. Sales of Existing Homes

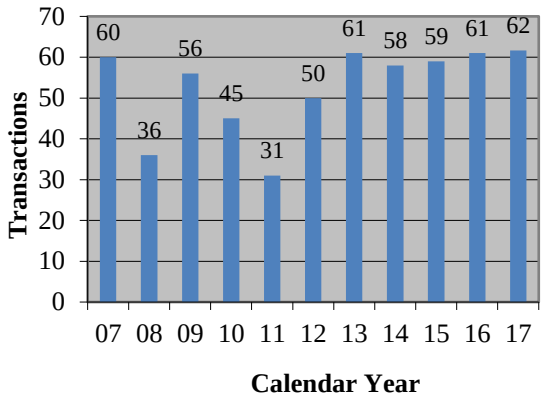


Figure 15 presents the non-public enrollment in grades PK-8 over the past ten years for students from the town of Sherman. The data are from the records of the Connecticut State Department of Education. Non-public enrollment ranged from a high of 17 students in 2014 to a low of nine students in 2010. There were ten students enrolled in 2017. In the past ten years, enrollment in the non-public schools not changed. The 2017 enrollment represented 3.2 percent of all PK-8 students from Sherman. The ten-year high was 4.6 percent in 2014.

Figure 15. Non-Public K-8 School Enrollment

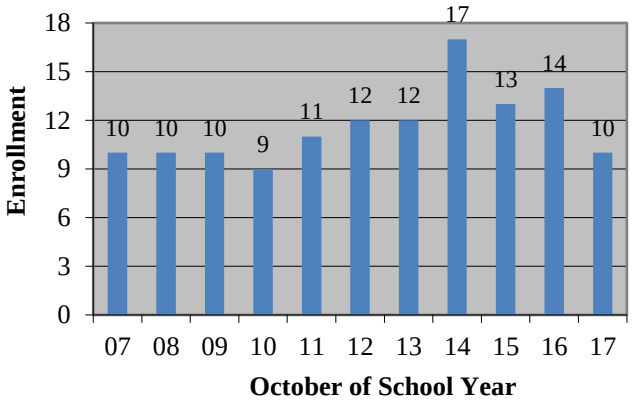


Figure 16 presents the number of Sherman residents who attended public high schools in Connecticut from 2007 to 2017. Sherman does not operate its own high school. In 2017, almost 58 percent attended New Milford High, 17 percent attended New Fairfield High and Region 12. A little more than five percent attended Abbot State Technical High School, one percent attended the agriculture science program at Nonnewaug High and one student attended Housatonic Valley High. Since 76 percent of 9th graders from Sherman enrolled in New Milford High, that percentage is likely to rise in the future.

In 2017, only one Sherman resident in grades PK-8 attended another public school.

Figure 16. Sherman Enrollment in Public High Schools

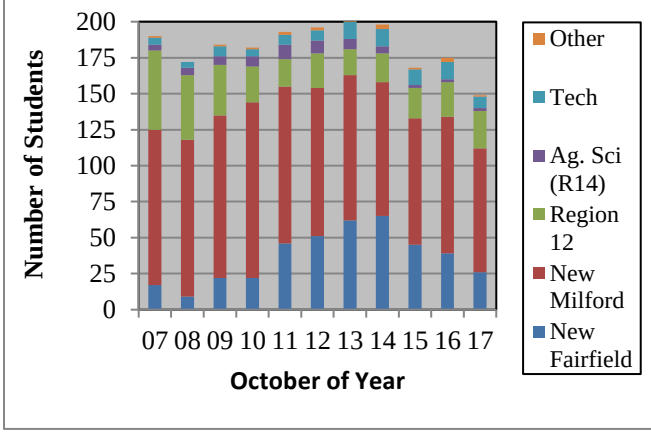
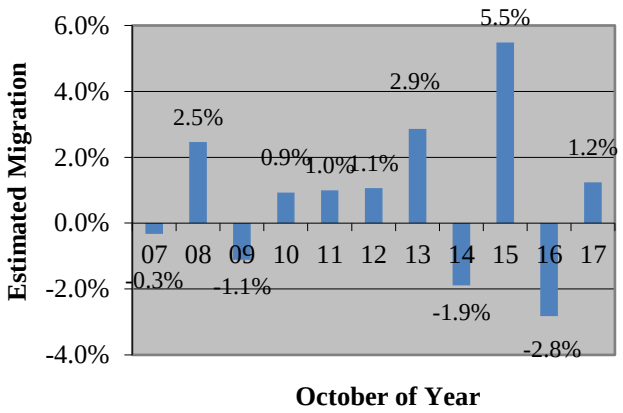


Figure 17 presents the estimated migration of students to and from Sherman. It includes students attending other public schools, but not non-public schools. Estimated migration ranged from a low of -2.8 percent in 2016 to a high of +5.5 percent in 2015. The estimated rate was 1.2 percent in 2017. The data behind these figures may be found in Appendix B. The average migration over the three-year look-back period of the projection was +1.30 percent. This rate has been exceeded 19 times in the past 30 years. The median three-year rate over the past 20 years was +1.73 percent.

