PROPOSAL FOR DEMOGRAPHIC SERVICES

WELLESLEY PUBLIC SCHOOLS, MASSACHUSETTS

MAY 31, 2016

Cropper GIS

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SECTION 1: INTRODUCTION

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Date:
May 31, 2016

Dear Wellesley Public Schools,

This proposal has been developed as a response to the Wellesley Public Schools (WPS) RFQ for demographic services. The information included in this proposal details the qualifications of our firm along with the recommended process for developing the work requested in the RFQ. This objective of this plan is to develop a comprehensive demographic study of WPS at small area levels (by school) using 2010 Census information. The results of the detailed demographic study will serve as a basis for understanding forecasted trends of the total population in addition to school-aged.

In addition to the qualifications and recommended project approach, please find the attached documentation requested to fulfill the requirements of the proposal submission. This proposal is formatted in an order that was requested in the RFQ, which will make the WPS review process more efficient and easy to follow.

I am sure that you will find the demographic services work requested is a perfect fit for **Cropper GIS Consulting (Cropper)** and the team. We are certain that you will be pleased with our demographic forecasting and redistricting process. Our experience with school districts across the U.S. coupled with knowledge of GIS technology will help in providing the successful results. We have worked on many districts in the Massachusetts, including Wellesley Public Schools MA.

Please call or email us if you have any questions and we look forward to the opportunity of working with the Wellesley Public Schools.

Sincerely,

Matthew Cropper

SECTION 2: EXECUTIVE SUMMARY

Cropper GIS Consulting (Cropper) are very well suited to perform the work requested in the RFQ for demographic services. Our team has performed demographic studies of similar magnitude to public school districts across the United States. **Cropper** has developed demographic and facility planning studies for many of the large urban school districts in the United States, including:

- Wellesley Public Schools, Massachusetts – Demographic study and redistricting consultation. 2012-2013
- Arlington Public Schools, Massachusetts – Demographic Study. 2015
- Hamilton-Wenham Schools, Massachusetts – Demographic Study. 2013
- Nantucket Public Schools, Massachusetts – Demographic Study. 2014
- Lawrence Public Schools, Massachusetts – Demographic Study. 2015
- Scituate Public Schools, Massachusetts – Demographic Study. 2016
- Westwood City Schools, Massachusetts – Demographic Study. 2014
- Corning Painted Post Schools, New York – Demographic study and redistricting consultation. 2010-current
- Buffalo City Schools, New York – Demographic study for the city school district by neighborhood. 2008
- Baltimore County Public Schools, Maryland – School utilization study and pupil yield-factor study. 2008
- Frederick County Public Schools, Maryland – Redistricting (2010) and ongoing consultation related to facility planning and GIS.
- Henrico County Public Schools, Virginia – Redistricted all 100 attendance areas through a comprehensive process. 2009
- Charleston County School District, SC – Demographic study by school by constituent district, redistricting, GIS implementation and training. 2007-2012
- Washington DC Public Schools, DC – Analytical mapping for facility planning. 2012
- Atlanta Public Schools, Georgia – Demographic study for all schools within the district. 2011

Dr. McKibben will lead the demographic forecasting component of the project. He has worked with 100's of school districts and government agencies across the U.S. He is one of the most esteemed small area forecasters in the industry and is respected amongst his peers and clients.

In addition to public school work, **Cropper** are leaders in studying new models for population and demographic forecasting methodology. As new technology arises, **Cropper** strives to incorporate new datasets and models into our process to further enhance the accuracy of our studies. Members of **Cropper** serve as expert witnesses for Federal organizations such as the U.S. Department of Justice Civil Rights Division, where Matthew Cropper serves as an expert for issues related to Federal Desegregation and K-12 redistricting.

Team members of **Cropper** have a combined 75 years experience in small area forecasting, GIS analysis, and demographic studies. Matthew Cropper has over 15 years of experience in K-12 school planning and analytical GIS for demographic studies, where Dr. McKibben and Dr. Swanson each possess over 30 years of small area forecasting, demographic and population forecasting, and K-12 school planning experience. We have met or exceeded every one of our client's expectations and we strive to maintain that level of service for future clients.

Our staff consists of a perfect combination of skills to provide demographic studies to K-12 school districts. We combine GIS expertise with solid demographic expertise to provide a team that cannot be matched. **Cropper** has more than adequate capacity to handle a project of this magnitude, in both technology and staff.

Geographic Information Systems will serve as the foundation as the team develops the demographic study, and **Cropper** are experts in the use of the software. **Cropper** are authorized consultants and resellers of ESRI GIS technology, which is used by, Federal, State, and local governments.

ESRI Technology
AUTHORIZED BUSINESS PARTNER

Matthew Cropper is a certified GIS Professional, or GISP. The GISP certification is given to those who fulfill stringent requirements based on education, experience, and continued contributions to the GIS industry (presentations & publications). Mr. Cropper has written multiple articles and presented at conferences across the country on GIS and planning. He is a pioneer in integrating new technology with age-old planning processes to refine and enhance accuracy of data when planning.

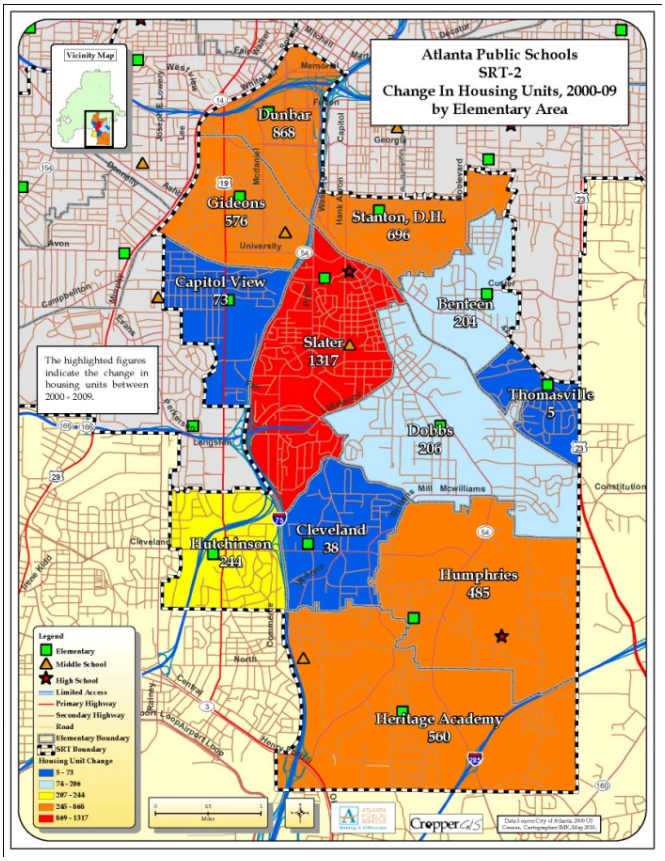
Cropper is one of the nation's foremost experts in K-12 planning. **Cropper** has facilitated planning projects across the United States, and primarily works with K-12 Schools. **Cropper** leverages the most recent technology to assist in providing data and information in an accurate and extremely efficient manner to stakeholders. A greater part of the planning process is building consensus amongst stakeholders, and **Cropper** has proven to be experts in building this consensus.

SECTION 3 – OFFEROR PROJECT EXPERIENCE AND CAPABILITIES

Cropper manages and successfully completes multiple projects of this size and scope on a frequent annual basis. Below is a summary of projects of to convey our expertise:

Atlanta Public Schools, Georgia - Demographic Study and Redistricting, Spring 2012

Cropper has recently completed a population and enrollment forecast for the Atlanta Public Schools. The project required a 10-year population and enrollment forecast for all 97 schools that serve the metro area's 50,000 students. Forecasts were calculated by attendance area for each school building and then organized by the district's 4 planning areas, also known as SRT's.

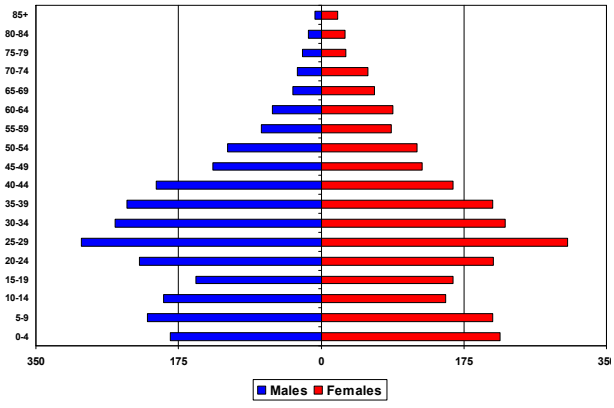


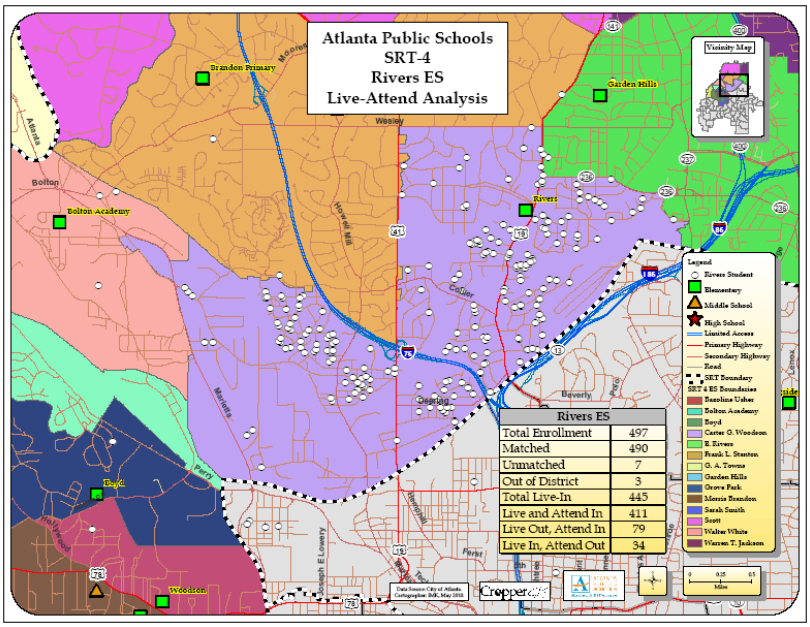
Once the analytical mapping was complete, **Cropper** conducted field research in the district to better understand various trends and community dynamics that were occurring at the neighborhood level.

Forecast models were developed for each specific attendance area. It is important to build a forecast model for each small area that is being forecasted because demographic dynamics can vary significantly and it is necessary to understand the demographic makeup of the population of each area.

On any demographic forecasting project, **Cropper** first must forecast total population by age and sex. The total population forecast is what drives the enrollment forecast results. In order to have a thorough understanding of future enrollment trends, it is imperative to know the trends of the total population.

Cropper delivered the study to the Atlanta Public Schools board of education in Winter 2010. Our team continues to provide ongoing consultation to Atlanta Public Schools and the district is very satisfied with our thorough and detailed work.





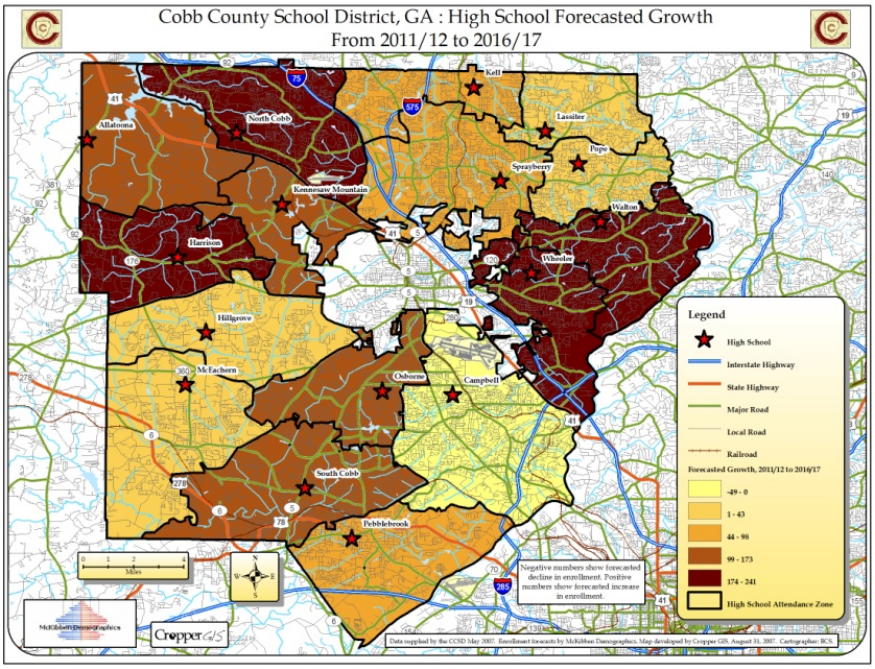
SECTION 3 – OFFEROR PROJECT EXPERIENCE AND CAPABILITIES CONTINUED

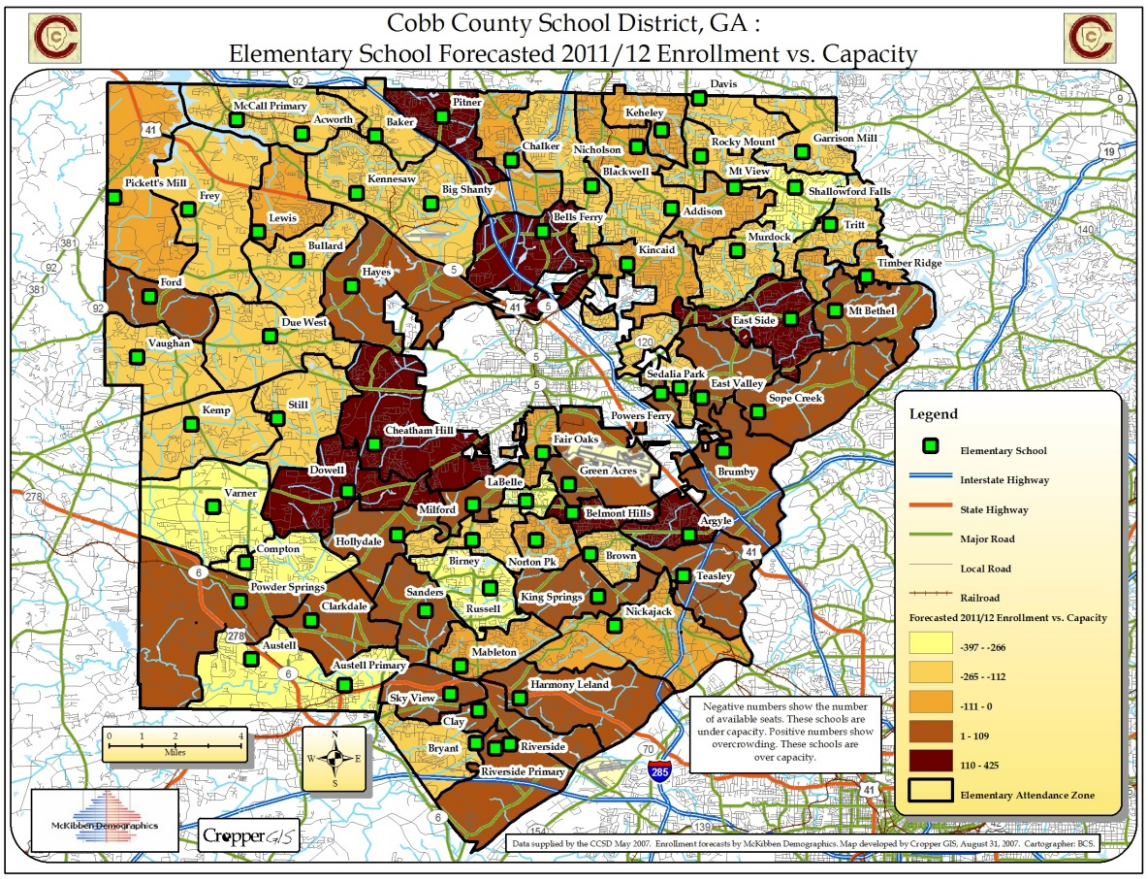
Cobb County School District, Georgia - Demographic Study, Winter 2008

Cropper was contracted by Cobb County Schools to develop a 10-year population and enrollment forecast for all 107 schools, which serve the counties 107,000 students.

Local, state, and federal data necessary for the demographic study were collected by the team. Like the Atlanta Study, **Cropper** provided detailed mapping to help support the demographic study findings. In addition to providing analytical mapping to support the demographic study, **Cropper** developed a series of maps depicting the long-term impacts on forecasted enrollment vs. current and planned school capacity. The mapping helped to assist the district in pinpointing areas of greatest need and adjacent schools that could help alleviate overcrowding.

The district continues to utilize the demographic study findings to help drive school construction and long-term facility planning endeavors.



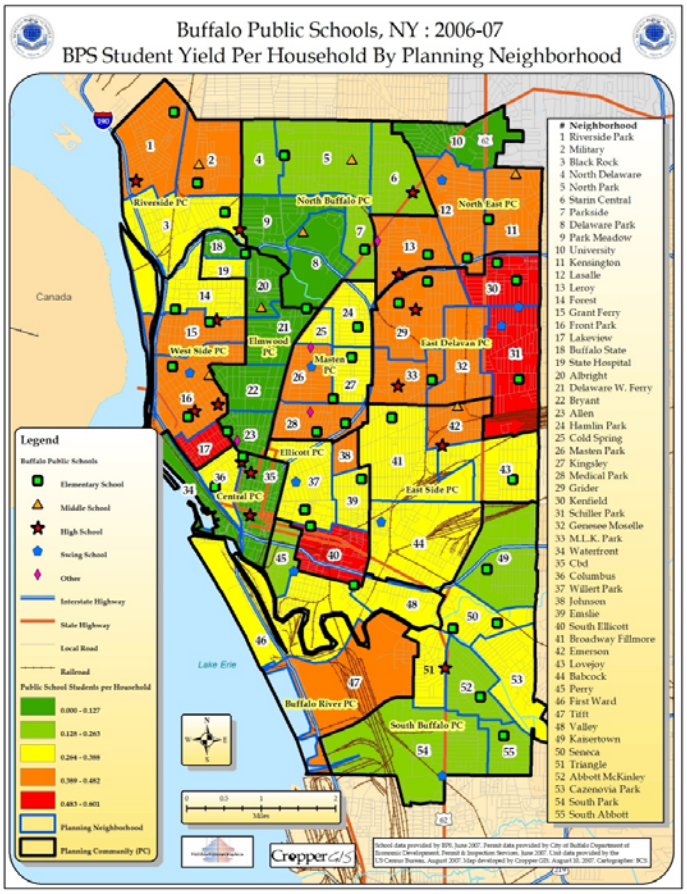


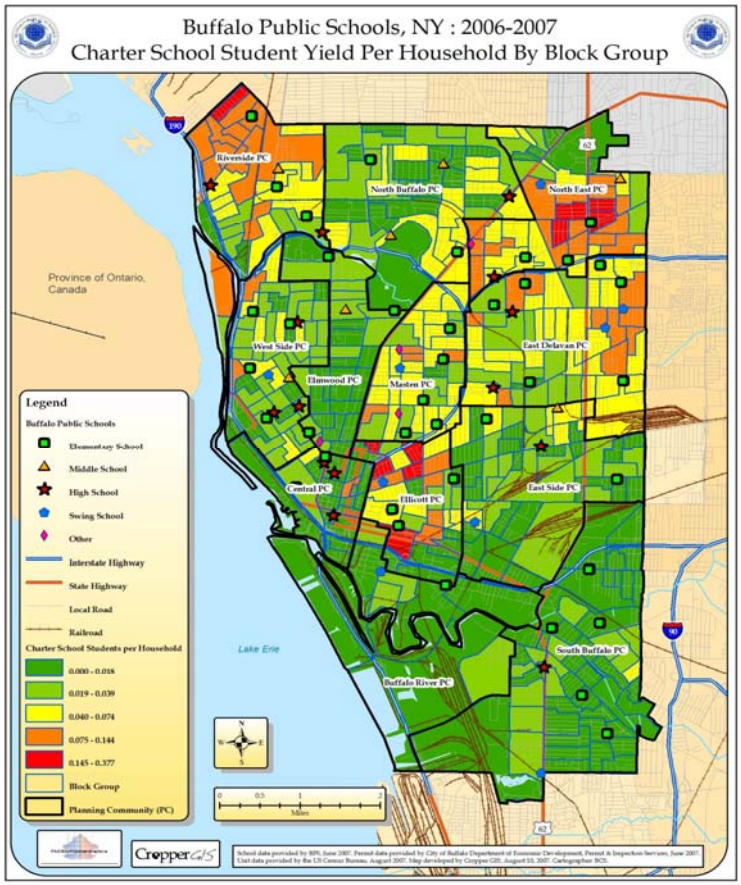
SECTION 3 – OFFEROR PROJECT EXPERIENCE AND CAPABILITIES CONTINUED

Buffalo Public School District, New York - Demographic Study, Winter 2007

Cropper was contracted by the Buffalo Public School District (BPS) to develop a 10-year enrollment forecast for the district's 12 planning areas. The district was in the midst of a long-range building plan that consisted of multiple building phases. The demographic study results would help drive decision making as it relates to location of future buildings and sizes/capacities of facilities. The city has undergone significant change over the past 2 decades which has affected the district's operating approach. Most school buildings were constructed pre-1960 and were designed to serve the population of that era, which current day is about ½ of the size. In addition to the massive population decline, the district is losing students by an ongoing increase of charter schools in the area. All of these factors led to BPS choosing **Cropper** as the experts to study the demographics and long term trends for the district. **Cropper** was excited to work on this project because of the complexity and uniqueness of the study.

