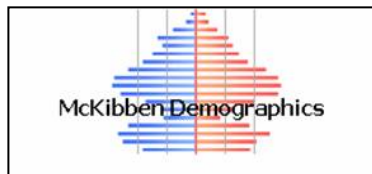


Menands School District, NY Demographic Study

March 2015



Cropper GIS

Executive Summary – Menands Union Free School District Population and Enrollment Forecasts - March 2015

1. The Menands School District's fertility rates over the life of the forecasts are below replacement levels. (1.72 versus replacement level of 2.1)
2. Most in-migration to the district continues to occur in the 0-to-4 and 20-to-29 age groups.
3. The indigenous 18-to-24 year old population continues to leave the district, going to college or moving to urbanized areas. This population group accounts for the largest segment of the district's out migration flow.
4. The primary factor causing the district's enrollment to stabilize after 2019 is the fairly constant level of in-migration of young households/families, which will be replacing out migrating 70+ households.
5. Changes in year-to-year enrollment (at least for the next five years) will primarily be due to smaller cohorts entering and moving through the system in conjunction with larger cohorts leaving the system.
6. Roughly half of the increase in the Asian student population the last 5 years has been due to larger pre-school aged cohort aging into the school.
7. The median age of the district population will increase from 37.9 in 2010 to 39.7 in 2025.
8. As the district continues to have less new housing unit construction, (as compared to the 2001-2007 time period) the rate and magnitude of existing home sales and apartment occupancy rates will become the increasingly dominant factor affecting the amount of population and enrollment change.
9. Total enrollment is forecasted to decrease by 36 students, or -14.0%, between 2014-15 and 2019-20. Total enrollment will grow by 2 students, or 0.9%, from 2019-20 to 2024-25.

INTRODUCTION

By demographic principle, distinctions are made between projections and forecasts. A projection extrapolates the past (and present) into the future with little or no attempt to take into account any factors that may impact the extrapolation (e.g., changes in fertility rates, housing patterns or migration patterns) while a forecast results when a projection is modified by reasoning to take into account the aforementioned factors.

To maximize the use of this study as a planning tool, the ultimate goal is not simply to project the past into the future, but rather to assess various factors' impact on the future. The future population and enrollment change of each school district is influenced by a variety of factors. Not all factors will influence the entire school district at the same level. Some may affect different areas at dissimilar magnitudes and rates causing changes at varying points of time within the same district. The forecaster's judgment, based on a thorough and intimate study of the district, has been used to modify the demographic trends and factors to more accurately predict likely changes. Therefore, strictly speaking, this study is a forecast, not a projection; and the amount of modification of the demographic trends varies between different areas of the district as well as within the timeframe of the forecast.

To calculate population forecasts of any type, particularly for smaller populations such as a school district, realistic suppositions must be made as to what the future will bring in terms of age specific fertility rates and residents' demographic behavior at certain points of the life course. The demographic history of the school district and its interplay with the social and economic history of the area is the starting point and basis of most of these suppositions, particularly on key factors such as the age structure of the area. The unique nature of each district's demographic composition and rate of change over time must be assessed and understood to be factors throughout the life of the forecast series. Moreover, no two populations, particularly at the school district level, have exactly the same characteristics.

The manifest purpose of these forecasts is to ascertain the demographic factors that will ultimately influence the enrollment levels in the district's schools. There are of course, other non-demographic factors that affect enrollment levels over time. These factors include, but are not limited to transfer policies within the district;

student transfers to and from neighboring districts; placement of "special programs" within school facilities that may serve students from outside the district; state or federal mandates that dictate the movement of students from one facility to another (No Child Left Behind is an excellent example of this factor); the development of charter schools in the district; the prevalence of home schooling in the area; and the dynamics of local private schools.

Unless the district specifically requests the calculation of forecasts that reflect the effects of changes in these non-demographic factors, their influences are held constant for the life of the forecasts. Again, the main function of these forecasts is to determine what impact demographic changes will have on future enrollment. It is quite possible to calculate special "scenario" forecasts to measure the impact of school policy modifications as well as planned economic and financial changes. However, in this case the results of these population and enrollment forecast are meant to represent the most likely scenario for changes over the next 10 years in the district.

The first part of the report will examine the assumptions made in calculating the population forecasts for the Menands School District. Since the results of the population forecasts drive the subsequent enrollment forecasts, the assumptions listed in this section are paramount to understanding the area's demographic dynamics. The remainder of the report is an explanation and analysis of the district's population forecasts and how they will shape the district's grade level enrollment forecasts.

DATA

The data used for the forecasts come from a variety of sources. Enrollments by grade were provided by the Menands School District for the school years 2005-2006 to 2014-15. Birth and death data were obtained from the New York Department of Health for the years 2000 through 2012. The net migration values were calculated using Internal Revenue Service migration reports for the years 2000 through 2011. The data used for the calculation of migration models came from the United States Bureau of the Census, 2005 to 2010, and the models were designed using demographic and economic factors. The base age-sex population counts used is from the results of the 2010 Census.

