

**Milford School District Enrollment
2020-2030**

prepared for

Milford School District

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by

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Executive Summary

Long-term growth in the Milford School District is largely a function of growth in Kent and Sussex counties. The school population of the district is drawn from Kent County (35%) and Sussex County (65%). On average, the Milford School District is now attracting about 8% of Kent and Sussex counties' combined total public school enrollment over the last 10 years. That share has been steady over this time period and is expected to remain that way over the next 10 years.

Kent and Sussex counties' population growth has increased steadily since 1950 and has increased that rate since 1995. Births have increased modestly over the last 20 years rising from 3,554 (1997) to 4,490 (2017). Births in the Milford School District have increased from 258 (1997) to 379 (2007) and have stabilized at that level. Conversely, deaths have increased from 2,761 to 3,446 annually over roughly the same time period. Thus, the population increase from natural increase (births – deaths) fell from 1,175 in 2000 to 571 in 2017.

The other source of population growth is net migration (people moving into Kent and Sussex counties less those leaving). Net migration contributed 5,000 persons to annual population growth over the decade. This was reflected fully in school enrollment growth. However, the Milford School District grew slower and its enrollment share fell slightly from 7.93% in 2004 to 7.64% in 2013.

The Delaware Population Consortium releases 30-year projections of population for the state and the three counties on an annual basis. Currently, their view is that Kent and Sussex counties' births will continue at about the same level as they are now over the next decade. Deaths will continue to increase in a regular fashion. This will reduce natural increase from its current level of 550 to about 0 by 2021. Net migration is expected to continue at current levels for the next decade and moderate further in the future, mainly in Sussex County.

Using this information and enrollment since 2000, a series of simulations for enrollment by grade for the next ten years were generated. The most likely scenario suggests that a slow increase in the District's enrollment is likely over the 2020-2030 period. The primary factors influencing this forecast are a maturing population and net in-migration of households without children.

There will be substantial growth in housing units in the Milford School District over the next ten years with nearly 3,000 units forecast. However, the District's population will increase by only 4,500. As household size continues to fall, it requires more housing units to support the same number of people. For example, if the same household size existed now as existed in 1960, Kent and Sussex counties would require 31,000 fewer housing units. Similarly, the number of persons 5-17 will decrease from 0.51 per household to 0.39 per household over the next 10 years. The number is even smaller if you include only those attending public schools.

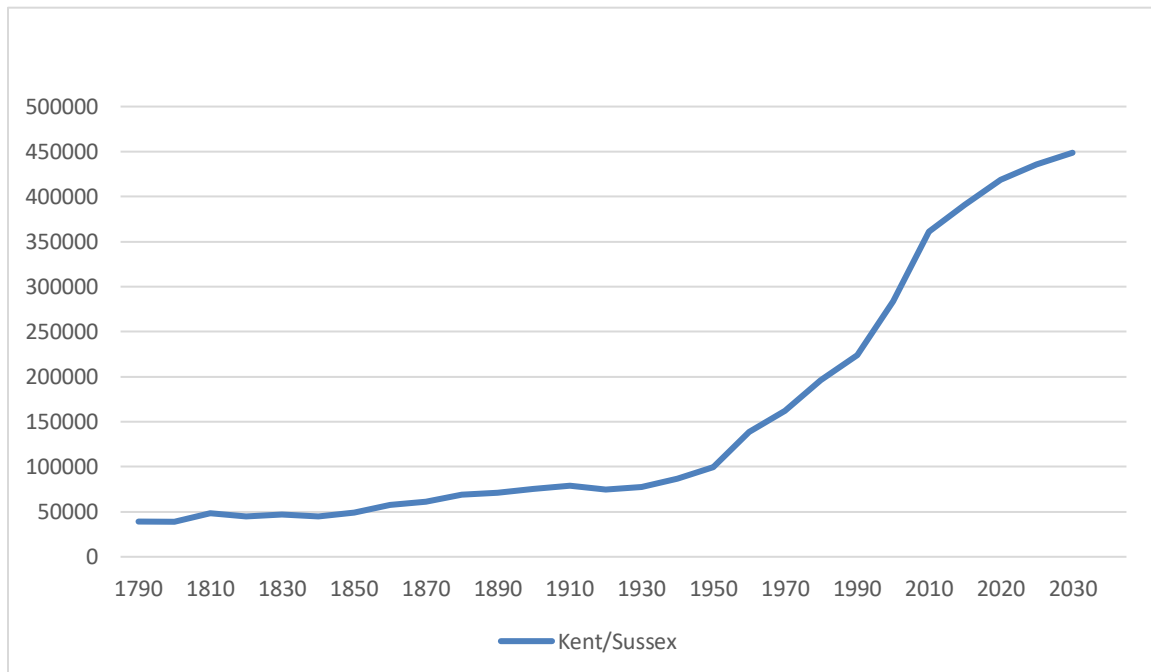
In summary, the Milford School District student enrollment will increase slightly over the next 10 years, gaining on average about 22 students per year for the first five years and about 38 students over the last six years. As with any projection there is both upside and downside risk. The projections provided here try to balance both. In reality, the projection is probably +/- 3% at 2024 and +/- 5% at 2030. Some of the unknowns that could change are the success or failure of the charter schools; a change in the use of private/parochial schools, which currently attracts approximately 500 Milford School District residents; an influx of families due to the economy and the relocation of people out of the beach areas as prices continue to rise.

Demographic Trends

The Milford School District does not have its own independent development path. Its growth is heavily influenced by its spatial location both within Delaware and Kent and Sussex counties. Its residents and businesses are governed by land-use and zoning regulations provided both by county and municipal governments in Kent and Sussex counties. As a result, growth in the Milford School District is largely a function of growth in Kent and Sussex counties. Currently, the District draws 35% of its total population from Kent County and 65% from Sussex County.

As a general proposition, the median employee in the two counties now lives within 25 minutes of their workplace. That suggests that people in the district are oriented toward the Kent and Sussex labor markets. There are people who commute longer distances, but they are in the distinct minority. Overall, growth in Kent County will be driven by the strength of the local labor market and the diversity of employment opportunities. Growth in Sussex County is more complex since it is heavily influenced by net in-migration of retirees aged 55 and older. However, even that migration generates new jobs that must be filled.