BPS does not have neighborhood attendance areas for their schools, which means a student can attend anywhere within the district regardless of their home residence. Calculating an enrollment forecast for an open enrollment district can be challenging for planners because historical enrollment information does not correlate to neighborhood area trends. It was important to understand local small area neighborhood dynamics to be able to forecast population and enrollment by the districts 12 planning areas.





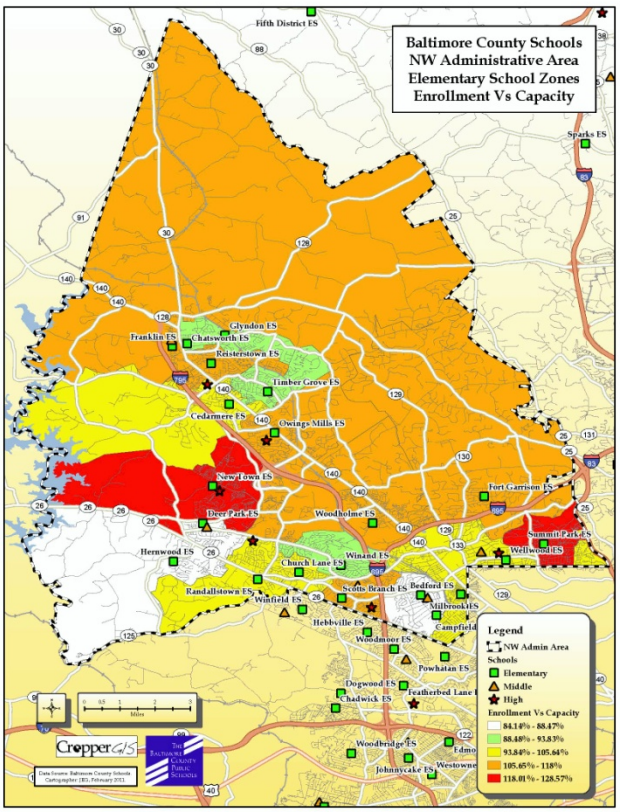
GIS was used extensively to allocate student populations and densities by home residence as opposed to school attendance. Students were mapped based on home residence and calculated by planning area (where they live instead of where they attend). This was done for historical and current enrollment so the planners can understand the change and rates of change of students by residence. Doing this tied population trends back to the neighborhood level as opposed to attendance history.

Cropper was asked to develop a forecast update the following year by Buffalo Public Schools to help understand further impacts from Charter schools. Our forecast models enable clients to establish assumptions as well, such as 'x' number of charter schools coming online per year or other planned changes that can impact student enrollment.

SECTION 3 – OFFEROR PROJECT EXPERIENCE AND CAPABILITIES CONTINUED

Baltimore County Public School District, Maryland - School Utilization and Pupil Yield-Factor Studies 2008-Current

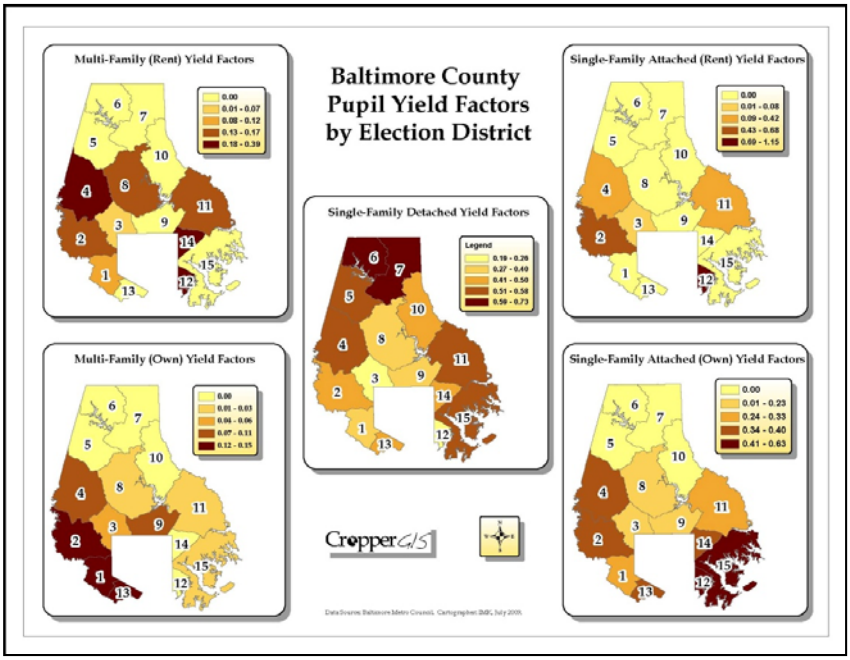
Baltimore County Public Schools (BCPS) consists of 173 schools, programs, and centers that serve 104,000 students. Aging facilities and imbalances in building utilization across the southeast portion county have proven to be a challenge when planning. **Cropper** is currently working with BCPS to study the 30 elementary schools in the Northwest portion of the county. This area is experiencing significant overcrowding along with aging facilities. The result of this study is a complete discovery of the issues the area is facing, along with relief strategies that the district can consider to resolve overcrowding and building utilization imbalances.

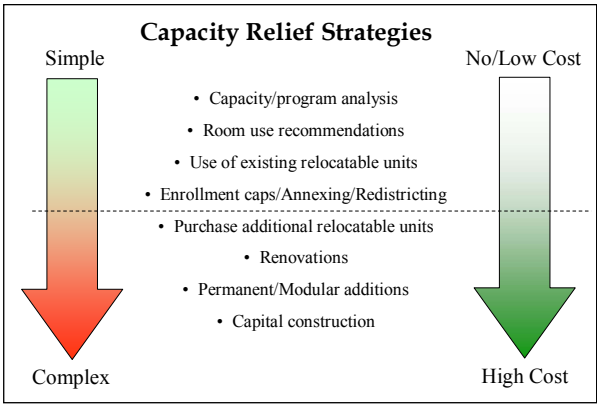


BCPS has also contracted with **Cropper** to facilitate a school utilization study for the southeast area of the county. **Cropper** worked with the BCPS to identify and prioritize the needs throughout this part of the district. This included identifying optimal building utilizations and locations, and developing concepts to provide solutions to some of the challenges. Concepts were not always related to realignment but also focused on locations of programs. In addition to providing technical expertise and redistricting options, **Cropper** organized and facilitated meetings with the 40-member advisory committee established by BCPS.

As committees met, they were providing constant feedback on how concepts could be improved to better suit their community's safety and neighborhood continuity needs. During committee meetings, **Cropper** would collect their feedback and incorporate into changes for the committee to review. With the use of GIS, options were explored during the meetings and committee members could examine the impacts on modifying an option as soon as a question was posed. The entire process was supported by GIS data collected from the school district and local agencies such as the county auditor's office.

In addition to a school utilization study, BCPS contracted with **Cropper** to develop a pupil-yield factor study in 2009. BCPS continues to utilize **Cropper** for their demographic, facility planning, and GIS consultation needs.





SECTION 3 – OFFEROR PROJECT EXPERIENCE AND CAPABILITIES CONTINUED

Below are references that can attest to the quality of work provided by **Cropper** and the team.

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Michael Cohort
Superintendent
Nantucket Public Schools, Massachusetts
10 Surfside Road
Nantucket, MA 02554
Phone: (508) 228-7285
cozortm@nps.k12.ma.us
Work performed: Demographic Study, 2014

****

Paul Taylor
Planning Coordinator
Baltimore County Public Schools, Maryland
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Baltimore MD 21220
Phone: (443) 809-3125
ptaylor6@bcps.org
Work performed: GIS Consulting & Training, Redistricting, Demographic Analysis, Yield Factor Study, 2005-current

****

John McCarthy
Superintendent
Scituate Public Schools, MA
Phone: (781) 545-8759
jmccarthy@scit.org

Work performed: Demographic Study, 2016.

****

Frank Williams
Director of Business Services
Windsor Public Schools
Windsor, Connecticut
Phone: (860) 687-2000 ext. 259
fwilliams@windsorct.org

Work performed: Redistricting, facility planning, demographic analysis 2010-2012

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Additional references can be provided upon request.

SECTION 4 – OFFEROR PROJECT MANAGER AND PROJECT PERSONNEL

The team working on the Demographic Study for the Wellesley Public Schools (WPS) consists of 3 key individuals. These individuals are:

1. ***Matthew Cropper – Project Manager and Senior GIS Specialist.*** Mr. Cropper will be the primary point of contact between the WPS and **Cropper**. Mr. Cropper will coordinate requests, meetings, and project specifics with WPS and also coordinate all of the work that is done for the project. Mr. Cropper has extensive experience in managing projects of this magnitude and strives to ensure that all communication is maintained in a clear and concise manner. In addition to project management, Mr. Cropper's primary role in the project is to collect all pertinent data and develop various series' of analytical mapping for the demographers. The analytical mapping done via GIS will be essential for the demographers to gain a solid understanding of the trends that are impacting the district. Mr. Cropper's technical background and use of technology is far superior to competitors, and he is considered a pioneer in integrating new technology with K-12 planning. He will ensure that all data is provided in the formats (GIS, written, tabular) as requested by the district. He serves as an expert witness for the U.S. Department of Justice Civil Rights Division, where he provides technical and educational consultation related to Federal desegregation cases in the U.S.

2. ***Jerome McKibben, PhD – Senior Demographer.*** Dr. McKibben will be the senior demographer on the project for **Cropper.** Dr. McKibben specializes in race/ethnic and small area forecasting, and is widely published in both of these areas of demographic analysis. He is regarded amongst his peers in the demographic and school planning community as one of the best small area forecasters in the world. Dr. McKibben has developed demographic studies for districts of all sizes across the United States. His forecast accuracy is unparalleled due to his forecasting methodology and experience in providing forecasts for districts. He has written numerous articles/publications and has given presentations to planning groups and conferences across the world.

The team has some of the best technology available in the K-12 school planning industry. **Cropper** are business partners with both Microsoft and ESRI, the world leader in GIS. **Cropper** leverages all of the latest technology available to assist with the project, including most recent GIS technology. Technology is moving to an online form of delivery (aka The Cloud) and **Cropper** is at the forefront of this movement.

Resumes of the key staff members can be found on the following pages.

Matthew Cropper, GISP

Matthew Cropper has worked in the Geographic Information Systems (GIS) and planning industry since 1997. He has a Bachelors Degree in Geography with a Specialization in Geographic Information Systems and Analytical Cartography. He has worked with organizations of all sizes across the United States. Matthew is the President of Cropper GIS Consulting, LLC. His firm specializes in planning with a focused approach of using GIS mapping technology to assist in problem solving. Clients of Cropper GIS are primarily K-12 school districts, but the firm does provide consultation to governments and private companies.

Matthew serves as an expert witness for the U.S. Department of Justice's Civil Rights Division, where he provides consultation related to federal desegregation lawsuits.

Matthew's firm recently directed the largest redistricting effort that Henrico County, Virginia (surrounds Richmond) has ever undertaken. Matthew's firm is currently providing redistricting and planning consultation to the City of Atlanta, Atlanta Public Schools, Baltimore County Schools MD, Charleston County Schools SC, and Akron Public Schools OH. Below is a condensed list of current and recent projects that Cropper GIS is working on:

- Atlanta City and Atlanta Public Schools, Georgia
  - Population and Housing forecast for the City of Atlanta, along with parallel project forecasting K-12 enrollment for the Atlanta Public Schools.
- Cobb and DeKalb Counties, Georgia
  - Population and enrollment forecasting for the school districts in both counties. Work also included detailed analysis of facility utilization versus long-term forecasts and the development of recommendations based on population forecast results.
- Henrico County, Virginia
  - County-wide redistricting project. Involves facilitation of a 70 member committee to redraw attendance boundary lines to incorporate a new middle school, a new high school, and to balance elementary enrollments. School Division has over 80 schools and more than 48,000 students.
- Buffalo, New York
  - Demographic Study for region who has lost more than half of their population and student enrollment in the past 30 years. Project objectives are to develop a 10-year population and enrollment forecast for 12 sub-areas within the City of Buffalo.
- Baltimore County, Maryland
  - School Utilization Study for Southeastern Baltimore County. Cropper GIS led a community-based process of building consensus around potential school closings and redistricting concepts. The area of study included over 40 schools.

Education

- The Ohio State University, B.S., Geography with specialization in Geographic Information Systems and Analytical Cartography.
- Hocking College, A.S., Geographic Information Systems/Global Positioning Systems

Publications

- "Using Demography and GIS in School District Planning ", *Educational Facility Planner Journal* Volume 41, Issue 4, 2007
- "Geographic Information Systems and Schools," *OSBA School Management News* April 2006
- "A Smart Map for Schools," *School Planning and Management* February 2005
- "GIS in Facility Master Planning," *School Planning and Management* February 2003

Memberships

- Council of Educational Facility Planners International (CEFPI)
- Urban and Regional Information Systems Association (URISA)
- Southern Demographic Association (SDA)

Jerome N. McKibben, Ph.D

Dr. McKibben is currently the Senior Demographer with Cropper GIS Consulting. In addition to working with Cropper GIS, he is also Senior Demographer of McKibben Demographic Research. He specializes in population forecasts and estimates, demographic methodology, small area analysis and redistricting, site selections, demographic analysis, enrollment forecasts, and migration. He has successfully completed over 800 forecasting and estimates projects with populations ranging in size from 2,000 to 10,000,000 people.

His current research projects included the development of demographic methodologies for non-traditional populations, race and ethnic composition, the effect of household composition changes on small area populations and estimates and forecasts methodology.

Dr. McKibben has published articles in such journals as Population Research and Policy Review, Journal of Economic and Social Measurement, American Demographics and Voprosy Statistiki. He is also the author of 2 chapters in the recently published text The Methods and Materials of Demography; Race and Ethnic Composition and Urban/Rural Classification.

In addition to his work in applied demography, Dr. McKibben has also been a Fulbright Scholar, has testified before the U.S. Senate on census undercount issues and been a Visiting Professor of statistics at Helsinki School of Economics. He has also been a long time active member in both the Population Association of America and the Southern Demographic Association, Including serving of the Applied Demography and Small Area Demography committees.

Formerly the State Demographer of Indiana, Dr. McKibben has also been a member of the Federal-State cooperative on Population Estimates and the Federal-State cooperative on Population Projections. Some of his more recent work includes:

- Atlanta City and Atlanta Public Schools, Georgia
  - Population and Housing forecast for the City of Atlanta, along with parallel project forecasting K-12 enrollment for the Atlanta Public Schools.
- Cobb and DeKalb Counties, Georgia
  - Population and enrollment forecasting for the school districts in both counties. Work also included detailed analysis of facility utilization versus long-term forecasts and the development of recommendations based on population forecast results.
- Buffalo, New York
  - Demographic Study for region who has lost more than half of their population and student enrollment in the past 30 years. Project objectives are to develop a 10-year population and enrollment forecast for 12 sub-areas within the City of Buffalo.

Education

- Ph.D. Bowling Green State University, 1990, Applied Demography.
- M.A. Syracuse University, 1982, Sociology
- B.A. SUNY at Geneseo, 1981, History and Sociology

Publications

- "School District Planning Needs and the 2010 Census". In Journal of Economic and Social Measurement, May 2007
- "Race and Ethnicity." In Methods and Materials of Demography, Second Edition, March 2004
- "Population Distribution - Classification of Residence." In Methods and Materials of Demography, Second Edition., March 2004
- "The Effects of Migration on Birth Dynamics in the East South Central Region, 1940-2000". Presented at the annual meeting of the Southern Demographic Association, Alexandria VA, October 2003

Memberships

- Population Association of America (PAA)
- Southern Demographic Association (SDA)

SECTION 5 – RESPONSE TO SCOPE OF WORK REQUIREMENTS

Geographic Information Systems, or GIS, will be used extensively throughout the study. The use of GIS will aide in demographic analysis, and will also be utilized to help depict and convey our findings and forecast results. **Cropper** will collect any existing GIS data from the district and other sources named below. The following depicts the methodology and process for both collecting data for the study and how population and enrollment forecasts will be developed.

Methodology: GIS Mapping of Demographics

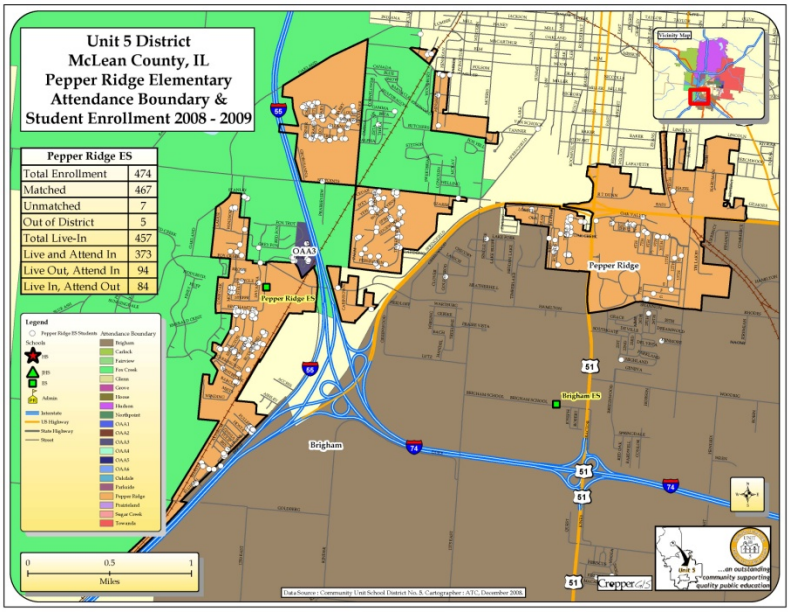
Geographic Information Systems, or GIS, will be used extensively to depict trends at the district and small area level. Mapping of historical and current students will help to understand the demographic trends throughout the district at the address level. The GIS mapping will occur simultaneously with the demographic study, and results of GIS analysis will be used to aide in the population/enrollment forecasts.

Mapping for the project will be completed in 2 phases, which are data collection and data development/aggregation. These phases are detailed in the following section of the proposal:

Phase 1: Data Collection

For the GIS mapping, a series of data will need to be collected to perform GIS analysis. This data come from sources such as:

1. Wellesley Public Schools Data
   - Current (2015-16) student enrollment databases with student attributes including (Shapefile Preferred).
     - Student ID
     - Student Address
     - City
     - State
     - Zip
     - Grade Level
     - School Name/Number
     - ESL/LEP Information
     - Ethnicity
     - Free/Reduced Lunch attributes
     - Special Education information
     - X,Y Coordinates
   - 5-year historical enrollment by school by grade
   - Maps of elementary, middle, and high school attendance areas
   - Table or GIS file of school locations including school name, type (ES, MS, etc), and address.
   - Parochial, Private, and Charter enrollment databases that the district has.
     - If the district currently transports these students, data can be collected from the transportation department of these kids. Although this might not give a complete depiction of the non-public enrollment, it is very helpful to determine percentages based on private, parochial, and charter schools.



