Proposal for Demographic Services for Thomaston Public Schools, Connecticut

July 2025

CropperGIS

Demographic Services

From:
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This proposal has been developed as a response to the Thomaston Public School's (district) request for demographics and consultation services. This project will be completed by **Cropper GIS Consulting, LLC (Cropper).** The project will be directed by Matthew Cropper.

We are confident that you will find our team to be a good fit for this project, as we have a wealth of relevant experience and have performed these services to many other satisfied clients. We thank you for the opportunity to submit this proposal for the district and look forward to the opportunity of working together.

Sincerely,

Matthew Cropper

Firm Profile – Cropper GIS Consulting, LLC

Since the company was formed in 2005, **Cropper GIS Consulting (Cropper)** has worked with clients on various demographic, redistricting, and GIS Implementation projects. The majority of clients served by **Cropper** are school districts, and all projects have met/exceeded our client's expectations. Our firm's expertise is in demographic studies, K-12 school redistricting, long-range facility planning, and GIS Implementation/Training.

Some of our more recent clients include:

- Norwich Public Schools, Connecticut
- Trumbull Public Schools, Connecticut
- Windsor Public Schools, Connecticut
- Regional School District 17, Connecticut
- Ellington Public Schools, Connecticut
- Warwick Public Schools, Rhode Island
- Barrington Public Schools, Rhode Island
- Providence Public Schools, Rhode Island
- Cranston Schools, Rhode Island
- Lakota Local Schools, Ohio
- Hamilton City Schools, Ohio
- Middletown City Schools, Ohio
- Madeira Local Schools, Ohio
- Lakewood City Schools, Ohio
- Akron Public Schools, Ohio
- South-Western City Schools, Ohio
- Westerville City Schools, Ohio
- Henrico County Public Schools, Virginia
- Richmond City Schools, Virginia
- Frederick County Public Schools, Virginia
- Alexandria City Public Schools, Virginia
- Arlington Public Schools, Virginia
- Baltimore County Public Schools, Maryland
- Frederick County Public Schools, Maryland
- Union County Public Schools, North Carolina
- Cabarrus County Public Schools, North Carolina
- Brunswick County Public Schools, North Carolina
- Charleston County Public Schools, South Carolina
- Aiken County Schools, South Carolina
- Richland One Schools, South Carolina
- Lexington 5 Schools, South Carolina
- Rock Hill Schools, South Carolina
- Anderson 5 Schools, South Carolina
- Spartanburg 2 Schools, South Carolina
- Spartanburg 5 Schools, South Carolina
- Council Rock School District, Pennsylvania
- Reading School District, Pennsylvania
- Ephrata Area Schools, Pennsylvania
- Carthage Central School District, Pennsylvania
- West Jefferson Hills Schools, Pennsylvania
- Albany Public Schools, New York
- Saratoga Springs Public Schools, New York
- Corning Painted Post School District, New York
- Schenectady City School District, New York
- North Colonie Schools, New York
- Buffalo Public Schools, New York
- Wellesley Public Schools, Massachusetts
- Nantucket Public Schools, Massachusetts
- U.S. Department of Justice, Civil Rights Division
- Billings Public Schools, Montana
- DeKalb District 428, Illinois
- Atlanta Public Schools, Georgia

Geographic Information Systems will be used extensively to analyze demographic data and **Cropper** are experts in the use of the software. **Cropper** are licensed consultants and resellers of ESRI GIS technology, which is utilized by local, state, and federal governments. Mr. Cropper has written multiple articles and presented at conferences across the country on GIS in educational planning. He is a pioneer in integrating new technology with age-old planning processes to refine and enhance accuracy of data when planning.

Introduction and Project Objectives

The District would like to consider a school-level demographic study, which will include 10-year population and enrollment forecasts for every school by grade.

There are 2 primary phases of the study. These phases are:
- Data Collection and Development.
- Data Analysis and Population/Enrollment forecasting

Scope of Services

Cropper has identified two (2) primary phases of the project, which are:

Phase1: Data Collection and Development
Cropper will collect data from local sources such as the county auditor/assessor's office to support the upcoming planning work. In addition to GIS data, **Cropper** will collect historical enrollment by school by grade, and current 2024-25 student enrollment databases from the District. Other parts of this phase include:
- o Perform field research of school district and surrounding region.
- o Collection of information from city, county, school district, census bureau.
- o Conversion of datasets into GIS format
- o Development of Census demographic profiles for the district.