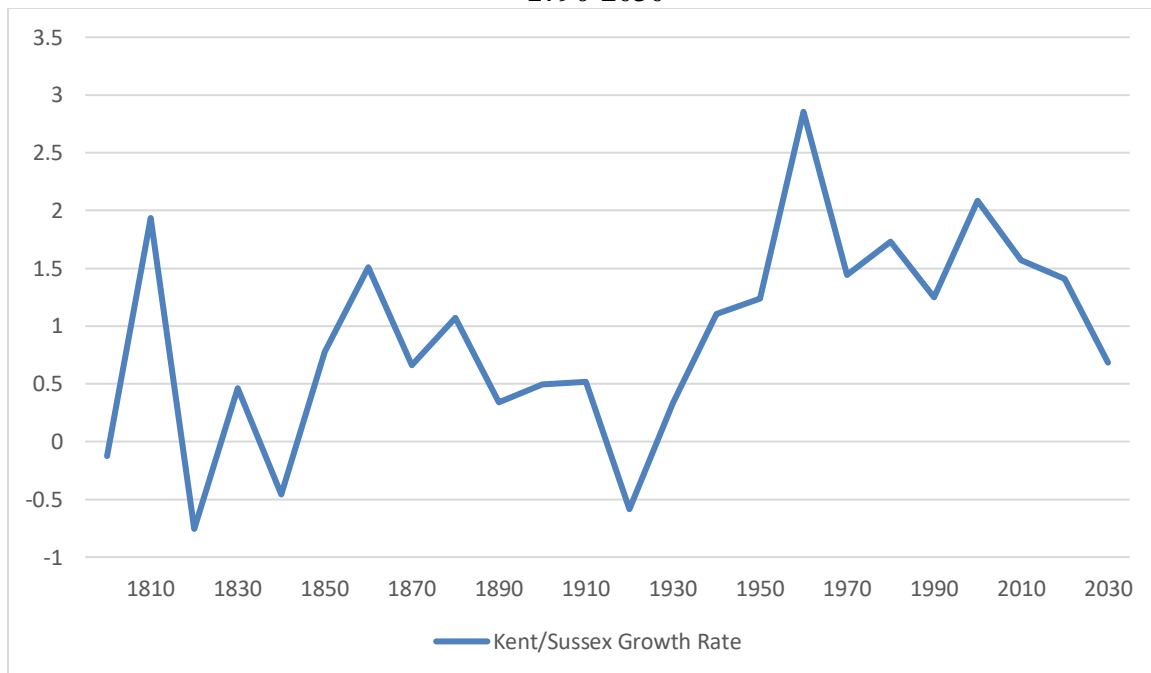
Figure 2.1
Kent/Sussex Counties Population
1790-2030



Source: Center for Applied Demography & Survey Research, University of Delaware

Population growth in both Kent and Sussex counties is expected to grow at rates above the national average and above the long-term growth rate in the state as a whole. These rates will gradually decline but will remain above 1% annually until 2020 (Figure 2.1, above). As can be seen in Figure 2.2, the County enjoyed dramatic growth in the decade of the 1950's and 1960's followed by lower rates in the 1970's. More recently, growth resumed rates in the vicinity of 1.5% per year.

Figure 2.2
Average Annual Kent/Sussex Counties Population Growth Rates
1790-2030



The long-term (200 year) annual growth rate of population for Kent/Sussex Counties is 1.0% per year. As the graph shows the rate has been volatile with negative growth in the 1810's and the 1910's. Since that last period of net out-migration the trend has risen significantly and has remained above the long-term growth rate since the 1940's. For the 2010-2030 decades, that rate is seen as falling below its more recent rate largely because of the aging population.

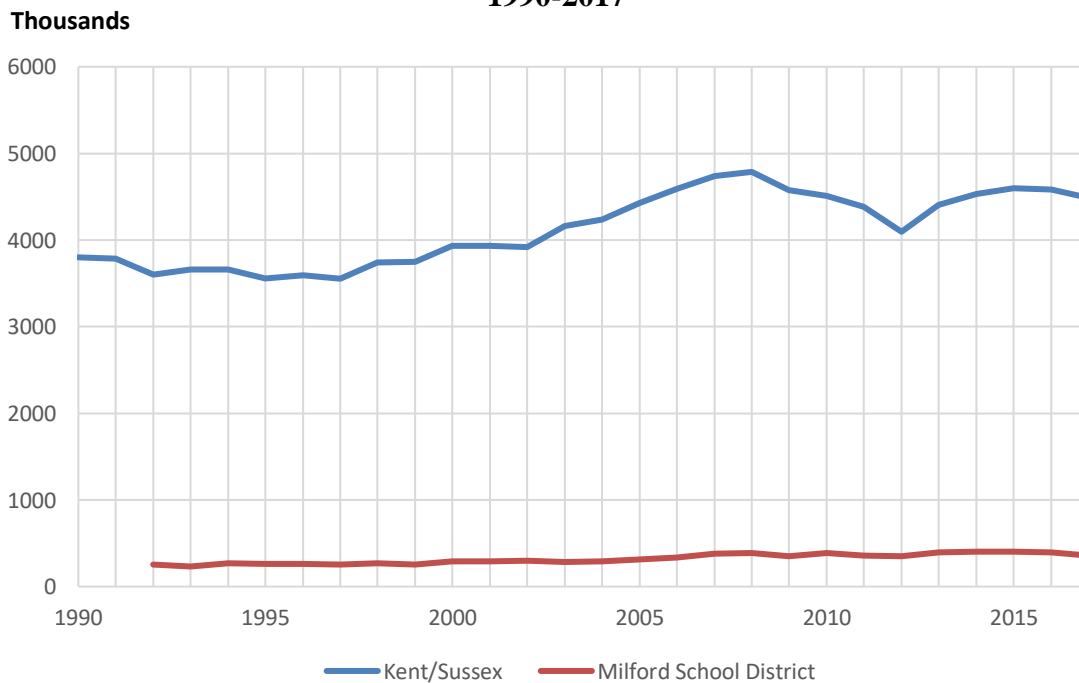
Population growth is generally conceived as the sum of two parts, namely natural increase and net migration. Either factor can be positive (add to the population) or negative (subtract from the population).

Natural increase is simply the difference between births and deaths. In some areas the population has a relatively large number of women in the child-bearing years (15-44). In others,

e.g. Florida, the age structure is much older and number of births is relatively fewer. Similarly, the older the population is, the more deaths will be produced. Thus, in areas with younger populations, natural increase will play a larger part for the source of population growth. Kent County has the youngest population in the state (median=36.6), while Sussex County has the oldest population (median=45.4).

The second source of growth is net migration. Net migration is the sum of people who move into the area less those that leave. There are substantial numbers in both categories and the result may either increase or decrease the population. This concept holds for smaller regions (like school districts) as well. In areas with rapidly expanding job markets and low unemployment rates relative to surrounding states, a positive net migration would be expected. This has been true for Delaware for more than 15 years. Recently, unemployment rates have been low everywhere, and it has become more difficult to attract new workers and their families into the state. In addition, the recession has curtailed the robust growth of employment, which the state enjoyed for nearly a decade prior. Unemployment rates however remain near historical lows.