2. County GIS Data
   - Planimetric layers (streets, rivers, railroads, water bodies, rivers, other major geographic identifiers)
   - Parcels/Property lines, subdivisions, neighborhoods, planned developments, other layers helpful for analysis
3. City/Municipality GIS data
   - Data from municipalities that are maintained separately from the county GIS system (I.E. Zoning, Future Land Use).
4. Federal Census Bureau (2010 Census)
   - Block polygons with population and housing attributes

With the exception of the school enrollment data, most of the data on the previous page are maintained by the city and county sources. Existing and planned land use/zoning data are typically maintained by the local planning offices. All of these data will need to be incorporated into a GIS for analysis of historical development activity and future plans and trends for development. Before analysis can take place, some of the data need to be joined to GIS layers and/or converted into GIS format.

SECTION 5 – RESPONSE TO SCOPE OF WORK REQUIREMENTS CONTINUED

Phase 2: Data Development / Aggregation

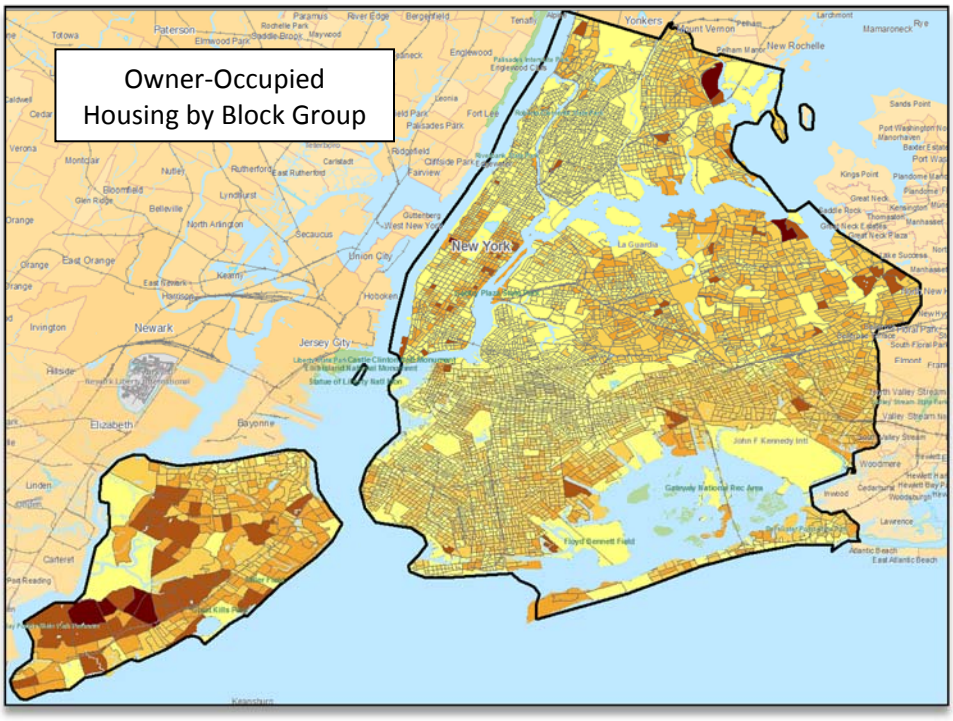
Cropper GIS will need to develop and aggregate the data for mapping. This includes:

- Geocoding historical and current student enrollment files into ESRI Shapefile format. **Cropper GIS** will focus on providing a minimum of 99% match of student enrollment.
- Zone geography (maps of attendance areas) converted into ESRI Shapefile format.
- Aggregating all school, city, county, and federal GIS data into a geodatabase for analysis. This includes projecting data into a common coordinate system so that data analysis can be performed on the fly in an efficient manner.
- Collecting Census demographic variables and joining data to census block or block group shapefiles. Demographic variables will include attributes that pertain to race/ethnicity, average/median family income, education level, industry/occupation, # of renters vs. owners, and many other variables that indicate socioeconomic attributes.

Methodology: Demographic Analysis and Enrollment Forecasts

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 projection 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.

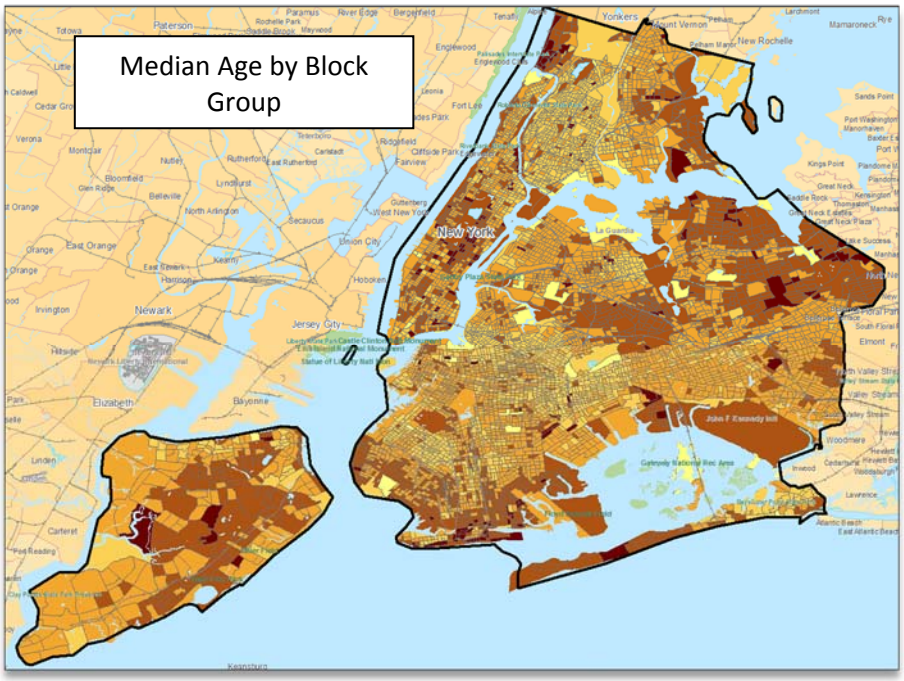


The first step is to overlay the district's geographical boundaries (i.e. constituent districts, attendance zones) with Census Bureau's 2010 TIGER maps. This allows us to identify which census tracts and blocks make up each geographical area. Once this is established, the detailed 2010 Census information from file SF1 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 projection 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.

SECTION 5 – RESPONSE TO SCOPE OF WORK REQUIREMENTS CONTINUED

The second step is to calculate a total population forecast for all geographic areas under study (in this case constituent districts and school attendance areas). 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 "down sizing" movers (ages 50-85).

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.

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	53	96	1.81
IL	Lake County	52	74	1.42
		40	58	1.45
		39	71	1.82
		33	51	1.55
		33	47	1.42

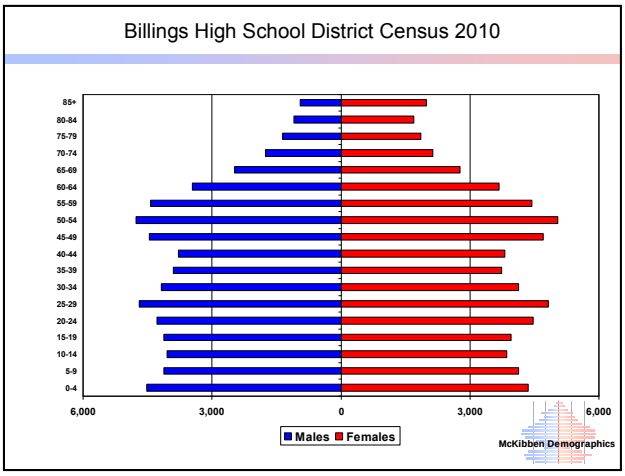
Sample IRS Migration Data used for study

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.

SECTION 5 – RESPONSE TO SCOPE OF WORK REQUIREMENTS CONTINUED

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 2010 Census population for the WPS Schools and all of its geographical areas i.e. School Attendance Areas);
- a set of age-specific fertility rates for each small area to be used over the forecast period;
- a set of age-specific survival (mortality) rates for each small area;
- a set of age-specific migration rates for each small area;
- Historical enrollment figures by grade for all facilities to be projected.
    - Historical enrollment databases will also be used to calculate student populations by small area regardless of where they attend.



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 individual attendance areas and the total 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 in-migration of 5-to-9 and 10-to-14 year olds to each of the study areas for the period 2012 to 2016. 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 project the enrollment of grades 2 through 12 for the period 2012 to 2016. 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.

Birth and death data are obtained from the Massachusetts State Department of Health for the years 2005 through 2010. The net migration values are calculated using Internal Revenue Service migration reports for the years 2000 through 2010. The data used for the calculation of migration models come from the United States Bureau of the Census, 2000 to 2010, and the models are assigned using an eco-demographic system.

Other locally obtained variables that will be used in the construction of the population forecast models include but are not limited to: sales of existing housing units, construction of new housing units, housing price, housing tenure, household size, household composition and planned infrastructure improvements.

The forecasted enrollments for kindergarten and first grade are derived from the 5-to-9 year old population of the age-sex population projection at the small area and school district level. This procedure allows the changes in the incoming grade sizes to be factors of projected 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 projections.

FORECAST ACCURACY

Historically, Population and Forecasts developed by **Cropper** have been highly accurate. The level of the accuracy for both the population and enrollment projections at the school district level is estimated to be +2.0% for the life of the projections.

Cropper provided updated forecasts to Wellesley Public Schools in 2013. The 2015-16 enrollment for the district is within 40 students of what we forecasted for the district. This represents an accuracy rate of 99.2% (or .8% error) for the district.

The forecasts assume the current economic, political, social, and environmental factors of the district remain the same through the life of the forecasts. In particular, the forecasts assume that:

- 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 GDP contracts in excess of 1%);
- Interest rates have reached an 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 7%;
- The rate of mortgage approval stays at 1999-2002 levels and lenders do not return to "sub-prime" mortgage practices.
- The rate of housing foreclosures does not exceed 125% of the 2005-2007 average of the Wellesley Public Schools for any year in the forecasts.
- housing turnover rates (sale of existing homes in the district) will remain at their current levels;
- Private school attendance rates will remain constant; and
- There will be no major infrastructure changes.

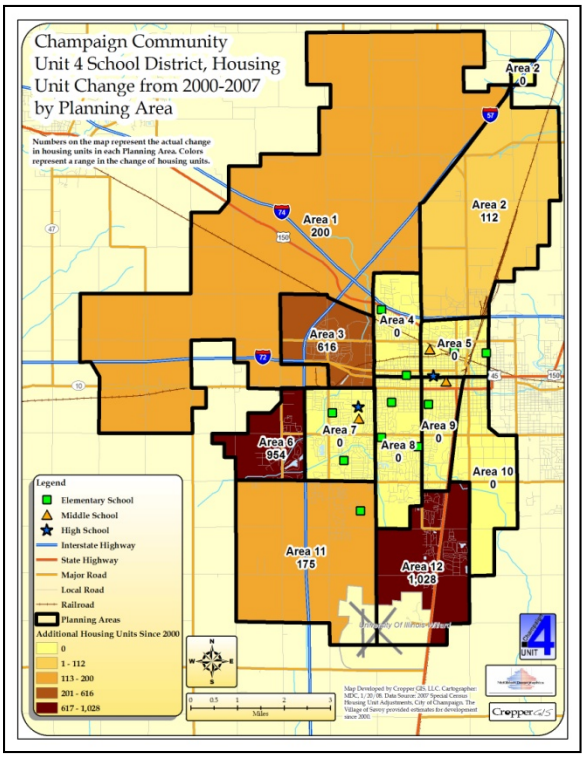
Sample of accuracy for previous projects. More recent accuracy results available upon request.

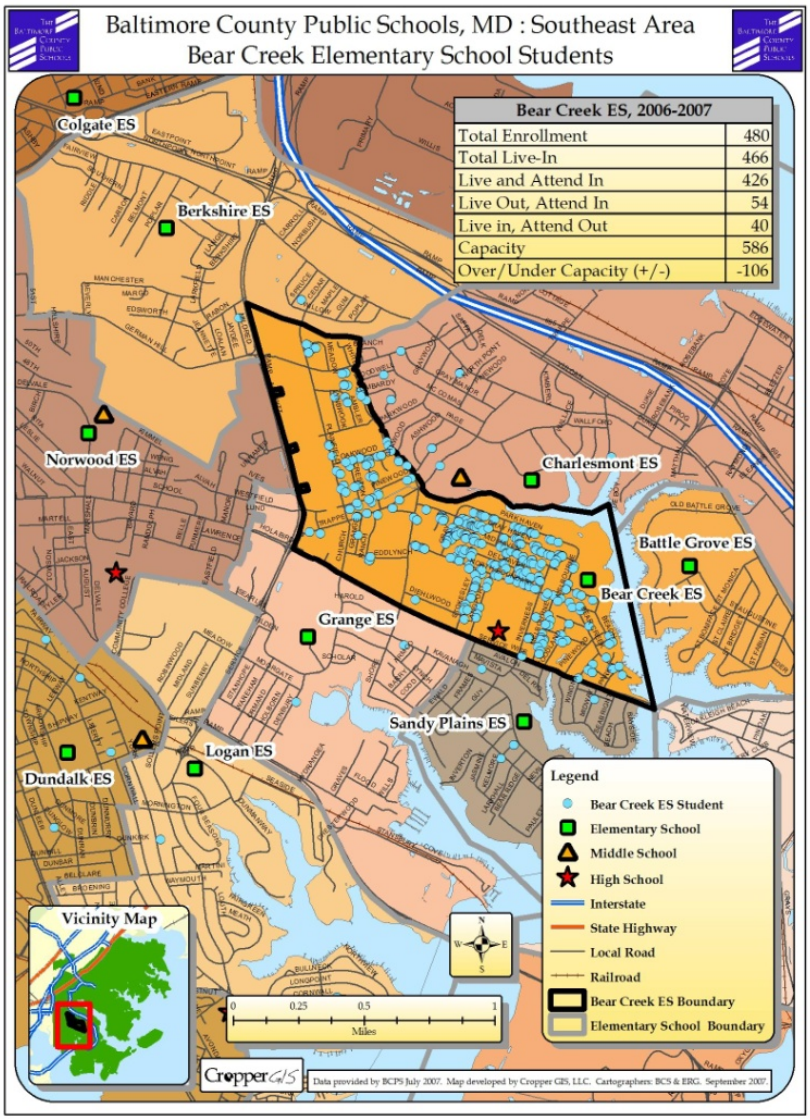
District	2006 Projections	Projection year	Actual Enrollment 2006	% Error
Cobb County, GA	103,907	2002	106,163	-2.2
Madison County, MS	10,922	2004	10,851	0.7
N.W. Allen County, IN	6,067	2004	6,035	0.5
Penn Harris Madison, IN	10,236	2003	10,240	-0.04
Savannah-Chatham, GA	34,493	2004	36,620	-0.3
Huntsville, AL	23,319	2005	23,371	-0.2

DELIVERABLES AS A RESULT OF DEMOGRAPHIC SERVICES RENDERED

As indicated in the RFP, **Cropper** will develop a comprehensive report that encompasses all facets of the study. The report will include:

- Methodology and forecast assumptions
- Summaries of data collected and utilized
- 10-year population and enrollment forecast by school by grade.
  - As requested by the district, a high and low enrollment forecast will be provided.
- Population pyramids for each school zone depicting age structure and distribution.
- Supporting maps that were used in the analysis of the district during the demographic study.
- Analytical mapping of students by school to show internal migration trends (Live/Attend Mapping)





TIMELINE

The proposed timeline for the work is shown in the table to the right. Timelines are flexible and can be modified to meet the specific timelines specified by Wellesley Public Schools. As requested in the RFW, our team will provide the final enrollment forecasts and report to the district no later than August 31, 2016. The demographic study can be presented to the school board at their September meeting if that fits the schedule of the district.

The demographic study that will be delivered in August 2016 will rely on 2015-16 enrollment data as the last known year of data. In order to ensure that the district can leverage a fresh study for a whole year, **Cropper** suggests that the August 2016 forecasts be considered as 'provisional'. Final enrollment forecasts can be provided once the official 2016-17 enrollment data is completed and ready to incorporate into the study.

This prevents the district from having a study that is outdated within 1-2 months of its completion. If the district wishes to consider the August 2016 forecasts as 'final', that is fine too, but the calibration to the 2016-17 enrollment data is offered as a value-add to the study.

Demographic Study 2016 Proposed Timeline

	June 2016	July 2016	August 2016	September 2016
Demographic Study				
- Data Collection				
- Field Research				
- Census Modeling				
- Development of Projections				
- Review of preliminary findings				
- Finalize Enrollment Projections				
GIS Mapping				
- Data Collection				
- Data Development/Integration				
- Data Analysis				
- Reporting				
- Presentation of Demographic Study to the Board of Education (if needed)				

FEES

Fees for services itemized above are $13,000 not including expenses. Expenses include travel to the district for field research and school board presentation. Expenses are billed at cost, and include airfare, lodging, rental car, and meals. Our firm travels with our client's budgets in mind and will keep costs at a minimum. It is estimated to cost $1,000 per person in expenses each trip out, with the majority of cost being airfare, lodging, and rental car. **Cropper** will make all efforts to travel efficiently and will aim to only have 1 person travelling to keep costs at a minimum.

Cropper is willing to adhere to any standard 'per-diem' rates if that is a requirement by the school district.

Additional work not included in the proposal will be billed at $175 per hour plus expenses (if necessary). Although we feel that our costs are very fair and competitive, fees are negotiable and we are willing to consider matching any low bids that have been received.

CERTIFICATION

Per requirements of the RFQ, I hereby certify that our firm will meet the deadline of submitting the full demographic study by August 31, 2016. We take pride in our work and always exceed our client's expectations. Thank you for the opportunity to submit a proposal for Wellesley Public Schools and please don't hesitate to call or email if you have any questions.

Sincerely,

Matthew Cropper
President
Cropper GIS Consulting, LLC
mcropper@croppergis.com
www.croppergis.com
614.451.1242

APPENDIX A:
SAMPLE STUDY AS REQUESTED IN RFQ

Wellesley Public Schools
Wellesley, Massachusetts

Wellesley Public Schools, MA
Demographic Study

February 2013

McKibben Demographics

Cropper GIS

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Executive Summary

1. Wellesley's non-college fertility rates are below replacement levels over the duration of the forecasts (TFR=1.81 for the district vs. 2.1 for replacement level)

2. Most in-migration to the district occurs in the 0-to-9 and 30-to-44 age groups.

3. The locally born 18-to-24 year old population continues to leave the district, going to college or moving to other urbanized areas.

4. The primary factor causing the district's enrollment to decline over the next five years is the presence of small preschool age population in the district.

5. Changes in year-to-year enrollment largely will be due to smaller cohorts entering and moving through the system in conjunction with larger cohorts leaving the system.

6. As the in-migration of young families continues to slow and smaller grade cohorts enter into the school system, total enrollment will begin to decline. The district's elementary enrollment will see a steady decline for the next 10 years

7. If there was zero migration during the 2012-13 to 2015-16 time period, elementary enrollment would decline by 590 students. The forecasted decline in elementary enrollment in the same period is for 166 students.

8. As the district continues to have virtually no new home construction, the rate and magnitude of existing home sales will be the dominant factor affecting the amount of population and enrollment change.

9. Total enrollment is forecasted to decline by 243 students, or -5.0%, between 2012-13 and 2017-18. Total enrollment will decline 317 students, or -6.9%, from 2017-18 to 2022-23.

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 growth of each school district (and its individual attendance areas) 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. 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 or its attendance areas, realistic suppositions must be made as to what the future will bring in terms of the residents' general 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/sex distribution, local vital rates, housing characteristics and special populations of the area. The unique nature of each district's and attendance area'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 and attendance area 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 the 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 attendance area; 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 and its attendance areas.

The first part of the report will examine the assumptions made in calculating the population forecasts for the Wellesley Public Schools. 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 and attendance center were provided by the Wellesley Public Schools for school years 2008-2009 to 2012-13. Birth and death data were obtained from the Town of Wellesley for the years 2000 through 2012. The net migration values were calculated using Internal Revenue Service migration reports for the years 2000 through 2010. 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 are 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 260 of the over 8,700 current households in the district would have been included. For comparison 1,300 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, housing tenure and amount of 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 drop in the average household size in Wellesley as well as most other areas of the state during the previous 20 years, the rate of this decline has been forecasted to slow 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 60, 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 or attendance area level. Thus, significant changes are not foreseen in the district's mortality rates between now and the year 2022. 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 and subsequent decline in the fertility rates of the United States, overall fertility rates have stayed within a 10% range (Total Fertility Rates of 1.8 to 2.0) 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 1.81 for the non-college population of 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 Wellesley Public Schools.

