Milford School District Enrollment
2004-2014

prepared for

Milford School District

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 population of the district is drawn from Kent County (37%) and Sussex County (63%). On average, the Milford School District is now attracting about 7.9% of Kent and Sussex counties' combined total public school enrollment. That share has been declining.

Kent and Sussex counties' population growth has increased steadily since 1950 and has increased that rate since 1990. Births have increased modestly over the last 10 years rising from 3,661 (1993) to 3,925 (2003). Births in the Milford School District have increased from 232 (1993) to 286 (2003) and have stabilized at that level. Conversely, deaths have increased from 2,328 to 2,912 annually over the period. Thus, the population increase from natural increase (births – deaths) fell from 1,333 in 1993 to 1,013 in 2003.

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 from 8.9% in 1990 to 7.9% in 2003.

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 1,000 to about 100 by 2014. Net migration is expected to continue at current levels for the next decade and moderate further in the future.

Using this information and enrollment since 1993, a series of eight simulations for enrollment by grade for the next ten years was generated. The most likely scenario suggests that a slow increase in the District's enrollment is likely over the 2004-2014 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 2,800 units forecast. The District's population will increase by only 4,400. 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 only those attending public schools are included.

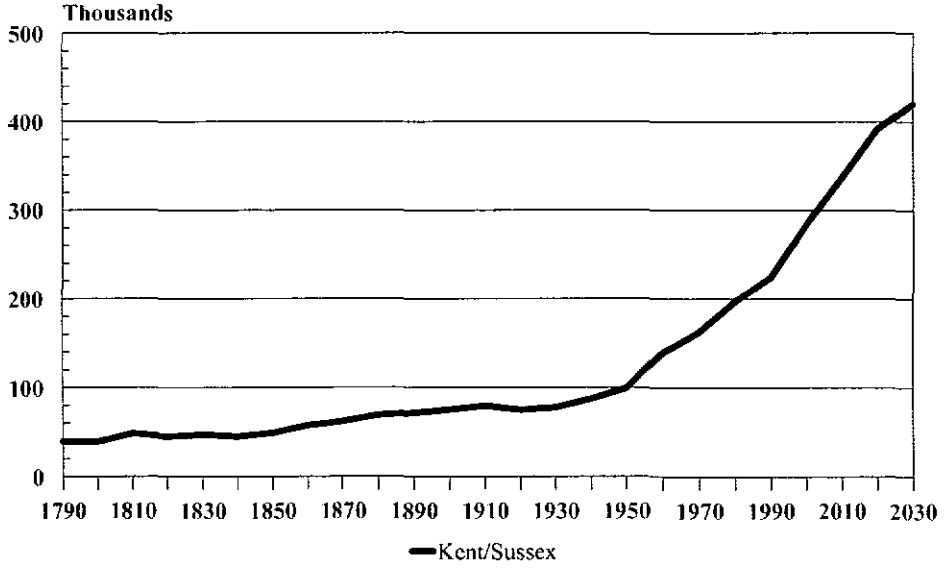
In summary, the Milford School District student enrollment will increase gradually over the next 10 years gaining on average about 35 students per year. As with any projection there is both upside and downside risk. The projection provided here tries to balance both. In reality, the projection is probably +/- 3% at 2009 and +/- 5% at 2014. 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 350 Milford School District residents; 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. It's growth is heavily influenced by its spatial location both within Delaware and Kent and Sussex Counties. It's 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 37% of its total population from Kent County and 63% from Sussex County.

As a general proposition, the median employee in the two counties now lives within 23 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.