Recently the Census Bureau began releasing annual estimates of demographic variables at the block group and tract level from the American Community

Survey (ACS). There has been wide scale reporting of these results in the national, state and local media. However, due to the methodological problems the Census Bureau is experiencing with their estimates derived from ACS data, particularly in areas with a population of less than 60,000, the results of the ACS are not used in these forecasts. For example, given the sampling framework used by the Census Bureau, each year only 60 of the over 1,950 current households in the district would have been included. For comparison 250 households in the district were included in the sample for the long form questionnaire in the 2000 Census. As a result of this small sample size, the ACS survey result from the last 5 years must be aggregated to produce the tract and block group estimates.

To develop the population forecast models, past migration patterns, current age specific fertility patterns, the magnitude and dynamics of the gross migration, the age specific mortality trends, the distribution of the population by age and sex, the rate and type of existing housing unit sales, and future housing unit construction are considered to be primary variables. In addition, the change in household size relative to the age structure of the forecast area was addressed. While there was a slight drop in the average household size in the Menands School District, as well as most other areas of the state during the previous 20 years, the rate of this decline has been forecasted to continue over the next ten years.

ASSUMPTIONS

For these forecasts, the mortality probabilities are held constant at the levels calculated for the year 2010. While the number of deaths in an area are impacted by and will change given the proportion of the local population over age 65, in the absence of an extraordinary event such as a natural disaster or a breakthrough in the treatment of heart disease, death rates rarely move rapidly in any direction, particularly at the school district. Thus, significant changes are not foreseen in district's mortality rates between now and the year 2024. Any increases forecasted in the number of deaths will be due primarily to the general aging of the district's population and specifically to the increase in the number of residents aged 65 and older.

Similarly, fertility rates are assumed to stay fairly constant for the life of the forecasts. Like mortality rates, age specific fertility rates rarely change quickly or dramatically, particularly in small areas. Even with the recently reported rise in the fertility rates of the United

States, overall fertility rates have stayed within a 10% range for most of the last 40 years. In fact, the vast majority of year to year change in an area's number of births is due to changes in the number of women in child bearing ages (particularly ages 20-29) rather than any fluctuation in an area's fertility rate.

The total fertility rate (TFR), the average number of births a woman will have in her lifetime, is estimated to be 1.72 for the total district for the ten years of the population forecasts. A TFR of 2.1 births per woman is considered to be the theoretical "replacement level" of fertility necessary for a population to remain constant in the absence of in-migration. Therefore, over the course of the forecast period, fertility will not be sufficient, in the absence of migration, to maintain the current level of population within the Menands School District.

A close examination of data for the Menands School District has shown the age specific pattern of net migration will be nearly constant throughout the life of the forecasts. While the number of in and out migrants has changed in past years for the Menands School District (and will change again over the next 10 years), the basic age pattern of the migrants has stayed nearly the same over the last 30 years. Based on the analysis of data it is safe to assume this age specific migration trend will remain unchanged into the future. This pattern of migration shows most of the local out-migration occurring in the 18-to-20 year old age group as young adults leave the area to go to college or move to other urbanized areas. The second group of out-migrants is those householders aged 70 and older who are downsizing their residences. Most of the local in-migration occurs in the 0-to-4 and 20-29 age groups (bulk of which is from areas within 100 miles of the Menands School District) primarily consisting of younger adults and their children.

As the Albany County area is not currently contemplating any major expansions or contractions, the forecasts also assume the current economic, political, transportation and public works infrastructure (with a few notable exceptions), social, and environmental factors of the Menands School District will remain the same through the year 2024.

Below is a list of assumptions and issues that are specific to the Menands School District. These issues have been used to modify the population forecast models to more accurately predict the impact of these factors on each area's population change. Specifically, the forecasts for the Menands School District assume that throughout the study period:

- a. There will be no short term economic recovery in the next 18 months and the national, state or regional economy does not go into deep recession at anytime during the 10 years of the forecasts; (Deep recession is defined as four consecutive quarters where the GDP contracts greater than 1% per quarter)
- b. Interest rates have reached a historic low and will not fluctuate more than one percentage point in the short term; the interest rate for a 30 year fixed home mortgage stays below 5.5%;
- c. The rate of mortgage approval stays at 1999-2003 levels and lenders do not return to "sub-prime" mortgage practices;
- d. There are no additional restrictions placed on home mortgage lenders or additional bankruptcies of major credit providers;
- e. The rate of housing foreclosures does not exceed 125% of the 2005-2007 average of Albany County for any year in the forecasts;
- f. All currently planned, platted, and approved housing developments are built out and completed by 2020. All housing units constructed are occupied by 2023;
- g. The unemployment rates for Albany County will remain below 6.0% for the 10 years of the forecasts;
- h. The rate of students transferring into and out of the Menands School District will remain at the 2010-11 to 2014-15 average;
- i. The inflation rate for gasoline will stay below 5% per year for the 10 years of the forecasts;
- j. There will be no building moratorium within the district;
- k. Businesses within the district and the greater Albany metropolitan area will remain viable;
- l. The number of existing home sales in the district that are a result of "distress sales" (homes worth less than the current mortgage value) will not exceed 20% of total homes sales in the district for any given year;
- m. Housing turnover rates (sale of existing homes in the district) will remain at their current levels. The majority of existing home sales are made by home owners over the age of 55;
- n. Private school and home school attendance rates will remain constant;
- o. The recent decline in new home construction has ended and building rates have stabilized;
- p. The rate of foreclosures for commercial property remains at the 2004-2008 average for Albany