Figure 2.3
Kent/Sussex Counties and Milford School District Births
1990-2017



Source: Center for Applied Demography & Survey Research, University of Delaware

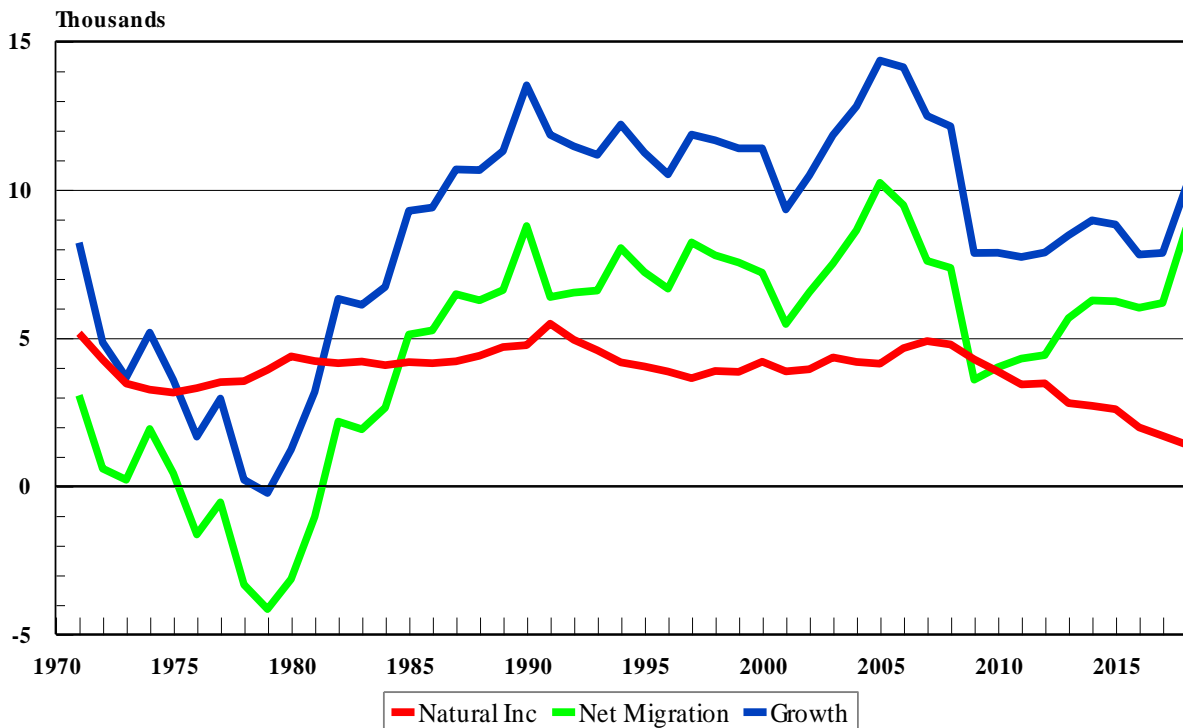
The other cases for net in-migration are some special circumstances. Sussex County's growth is being driven by a strong contingent of retirees taking up permanent residence in the vacation homes that they have been visiting for years. A recent trend for retirees to locate near universities may have an impact on certain areas in the coming decade. The trend of retirees to relocate to the Sunbelt seems to have run its course.

Kent and Sussex counties' combined births for the last 27 years are shown in Figure 2.3, above. The fewest infants were born prior to the start of the chart in 1984. That was the beginning of the trend that is known as the "baby boomlet". The "boomlet" was created by the offspring of the baby boomers. Fertility rates were falling (although at slower rates) during the period, as they continue to do today; however, the significant increase in the number of women in the child-bearing age groups produced a bumper crop even with those lower fertility rates. The number of births in Kent/Sussex counties rose steadily, if not dramatically, until 2008. After that, the number of births has stabilized. This profile suggests that increases in school enrollment should have appeared by 1990, and would increase gradually at least through 2014 before stabilizing during the next ten years. Births in the Milford School District hit a maximum in 2014 with 403 live births. District births also reached a low point in 1992 (232). Births in the District have been in the vicinity of 375 for the last four years. The District has accounted for between 7.7% and 9.0% of Kent/Sussex counties' births over the last 12 years. The current level is in the upper part of that range, 8.5%. In general, the share of Kent/Sussex counties births attributable to Milford School District has been increased steadily over the period 1992-2013, but has recently stabilized.

The two sources for the State of Delaware growth from 1970 through 2018 are shown in Figure 2.4, below. The red line represents natural increase (births – deaths). That source has tended toward 4,000 persons per year throughout the two decades but recently has fallen below that level. Since 2008 decreasing births and increasing deaths have reduced the annual additions from natural increase.

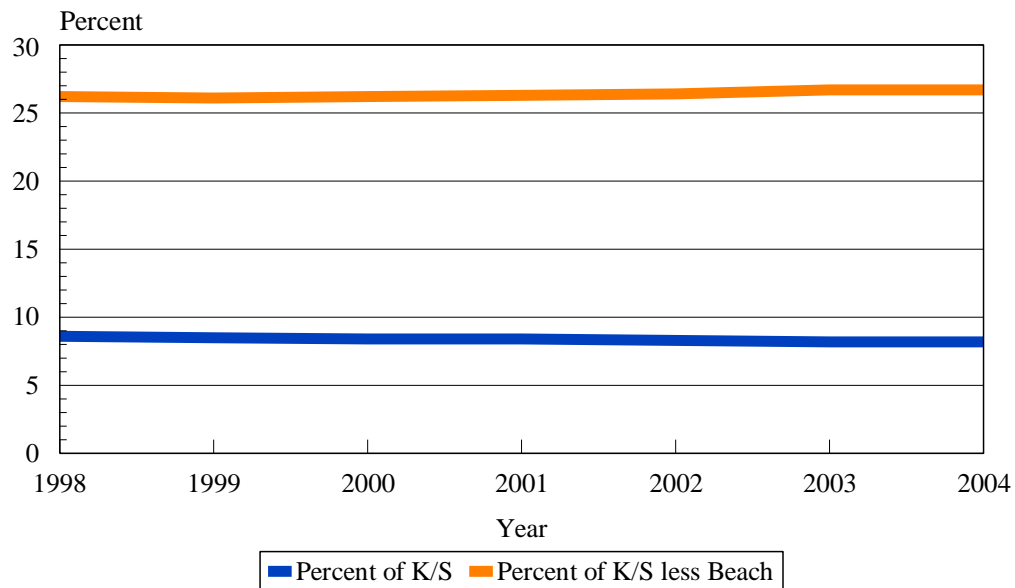
Net migration (light green) has been volatile in Delaware. It has been negative, i.e. net out migration, during the 1974-80 period. It has exceeded natural increase as a source of growth since 1981. In general, after reversing the negative trend in the late 1970's, net migration has increased and adds an average 6,500 persons to the population annually in the state. Recently, increases in Sussex County over the last two years have driven net migration to over 7,000 persons per year. This trend makes growth in the state increasingly dependent on the most volatile component of population growth.