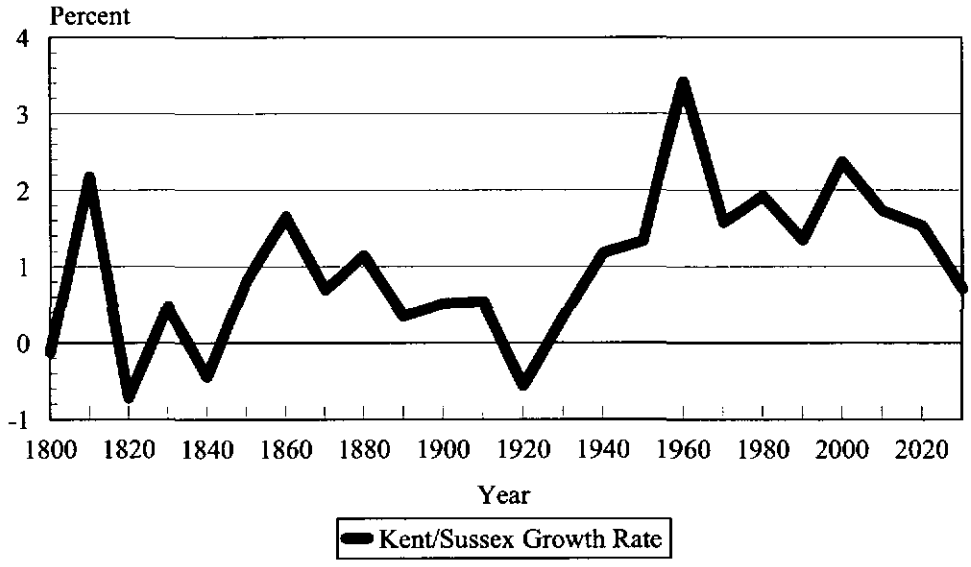
Figure 2.1
Kent/Sussex Counties Population
1790-2030



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 2% per year.

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



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

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.

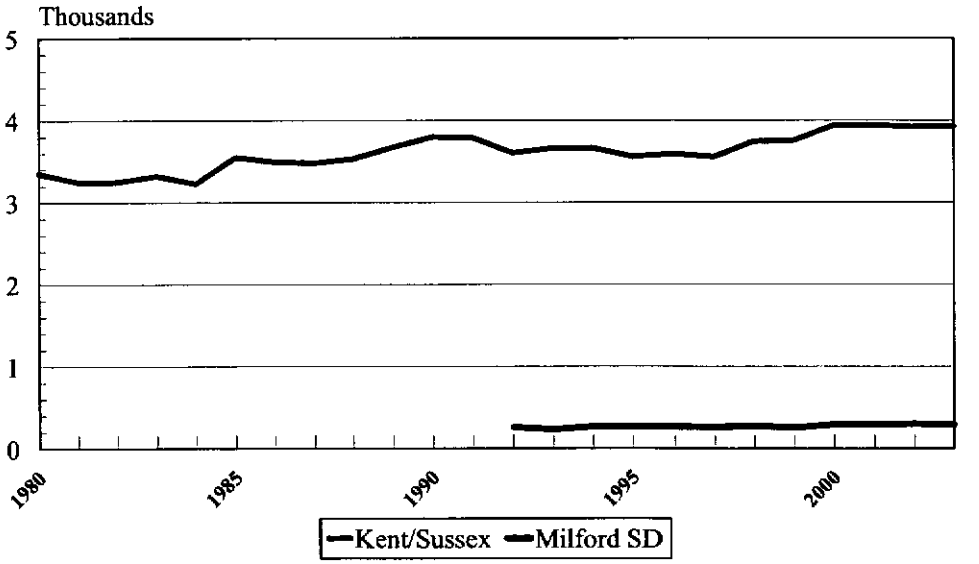
Population growth is generally conceived as the sum of two parts, namely natural increase and net migration. Either factor can be positive (add to the population) or negative (subtract from the population).

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 be a significant source of population growth. Kent County has the youngest population in the state (median=34.4), while Sussex County has the oldest population (median=41.1).

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 recent recession has curtailed the robust growth of employment, which the state enjoyed for nearly a decade. Unemployment rates however remain near historical lows.