County;

If a major employer in the district or in the Greater Albany metropolitan area closes, reduces or expands its operations, the population forecasts would need to be adjusted to reflect the changes brought about by the change in economic and employment conditions. The same holds true for any type of natural disaster, major change in the local infrastructure (e.g., highway construction, water and sewer expansion, changes in zoning regulations etc.), a further economic downturn, any additional weakness in the housing market or any instance or situation that causes rapid and dramatic population changes that could not be foreseen at the time the forecasts were calculated.

The high proportion of high school graduates from the Menands School District that attend college or move to urban areas outside of the district for employment is a significant demographic factor. Their departure is a major reason for the extremely high out-migration in the 18-to-24 age group and was taken into account when calculating these forecasts. The out-migration of graduating high school seniors is expected to continue over the period of the forecasts and the rate of out-migration has been forecasted to remain the same over the life of the forecast series.

Finally, all demographic trends (i.e., births, deaths, and migration) are assumed to be linear in nature and annualized over the forecast period. For example, if 1,000 births are forecasted for a 5-year period, an equal number, or proportion of the births are assumed to occur every year, 200 per year. Actual year-to-year variations do and will occur, but overall year to year trends are expected to be constant.

METHODOLOGY

The population forecasts presented in this report are the result of using the Cohort-Component Method of population forecasting (Siegel, and Swanson, 2004: 561-601) (Smith et. al. 2004). As stated in the **INTRODUCTION**, the difference between a projection and a forecast is in the use of explicit judgment based upon the unique features of the area under study. Strictly speaking, a cohort projection refers to the future population that would result if a mathematical extrapolation of historical trends. Conversely, a cohort-component forecast refers to the future population that is expected because of a studied and purposeful selection of the components of change (i.e., births, deaths, and migration) and forecast models are developed to measure the impact of these changes in

each specific geographic area.

Five sets of data are required to generate population and enrollment forecasts. These five data sets are:

1. a base-year population (here, the 2010 Census population for Menands School District);
2. a set of age-specific fertility rates for the district to be used over the forecast period;
3. a set of age-specific survival (mortality) rates for the district;
4. a set of age-specific migration rates for the district; and
5. Historical enrollment figures by grade.

The most significant and difficult aspect of producing enrollment forecasts is the generation of the population forecasts in which the school age population (and enrollment) is embedded. In turn, the most challenging aspect of generating the population forecasts is found in deriving the rates of change in fertility, mortality, and migration. From the standpoint of demographic analysis, the Menands School District is classified as a "small area" population (as compared to the population of the state of Albany County or to that of the New York). Small area population forecasts are more complicated to calculate because local variations in fertility, mortality, and migration may be more irregular than those at the regional, state or national scale. Especially challenging is the forecast of the migration rates for local areas, because changes in the area's socioeconomic characteristics can quickly change from past and current patterns (Peters and Larkin, 2002.)

The population forecasts for Menands School District were calculated using a cohort-component method with the populations divided into male and female groups by five-year age cohorts that range from 0-to-4 years of age to 85 years of age and older (85+). Age- and sex-specific fertility, mortality, and migration models were constructed to specifically reflect the unique demographic characteristics of the Menands district.

The enrollment forecasts were calculated using a modified average survivorship method. Average survivor rates (i.e., the proportion of students who progress from one grade level to the next given the average amount of net migration for that grade level) over the previous five years of year-to-year enrollment data were calculated for grades two through eighth. This procedure is used to identify specific grades where there are large numbers of students changing facilities

for non-demographic factors, such as private school transfers or enrollment in special programs.

The survivorship rates were modified or adjusted to reflect the average rate of forecasted in and out migration of the 0-4, 5-to-9, 10-to-14 and 15-to-17 year old cohorts in the Menands School District for the period 2005 to 2010. These survivorship rates then were adjusted to reflect the forecasted changes in age-specific migration the district should experience over the next five years. These modified survivorship rates were used to project the enrollment of grades 2 through 8 for the period 2010 to 2015. The survivorship rates were adjusted again for the period 2015 to 2020 to reflect the predicted changes in the amount of age-specific migration in the districts for the period.