Figure 2.4
State of Delaware Sources of Population Growth
1970-2018



Source: Center for Applied Demography & Survey Research, University of Delaware

Figure 2.5
Percent of Total Improved Residential Properties
1998-2004

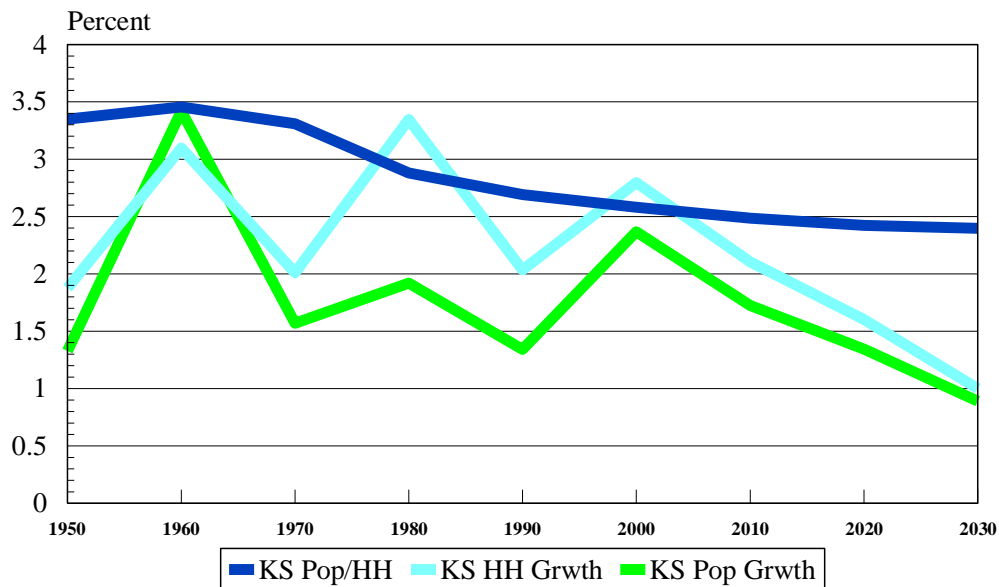


Source: Center for Applied Demography & Survey Research, University of Delaware

In Figure 2.5 previously, the Milford School District's share of all residential single-family improved properties in Kent/Sussex counties is shown. It's readily apparent that there is slight degradation in that share over time. The district began with 8.6% of the properties and ends with 8.1%. This means that the Milford School District is growing more slowly than the rest of the area. Most of the new growth is located in the eastern part of the Sussex County. Still, the District managed to add about 650 new single-family units over the period. If you exclude the Indian River and Cape Henlopen School Districts, which have the bulk of the retiree population, Milford School District has increased its share from 26.1% to 26.7%. That indicates it is growing faster than the other parts of the area.

One point of considerable contention is why there is so much housing development going on in Kent/Sussex, but population growth is not exploding. This phenomenon is widespread in the state and in the country. It is explained in part by Figure 2.6, below.

Figure 2.6
Kent/Sussex Counties Household and Population Growth Rates
1950-2030

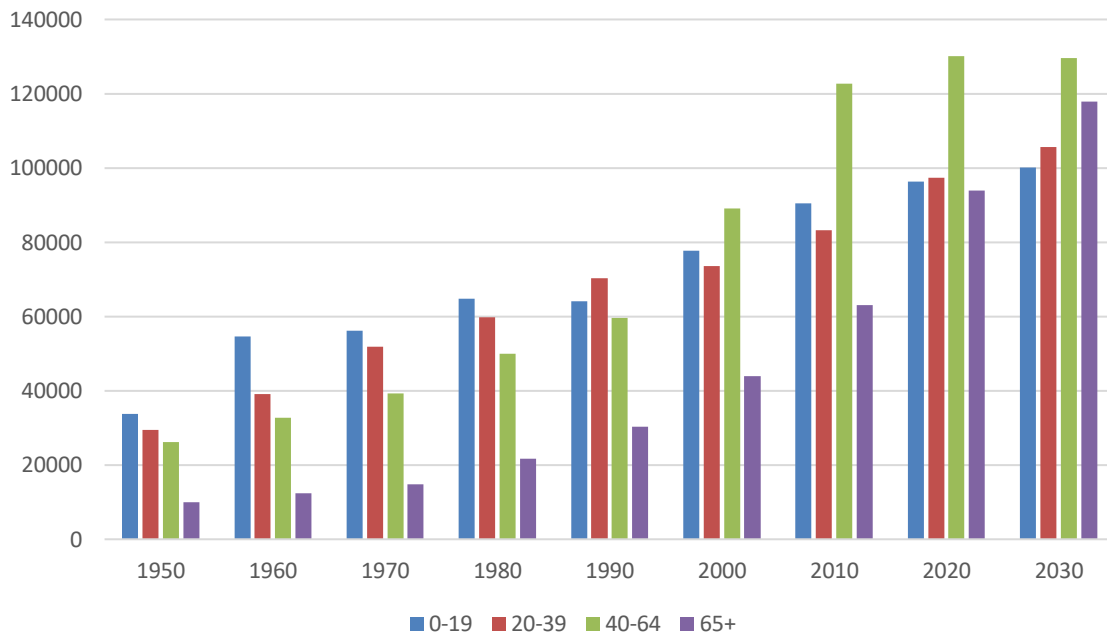


Source: Center for Applied Demography & Survey Research, University of Delaware

The figure shows the huge spurt of growth in the 1960s in both population (green) and households (light blue). Subsequent to 1970, the growth rate in housing has always exceeded that for population. The reason for this phenomenon is declining household size. As the figure shows, persons per household (dark blue line) has been falling since 1960 from its peak of 3.6 persons to

about 2.4 persons by 2030. In other words, each house now holds 1.1 less persons than it did in 1960. This means that 31,000 more housing units are needed to shelter today's population than would have been necessary in 1960. Of course, this is largely because of significant differences in the structure of households, with many more single person households and single parent households, and the aging population. The percentage of households containing a single person has risen from 15% to more than 24% since 1970. The percentage of households headed by a single female with children under 18 is now 8%. The percentage of households with children under the age of 18 has fallen to 30% in Kent/Sussex counties.