Figure 2.3
Kent/Sussex Counties and Milford School District Births
1980-2003



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

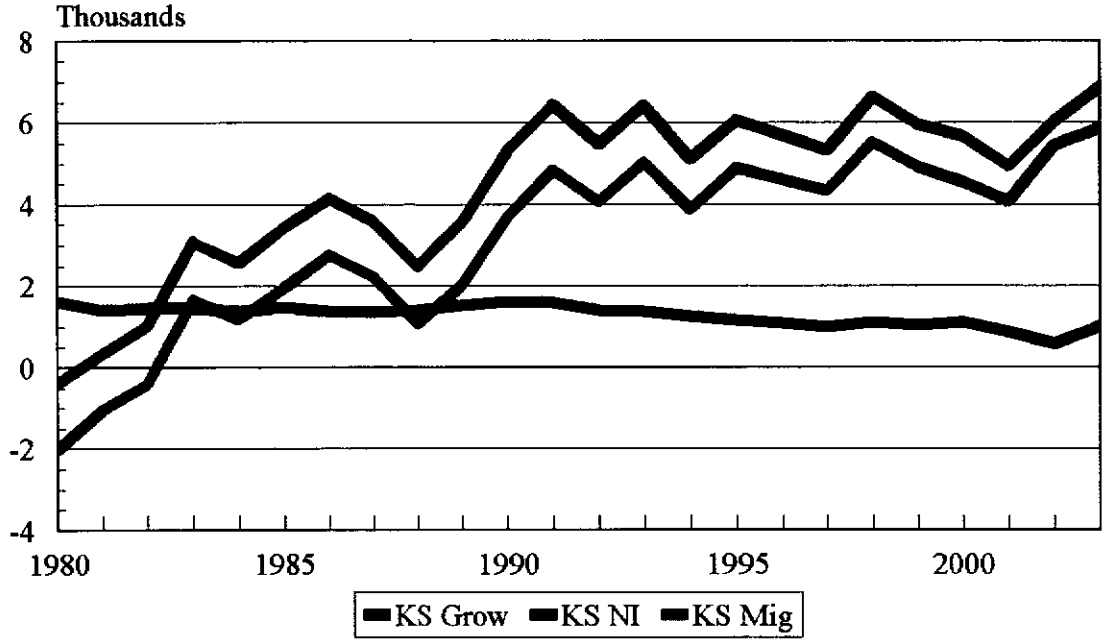
universities may have an impact on the Newark area in the coming decade. The trend of retirees to relocate to the Sunbelt seems to have run its course.

Kent and Sussex counties combined births for the last 23 years are shown in Figure 2.3, above. The fewest infants were born 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 2000. 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 2000 before stabilizing during the next eight years. Births in the Milford School District hit a maximum in 2002 with 297 live births. District births also reached a low point in 1993 (232). Births in the District have been in the vicinity of 290 for the last four years. The District has accounted for between 6.3% and 7.6% of Kent/Sussex Counties births over the last 12 years. The current level is in the upper part of that range, 7.3%. In general, the share of Kent/Sussex counties births attributable to Milford School District mothers has been increased steadily over the period 1992-2003, but has recently stabilized.

The two sources of Kent/Sussex counties growth from 1980 through 2003 are shown in Figure 2.4, below. The red line represents natural increase (births – deaths). That source has tended toward 1,500 persons per year throughout the two decades but recently has fallen below that level. Since 1991 decreasing births and increasing deaths have reduced the annual additions from natural increase.