The forecasted enrollments for kindergarten and first grade are derived from the 5-to-9 year old population of the age-sex population forecast at the district level. This procedure allows the changes in the incoming grade sizes to be factors of forecasted population change and not an extrapolation of previous class sizes. Given the potentially large amount of variation in Kindergarten enrollment due to parental choice, changes in the state's minimum age requirement, and differing district policies on allowing children to start Kindergarten early, first grade enrollment is deemed to be a more accurate and reliable starting point for the forecasts. (McKibben, 1996) The level of the accuracy for both the population and enrollment forecasts at the school district level is estimated to be +2.0% for the life of the forecasts.

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Appendix A: Enrollment Forecast

**Menands Union Free School District Enrollment Forecasts
 March 2015**

	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25
K	37	28	36	27	29	26	25	24	23	23	23	23	22	22	24
1	29	40	32	34	24	29	27	26	25	24	24	23	23	22	22
2	22	27	39	26	29	22	26	24	23	23	23	23	22	22	21
3	24	24	25	35	26	28	21	25	23	22	23	23	23	22	22
4	32	25	25	24	38	27	29	22	26	24	24	25	25	25	24
5	31	33	27	23	26	39	28	30	22	27	25	25	27	27	27
6	25	25	33	29	21	24	37	26	28	21	26	25	25	26	26
7	25	25	28	30	32	21	24	38	27	29	22	28	27	27	28
8	19	30	27	25	33	34	22	25	40	29	32	24	31	30	30
Total: K-8	244	257	272	253	258	250	239	240	237	222	222	219	225	223	224
Change		13	15	-19	5	-8	-11	1	-3	-15	0	-3	6	-2	1
% Change		5.3%	5.8%	-7.0%	2.0%	-3.1%	-4.4%	0.4%	-1.3%	-6.3%	0.0%	-1.4%	2.7%	-0.9%	0.4%
Asian	47	57	75	75	85	80	79	82	83	80	82	83	88	89	92
Black	65	70	73	69	66	65	62	62	62	58	56	55	56	56	56
Hispanic	21	21	19	15	17	17	17	17	16	15	15	15	16	15	15
White	111	109	104	93	89	88	81	79	76	69	69	66	65	62	60

Forecasts Developed March 2015
 Green cells (2012-15 and earlier) are historical data
 Blue cells (2015-16 and later) are forecasted years

Appendix B: Population Forecasts

Menands Union Free School District 2015 Population Forecasts

March 2015

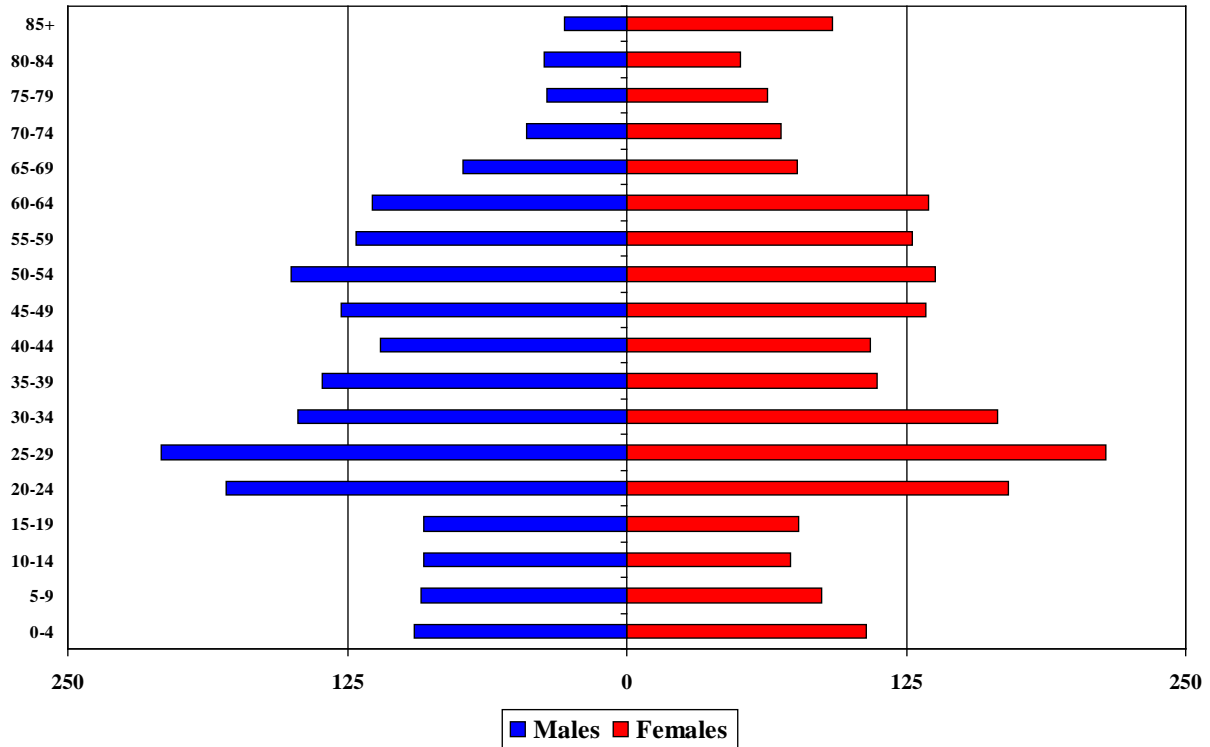
Total	2010	2015	2020	2025
0-4	202	190	180	160
5-9	179	160	150	150
10-14	164	160	150	140
15-19	168	160	150	140
20-24	350	370	360	330
25-29	422	430	450	420
30-34	313	340	350	390
35-39	248	240	270	290
40-44	219	230	220	250
45-49	262	220	220	220
50-54	288	250	220	220
55-59	249	270	250	200
60-64	249	230	260	230
65-69	149	230	220	230
70-74	114	140	210	200
75-79	99	110	130	210
80-84	88	90	100	110
85+	120	110	110	110
Total	3,883	3,930	4,000	4,000
Median Age	37.9	38.2	38.9	39.7