Figure 2.7
Kent/Sussex Counties Population by Age Group
1950-2030

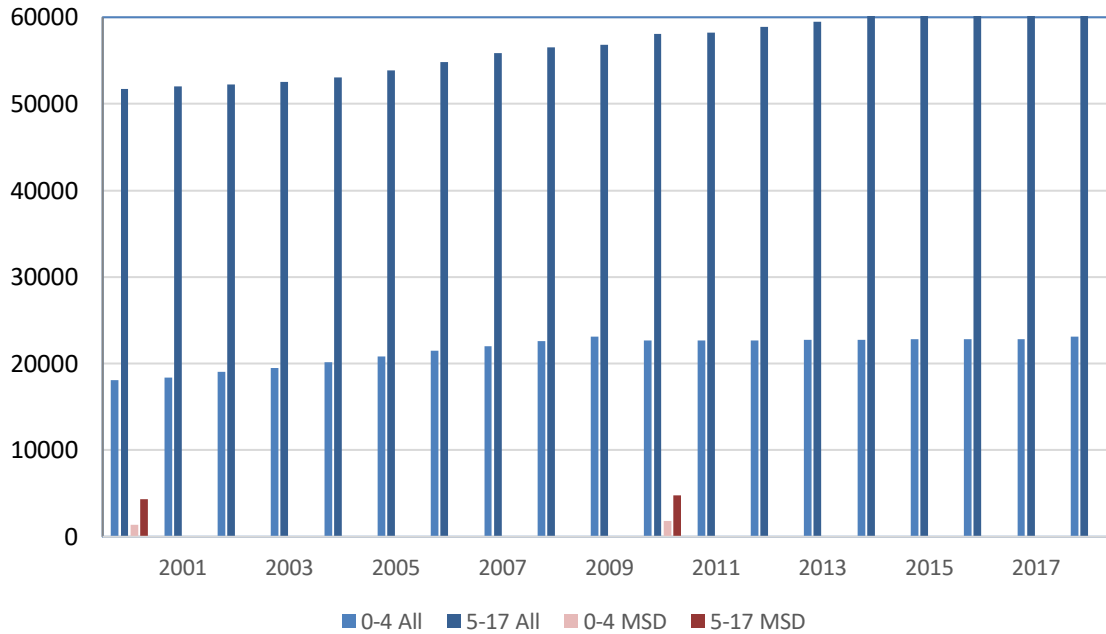


Source: Center for Applied Demography & Survey Research, University of Delaware

Age structure is everything. Kent/Sussex counties' structure is displayed in Figure 2.7, above. The numbers of people in the four age groups change in substantially different ways. The 0-19 age group (dark blue) seems to alternate between significant growth and relative stability from 1940 through 2000. As the baby boomlet arrives in 1990, the numbers increase robustly. The projection shows fairly steady but modest growth in the youngest age group over the next 30 years. Part of the reason for this is that the 20-39 age group (light blue) is also growing modestly. That group holds the majority of the women in the child-bearing age groups. Compare the growth

in that group today with that experienced in 1950-1990. The boomers in the 40-64 age group and the retirees obviously have the most significant impact on the age structure

Figure 2.8
Kent/Sussex Counties and Milford School District
Younger Age Groups
2000-2018



Source: Center for Applied Demography & Survey Research, University of Delaware

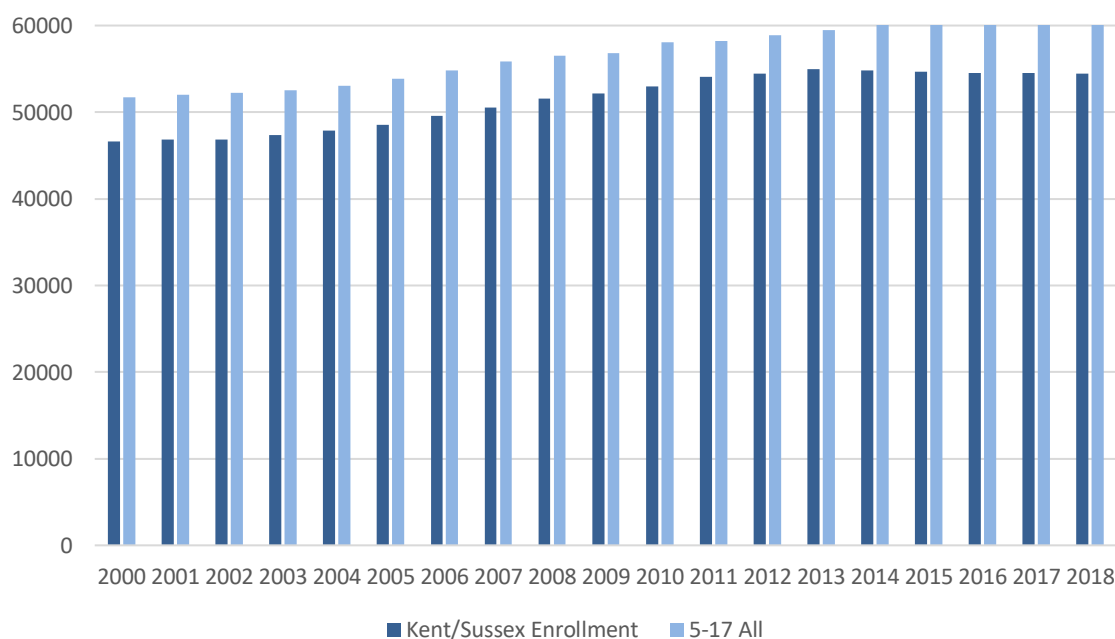
Finally, in Figure 2.8 above, the number of people in the two youngest age groups is shown. The 0-4 age group represents those not yet in school while the 5-17 age group represents the bulk of those already in school. It is clear that the size of the 0-4 age group reached a peak around 2009 and is now stable. The 5-17 age group is still increasing although it clearly has leveled out. This suggests that the Kent/Sussex counties' school districts should be experiencing some growth in the immediate future but stability in later years.

The data for same age groups in the Milford School District are also shown in the figure (dark and light red). While intercensal estimates are not available, the pattern is consistent with the overall county data. There is a slight decline in the 0-4 age group and a modest increase in the 5-17 age group.

Enrollment Projections

Projecting school enrollments, like projecting population, is neither simple nor without risk. In general, a projection is wrong almost the minute that it is issued. The reason is the underlying assumptions have changed. Long-term enrollment projections, i.e. those extending past three years, are more hazardous because one is dealing with a subset of the population. Statewide projections of population will always be more accurate than those done at a county level. Likewise, projections for school districts will always be less accurate than those developed for an entire county. Similarly, a projection of the total population is certainly likely to be more accurate than that for a subset of the population. The smaller the base population, or the smaller the area, the more hazardous the process.