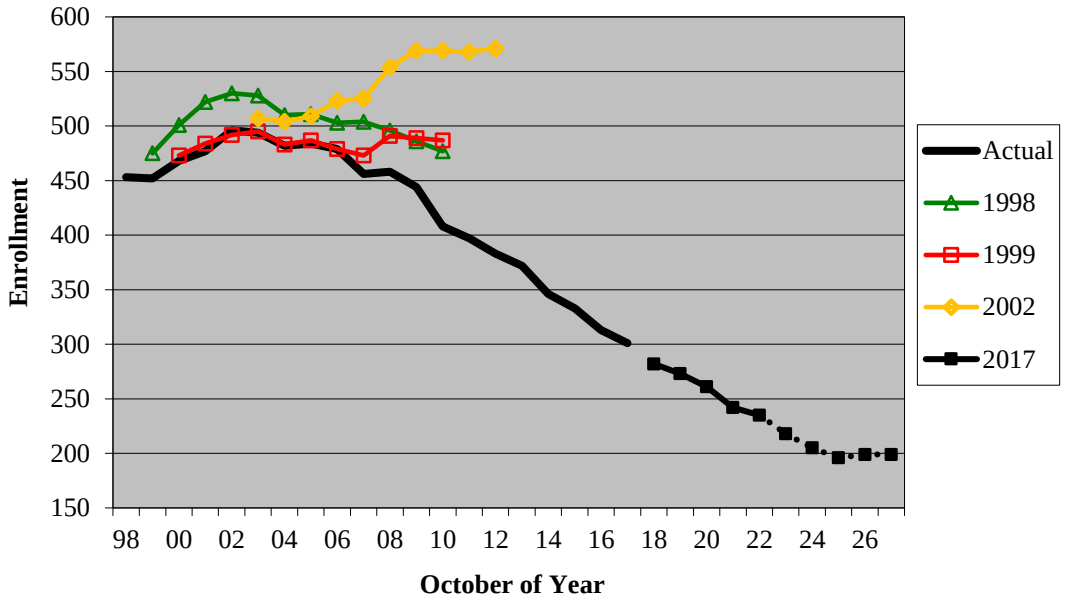
Figure 17. Estimated Student Migration



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. I have not run a projection for Sherman recently. However, Figure 18 presents the enrollment projections that I have run since 1998. The 1998, 1999 and 2002 projections had one-year error rates that averaged 2.9 percent. Those projections had an average five-year error rate of 7.4 percent, which is 1.4 percent annualized. The projection that I ran in 2002 had a ten-year error rate of 56 percent, which is 4.5 percent annually.

Figure 18. Prior Projections of 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 2007. I found for the 67 district-level projections that I ran in 2007 the median projection was 5.5 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 15percent 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 enrollment at the Sherman School could fall from 301 students in 2017 to about 200 students in 2027 if births remain similar to 2014-2017. Between 2017 and 2027 the projected decline would be about 100 students or 34 percent. Over the ten-year projection period, I believe enrollment at the Sherman School could average about 230 students compared to 376 students over the 2008 to 2017 period.

I project that public high school enrollment of Sherman residents could decline from 149 students in 2017 to about 90 students in 2027. That would represent a ten-year decline of almost 60 students or about 39 percent. Over the ten-year projection period, enrollment of Sherman residents in state public high school should average close to 120 students compared to 182 students over the past ten years.

This report is projecting a moderate 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 2008 to 2012 (this fall's kindergarten through 4th graders) births averaged 21. Births in the 2013 through 2018 period will average 15. Based on 2015 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 2018 and 2022 will average 14. Based on data from the past three years, I projected that there will be a gain of 26 percent between births and kindergarten enrollment five years later. That assumes Sherman parents will continue to choose the Sherman School for their children even if a new magnet or charter school were to open. 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 1.006 in 2017 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 14 over the 2018 to 2022 period, a 26.3 percent increase between the number of births and subsequent kindergarten enrollment and a student migration of +1.30 percent. Additionally, about 19 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 one new housing unit constructed annually and 61 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 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.

Appendix A. Sherman Enrollment Projected By Grade to 2027

School Year	Birth Year	Births[1]	K[2]	1	2	3	4	5	6	7	8	PreK	K-8	PK-8
2007-08	2002	32	33	49	52	44	46	57	61	53	43	18	438	456
2008-09	2003	29	31	36	52	54	48	48	59	61	51	18	440	458
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
Projected														
2018-19	2013	14	18	15	28	31	38	27	38	40	34	13	269	282
2019-20	2014	15	19	19	15	28	33	41	27	38	40	13	260	273
2020-21	2015	20	24	20	19	15	30	35	40	27	38	13	248	261
2021-22	2016	11	16	25	20	19	16	32	34	40	27	13	229	242
2022-23	2017	14	17	17	25	20	21	17	31	34	40	13	222	235
2023-24	2018	15	19	18	17	25	22	22	17	31	34	13	205	218
2024-25	2019	13	17	20	18	17	27	23	22	17	31	13	192	205
2025-26	2020	14	18	18	20	18	18	29	23	22	17	13	183	196
2026-27	2021	14	18	19	18	20	19	19	28	23	22	13	186	199
2027-28	2022	14	18	19	19	18	22	20	19	28	23	13	186	199