A close examination of data for the Wellesley Public Schools 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 Wellesley Public Schools (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 out-migration occurring in

the 18-to-24 year old age group (those that grew up in the district) 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-9 and 30-44 age groups (the bulk of which is from areas within 75 miles of Wellesley) primarily consisting of younger adults and their children.

As the town of Wellesley 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 Wellesley Public Schools and its attendance areas will remain the same through the year 2022.

Below is a list of assumptions and issues that are specific to Town of Wellesley. These issues have been used to modify the population forecast models to more accurately predict the impact of these factors on each attendance area's population change and composition. Specifically, the forecasts for the Wellesley Public 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 any time 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 an 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 1999-2002 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 2005-2008 average of the Wellesley School District 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 2022;
g. The unemployment rates for the Boston Metropolitan Area will remain below 7.0% for the 10 years of the forecasts;
h. The rate of students transferring into and out of the Wellesley Public Schools will remain at the 2008-09 to 2012-13 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 Boston 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. The Wellesley Public School District will not allow out of district students to transfer in to the district at any time over the next 10 years.
o. Private school and home school attendance rates will remain constant;
p. The recent decline in new home construction has ended and building rates have stabilized;
q. The rate of foreclosures for commercial property remains at the 2004-2008 average for the Boston Metropolitan area;

If a major employer in the district or in the Greater Boston 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 Wellesley Public Schools 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-component projection refers to the future population that would result if a mathematical extrapolation of historical trends were applied to the components of change (i.e., births, deaths, and migration). 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 believed to be critical factors of influence in each specific area.

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

a. a base-year population (here, the 2010 Census population for the Wellesley Public Schools and their attendance areas);
b. a set of age-specific fertility rates for each attendance area to be used over the forecast period;
c. a set of age-specific survival (mortality) rates for each attendance area;
d. a set of age-specific migration rates for each attendance area; and
e. the historical enrollment figures by grade.

The most significant part 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 difficult aspect of generating the population forecasts is found in deriving the rates of change in fertility, mortality, and migration as they relate to the age structure of the district and the attendance areas. From the standpoint of demographic analysis, the Wellesley Public Schools and its seven elementary attendance center districts are classified as "small area" populations (as compared to the population of the state of Massachusetts or to that of the United States). Small area population forecasts are more difficult to calculate because local variations in fertility, mortality, and migration may be more irregular than those at the state or national scale. Especially challenging to project are 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 Wellesley Public Schools and its attendance areas 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 each of the Wellesley Public Schools attendance areas as well as the total school 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 twelve. 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 5-to-9, 10-to-14 and 15-to-17 year old cohorts to each of the attendance centers in the Wellesley Public Schools 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 12 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 elementary attendance center 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.

RESULTS AND ANALYSIS OF THE POPULATION FORECASTS

From 2010 to 2020, the populations of the Wellesley Public Schools, Norfolk County; the state of Massachusetts, and the United States are forecasted to change as follows; the Wellesley Public Schools will increase by 2.0%, Norfolk County will grow by 4.5% Massachusetts will increase by 5.3%; and the United States increase by 8.4% (see Table 1)

Table 1: Forecasted Population Change, 2010 to 2020

	2010	2015	2020	10-Year Change
U.S. (in millions)	308	322	334	8.4%
Massachusetts	6,547,629	6,688,000	6,892,000	5.3%
Norfolk County	670,850	687,000	701,000	4.5%
Wellesley	27,982	28,290	28,540	2.0%

A number of general demographic factors will influence the growth rate of the Wellesley Public Schools during this period, and include the following:

a. The Baby Boom generation will have passed through prime childbearing ages by 2003, thereby reducing the overall proportion of the population at risk of having children;
b. The remaining population in childbearing ages (women ages 15-45) will have fewer children;
c. The local non-college18-to-24 year old population, will continue to leave the area to go to college or to other urban areas, with the magnitude of this out-migration flow slowly increasing; and,
d. The district will experience virtually no increase in housing stock. The vast majority of in-migrating families will into existing housing units.

The Wellesley Public Schools will continue to experience in-migration (movement of new young families into the district) over the next 10 years. However, the size and age structure of the pool of potential in-migrants will change and the effects of the in-migration of families on population growth will be greatly offset by the continued steady growing out-migration of young adults as graduating seniors continue to leave the district.

From 2010 to 2015, the district's population is forecasted to increase by 308 or 1.1%, to 28,290. From 2015 to 2020, the population is forecasted to continue to increase by an additional 250 persons or 0.9%. During the ten years of the forecasts, all seven of the elementary attendance areas are forecasted to increase in population with the growth rates ranging from 7.9% in the Bates area to 0.4% in the Hardy area (See Table 2 for population forecast results of each elementary attendance area).

While all elementary areas will see some amount of gross in-migration, (primarily in the 0-to-9 and 30-to-44 age groups,) all areas also will continue to see gross out-migration. This out-migration primarily will be young adults, 18-to-24 years old, as graduating seniors continue to leave the district to go to college or seek employment in larger urbanized areas. There will also be an important secondary out migration flow, that of householders over the age of 65. This outflow is key given that fact that the district is almost totally dependent on the sale of existing homes to provide open housing units for new young families with children or who will have children in the future.

Table 2: Forecasted Elementary Area Population Change, 2010 to 2020

	2010	2015	*2010-2015 Change*	2020	*2015-2020 Change*	*2010-2020 Change*
Bates	3,132	3,260	*3.9%*	3,380	*3.7%*	*7.9%*
Fiske	5,582	5,630	*0.9%*	5,650	*0.4%*	*1.2%*
Hardy	2,958	2,940	*-0.6%*	2,970	*1.0%*	*0.4%*
Hunnewell	5,604	5,620	*0.3%*	5,630	*0.2%*	*0.5%*
Schofield	3,689	3,790	*2.7%*	3,810	*0.5%*	*3.3%*
Sprague	4,683	4,720	*0.8%*	4,720	*0.0%*	*0.8%*
Upham	2,334	2,330	*-0.2%*	2,380	*2.1%*	*2.0%*
District Total	27982	28290	*1.1%*	28540	*0.9%*	*2.0%*

As stated in the ASSUMPTIONS and emphasized above, the impact of the high proportion of high school graduates that leave the district to continue on to college or to seek employment in large urban areas is significant to the size and structure of the future population of the district. Up to 65% of all births occur to women between the ages of 20 and 29. (This is still true even with the recent rise in fertility rates for women age 30 and over) As the graduating seniors continue leave the district, the number of women at risk of childbirth during the next decade declines. Consequently, even though the district's fertility rate is just 0.3 points below the replacement level, the smaller number of women in the district in prime child bearing ages will keep the number of births low despite the district having an increasing population (see the population pyramids in the appendix of this report for a graphic representation of the age distributions of the district and all of the attendance areas). This will require the district to become dependent on the in-migration of children just to maintain current grade cohort sizes.

Another factor that needs to be considered is the birth dynamics of the last twenty years. An examination of national birth trends shows there was a large "Baby Boomlet" born between 1980 and 1995. This Boomlet was nearly as large as the Baby Boom of the 1950s and 1960s. However, unlike the Baby Boom, the Boomlet was a regional and not a national phenomenon (McKibben, et. al. 1999). Because Massachusetts did not experience a Baby Boomlet, most of the expected enrollment growth will have to result from in-migration and not from an increase in the grade cohort size.

Table 3: Household Characteristics by Elementary Districts, 2010 Census

	HH w/ Pop Under 18	% HH w/ Pop Under 18	Total Households	Household Population	Persons Per Household
Bates	520	50.9%	1021	3132	3.07
Fiske	610	41.2%	1480	3993	2.70
Hardy	451	41.6%	1082	2958	2.73
Hunnewell	481	35.7%	1347	3504	2.60
Schofield	616	49.0%	1258	3687	2.93
Sprague	676	38.4%	1763	4556	2.58
Upham	377	50.7%	744	2334	3.14
District Total	**3730**	**42.9%**	**8695**	**24164**	**2.78**

Clearly, the dominant factor that has affected the population growth rates of the Wellesley Public Schools over the last 20 years has been the pace of existing homes sales. However, the dynamics of this in migration flow are more complex than many realize. There is a common misconception that any changes in the economy, housing market or transportation system will have an immediate impact on the size of an area's population and the total impact of that change will be experienced immediately..

This "delayed demographic reaction" is a key issue when attempting to ascertain the impact and duration of a trend. While it is true that the households moving into these new housing units bring many school age (particularly elementary) children into the district, they also bring many preschool age children as well. Consequently, the full impact of the growth in existing home sales is not seen immediately in elementary enrollment as it takes three to seven years for all of the

children of a given household to age into the schools. This is a key issue since the number of births in the Wellesley Public Schools is insufficient to maintain current enrollment levels over the next 10 years. The number of women living in the district ages 20-29 (prime child bearing ages) is too small to produce birth cohorts that are the same size as those currently in the elementary grades.

Of additional concern are the issues of the district's aging population and the growing number of "empty nest" households, particularly in the Upham attendance area. For example, after the last school age child leaves high school, the household becomes an "empty nest" and most likely will not send any more children to the school system. In most cases, it takes 20 to 30 years before all original (or first time) occupants of a housing area move out and are replaced by new, young families with children. This principle also applies to children leaving elementary school and moving on to middle school. Households can still have school age children in the district's school, but also in effect be an "empty nest" of elementary age children.

Table 4: Householder Characteristics by Elementary Districts, 2010 Census

	Percentage of Householders aged 35-54	Percentage of Householders aged 65+	Percentage of Householders Who Own Homes
Bates	52.3%	25.4%	97.4%
Fiske	42.7%	28.4%	72.0%
Hardy	46.7%	27.6%	90.5%
Hunnewell	38.4%	36.2%	73.9%
Schofield	48.7%	22.4%	84.4%
Sprague	43.9%	28.1%	73.8%
Upham	47.6%	23.5%	96.1%
District Total	**45.2%**	**27.8%**	**81.8%**

Note as well the steady increase in the median age of the population in the Wellesley Public Schools and all of its attendance areas (see population forecasts in the appendix for the median age for each forecast year). The district as a whole will see the median age of its population increase from 37.8 in 2010 to 39.9 in 2020. (A 2.1 year increase over the course of a decade is a large increase for a district of this size with two colleges located within its boundaries) This rise in median age is due to three factors, 18-24 years leaving the district, a high proportion of their parents staying in their existing households and the decline in the number of births. (See Table 4)

As a result of the "empty nest" syndrome, the attendance areas in the Wellesley Public Schools will see a steady rise in the median age of their populations, even while the district as a whole continues to attract some new young families. It should be noted that many of these "childless" households are single persons and/or elderly (See Table 5). Consequently, even if many of these housing units "turnover" and attract households of similar characteristics, they will add little to the number of school age children in the district. Furthermore, several of the empty nest households will "down size" to smaller households within the district. In these cases new housing units may be developed in an area, yet there is no corresponding increase in school enrollment.

Table 5: Single Person Households and Single Person Households over age 65 by Elementary Districts, 2010 Census

	Percentage of Single Person Households	Percentage of Households single person and 65+
Bates	14.6%	9.9%
Fiske	23.7%	13.6%
Hardy	19.7%	11.1%
Hunnewell	25.6%	15.9%
Schofield	15.7%	8.0%
Sprague	26.5%	12.4%
Upham	10.3%	6.5%
District Total	**20.7%**	**11.6%**

RESULTS AND ANALYSIS OF ENROLLMENT FORECASTS

Elementary Enrollment

The total elementary enrollment of the district is forecasted to decline from 2,309 in 2012-13 to 2,066 in 2017-18, a decrease of 243 students or 10.5%. From 2017-18 to 2022-23, elementary enrollment is expected to drop by 154 students to 1,912. This will represent a -7.5% decrease over the five-year period. All of the seven elementary attendance areas will experience a net decline in enrollment over the next ten years (see Chart 6).

The reason for this turnaround in elementary enrollment pattern is the convergence of the effects of three factors, all affecting the enrollment level for the next 10 years. These factors are the reversal of cohort sizes in the elementary grades, the growth in the number of empty nest households and a "dearth" of population in the preschool ages. Each of these factors will contribute in part to the decline in elementary enrollment until at least 2022-23.

Over the last several years, one of the main reasons elementary enrollment was consistently declining was due to the fact that the number of children entering Kindergarten and 1st grade was much smaller than the number leaving elementary school after completing 5th grade. This enrollment decline was in spite of the extra Kindergarten through 5th grade students the district was gaining through in-migration of young families. Over the next 10 years, the number of students in 5th grade will average 365 each year as opposed to the 325 average size of the 1st grade cohort.

Table 6: Total Elementary Enrollment, 2012, 2017, 2022

	2012	2017	2012-2017 Change	2022	2017-2022 Change	2012-2022 Change
Bates	320	308	-3.8%	274	-11.0%	-14.4%
Fiske	335	302	-9.9%	281	-7.0%	-16.1%
Hardy	328	319	-2.7%	287	-10.0%	-12.5%
Hunnewell	298	262	-12.1%	237	-9.5%	-20.5%
Schofield	341	333	-2.3%	320	-3.9%	-6.2%
Sprague	394	351	-10.9%	331	-5.7%	-16.0%
Upham	226	191	-15.5%	182	-4.7%	-19.5%
District Total	2,309	2,066	-10.5%	1,912	-7.5%	-17.2%

The second factor is that there is currently a significantly dearth of population in the district's pre-school population. An excellent example of this impact of the trend is shown in the single year of age counts of the district from the 2010 Census (See Table 7). The population at age six is closely related to the combined 1st grade enrollment of the public and private students in the district (as it is for all ages and elementary grades). However, note the relatively lower number of residents younger than five years old, particularly when compared to the cohort sizes of the age 6 through 10 population. This trend is an indication of the proportion of households in each area that will produce elementary age students over the next five years.

Even with a substantial in-migration of young families with children under the age of five, this "pre-school cohort" will results in significant decline in elementary enrollments over the next five years. For example, if there was zero migration during the 2012-13 to 2015-16 school years, elementary enrollment would decline by 590 students due to the substantially smaller pre-school age cohort aging into the elementary grades. However in this case, the forecasted decline in elementary enrollment in the same period is for 166 students. This is a result of the forecasts adding 424 elementary students over the same period through in-migration. Thus, even though the district will experience a substantial level of in-migrating young households, this migration flow will be insufficient in magnitude to fully compensate for the smaller preschool age cohorts.

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

	Age in Years										
	Under 1	1	2	3	4	5	6	7	8	9	10
Bates	34	49	47	64	69	52	68	81	76	77	60
Fiske	43	43	50	70	59	61	68	91	83	77	86
Hardy	28	31	46	52	52	40	51	61	53	59	45
Hunnewell	21	27	37	37	46	47	49	68	62	67	69
Schofield	47	52	59	54	61	59	87	76	62	83	92
Sprague	35	55	61	63	60	73	73	88	91	82	81
Upham	16	24	23	24	34	25	39	40	51	53	62
District Total	224	280	323	363	380	357	434	505	478	498	495

The third factor is the rise of the number of empty nest households in the district. In 2010 the district had 45.2% of their households headed by people ages 35-54 (The ages most people have school aged children). The district's proportion of households in these age groups has dropped over the last five years as the homeowners (and their children) aged and the households became empty nest. Unfortunately, the large and growing bubble of now empty nest households, (particularity empty of elementary age students) will not reach their 70s during the life of these forecasts. Post 70 year old households are the stage of life when most householders downsize, allowing new young families with children to move in.

The demographic factors that will become the most influential over the next ten years are the growth rate of empty nest household in the attendance areas, the number of sales of existing homes, the rate and magnitude of existing housing unit "turn over," the relative size of the elementary and pre-school age cohorts and each area's fertility rate. Each of these factors will vary in the scale of their influence and timing of impact on the enrollment trends of any particular elementary area.

Attendance areas that are currently experiencing a rise in empty nest households tend to be the same areas that are not the areas that will experience any large number of existing home sales. Thus, areas like Hardy will see sustained net declines in elementary enrollment. While these areas will continue to see net in migration of families, it will not be at a sufficient rate to maintain current attendance levels.

As all the elementary attendance areas become almost completely dependent upon existing home sales to attract new families, the overall elementary enrollment trend of the district will decline. Thus, the best primary short- and long-term indicator for enrollment change in most of the attendance area will be the year-to-year rate of housing turnover. If the Total Fertility Rates of all the attendance areas remain at their current low levels (and they are forecasted to do so) they will insure that enrollments will continue to see declines.

There is one additional factor affecting the in migration characteristics of the households moving to Wellesley, the cost of housing. The household demographic dynamics of homes priced at $400,000 to $500,000 tend to be quite different from houses priced at $900,000 and higher. The latter group, which makes up a sizeable proportion of the housing units in Wellesley, tend to draw occupants that have completed their family formation and the children they do have are frequently in the late elementary or early middle school grades.

Middle School Enrollment

The total middle school enrollment for the district is forecasted to decline from 1,165 in 2012-13 to 1,049 in 2017-18, a 116 student or -10.0%. Between 2017-18 and 2022-23 middle school enrollment is forecasted to decline to 1,012, a decrease of 37 students or -3.5%. The difference in the size of the individual grade cohorts and the aging of students through the school system are the primary reasons why the middle school enrollment trends are more moderate than those of the elementary grades.

There are currently smaller grade cohorts enrolled in the elementary school grades compared to those in the middle schools' grade cohorts. As these elementary school cohorts "age" into middle school and smaller middle school cohorts age into high school, they decrease the overall middle school enrollment level. Note how the size of the incoming 6th grade class is usually smaller than the previous year's 8th grade class, which has now moved on to high school. As long as this "dearth" in the enrollment pattern exists, (even with the aforementioned in-migration of middle age students) there will be to some degree, a decrease in middle school enrollment at least until the 2017-2018 school year.

By 2018 the full impact of the current dearth of population should be seen in the middle school grades. The district should experience a much more moderate decline in middle school enrollment as the year to year changes are more a reflection of each year's relative cohort size.

High School Enrollment

Enrollment at the high school level is forecasted to grow from 1,383 in 2012-13 to 1,499 in 2017-18, an increase of 116 students or 8.4%. After 2017-18, the high school enrollment will begin to decline. The net result for the five-year period 2017-18 to 2022-23 will be a decrease of 126 students to 1,373 or -0.7%.

The aforementioned effects of changes in cohort size on middle school enrollment are also affecting the growth patterns of the high school population. The difference here is that for the next five years the incoming 9th grade cohort will be larger than the graduation 12th grade cohorts of the year before. From 2012-13 to 2017-18, the larger grade cohorts that are in middle school begin to enter high school. Until the current bubble of students passes through the high school grades, there will be continued growth at the

district's high school.

After 2017, this trend reverses. The incoming 9th grade cohorts will be smaller than the previous year's graduating 12th grade class. The will results in a slow, uneven decline in total high school enrollment that will continue beyond the 10 year horizon of these forecasts.

It is important to note that the vast majority of this future high school enrollment growth will be a result of students aging into those grades. Specifically, students who already live in the district (and not in-migration of students ages 14 to 18) will be the primary cause of the forecasted increase in high school enrollment. Additionally, as was mentioned earlier, these forecasts represent the demographic changes that will affect high school enrollment. Any changes in the district's student transfer policy and/or changes in special high school level programs will need to be added or subtracted from the forecast result

High school enrollment is the most difficult of all the grade levels to project. The reason for this is the varying and constantly changing dropout rates, particularly in grades 10 and 11. For these forecasts the dropout rates at the high school were calculated for each grade over the last five years. These five-year averages were then held constant for the life of the forecast. The effects of any policy changes dealing with any school's dropout rates, program placement or reassignment of former students to new grade levels will need to be added or subtracted from the forecast results.