Figure 3.1
Kent/Sussex Counties School Age Population and Enrollment
2000-2018

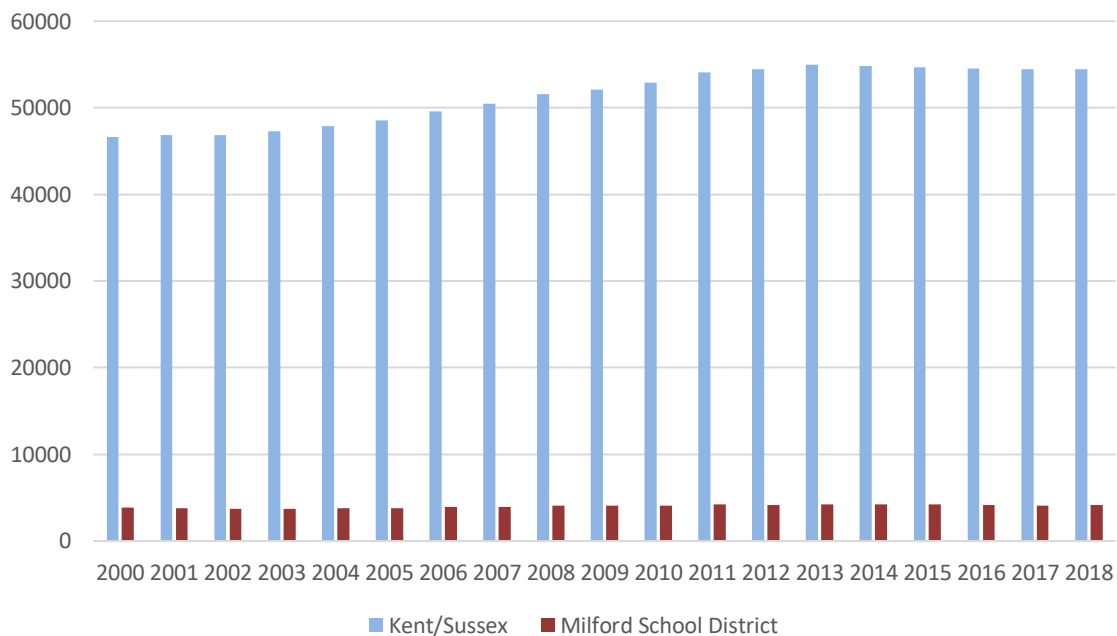


Source: Center for Applied Demography & Survey Research, University of Delaware

Since these projections will involve long-term population projections as well as short-term enrollment measures, one key issue is the stability of the relationships. In Figure 3.1, above, the relationship between past county enrollment and an approximation of the population from which those students came is shown. Enrollment will always be smaller since a large portion (8.7%) of the school-age population attends private or parochial schools. For example, in the 2001-2002 school year, 4,097 students attended private school of the 46,869 that attended school.

Even with this complication, the relationship between the 5-17 age group and total enrollment appears to be both stable and strong. In fact, the correlation coefficient between the two series is 0.988. This suggests that projections based on the total age distribution, assuming conditions do not change drastically, will be reasonably accurate.

Figure 3.2
Kent/Sussex Counties Public School and Milford School District Enrollment
2000-2018



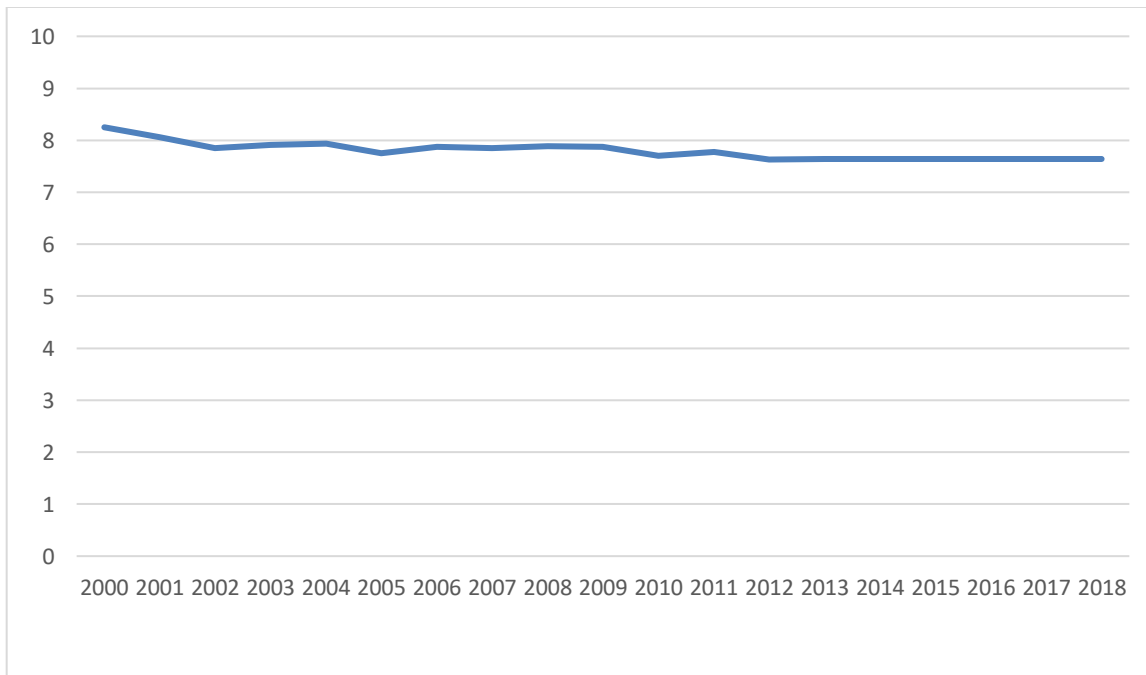
Source: Center for Applied Demography & Survey Research, University of Delaware

Unfortunately, there is no projection available for the age of students in the Milford School District from an independent source like the Delaware Population Consortium or the US Census Bureau. To overcome this problem, a relationship must be established between the Kent/Sussex counties' public school enrollments and those for the Milford School District. This relationship is shown in Figure 3.2, above. That relationship is not as robust but is still significant. A positive correlation of 0.64 exists between the two series.

The Milford School District has accounted for as much as 7.9% of Kent/Sussex counties' public school enrollment over the decade (Figure 3.3, below). As was noted in the previous figure, the two series are positively correlated. While the District's share has fallen, it has been reasonably stable at 7.6% in the latest two years. Using both of these relationships and projections from the Delaware Population Consortium, a projection of total enrollment in the Milford School

District is possible. It should be noted that these projections are true student head counts (including full-time and part-time) and not “unit” counts.

Figure 3.3
Milford School District
Percent of Kent/Sussex Counties Public School Enrollment 2000-2018



Source: Center for Applied Demography & Survey Research, University of Delaware

Every several years small area forecasts of population and housing are prepared for traffic analysis and planning purposes. These projections are done at a sufficiently disaggregated level that they can be recombined into estimates for the Milford School District. While only totals are projected, i.e. no age specific detail, it does provide some information about growth. The population of the District grew from 18,467 to 21,559 from 2000 to 2010. It is important to note that District enrollment increased by 4% as the total population increased by 17%, and the 5-17 age group increased by 10%.

The 2010 forecasts include a larger increase to 26,867 followed by a smaller increase to 28,719 in 2015. By 2030, the population is expected to increase to 33,074. Housing units are expected to increase by more than 5,000 by 2030. Eventually, there should be backfilling occurring as the baby boomers exit this world and their housing is bought by younger people. This should lead to more children if current fertility rates are suggestive of the future.

Given the total enrollment derived from the projected 5-17 population of Kent/Sussex counties and the assumption of a stable 8.2% share of that group, the total Milford School District 5-17 population was projected. In the second stage, total enrollment was projected assuming an increasing proportion of the 5-17 population would enroll in the District (89% to 94%). Using the observed variance in the share as a guide, an error of +/- 3% or 120 students on either side of the total enrollment is expected at 2024.

The more difficult task is the grade distribution. It is not simple to map an individual's grade based on their age for various reasons. Among these are different ages at starting school, different dropout rates, and different rates of attending non-public schools. In addition, the age distribution is centered at the beginning of July instead of the beginning of September. Finally, the distribution of students within the 5-17 age group will vary within each school district.

The final projection was reached using a hybrid model after looking at several different variations, which employed the same control totals derived earlier. The current grade distribution was employed as a starting point. Births through 2024 were then derived for single years using total projected births from the Delaware Population Consortium and the Milford likely share using 1990-2017. Kindergarten students were derived from the first grade estimates and PK students were held constant at a typical value.