*Phase 2: -Data Analysis and Population/Enrollment forecasting*
Work in this phase includes:
- o Creation of population and enrollment forecasts for the district and all schools in Summer 2025.
- o Development of report that identifies the forecast assumptions, depicts maps used to assist in the study, and interprets the population and enrollment forecast findings.

Forecasting Methodology

Below is the process that **Cropper** uses to develop a demographic study, which utilizes the best methods that are proven to have the best results.

To truly understand the complex enrollment patterns of any school district, an examination of the past, present and future demographic trends of the area is required. This does not mean just examining the school district in question, but also all of the surrounding area. In demographic terms, (as well as economic terms) no geographic area stands alone. Each area's demographic trends are interwoven with the trends in all of its neighboring areas. Furthermore, the historical trends of the number of children in each school grade have little or no effect on the future trends of a district's enrollment. The only way to accurately ascertain what the future enrollment patterns of a district be is to be able the projection the trends of the total population. Consequently, our forecast method is a three-step procedure that examines the demographic trends of both the district under study and all of its geographical areas under study.

Owner-Occupied Housing by Block Group
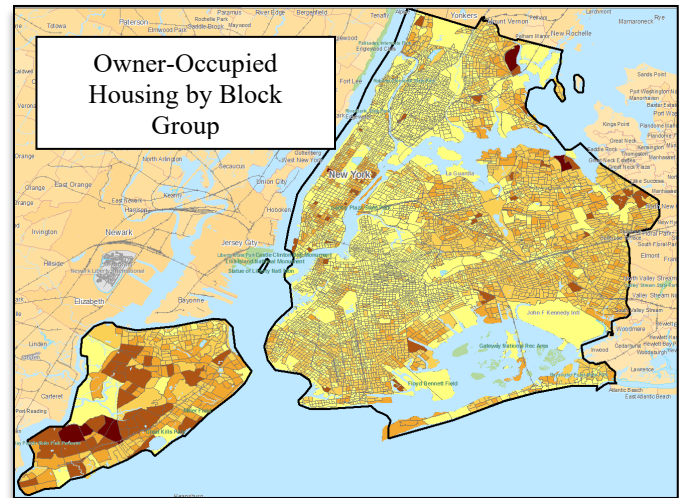
The first step is to overlay the district's geographical boundaries with Census Bureau's 2020 GIS data. This allows us to identify which census tracts and blocks make up each geographical area. Once this is established, the detailed 2020 Census information can be downloaded, creating a demographic and economic profile of each individual area.

This data, which can be attained at the block or block group level, forms the base information that will be used later in the construction of the population forecast models. The variables obtained from the Census Bureau include, but are not limited to, age, gender, race, ethnicity, median family and household income, household composition, home value, median rent, age of householder, number of owner and renter households and group quarters populations.

Median Age by Block Group
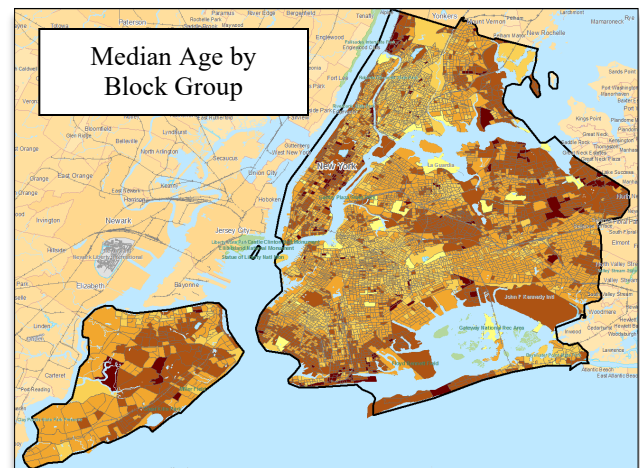
The second step is to calculate a total population forecast for all geographic areas under study. This forecast allows us to find how differences and changes in each area's fertility, mortality and migration rates will affect the composition of the area's future population.

Issues examined include but are not limited to the following:

1. The number of women in child bearing age in both the district and the surrounding area. Changes in the number of women 20-29 years old in an area have a far greater impact on the number of births than changes in the overall fertility rate.

2. Changes in the area's Mortality rates. Significant moves up or down in the mortality rate indicate that much of the local population change is due to factors relating to the elderly population and not to young families that would have school age children.