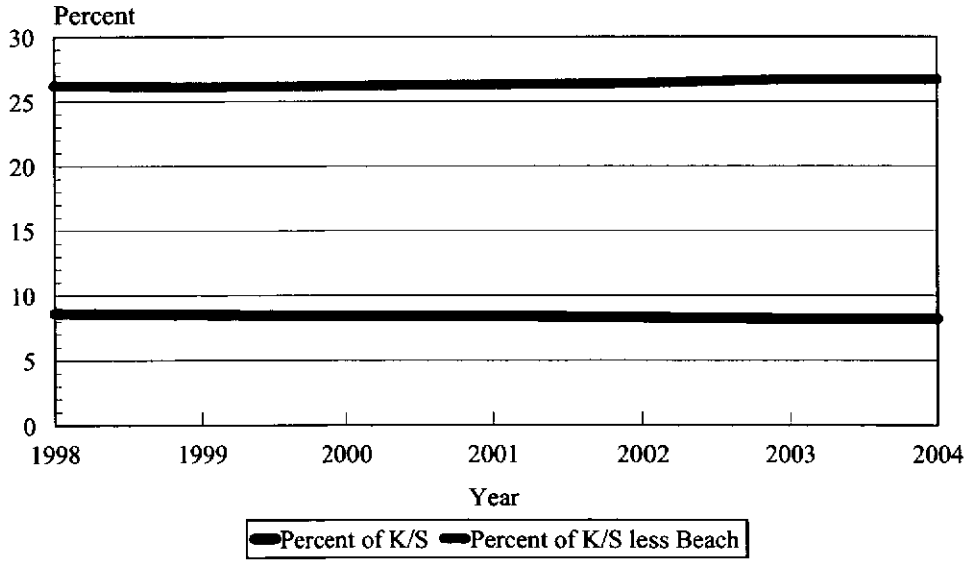
Net migration (light green) has been volatile in Kent/Sussex counties. It has been negative, i.e. net out migration, during the 1980-1983 period. It has exceeded natural increase as a source of growth since 1988. In general, after reversing the negative trend in the early 1980's, net migration has increased and adds an average 5,000 persons to the population annually. Recently, increases in Kent County over the last two years have driven net migration to over 6,000 persons per year. This trend makes growth in the two counties increasingly dependent on the most volatile component of population growth.

Figure 2.4
Kent/Sussex Counties Sources of Population Growth
1980-2003



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

Figure 2.5
Percent of Total Improved Residential Properties
1998-2004

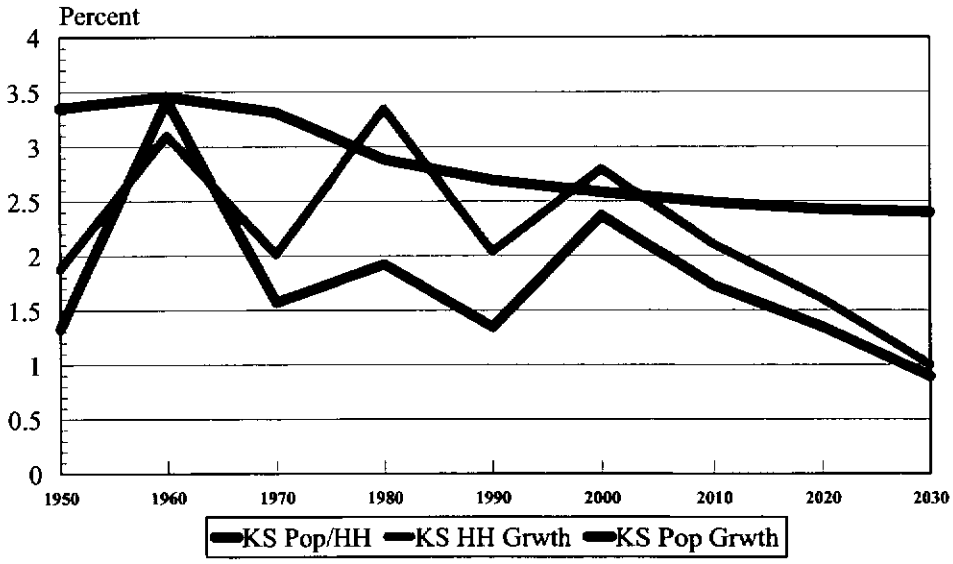


Source: Center for Applied Demography & Survey Research, University of Delaware

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 slower 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