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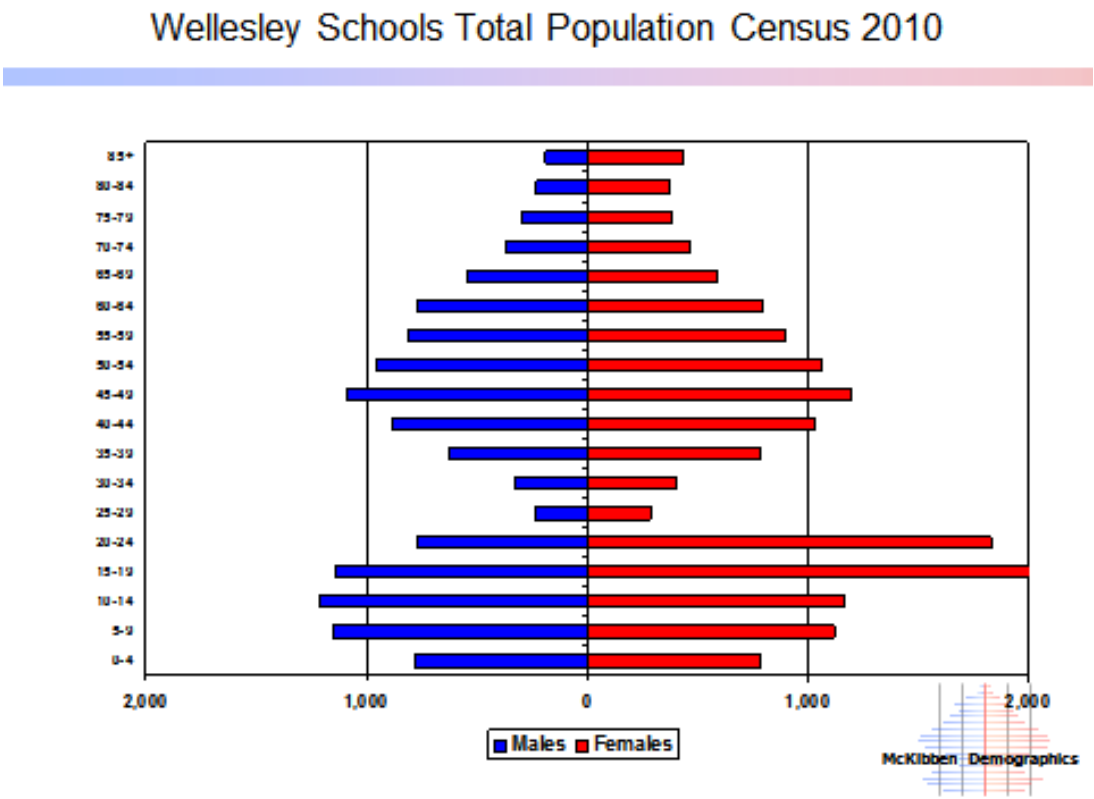
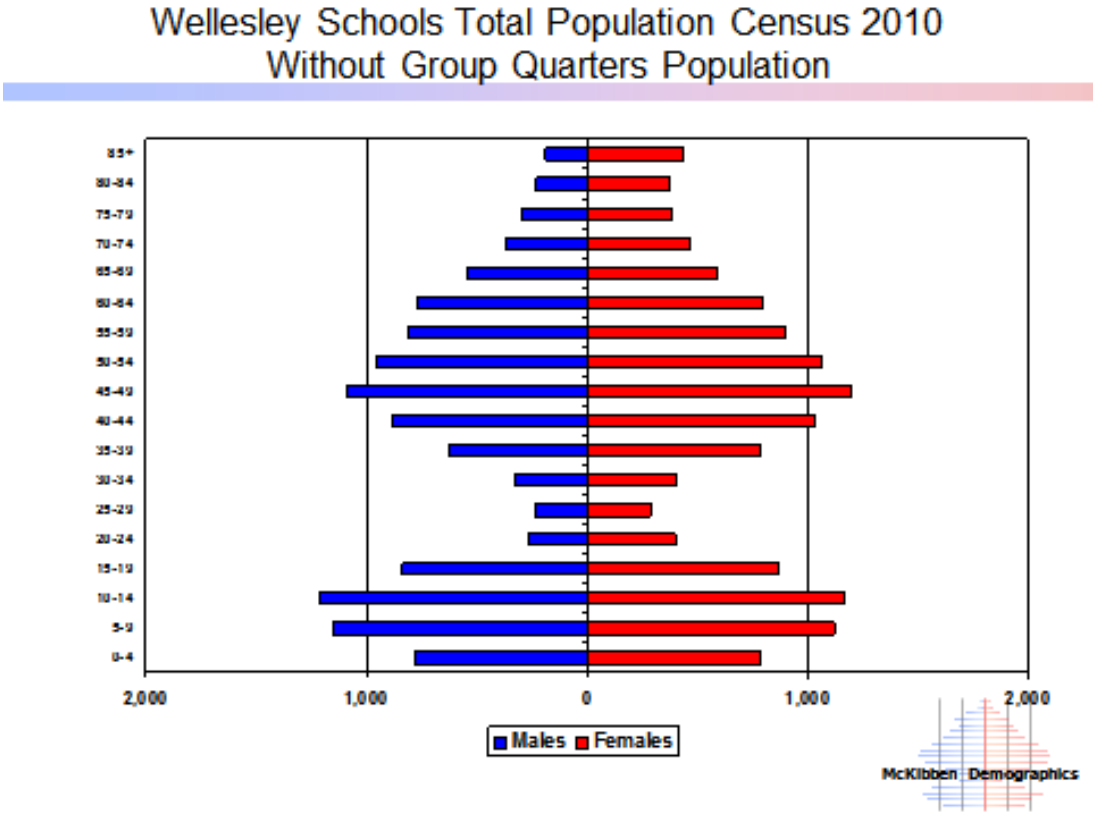
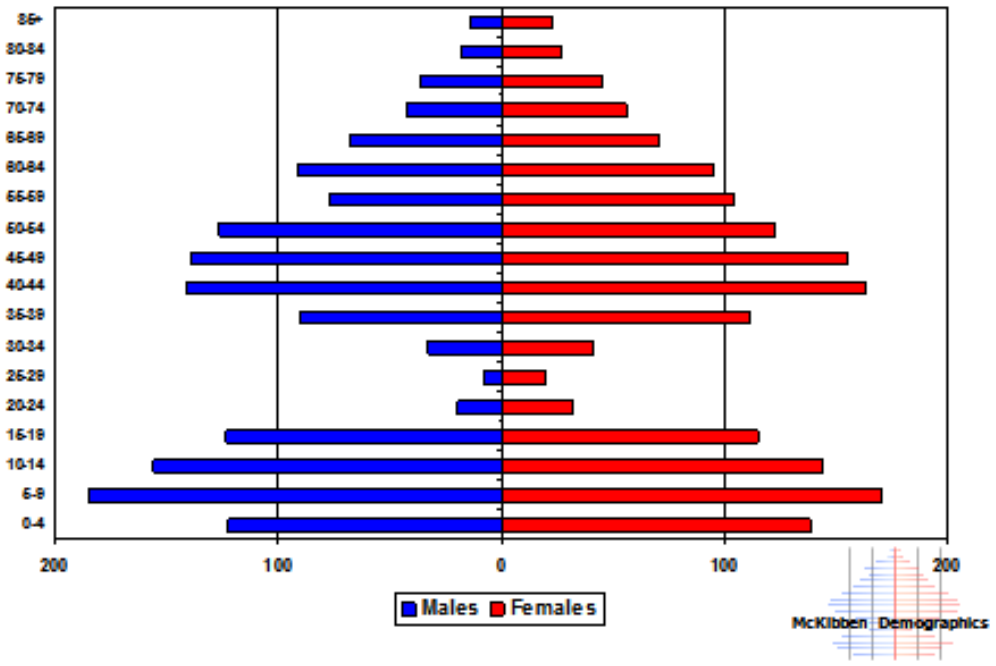
Appendix A: Population Pyramids by Attendance Zone (Age/Sex)

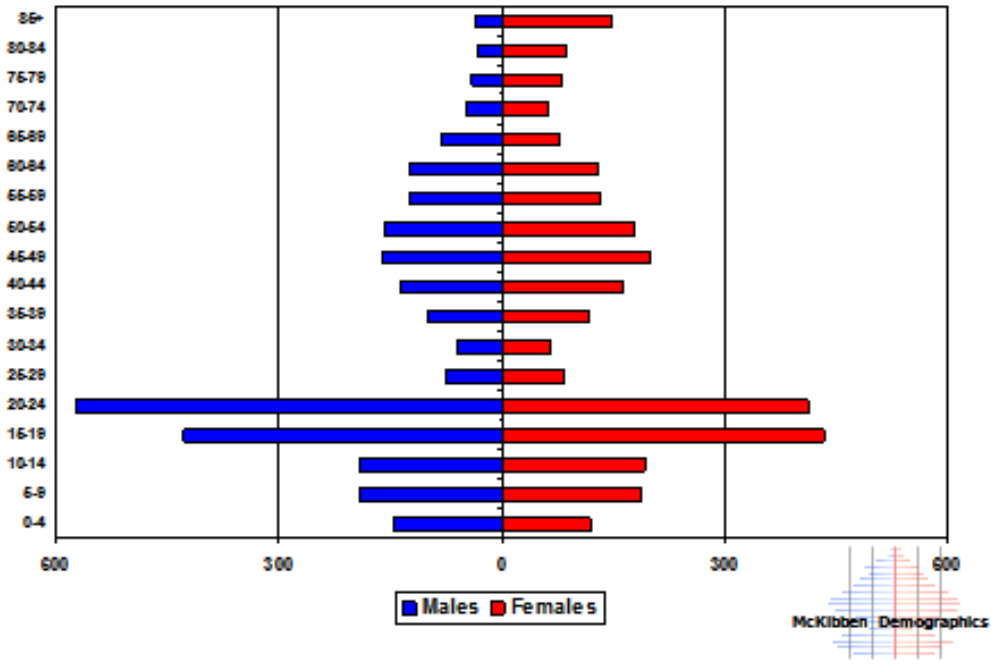




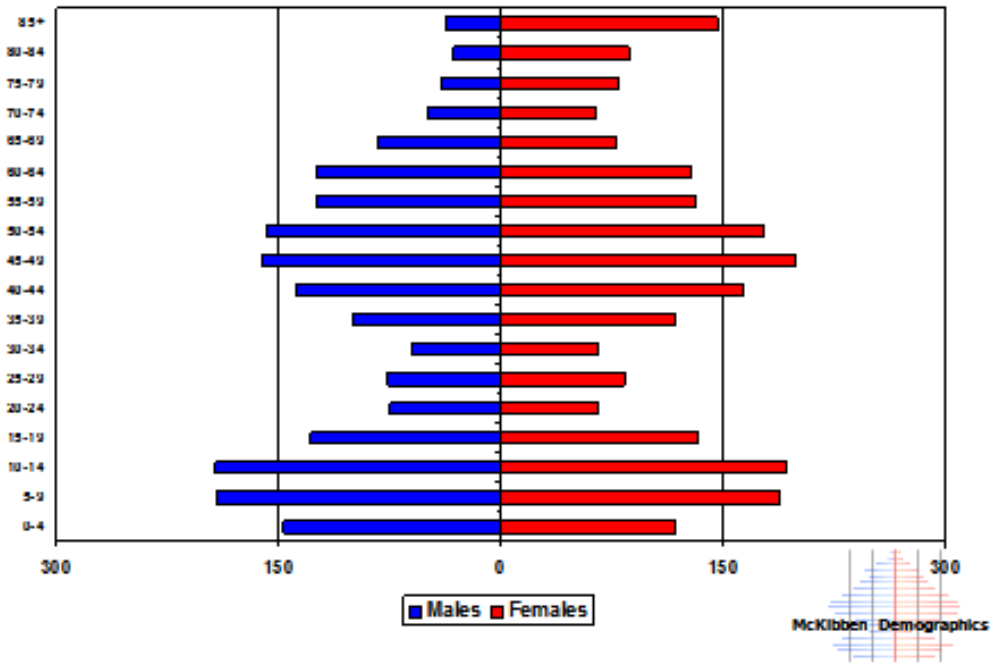
Bates School District Total Population Census 2010



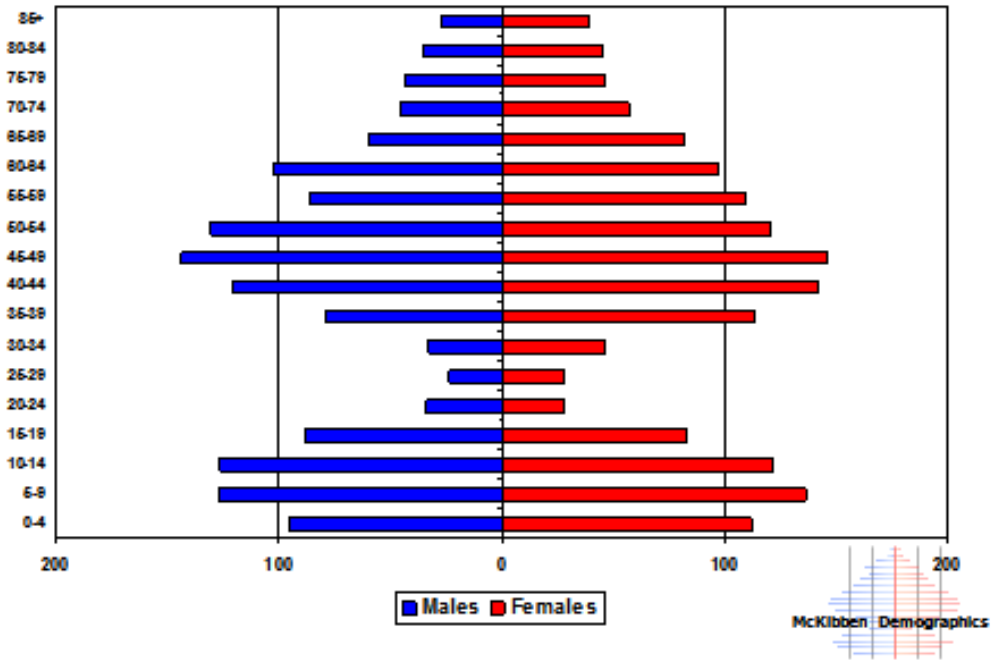
Fiske School District Total Population Census 2010



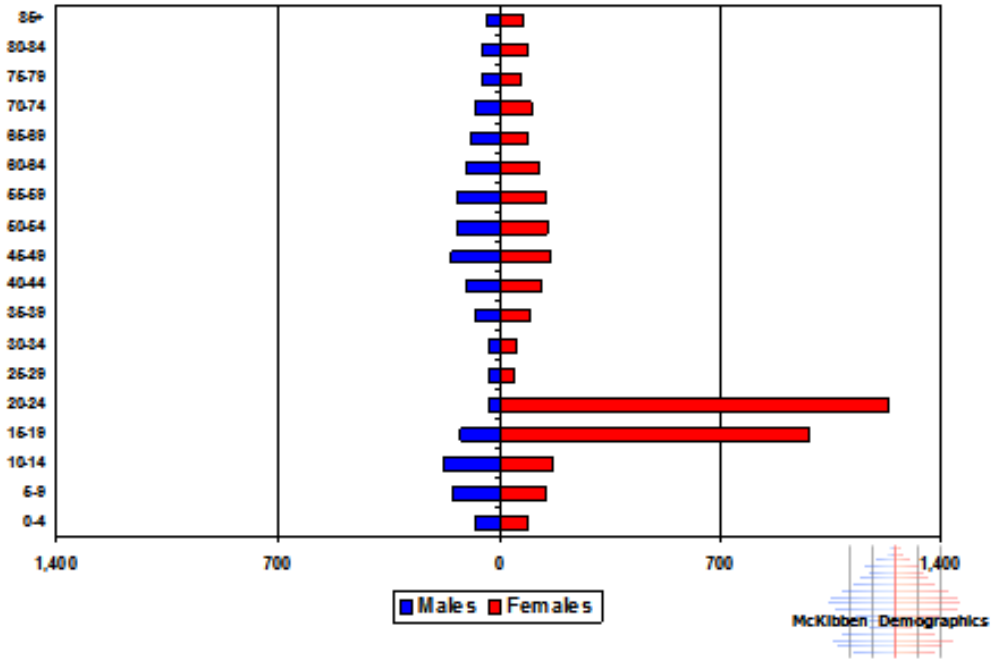
Fiske School District Total Population Census 2010
Without Group Quarters Population (note different scale)



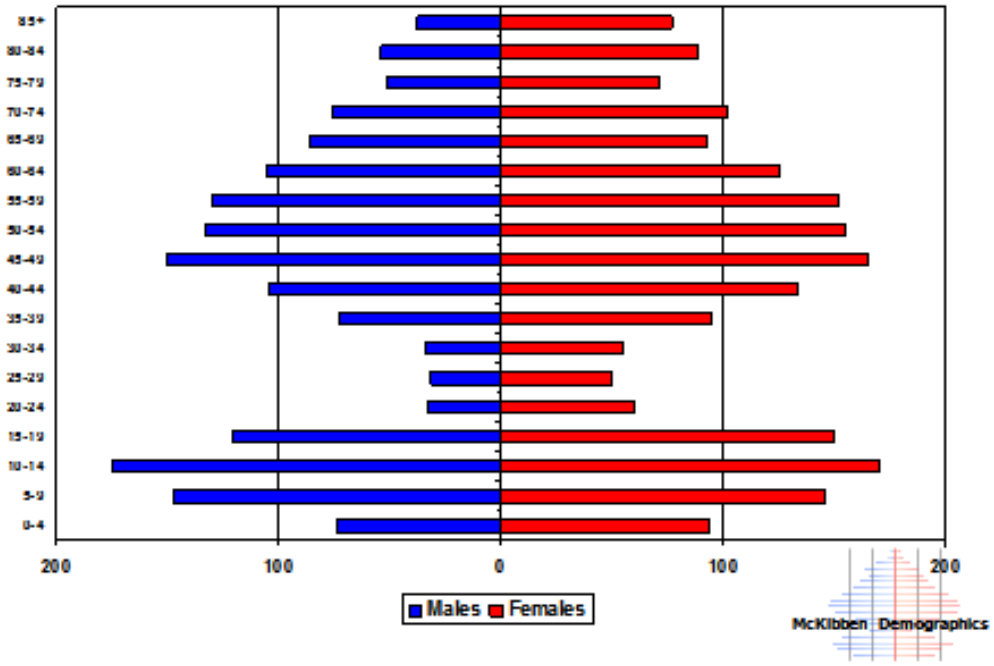
Hardy School District Total Population Census 2010