	2010-2015	2015-2020	2020-2025
Births	210	200	190
Deaths	180	190	200
Natural Increase	30	10	-10
Net Migration	40	40	30
Change	70	50	20

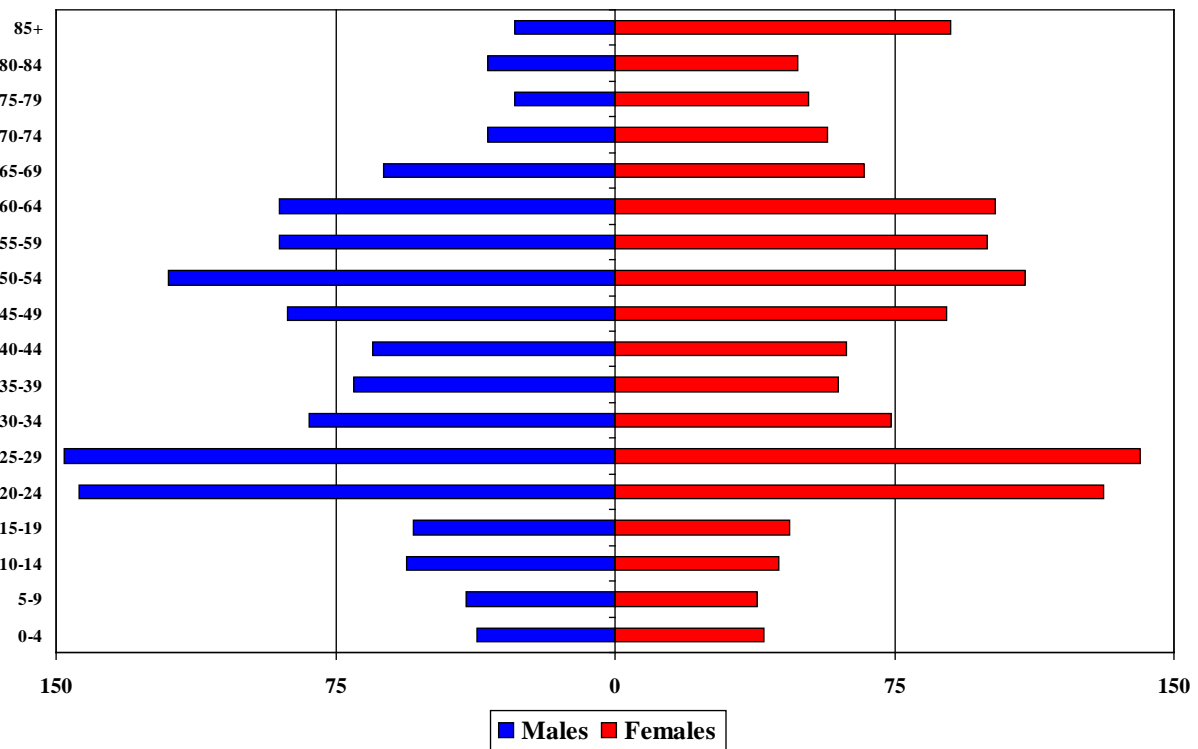
Differences between period Totals may not equal Change due to rounding.