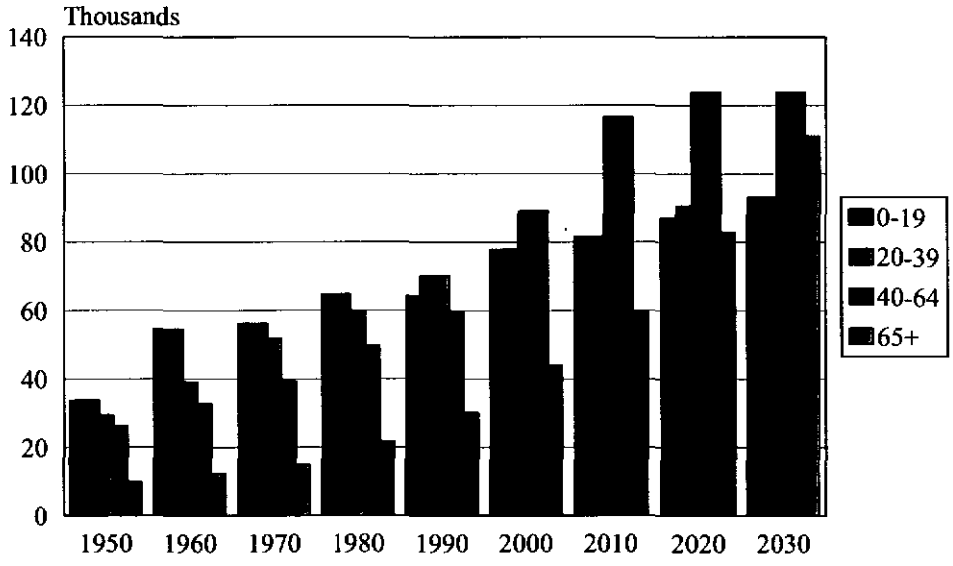


Source: Center for Applied Demography & Survey Research, University of Delaware

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

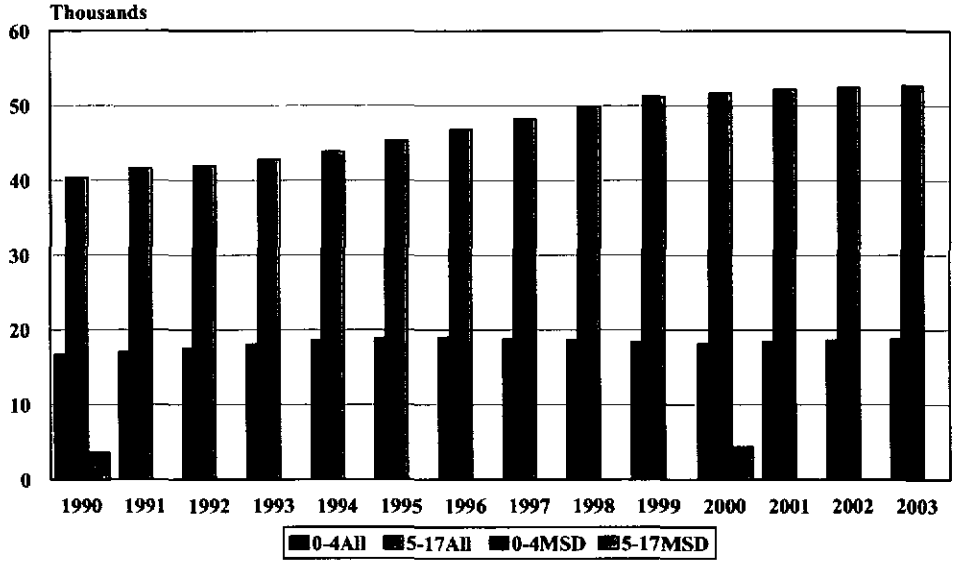


Source: Center for Applied Demography & Survey Research, University of Delaware

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
1990-2003



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

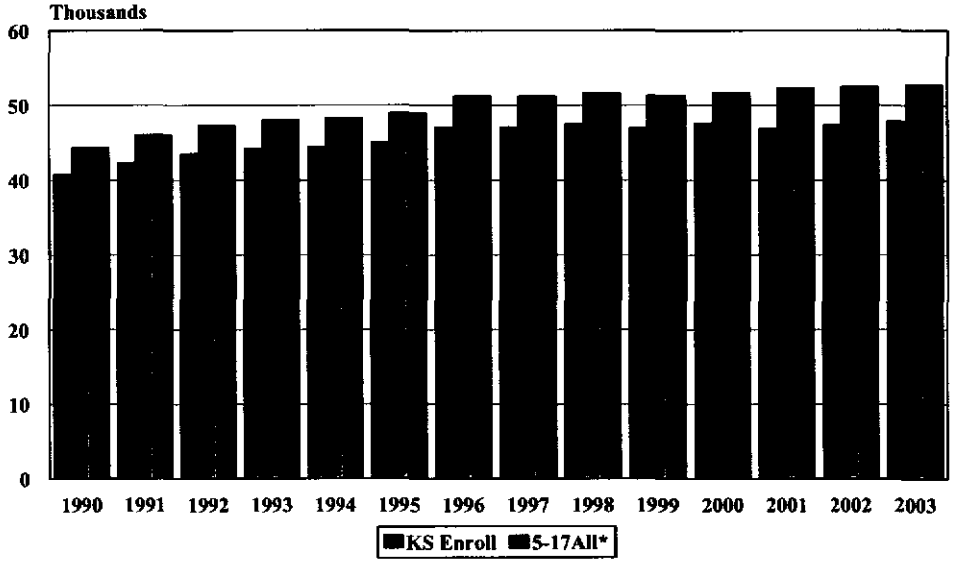