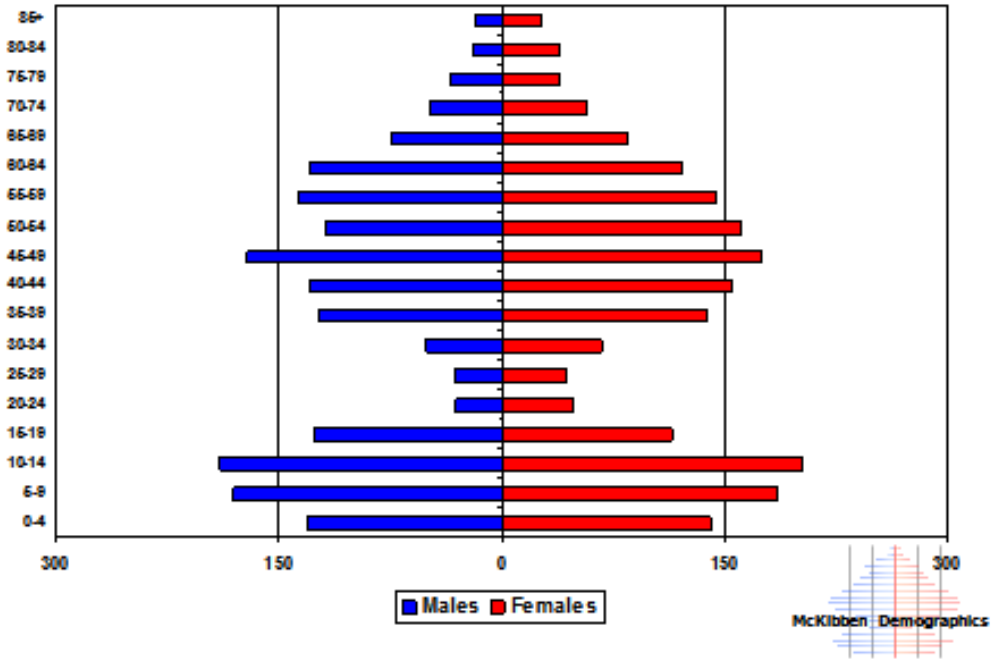
Hunnewell Total Population Census 2010



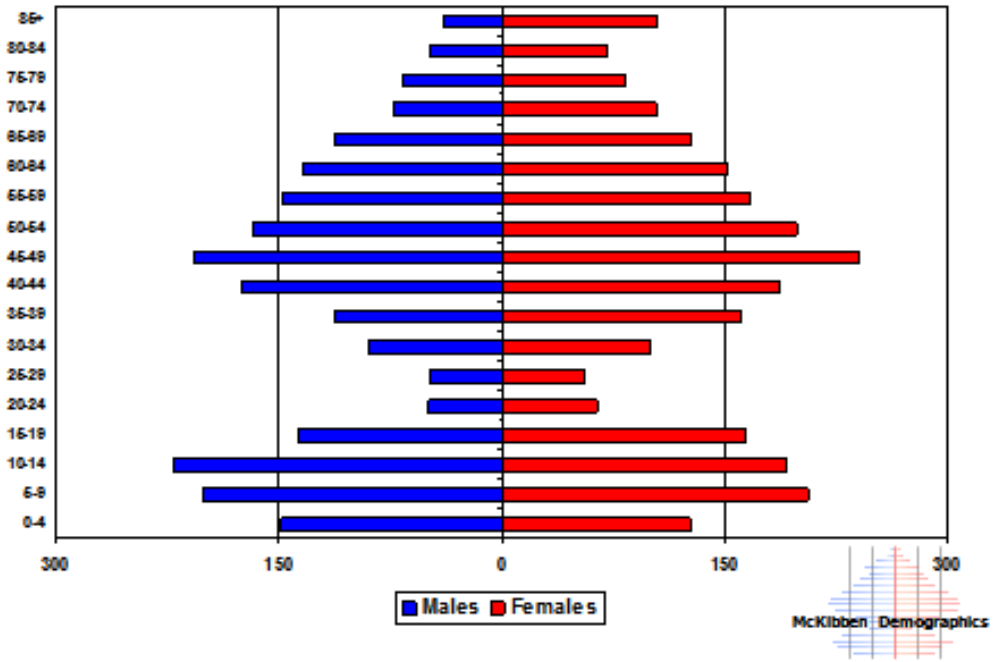
Hunnewell Total Population Census 2010
Without Group Quarters Population (note different scale)



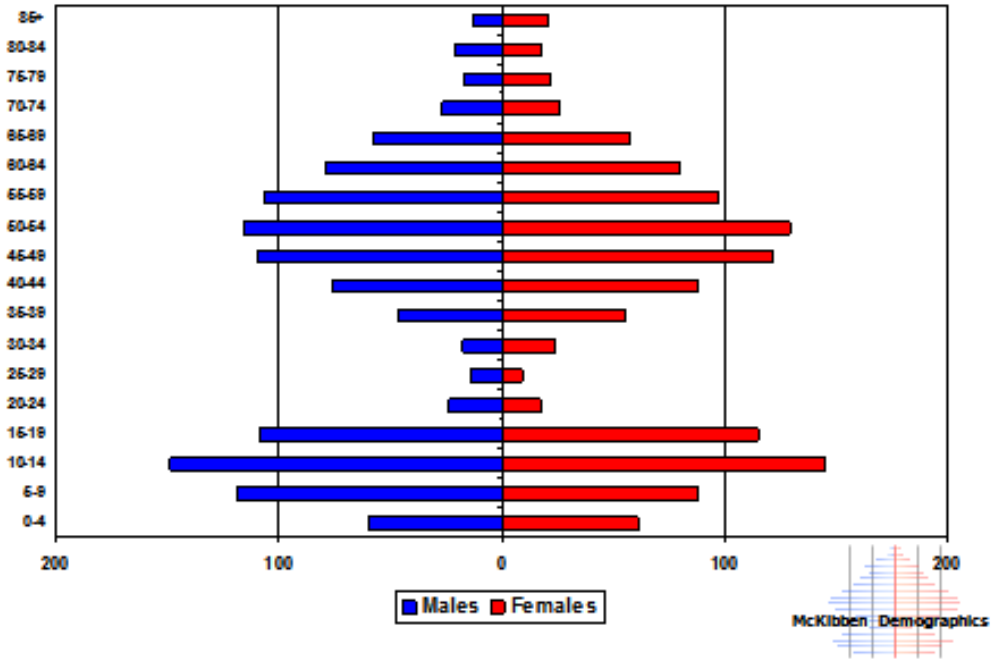
Schofield School District Total Population Census 2010



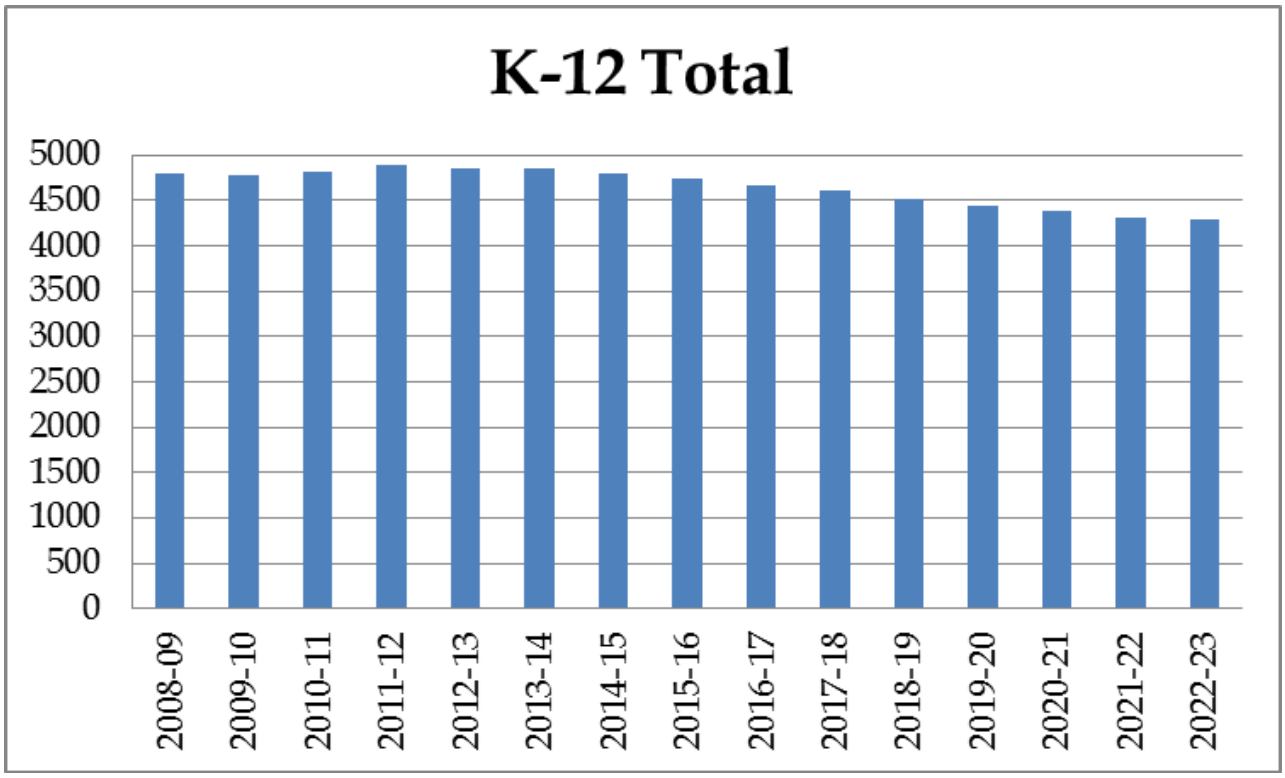
Sprague School District Total Population Census 2010

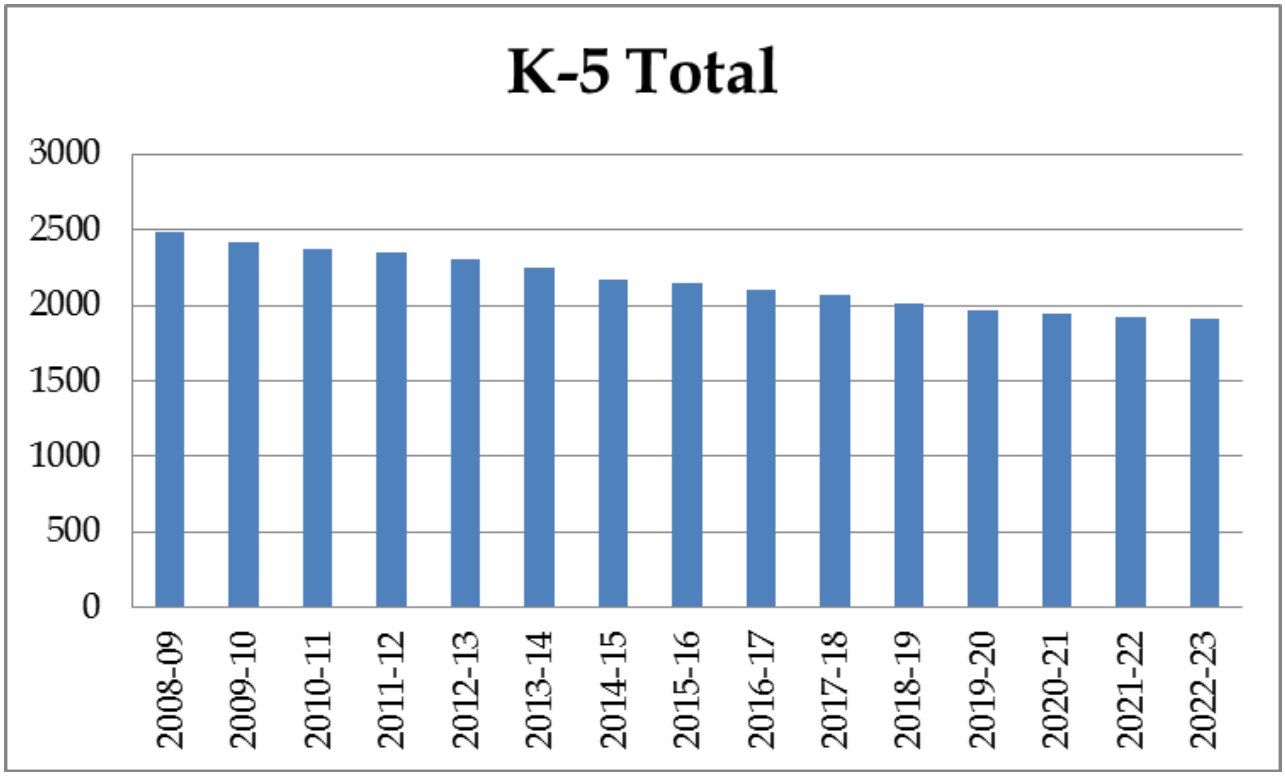


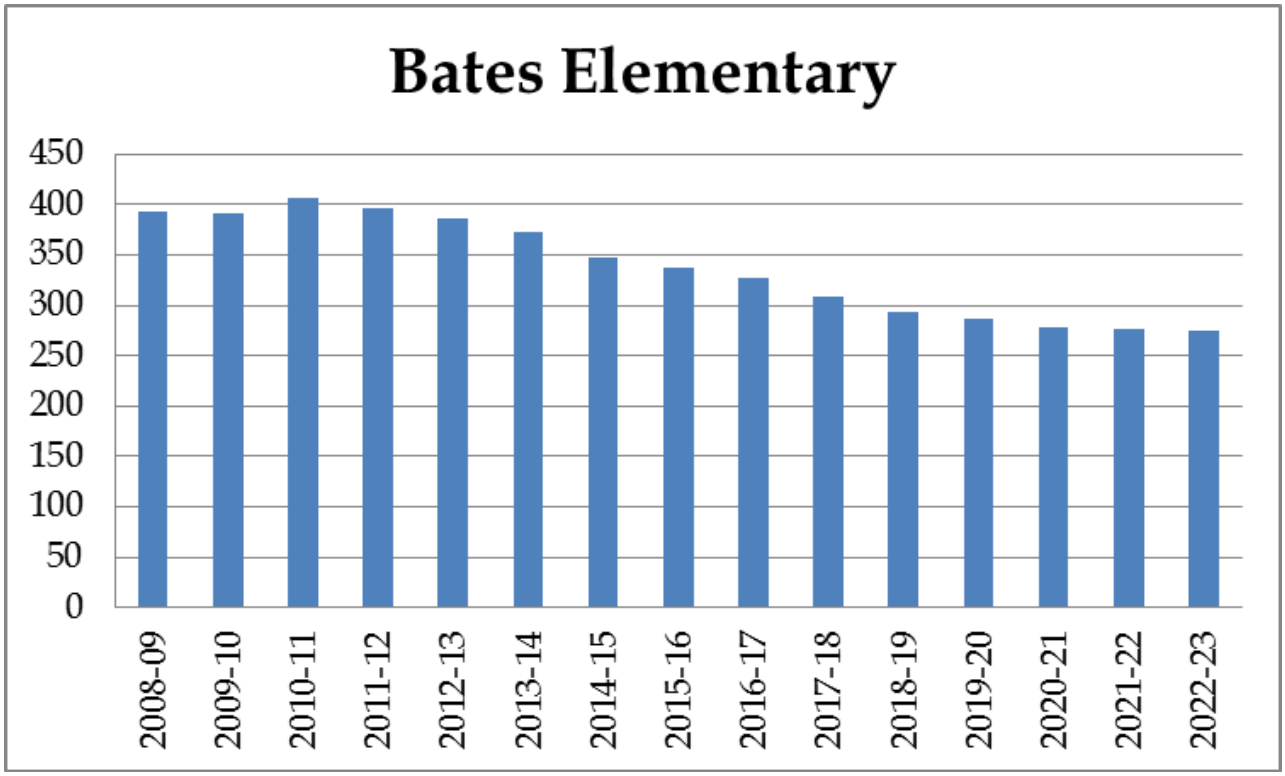
Upham School District Total Population Census 2010