Appendix C: Population Pyramids

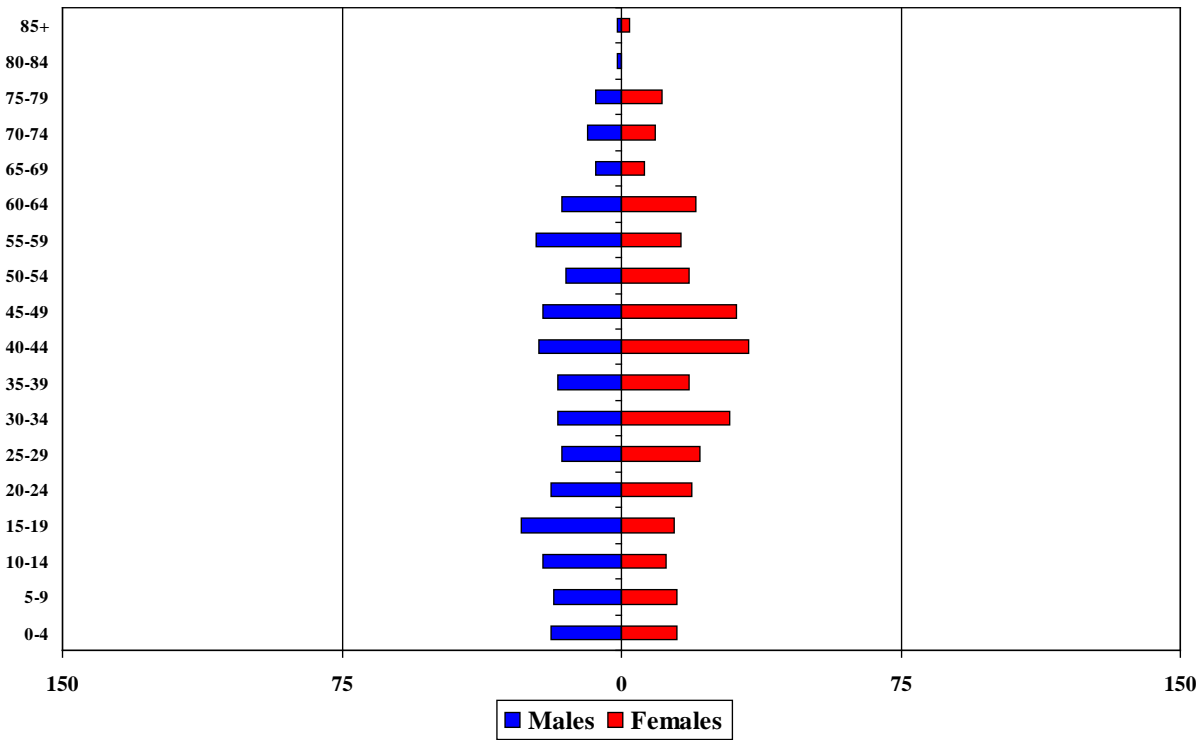
Menands, New York Total Population - 2010 Census



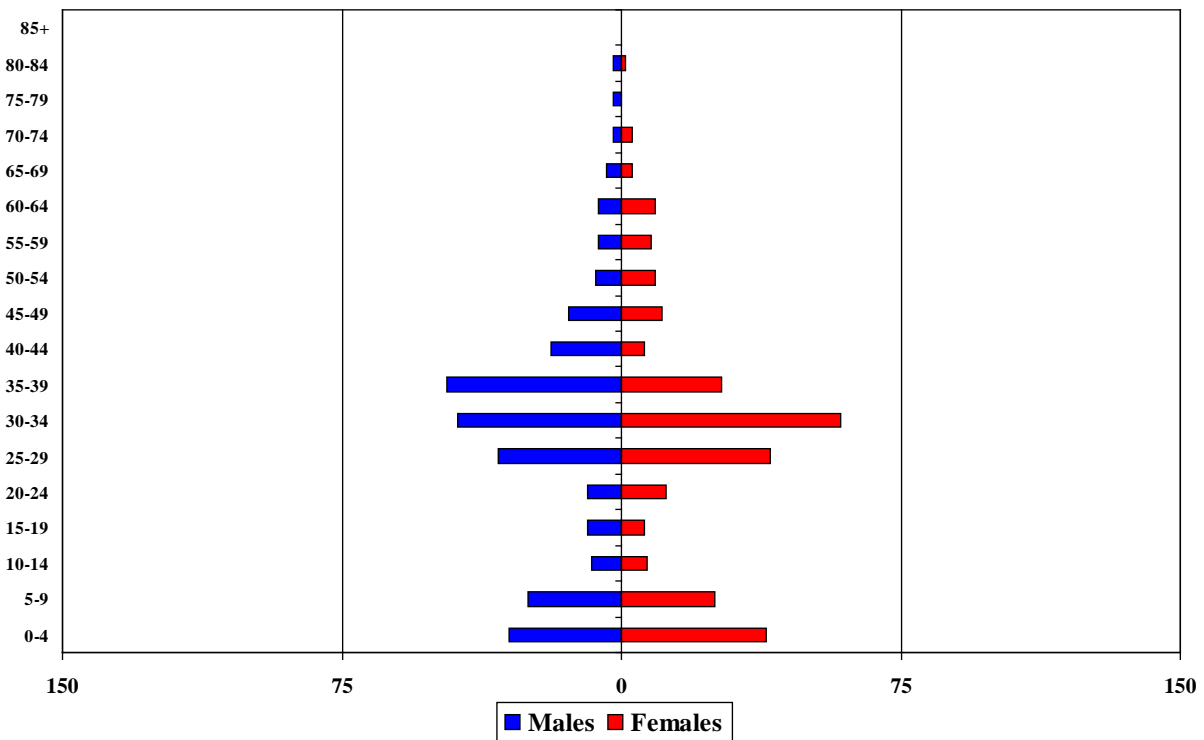
Menands, New York White Population Alone - 2010 Census