Finally, in Figure 2.8 above, the number of people in the two youngest age groups is shown. The 0-4 age group represents those not yet in school while the 5-17 age group represents the bulk of those already in school. It is clear that the size of the 0-4 age group reached a peak around 1996 and is now 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
1990-2003

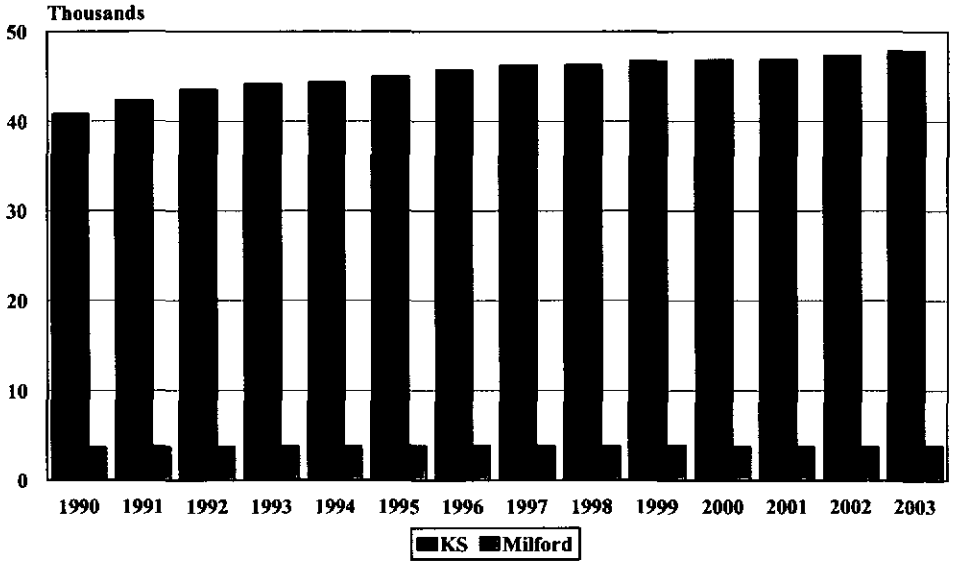


Source: Center for Applied Demography & Survey Research, University of Delaware

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 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
1990-2003