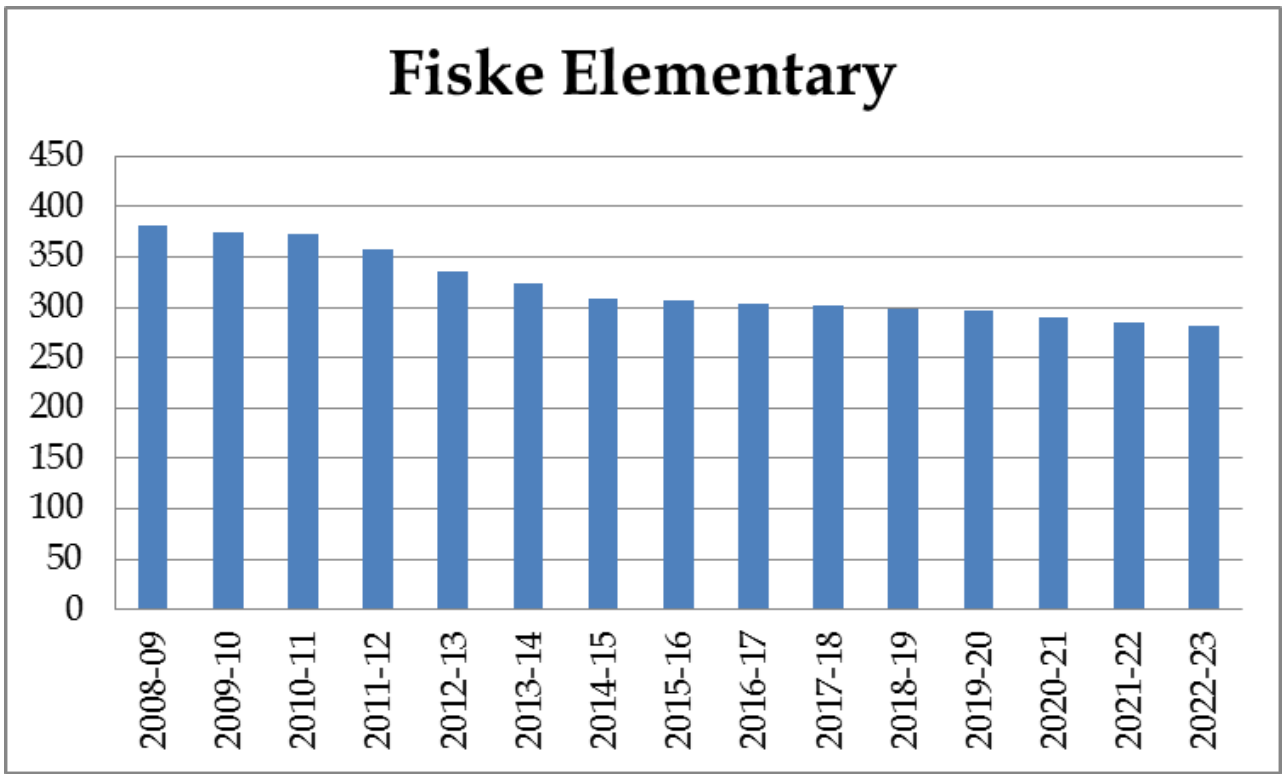


Appendix B: Enrollment Forecast Charts






Bates Elementary
450
400
350
300
250
200
150
100
50
0
2008-09
2009-10
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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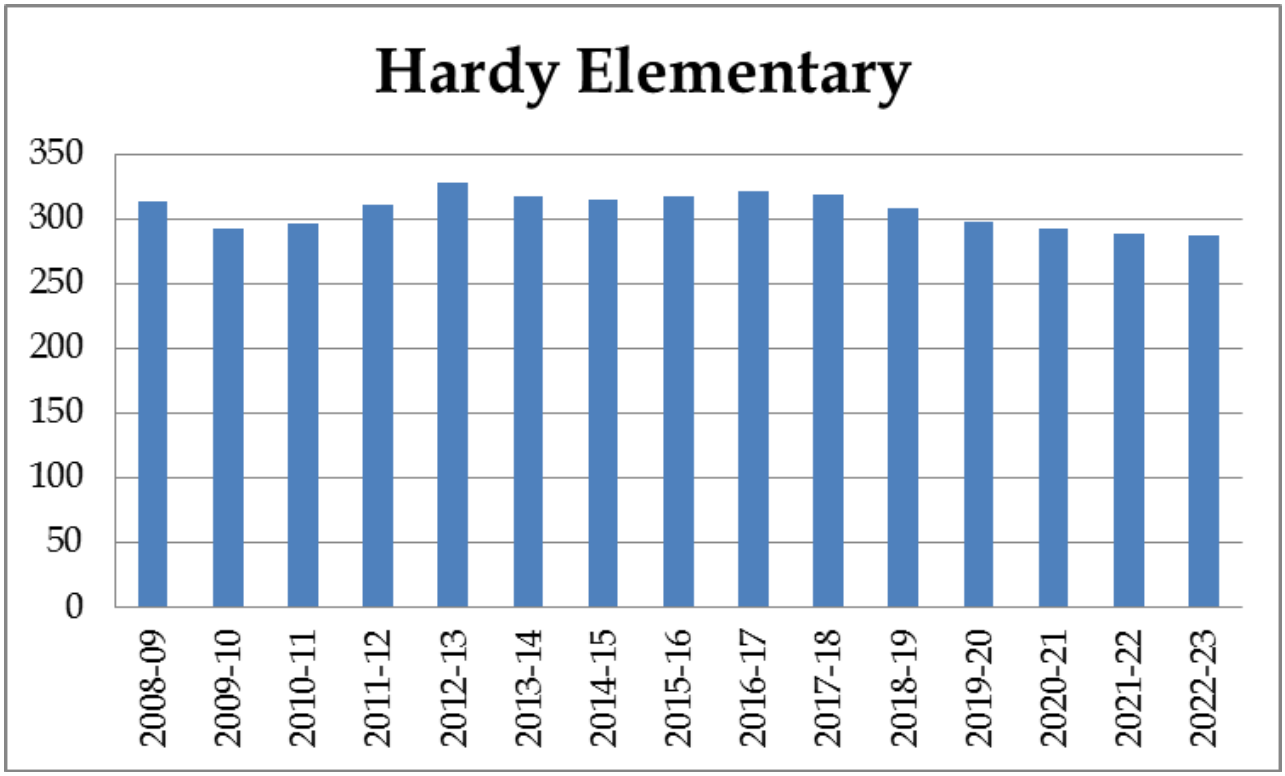
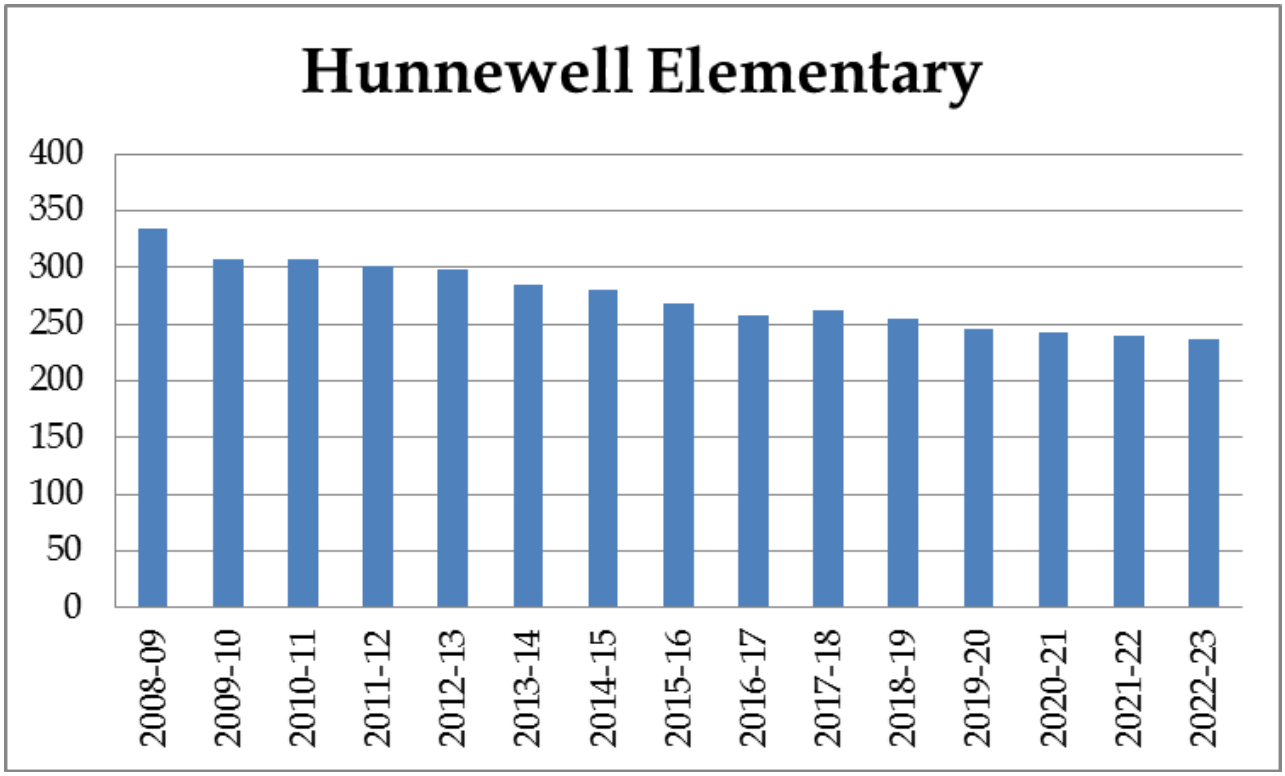
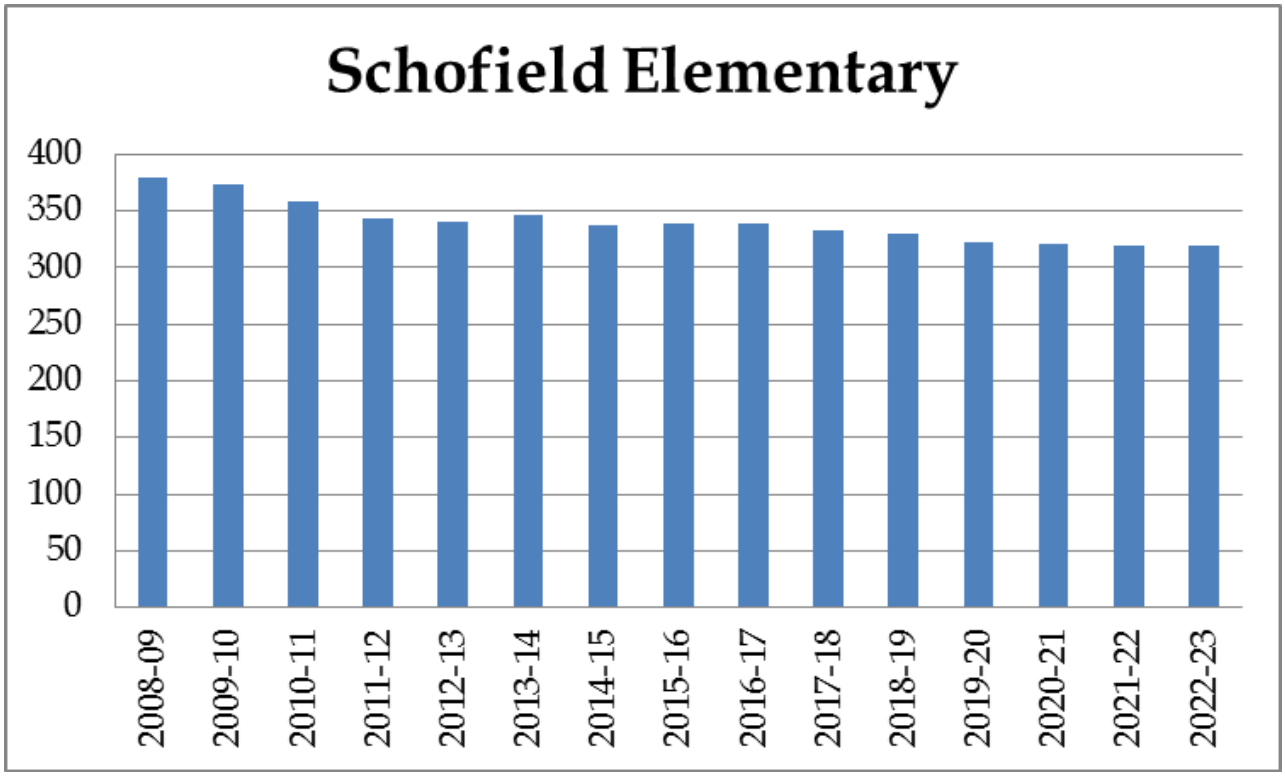
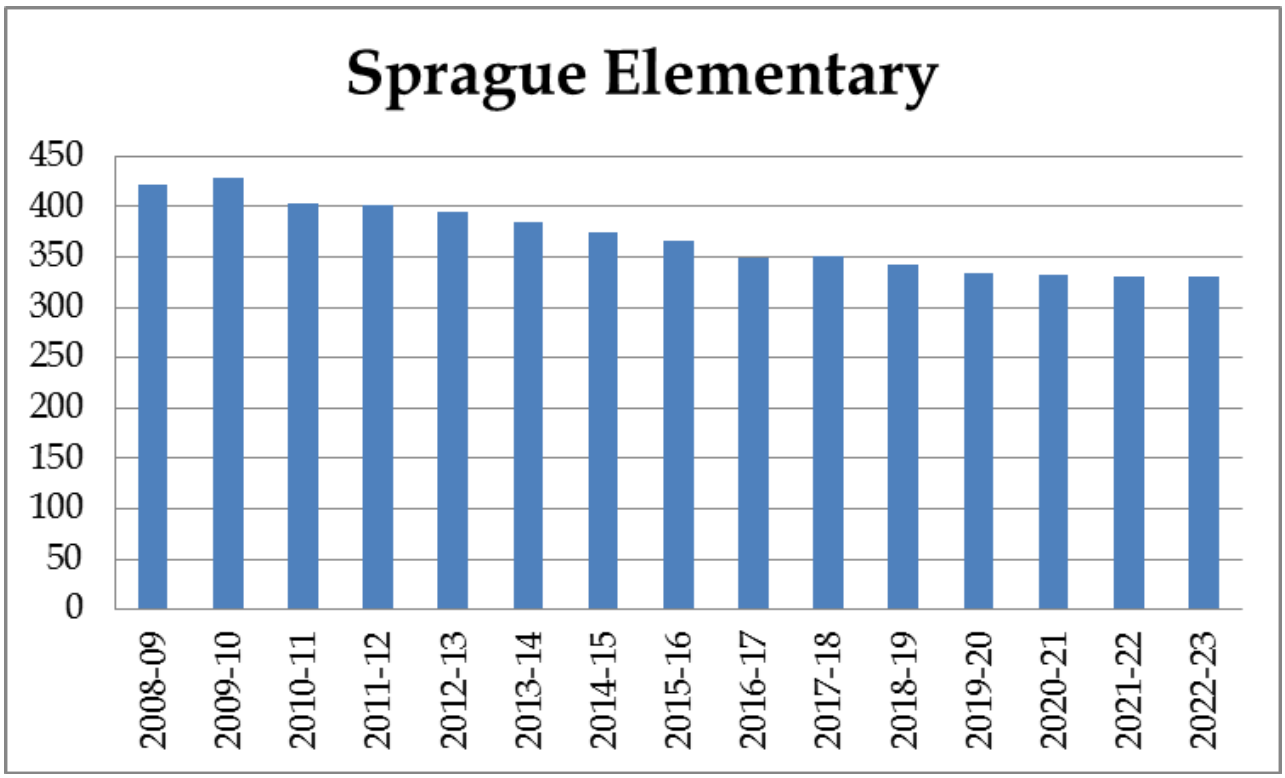
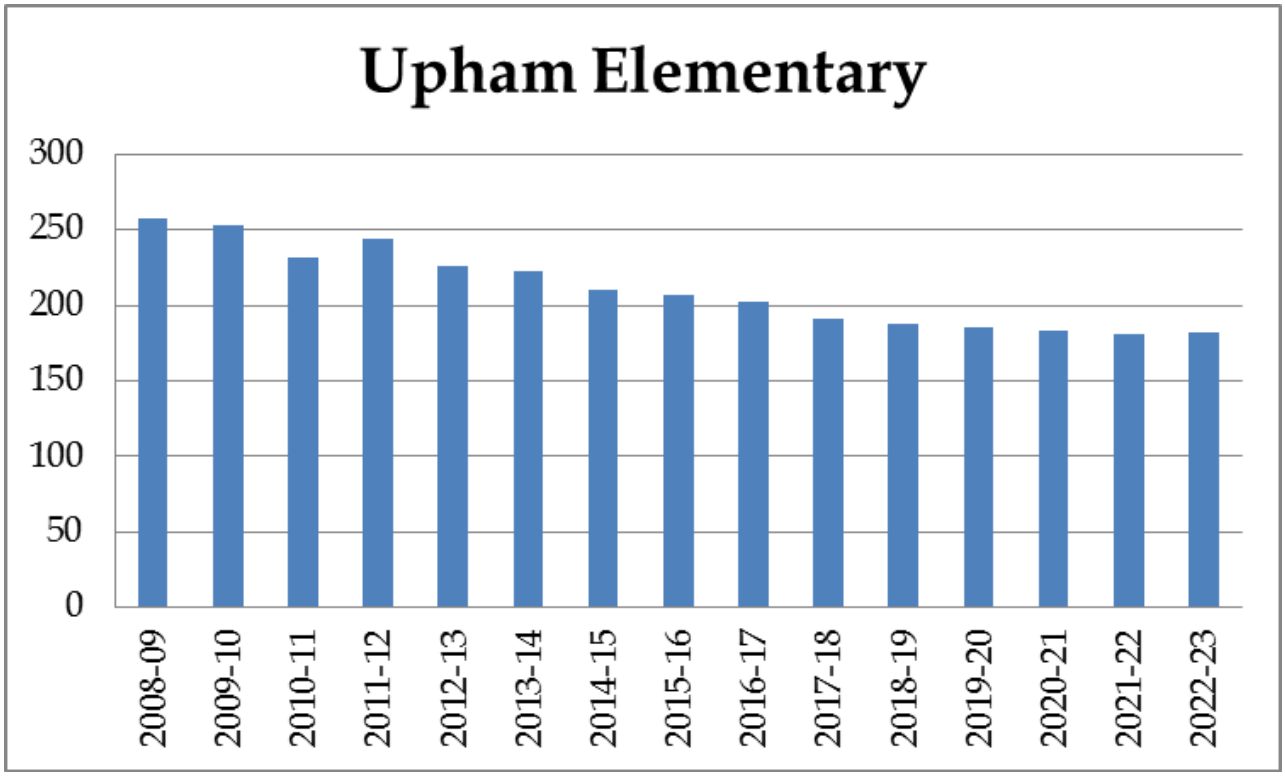
400
350
300
250
200
150
100
50
0
2008-09
2009-10
2010-11
2011-12
2012-13
2013-14
2014-15
2015-16
2016-17
2017-18
2018-19
2019-20
2020-21
2021-22
2022-23

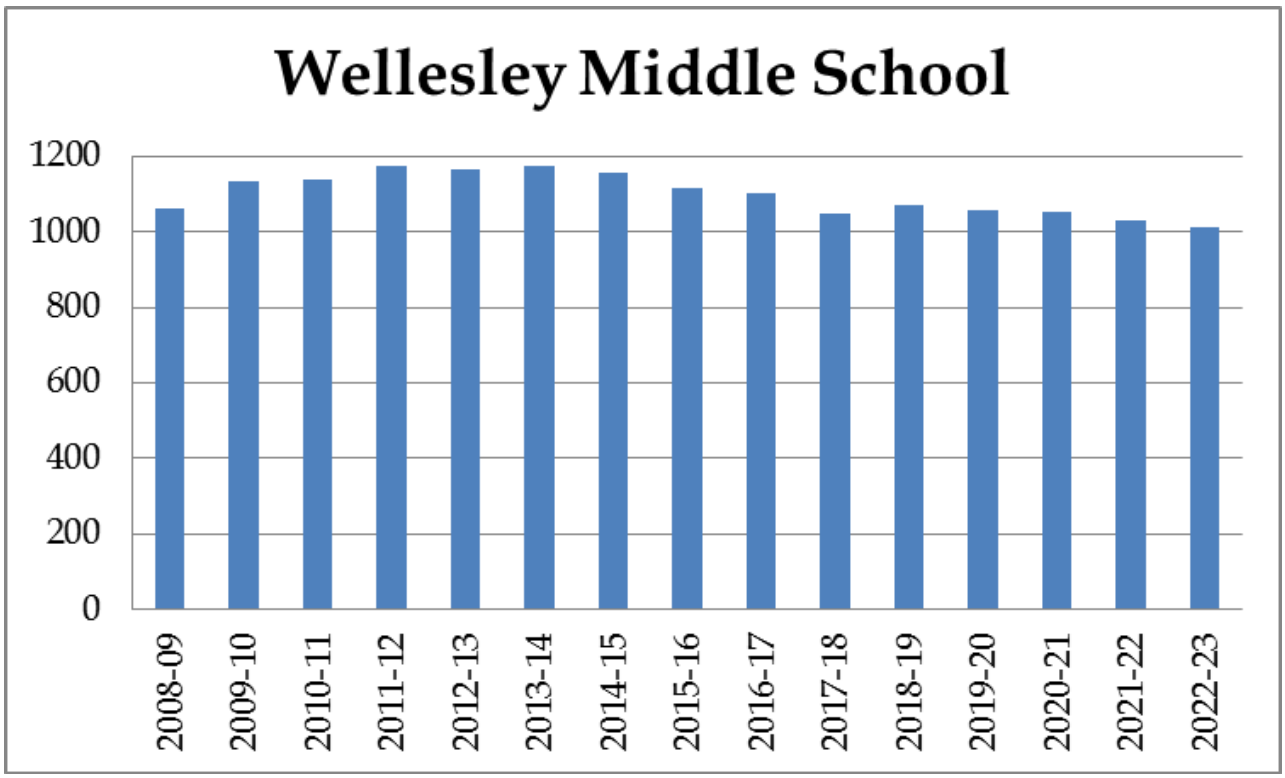

Hardy Elementary
350
300
250
200
150
100
50
0
2008-09
2009-10
2010-11
2011-12
2012-13
2013-14
2014-15
2015-16
2016-17
2017-18
2018-19
2019-20
2020-21
2021-22
2022-23

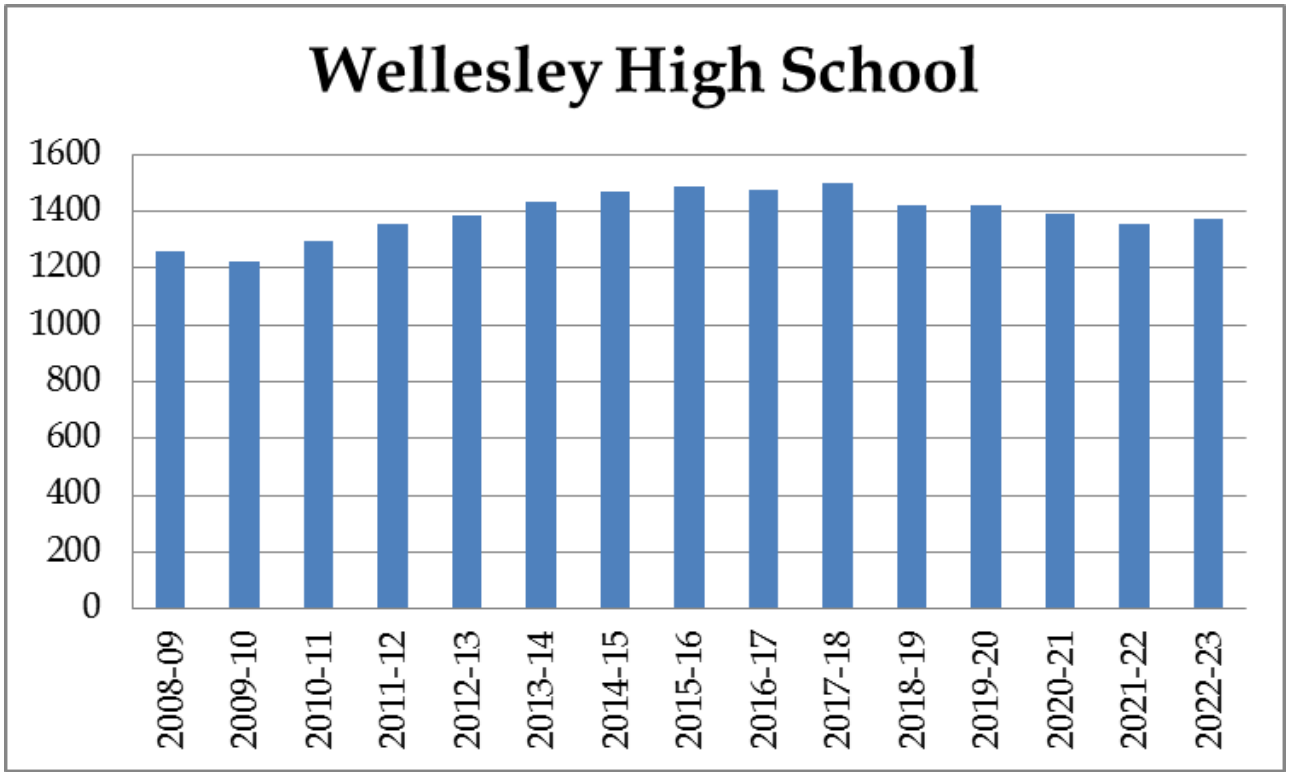

Hunnewell Elementary
400
350
300
250
200
150
100
50
0
2008-09
2009-10
2010-11
2011-12
2012-13
2013-14
2014-15
2015-16
2016-17
2017-18
2018-19
2019-20
2020-21
2021-22
2022-23


Schofield Elementary
400
350
300
250
200
150
100
50
0
2008-09
2009-10
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


Sprague Elementary
450
400
350
300
250
200
150
100
50
0
2008-09
2009-10
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


Upham Elementary
300
250
200
150
100
50
0
2008-09
2009-10
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


Wellesley Middle School
1200
1000
800
600
400
200
0
2008-09
2009-10
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


Wellesley High School
1600
1400
1200
1000
800
600
400
200
0
2008-09
2009-10
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