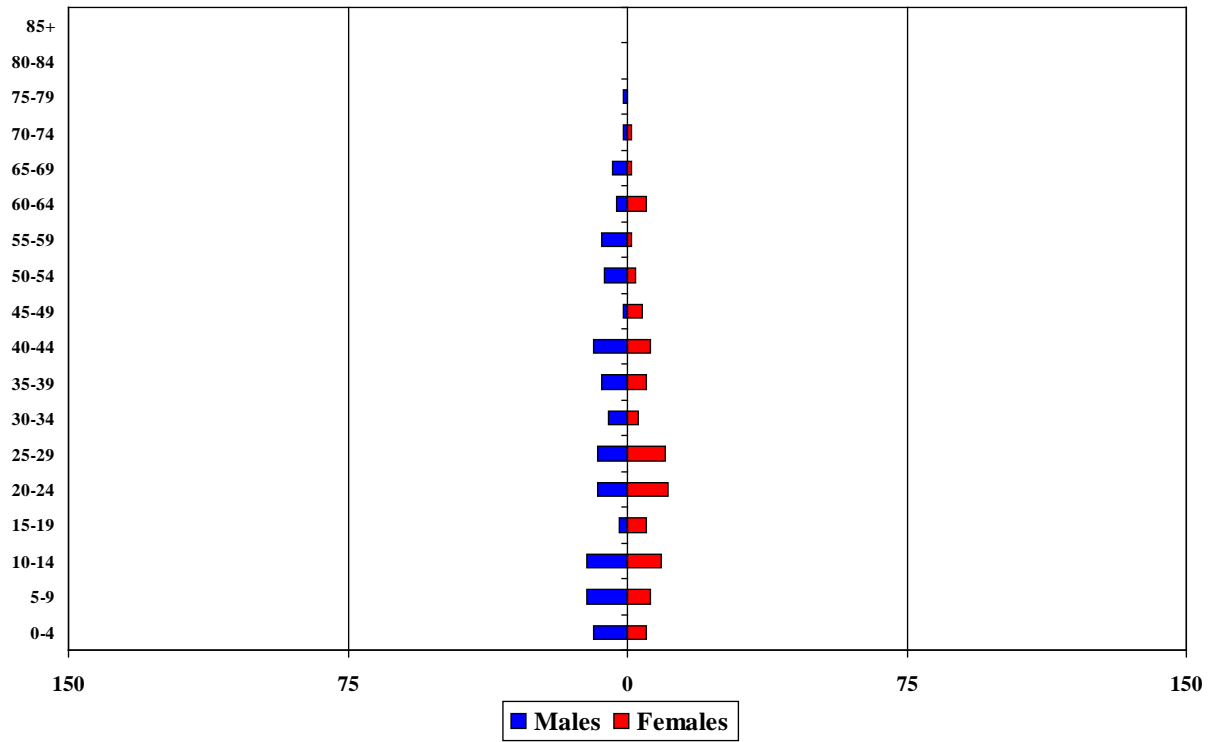
Menands, New York Black Population Alone - 2010 Census



Menands, New York Asian Population Alone - 2010 Census



Menands, New York Hispanic Population Alone - 2010 Census



Appendix D: Census 2010 Data Tables

Table 1: Forecasted Population Change, 2010 to 2020

	<u>2010</u>	<u>2015</u>	<u>2020</u>	<u>10-Year Change</u>
U.S. (in millions)	309	324	337	9.1%
New York	19,378,102	19,981,000	20,362,000	5.1%
Albany County	304,204	310,100	317,200	4.3%
MUFSD	3,883	3,930	4,000	3.0%

Table 2: Forecasted District Population Change, 2010 to 2020

	<u>2010</u>	<u>2015</u>	<u>2010-2015 Change</u>	<u>2020</u>	<u>2015-2020 Change</u>	<u>2010-2020 Change</u>
MUFSD	3,883	3,930	1.2%	4,000	1.8%	3.0%

Table 3: Household Characteristics, 2010 Census

	<u>HH w/ Pop Under 18</u>	<u>% HH w/ Pop Under 18</u>	<u>Total Households</u>	<u>Household Population</u>	<u>Persons Per Household</u>
MUFSD	412	21.1%	1951	3527	1.95

Table 4: Householder Characteristics, 2010 Census

	<u>Percentage of Householders aged 35-54</u>	<u>Percentage of Householders aged 65+</u>	<u>Percentage of Householders Who Own Homes</u>
MUFSD	34.6%	33.6%	75.7%

Table 5: Percentage of Households that are Single Person Households and Single Person Households that are over age 65, 2010 Census