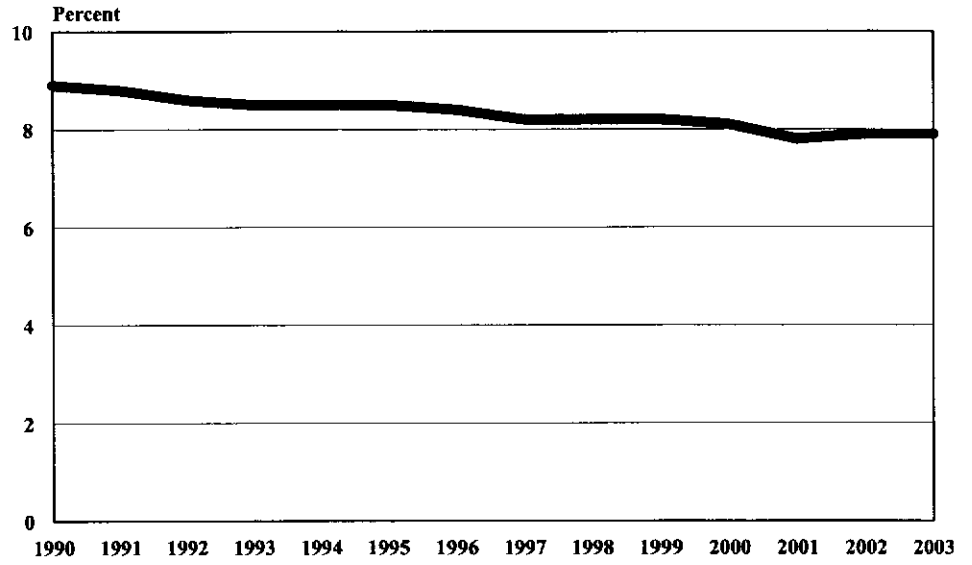
Source: Center for Applied Demography & Survey Research, University of Delaware

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 8.9% 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 7.9% 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
1990-2003



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

Every three 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 over the last decade. 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 +/- 4% or 180 students on either side of the total enrollment is expected at 2015.

The more difficult task is the grade distribution. It is not simple to map an individual's grade based on his/her age for a variety of 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 precise 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 eight different variations, which employed the same control totals derived earlier. The current grade distribution was employed as a starting point. Births through 2014 were then derived for single years using total projected births from the Delaware Population Consortium and the Milford likely share using 1988-2002. 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 1992-2003 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 years 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
1993-2003

GRADE	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
PK	30	31	28	33	28	20	19	30	23	22	25
K	307	298	301	300	315	328	312	299	299	312	302
1	318	294	302	303	316	319	315	295	293	296	335
2	319	304	309	306	282	296	299	315	282	300	271
3	339	336	310	309	291	286	295	282	309	281	303
4	320	330	335	315	309	291	287	310	286	312	279
5	319	328	327	333	311	307	282	279	304	299	305
6	327	319	341	340	326	327	321	275	268	311	322
7	320	335	316	345	348	344	355	348	297	289	309
8	282	307	329	290	335	331	343	313	307	292	325
9	257	257	292	317	296	293	327	330	310	315	313
10	235	233	210	246	256	246	255	273	271	261	263
11	190	223	223	207	209	208	233	209	241	244	236
12	199	168	202	190	189	195	206	219	189	208	211
Total	3762	3763	3825	3834	3811	3791	3849	3777	3679	3742	3799

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

Figure 3.5
Milford School District Enrollment Projections
2004-2014

GRADE	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
PK	25	25	25	25	25	25	25	25	25	25	25
K	302	282	291	296	301	305	311	316	319	323	326
1	311	291	300	305	310	314	320	325	329	333	336
2	324	301	282	290	295	300	304	310	315	319	322
3	276	316	296	305	310	315	319	326	331	335	339
4	296	269	309	289	298	303	308	312	318	323	327
5	288	305	277	318	298	307	312	317	321	327	333
6	309	292	309	281	323	302	311	316	322	326	332
7	355	341	322	341	310	356	333	344	349	355	360
8	305	351	337	318	337	306	352	329	339	345	350
9	329	309	355	341	321	341	310	356	333	343	349
10	262	275	258	297	285	269	285	259	298	279	287
11	233	232	244	228	263	252	238	252	230	263	246
12	208	205	204	215	201	232	222	210	222	202	232
Total	3822	3794	3809	3850	3878	3927	3950	3998	4050	4097	4164

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/Sussex counties forecast in July. Second, as a new grade distribution is obtained for the Milford School District on September 30, 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/Sussex counties' combined enrollment, the share of residential properties, the share of births, and the share of total population.