The first approach used conventional five year retention rates for all other grades with a number of variations; the average of the five rates, the average of the three middle values, the minimum observed value, the maximum observed value, and averages after excluding any observation that was outside of 0.5 standard deviations of the five year average.

The second approach used the relationship between Kent/Sussex counties' enrollments and Milford School District enrollments observed over the 1992-2018 period. Three different measures were simulated; the average of the ten rates, the average of last five values, and the average excluding observations outside of 0.5 standard deviations of the mean. This approach required the generation of Kent/Sussex counties' enrollment projections first and in the same manner described above. In addition, since there were significant downward trends in the shares over the period, shares were allowed to decline but at a slower rate.

The third approach used two variations of regression models. The first used 12 years of data and 13 equations to estimate next year's grade enrollment based on last year's enrollment in the previous grade. The second model was a conventional time series model with one equation for each grade.

The final results were forced to conform to the Milford School District control totals developed in the very beginning of the process, and they are displayed in Figures 3.4 and 3.5, below. These estimates are neither the most pessimistic nor the most optimistic but rather are the most probable based on the information gathered and the assumptions made.

Figure 3.4
Milford School District Enrollment
2011-2019

GRADE	2011	2012	2013	2014	2015	2016	2017	2018	2019
PK	81	62	67	65	57	46	54	67	74
K	316	359	339	375	360	337	337	309	320
1	328	320	360	338	391	362	340	340	319
2	339	309	315	354	332	371	338	340	347
3	319	337	329	319	340	320	385	337	346
4	356	313	344	343	309	340	299	384	345
5	316	349	320	343	341	318	363	300	401
6	316	306	343	320	344	330	305	353	298
7	317	313	320	357	333	349	320	311	359
8	316	333	324	325	347	338	343	321	317
9	336	312	333	296	304	317	292	325	308
10	314	283	280	266	241	232	294	284	273
11	301	301	265	262	266	234	221	265	258
12	252	258	256	240	232	225	200	191	262
Total	4207	4155	4195	4203	4197	4119	4091	4127	4227

Source: Center for Applied Demography & Survey Research, University of Delaware

Figure 3.5
Milford School District Enrollment Projections
2020-2030

GRADE	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
PK	64	64	64	64	64	64	64	64	64	64	64
K	361	361	353	323	372	374	376	378	380	382	384
1	325	367	367	359	328	378	380	382	384	386	388
2	314	320	361	361	353	323	372	374	376	378	380
3	353	320	326	368	368	360	329	379	381	383	385
4	341	348	315	321	362	362	354	324	373	375	377
5	358	354	361	327	333	376	376	368	337	388	390
6	391	349	345	352	319	325	367	367	359	328	378
7	299	392	350	346	353	319	326	368	368	359	329
8	360	299	392	351	346	354	320	326	368	368	360
9	293	332	276	363	324	320	327	296	301	340	340
10	281	267	303	252	331	296	292	298	270	275	311
11	251	259	246	279	232	305	272	269	275	249	254
12	233	227	234	222	252	210	275	246	243	248	224
Total	4224	4259	4293	4288	4337	4366	4430	4439	4479	4523	4564

Source: Center for Applied Demography & Survey Research, University of Delaware

The more difficult task is the school enrollment projections. Total students living in Milford School District do not reside proportionally within the three elementary school feeder patterns. The percentages range from 30.23% total students in Banneker Elementary School (BES) to 32.20% of the total students in Mispillion Elementary School (MES) to 37.57% of the total students in Ross Elementary School (RES). Also the future projections for these areas are not growing at a constant rate. Growth in the Ross feeder pattern slightly outpaces that of BES and MES. Values from the grade level district projections were used as a base and multiplied by the appropriated percentages in order to derive the school projections in Figures 3.6 and Figure 3.7.

Since the early childhood center, Morris (MECC), the middle school, Milford Central Academy (MCA), and the high school, Milford (MHS), are districtwide schools, school district feeder enrollment projections are an aggregation of the appropriate grade level configurations. MECC is a combination of the PK and KG grades, MCA is a combination of the 6th-8th grades and MHS is a combination of the 9th-12th grades.

The school feeder enrollment projections **DO NOT** take into account local and state choice students. These variables can change yearly based on parent choices as well as district policies, thus not allowing for a predictable input into the model.

Figure 3.6
Milford School District
School Enrollment 2011-2019

GRADE	2011	2012	2013	2014	2015	2016	2017	2018	2019
MECC	718	412	397	422	401	366	365	367	376
BES	618	514	524	525	510	518	507	495	530
MES	N/A	522	553	570	555	570	544	540	547
RES	670	559	551	571	609	592	631	617	656
MMS	620	608	651	N/A	N/A	N/A	N/A	N/A	N/A
MCA	590	634	594	981	1011	1000	951	966	966
MHS	896	830	846	1049	1028	991	995	1054	1098
MILC	95	76	79	85	83	82	98	88	54
Total	4207	4155	4195	4203	4197	4119	4091	4127	4227

Source: Center for Applied Demography & Survey Research, University of Delaware

Figure 3.7
Milford School District
School Enrollment Projections 2020-2030

GRADE	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
MECC	425	425	417	387	436	438	440	442	444	446	448
BES	511	517	523	525	527	544	547	552	560	577	580
MES	544	550	557	559	562	579	583	588	596	615	618
RES	636	642	650	652	655	676	681	687	695	718	722
MCA	1050	1040	1087	1049	1018	998	1013	1061	1095	1055	1067
MHS	1058	1085	1059	1116	1139	1131	1166	1109	1089	1112	1129
Total	4224	4259	4293	4288	4337	4366	4430	4439	4479	4523	4564