	<u>Percentage of Single Person Households</u>	<u>Percentage of Single Person Households and are 65+</u>
MUFSD	45.6%	12.4%

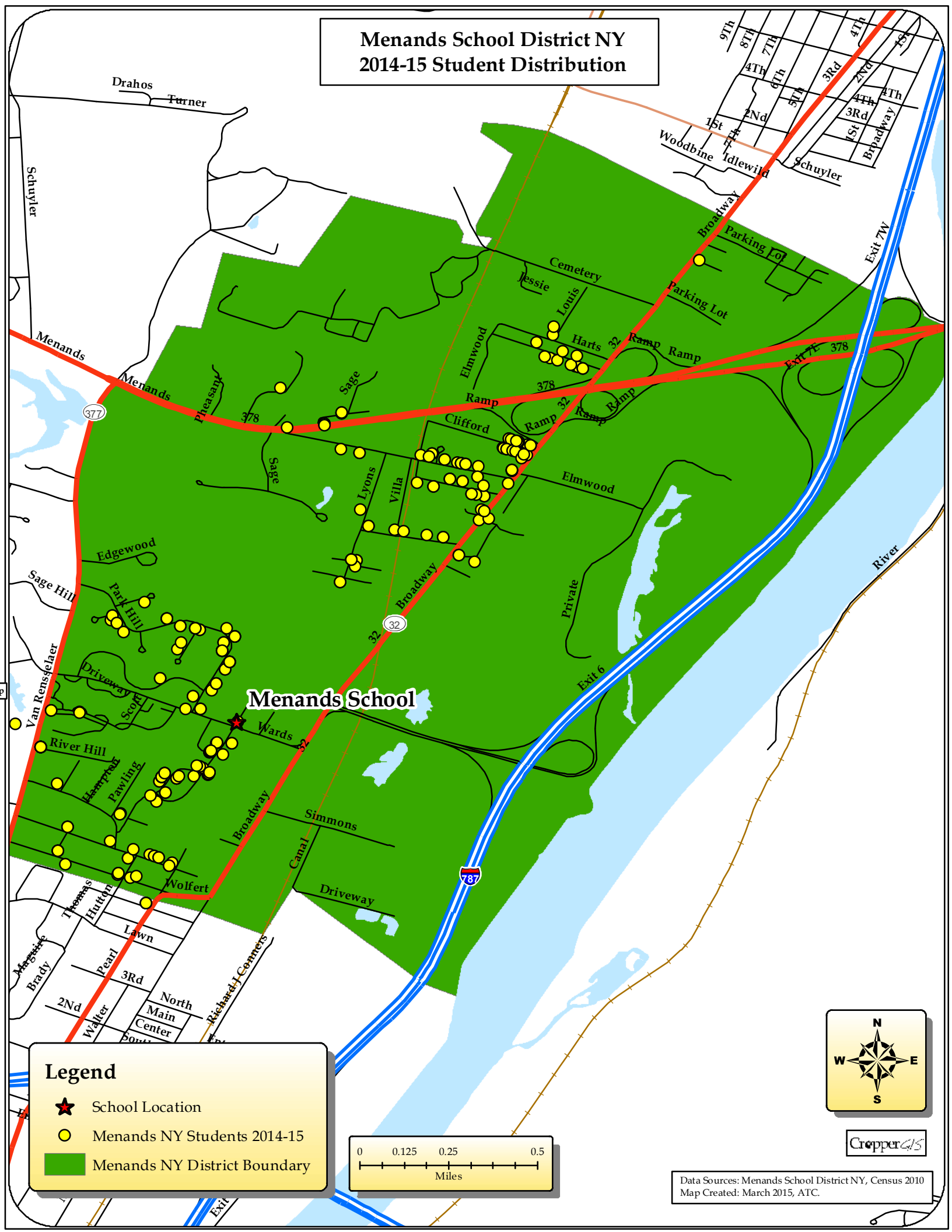
Table 6: Total K-8 Enrollment, 2014, 2019, 2024

	<u>2014</u>	<u>2019</u>	<u>2014-2019 Change</u>	<u>2024</u>	<u>2019-2024 Change</u>	<u>2014-2024 Change</u>
MUFSD	258	222	-14.0%	224	0.9%	-13.2%

**Table 7: Age Under One to Age Ten Population Counts, by Year of Age, by Elementary Attendance Area:
2010 Census**

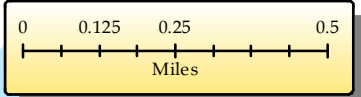
	Under 1 year	1 year	2 years	3 years	4 years	5 years	6 years	7 years	8 years	9 years	10 years
MUFSD	33	49	47	29	44	43	38	26	41	31	32

Menands School District NY 2014-15 Student Distribution



Legend

- ★ School Location
- Menands NY Students 2014-15
- Menands NY District Boundary



CrepperGIS

Data Sources: Menands School District NY, Census 2010
Map Created: March 2015, ATC.