[1] Births from 2002 to 2016 from the State Department of Public Health. Births in 2015 and 2016 are provisional. Births in 2017 were estimated from in-state births through December. Births in 2018-22 were based on DRG C 2015 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

	Grade Moved Into from Prior Year									Average Grades	Estimated
October of Year	**K**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**1-8**	**Migration[1]**
2008	1.069	1.091	1.061	1.038	1.091	1.043	1.035	1.000	0.962	1.040	2.47%
2009	1.583	0.968	0.972	0.923	1.000	1.000	1.000	1.000	1.016	0.985	-1.12%
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%
3-Year Ave.	1.331	**1.037**	**1.015**	**0.995**	**1.079**	**1.068**	**0.982**	**1.001**	**0.997**	1.022	
Weighted 3-Year	1.236	1.037	1.014	0.979	1.068	1.056	0.966	0.989	1.010	1.015	
5-Year Ave.	1.247	1.061	1.015	0.982	1.061	1.002	1.001	1.022	0.998	1.018	
Weighted 5 year	1.259	1.048	1.016	0.975	1.060	1.032	0.983	1.008	1.003	1.016	
Enrollment Multiplier		1.037	1.015	0.995	1.079	1.068	0.982	1.001	0.997		

[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.

Appendix C. Sherman Enrollment in Public Schools Projected to 2027: Grades PK-5

School Year	Birth Year	Births[1]	K	1	2	3	4	5	PK-8 Total
2007-08	2002	32	33	49	52	45	46	58	441
2008-09	2003	29	31	36	52	54	48	48	441
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
Projected									
2018-19	2013	14	19	15	28	31	37	27	268
2019-20	2014	15	20	19	15	28	33	39	257
2020-21	2015	20	27	21	19	15	30	35	247
2021-22	2016	11	15	28	21	19	16	32	228
2022-23	2017	14	18	15	28	21	20	17	221
2023-24	2018	15	20	19	15	28	22	21	206
2024-25	2019	13	18	21	19	15	30	23	193
2025-26	2020	14	19	19	21	19	16	32	184
2026-27	2021	14	19	20	19	21	20	17	189
2027-28	2022	14	19	20	20	19	22	21	190
Projection Growth Rates			1.331[2]	1.037	1.015	0.995	1.069	1.066	
Annual Growth Rates									**Estimated Migration[3]**
2008			1.069	1.091	1.061	1.038	1.067	1.043	2.47%
2009			1.583	0.968	0.972	0.923	1.000	1.000	-1.12%
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%
3-Year Ave.			**1.331**	**1.037**	**1.015**	**0.995**	**1.069**	**1.331**	
Weighted 3-Year			1.236	1.037	1.014	0.979	1.063	1.236	
5-Year Ave.			1.247	1.061	1.020	0.993	1.056	1.247	
Weighted 5-year			1.259	1.048	1.017	0.981	1.054	1.259	

[1] Births from 2002 to 2016 from the State Department of Public Health. Births in 2015 and 2016 are provisional. Births in 2017 were estimated from in-state births through December. Births in 2018-22 were based on DRG C 2015 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.

Appendix D. Sherman Enrollment in Public Schools Projected to 2027: Grades 6-12

School Year	6	7	8	9	10	11	12	9-12 Total	Sherman K-12
2007-08	61	54	43	49	48	44	49	190	631
2008-09	59	61	52	39	47	51	35	172	613
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
Projected									
2018-19	37	40	34	38	30	33	40	141	409
2019-20	26	37	40	30	40	31	30	131	388
2020-21	37	26	37	35	31	41	28	135	382
2021-22	34	37	26	32	37	32	37	138	366
2022-23	31	34	37	23	33	38	29	123	344
2023-24	16	31	34	32	24	34	34	124	330
2024-25	20	16	31	30	33	25	31	119	312
2025-26	22	20	16	27	31	34	23	115	299
2026-27	31	22	20	14	28	32	31	105	294
2027-28	16	31	22	18	15	29	29	91	281
Projection Growth Rates[1]	0.958	1.001	1.005	0.878	1.046	1.023	0.901		
Annual Growth Rates									**Estimated Migration[2]**
2008	1.017	1.000	0.963	0.907	0.959	1.063	0.795		2.47%
2009	1.000	1.000	1.016	0.846	1.051	1.000	1.020		-1.12%
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%
3-Year Ave.	**0.958**	**1.001**	**1.005**	**0.878**	**1.046**	**1.023**	**0.901**		
Weighted 3-Year	0.942	0.989	1.022	0.912	1.068	1.016	0.903		
5-Year Ave.	0.987	1.022	1.003	0.911	1.006	1.046	0.949		
Weighted 5-year	0.964	1.008	1.011	0.907	1.034	1.036	0.922		

[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.