Source: Center for Applied Demography & Survey Research, University of Delaware

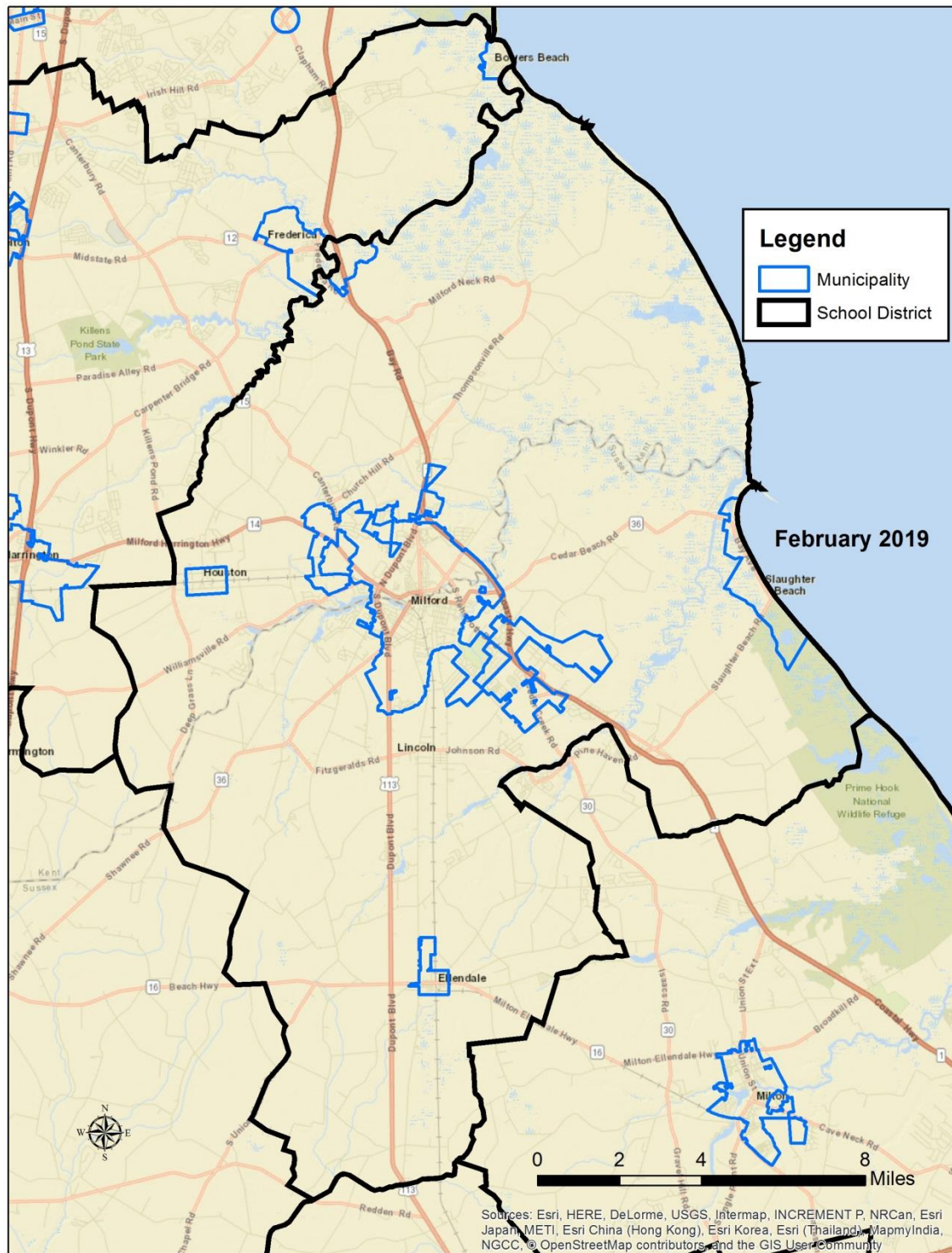
The key to usable population or enrollment projections is to project often. These projections can be updated annually when the Delaware Population Consortium updates its Kent and Sussex County forecasts in July. Second, as a new grade distribution is obtained for the Milford District on September 30 of each year, the projections should be adjusted first to the new control total and then to the observed enrollment by grade.

It is important to watch the indicators that heavily influenced these projections. These include the share of Kent and Sussex County enrollment, the share of public school enrollment, the share of Kent and Sussex County births, and the share of grade level retention rates.

APPENDIX

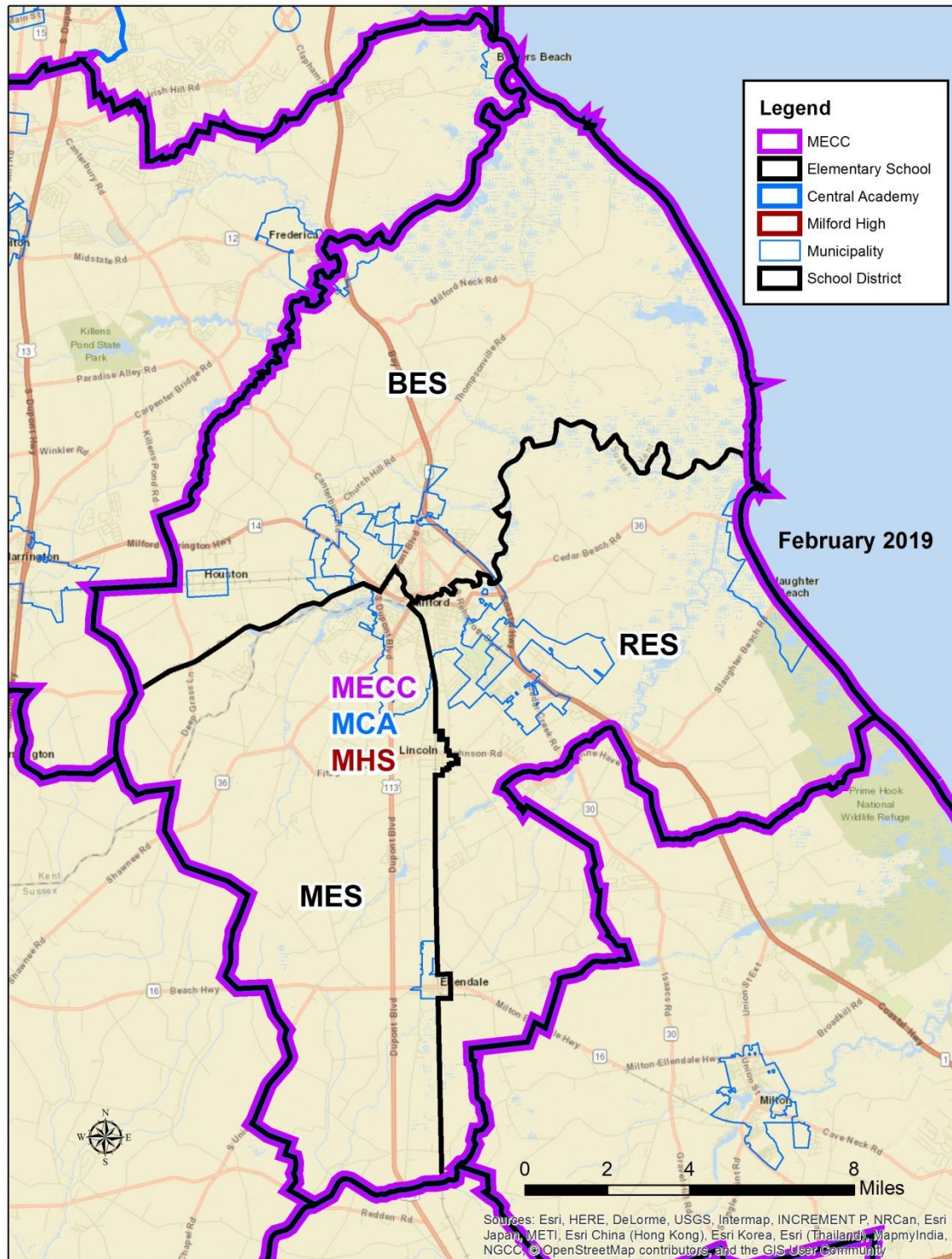
Reference Maps

MILFORD SCHOOL DISTRICT



Source: Center for Applied Demography & Survey Research, University of Delaware

MILFORD SCHOOL FEEDER DISTRICT PATTERNS



Source: Center for Applied Demography & Survey Research, University of Delaware