3. The magnitude and prevalence of out migration patterns by age. Typically, most school districts have a large amount of out migration in the 18-21 age groups as these students leave their parent's home and go to college. Other major out migration patterns that need to be identified is young college graduates moving to cities to start their careers (ages 22-26), young families go to the suburbs (25-35), people buy "move up" houses (33-50), and the "downsizing" movers (ages 50-85).

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4. Conversely, the magnitude and prevalence of the area's in migration patterns. For people who changes households each year, the majority of new residences are within a 30 mile radius of the old residence. Further the rate of existing home and new home sales in each area is used as a primary variable to establish both the magnitude and population composition of the in and out migration flow. This is especially key given that the current national average of existing homes to new homes sold is 8 to 1.
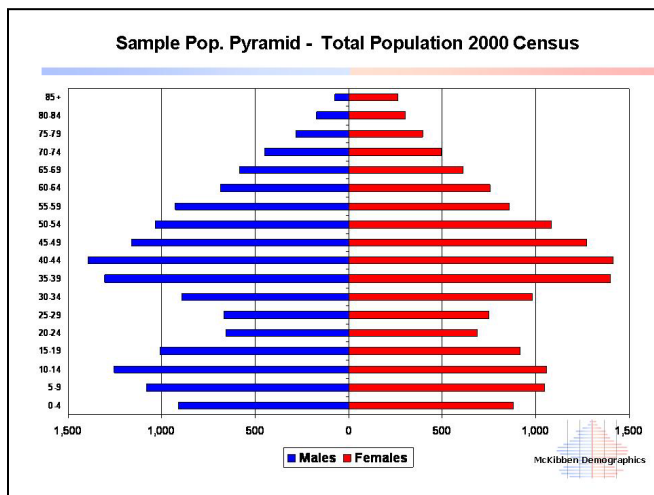
5. All of the geographic areas within the District have their own unique characteristics and demographic trends. To ensure that as many neighborhood social, economic and demographic factors are included in the projections modeling procedure, field research will be conducted throughout the entire district to ascertain the impact of housing changes, planned construction, infrastructure status and neighborhood dynamics.

State	Migration to Champaign County 2005 to 2006 From	Number of Households	Number of People	Persons Per Household
IL	Champaign Count Tot Mig-US	5,689	8,994	1.58
IL	Champaign Count Tot Mig-US	4,973	8,211	1.65
IL	Champaign Count Tot Mig-Sam	2,635	4,198	1.59
IL	Champaign Count Tot Mig-Dif	2,338	4,013	1.72
IL	Champaign Count Tot Mig-For	716	783	1.09
IL	Champaign Count Non-Migrant	61,554	126,763	2.06
IL	Cook County	472	692	1.47
IL	Vermilion County	268	489	1.82
IL	Piatt County	154	256	1.66
IL	Mclean County	150	233	1.55
IL	Douglas County	129	222	1.72
IL	Ford County	129	215	1.67
IL	Du Page County	102	140	1.37
IL	Coles County	94	158	1.68
IL	Sangamon County	87	135	1.55
IL	Macon County	80	133	1.66
IL	Will County	74	118	1.59
IL	Peoria County	62	104	1.68
IL	Iroquois County	59	89	1.51
IL	Kankakee County			
IL	Lake County			
IL	Kane County			
CA	Los Angeles County			
IL	Jackson County			
MO	St Louis County	33	47	1.42

Sample IRS Migration Data used for study

The population forecasts are developed by using the Cohort-Component Method of population forecasting. Five data sets are required to generate population and enrollment forecasts. These five data sets are:
- a base-year population (here, the 2020 Census population for the district and attendance areas);
- a set of age-specific fertility rates for the district and attendance areas;
- a set of age-specific survival (mortality) rates for the district and attendance areas;
- a set of age-specific migration rates for the district and attendance areas;
- Historical enrollment figures by grade.

Sample Pop. Pyramid - Total Population 2000 Census

The population forecasts are 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 demographic characteristics of the school district.

In the third and final step enrollment forecasts are 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 are calculated for grades two through twelve.

The survivorship rates are modified, or adjusted, to reflect the average rate of projected migration of 5-to-9 and 10-to-14 year olds for the first 5 years of the forecast. These survivorship rates then are adjusted to reflect the projected changes in age-specific migration the district should experience over the next five years. These modified survivorship rates are used to forecast the enrollment of grades 2 through 12 for the first five years of the forecast. The survivorship rates are adjusted again for the second 5 years of the forecast to reflect the predicted changes in the amount of age-specific migration in the districts for the period. Since the method doesn't depend on historical rates change it will more accurately reflect the current and future demographic situation as it relates to school enrollment.

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