Appendix C: Projected Enrollment Tables

Wellesly Public Schools: Total Enrollment

	2008-09	2009-10	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
K	394	352	354	353	352	337	330	315	313	307	300	295	295	291	301
1	422	413	359	381	365	369	355	345	330	323	317	310	305	302	298
2	415	414	419	362	389	367	370	356	350	335	327	321	319	314	311
3	446	407	411	438	365	395	372	375	366	360	345	337	334	332	327
4	399	439	406	413	433	361	391	369	377	368	362	347	343	340	337
5	405	396	427	408	405	424	354	383	365	373	365	358	345	341	338
Elementary Total	2481	2421	2376	2355	2309	2253	2172	2143	2101	2066	2016	1968	1941	1920	1912
Change		-60	-45	-21	-46	-56	-81	-29	-42	-35	-50	-48	-27	-21	-8
Percent Change		-2.42%	-1.86%	-0.88%	-1.95%	-2.43%	-3.60%	-1.34%	-1.96%	-1.67%	-2.42%	-2.38%	-1.37%	-1.08%	-0.42%
	2008-09	2009-10	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
6	368	390	397	410	381	390	408	341	370	353	361	354	348	336	333
7	377	360	380	382	411	370	378	396	332	361	345	353	347	342	331
8	315	383	361	384	373	413	372	381	399	335	365	349	358	352	348
Middle School Total	1060	1133	1138	1176	1165	1173	1158	1118	1101	1049	1071	1056	1053	1030	1012
Change		73	5	38	-11	8	-15	-40	-17	-52	22	-15	-3	-23	-18
Percent Change		6.89%	0.44%	3.34%	-0.94%	0.69%	-1.28%	-3.45%	-1.52%	-4.72%	2.10%	-1.40%	-0.28%	-2.18%	-1.75%
	2008-09	2009-10	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
9	350	296	369	346	383	364	403	363	372	390	327	357	342	350	345
10	292	350	295	374	342	380	361	400	360	369	387	325	355	340	348
11	297	284	342	297	360	334	372	353	392	352	361	379	319	348	334
12	319	294	289	338	298	356	331	369	350	388	349	358	376	317	346
High School Total	1258	1224	1295	1355	1383	1434	1467	1485	1474	1499	1424	1419	1392	1355	1373
Change		-34	71	60	28	51	33	18	-11	25	-75	-5	-27	-37	18
Percent Change		-2.70%	5.80%	4.63%	2.07%	3.69%	2.30%	1.23%	-0.74%	1.70%	-5.00%	-0.35%	-1.90%	-2.66%	1.33%
	2008-09	2009-10	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
Total Enrollment	4799	4778	4809	4886	4857	4860	4797	4746	4676	4614	4511	4443	4386	4305	4297
Change		-21	31	77	-29	3	-63	-51	-70	-62	-103	-68	-57	-81	-8
Percent Change		-0.44%	0.65%	1.60%	-0.59%	0.06%	-1.30%	-1.06%	-1.47%	-1.33%	-2.23%	-1.51%	-1.28%	-1.85%	-0.19%

Bates Elementary

	2008-09	2009-10	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
K	68	62	59	62	56	48	50	46	46	44	43	42	41	41	42
1	70	73	58	59	66	59	50	52	48	47	45	44	43	42	42
2	79	68	78	59	62	68	61	52	54	50	49	47	47	46	45
3	66	74	68	80	60	63	69	62	53	55	51	50	49	49	48
4	50	68	75	64	79	58	61	67	61	52	54	50	50	49	49
5	60	47	68	72	64	77	56	59	66	60	51	53	49	49	48
Total	393	392	406	396	387	373	347	338	328	308	293	286	279	276	274
Change		-1	14	-10	-9	-14	-26	-9	-10	-20	-15	-7	-7	-3	-2
% Change		-0.3%	3.6%	-2.5%	-2.3%	-3.6%	-7.0%	-2.6%	-3.0%	-6.1%	-4.9%	-2.4%	-2.4%	-1.1%	-0.7%

Fiske Elementary

	2008-09	2009-10	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
K	65	53	61	56	57	54	54	53	52	51	50	49	49	48	49
1	61	67	52	59	52	55	52	52	51	51	50	49	48	48	47
2	66	66	68	51	57	51	54	51	52	51	51	50	48	47	47
3	69	60	62	68	49	55	49	52	50	51	50	50	49	47	46
4	56	72	60	62	63	48	53	48	51	49	50	49	49	48	46
5	65	57	70	61	57	60	46	51	47	49	48	49	47	47	46
Total	382	375	373	357	335	323	308	307	303	302	299	296	290	285	281
Change		-7	-2	-16	-22	-12	-15	-1	-4	-1	-3	-3	-6	-5	-4
% Change		-1.8%	-0.5%	-4.3%	-6.2%	-3.6%	-4.6%	-0.3%	-1.3%	-0.3%	-1.0%	-1.0%	-2.0%	-1.7%	-1.4%

Hardy Elementary

	2008-09	2009-10	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
K	48	43	47	47	57	52	49	46	46	45	44	43	44	43	44
1	60	49	48	53	53	61	58	54	51	50	49	48	47	47	46
2	48	58	51	48	48	51	59	56	53	50	49	48	48	47	47
3	50	46	59	57	49	49	52	60	58	55	52	51	50	50	49
4	48	48	45	62	57	49	49	53	61	59	56	53	52	51	51
5	59	48	46	44	64	56	48	48	52	60	58	55	52	51	50
Total	313	292	296	311	328	318	315	317	321	319	308	298	293	289	287
Change		-21	4	15	17	-10	-3	2	4	-2	-11	-10	-5	-4	-2
% Change		-6.7%	1.4%	5.1%	5.5%	-3.0%	-0.9%	0.6%	1.3%	-0.6%	-3.4%	-3.2%	-1.7%	-1.4%	-0.7%

Hunnewell Elementary

	2008-09	2009-10	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
K	44	41	45	37	42	41	39	36	36	36	35	34	35	34	35
1	63	43	48	51	38	46	45	42	39	38	38	37	36	36	35
2	47	58	47	50	54	39	47	46	44	41	40	40	39	38	38
3	64	45	60	49	52	56	40	48	48	46	43	42	42	41	40
4	61	59	48	62	51	53	57	41	50	50	48	45	45	45	43
5	55	61	59	53	61	50	52	56	41	51	51	48	46	46	46
Total	334	307	307	302	298	285	280	269	258	262	255	246	243	240	237
Change		-27	0	-5	-4	-13	-5	-11	-11	4	-7	-9	-3	-3	-3
% Change		-8.1%	0.0%	-1.6%	-1.3%	-4.4%	-1.8%	-3.9%	-4.1%	1.6%	-2.7%	-3.5%	-1.2%	-1.2%	-1.3%

Schofield Elementary

	2008-09	2009-10	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
K	60	56	48	60	54	57	55	54	53	52	51	51	50	50	52
1	53	66	54	50	62	56	59	57	56	54	53	52	52	51	51
2	69	47	66	52	56	61	55	58	56	55	53	52	53	53	52
3	75	73	51	66	55	58	63	57	61	59	58	56	55	56	56
4	68	70	69	48	63	52	55	59	55	59	57	56	55	54	55
5	54	62	71	67	51	62	51	54	58	54	58	56	56	55	54
Total	379	374	359	343	341	346	338	339	339	333	330	323	321	319	320
Change		-5	-15	-16	-2	5	-8	1	0	-6	-3	-7	-2	-2	1
% Change		-1.3%	-4.0%	-4.5%	-0.6%	1.5%	-2.3%	0.3%	0.0%	-1.8%	-0.9%	-2.1%	-0.6%	-0.6%	0.3%

Sprague Elementary

	2008-09	2009-10	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
K	71	65	62	49	57	56	55	52	52	51	50	49	50	49	52
1	73	73	65	73	54	61	60	58	55	54	53	52	51	51	50
2	67	76	67	65	74	55	62	61	59	56	55	54	54	53	53
3	73	68	72	72	65	75	56	63	63	61	58	57	57	57	56
4	71	71	68	74	72	65	75	56	64	64	62	59	59	59	59
5	67	75	69	69	72	73	66	76	57	65	65	63	61	61	61
Total	422	428	403	402	394	385	374	366	350	351	343	334	332	330	331
Change		6	-25	-1	-8	-9	-11	-8	-16	1	-8	-9	-2	-2	1
% Change		1.4%	-5.8%	-0.2%	-2.0%	-2.3%	-2.9%	-2.1%	-4.4%	0.3%	-2.3%	-2.6%	-0.6%	-0.6%	0.3%

Upham Elementary

	2008-09	2009-10	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
K	38	32	32	42	29	29	28	28	28	28	27	27	26	26	27
1	42	42	34	36	40	31	31	30	30	29	29	28	28	27	27
2	39	41	42	37	38	42	32	32	32	32	30	30	30	30	29
3	49	41	39	46	35	39	43	33	33	33	33	31	32	32	32
4	45	51	41	41	48	36	41	45	35	35	35	35	33	34	34
5	45	46	44	42	36	46	35	39	44	34	34	34	34	32	33
Total	258	253	232	244	226	223	210	207	202	191	188	185	183	181	182
Change		-5	-21	12	-18	-3	-13	-3	-5	-11	-3	-3	-2	-2	1
% Change		-1.9%	-8.3%	5.2%	-7.4%	-1.3%	-5.8%	-1.4%	-2.4%	-5.4%	-1.6%	-1.6%	-1.1%	-1.1%	0.6%

Wellesly MS

	2008-09	2009-10	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
6	368	390	397	410	381	390	408	341	370	353	361	354	348	336	333
7	377	360	380	382	411	370	378	396	332	361	345	353	347	342	331
8	315	383	361	384	373	413	372	381	399	335	365	349	358	352	348
Total	1060	1133	1138	1176	1165	1173	1158	1118	1101	1049	1071	1056	1053	1030	1012
Change		73	5	38	-11	8	-15	-40	-17	-52	22	-15	-3	-23	-18
% Change		6.9%	0.4%	3.3%	-0.9%	0.7%	-1.3%	-3.5%	-1.5%	-4.7%	2.1%	-1.4%	-0.3%	-2.2%	-1.7%

Wellesly High School

	2008-09	2009-10	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
9	350	296	369	346	383	364	403	363	372	390	327	357	342	350	345
10	292	350	295	374	342	380	361	400	360	369	387	325	355	340	348
11	297	284	342	297	360	334	372	353	392	352	361	379	319	348	334
12	319	294	289	338	298	356	331	369	350	388	349	358	376	317	346
Total	1258	1224	1295	1355	1383	1434	1467	1485	1474	1499	1424	1419	1392	1355	1373
Change		-34	71	60	28	51	33	18	-11	25	-75	-5	-27	-37	18
% Change		-2.7%	5.8%	4.6%	2.1%	3.7%	2.3%	1.2%	-0.7%	1.7%	-5.0%	-0.4%	-1.9%	-2.7%	1.3%

Appendix D: Population Forecast Tables

Wellesly Public Schools

Males	2010	2015	2020
0-4	781	690	640
5-9	1,152	1,010	930
10-14	1,211	1,200	1,040
15-19	1,136	1,300	1,270
20-24	766	800	820
25-29	236	300	330
30-34	320	380	470
35-39	626	610	660
40-44	884	760	790
45-49	1,084	920	840
50-54	952	1,080	920
55-59	809	910	1,010
60-64	766	760	850
65-69	542	650	650
70-74	364	430	560
75-79	292	310	390
80-84	229	220	260
85+	186	180	190
Total	12,336	12,510	12,620

Females	2010	2015	2020
0-4	789	670	630
5-9	1,120	1,010	910
10-14	1,169	1,170	1,050
15-19	2,009	2,090	2,080
20-24	1,833	1,870	1,870
25-29	289	370	380
30-34	398	440	510
35-39	789	670	710
40-44	1,031	920	880
45-49	1,201	1,070	1,010
50-54	1,064	1,180	1,060
55-59	904	1,030	1,170
60-64	798	830	970
65-69	592	730	770
70-74	465	510	650
75-79	386	420	470
80-84	373	370	360
85+	436	430	440
Total	15,646	15,780	15,920

Total	2010	2015	2020
0-4	1,570	1,360	1,270
5-9	2,272	2,020	1,840
10-14	2,380	2,370	2,090
15-19	3,145	3,390	3,350
20-24	2,599	2,670	2,690
25-29	525	670	710
30-34	718	820	980
35-39	1,415	1,280	1,370
40-44	1,915	1,680	1,670
45-49	2,285	1,990	1,850
50-54	2,016	2,260	1,980
55-59	1,713	1,940	2,180
60-64	1,564	1,590	1,820
65-69	1,134	1,380	1,420
70-74	829	940	1,210
75-79	678	730	860
80-84	602	590	620
85+	622	610	630
Total	27,982	28,290	28,540
Median Age	37.8	38.3	39.9

	2010-2015	2015-2020
Births	940	900
Deaths	1,050	1,110
Natural Increase	-110	-210
Net Migration	530	480
Change	420	270

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

Bates Elementary

Males	2010	2015	2020
0-4	123	110	100
5-9	185	150	130
10-14	156	190	150
15-19	124	130	160
20-24	20	40	40
25-29	8	20	40
30-34	33	40	40
35-39	91	90	70
40-44	142	110	120
45-49	139	150	140
50-54	127	140	150
55-59	77	120	130
60-64	92	70	120
65-69	68	80	60
70-74	43	50	70
75-79	37	30	50
80-84	18	30	30
85+	14	20	20
Total	1,496	1,570	1,620

Females	2010	2015	2020
0-4	138	100	100
5-9	170	160	120
10-14	144	180	170
15-19	115	120	150
20-24	32	30	30
25-29	20	30	30
30-34	41	50	50
35-39	111	90	80
40-44	163	130	120
45-49	155	170	160
50-54	123	150	170
55-59	104	120	150
60-64	95	90	120
65-69	71	90	90
70-74	56	60	80
75-79	45	50	50
80-84	27	40	50
85+	23	30	40
Total	1,635	1,690	1,760

Total	2010	2015	2020
0-4	261	210	200
5-9	355	310	250
10-14	300	370	320
15-19	239	250	310
20-24	52	70	70
25-29	28	50	70
30-34	74	90	90
35-39	202	180	150
40-44	304	240	240
45-49	294	320	300
50-54	251	290	320
55-59	182	240	280
60-64	187	160	240
65-69	139	170	150
70-74	99	110	150
75-79	82	80	100
80-84	46	70	80
85+	38	50	60
Total	3,132	3,260	3,380
Median Age	40.9	42.1	44.8

	2010-2015	2015-2020
Births	110	120
Deaths	100	120
Natural Increase	10	0
Net Migration	120	100
Change	130	100

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

Fiske Elementary

Males	2010	2015	2020
0-4	147	110	100
5-9	192	160	140
10-14	193	200	170
15-19	428	430	430
20-24	574	590	580
25-29	77	90	80
30-34	61	80	100
35-39	100	100	120
40-44	138	120	130
45-49	162	150	140
50-54	158	170	160
55-59	124	150	160
60-64	125	120	140
65-69	83	110	100
70-74	49	70	100
75-79	41	40	60
80-84	32	40	40
85+	37	30	30
Total	2,721	2,760	2,780

Females	2010	2015	2020
0-4	118	110	100
5-9	188	130	140
10-14	193	200	140
15-19	433	430	430
20-24	412	440	440
25-29	83	90	100
30-34	65	90	100
35-39	117	100	130
40-44	163	140	140
45-49	199	180	150
50-54	178	200	180
55-59	131	170	200
60-64	128	120	160
65-69	78	120	110
70-74	63	70	110
75-79	80	60	60
80-84	86	80	50
85+	146	140	130
Total	2,861	2,870	2,870

Total	2010	2015	2020
0-4	265	220	200
5-9	380	290	280
10-14	386	400	310
15-19	861	860	860
20-24	986	1,030	1,020
25-29	160	180	180
30-34	126	170	200
35-39	217	200	250
40-44	301	260	270
45-49	361	330	290
50-54	336	370	340
55-59	255	320	360
60-64	253	240	300
65-69	161	230	210
70-74	112	140	210
75-79	121	100	120
80-84	118	120	90
85+	183	170	160
Total	5,582	5,630	5,650
Median Age	24.6	25.4	29.3

	2010-2015	2015-2020
Births	190	170
Deaths	210	210
Natural Increase	-20	-40
Net Migration	80	80
Change	60	40

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

Hardy Elementary

Males	2010	2015	2020
0-4	96	90	80
5-9	127	130	130
10-14	127	130	130
15-19	89	110	110
20-24	34	30	40
25-29	24	40	30
30-34	33	50	70
35-39	79	70	80
40-44	121	110	90
45-49	144	120	100
50-54	131	140	120
55-59	87	130	130
60-64	102	80	120
65-69	60	80	60
70-74	46	40	60
75-79	44	40	30
80-84	36	10	10
85+	27	10	10
Total	1,406	1,410	1,400

Females	2010	2015	2020
0-4	112	80	80
5-9	136	140	130
10-14	122	140	150
15-19	83	100	120
20-24	28	20	30
25-29	28	40	30
30-34	46	50	60
35-39	113	80	90
40-44	142	140	110
45-49	146	140	140
50-54	120	140	140
55-59	109	120	140
60-64	97	100	110
65-69	82	80	90
70-74	57	60	70
75-79	46	50	60
80-84	45	40	10
85+	39	10	10
Total	1,552	1,530	1,570

Total	2010	2015	2020
0-4	208	170	160
5-9	263	270	260
10-14	249	270	280
15-19	172	210	230
20-24	62	50	70
25-29	52	80	60
30-34	79	100	130
35-39	192	150	170
40-44	262	250	200
45-49	289	260	240
50-54	250	280	260
55-59	196	250	270
60-64	199	180	230
65-69	142	160	150
70-74	103	100	130
75-79	91	90	90
80-84	81	50	20
85+	65	20	20
Total	2,958	2,940	2,970
Median Age	43.8	43.4	43.1

	2010-2015	2015-2020
Births	100	100
Deaths	130	130
Natural Increase	-30	-30
Net Migration	90	80
Change	60	50

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

Hunnewell Elementary

Males	2010	2015	2020
0-4	74	90	90
5-9	147	120	120
10-14	175	150	120
15-19	121	160	130
20-24	33	40	40
25-29	32	30	50
30-34	34	40	60
35-39	73	70	80
40-44	104	100	110
45-49	150	110	110
50-54	133	150	110
55-59	130	130	140
60-64	105	120	120
65-69	86	90	110
70-74	76	70	70
75-79	51	70	60
80-84	54	40	60
85+	38	40	40
Total	1,616	1,620	1,620

Females	2010	2015	2020
0-4	94	90	90
5-9	146	140	120
10-14	170	150	140
15-19	983	990	960
20-24	1,232	1,260	1,270
25-29	50	60	70
30-34	55	60	70
35-39	95	90	100
40-44	134	120	130
45-49	165	140	140
50-54	155	160	140
55-59	152	150	160
60-64	125	140	140
65-69	93	120	130
70-74	102	80	100
75-79	71	90	70
80-84	89	70	90
85+	77	90	90
Total	3,988	4,000	4,010

Total	2010	2015	2020
0-4	168	180	180
5-9	293	260	240
10-14	345	300	260
15-19	1,104	1,150	1,090
20-24	1,265	1,300	1,310
25-29	82	90	120
30-34	89	100	130
35-39	168	160	180
40-44	238	220	240
45-49	315	250	250
50-54	288	310	250
55-59	282	280	300
60-64	230	260	260
65-69	179	210	240
70-74	178	150	170
75-79	122	160	130
80-84	143	110	150
85+	115	130	130
Total	5,604	5,620	5,630
Median Age	23.5	23.5	24.0

	2010-2015	2015-2020
Births	150	150
Deaths	200	200
Natural Increase	-50	-50
Net Migration	70	70
Change	20	20

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

Schofield Elementary

Males	2010	2015	2020
0-4	132	120	100
5-9	181	170	160
10-14	190	190	170
15-19	127	150	150
20-24	31	40	30
25-29	32	40	60
30-34	51	60	70
35-39	124	100	110
40-44	129	130	120
45-49	172	130	130
50-54	119	170	120
55-59	137	110	160
60-64	129	130	100
65-69	75	110	110
70-74	49	60	100
75-79	35	40	60
80-84	20	30	40
85+	18	20	20
Total	1,752	1,800	1,810

Females	2010	2015	2020
0-4	140	120	100
5-9	186	180	160
10-14	202	190	180
15-19	115	170	150
20-24	48	30	40
25-29	44	60	50
30-34	67	70	90
35-39	137	110	120
40-44	155	140	130
45-49	175	150	140
50-54	161	170	150
55-59	143	150	170
60-64	122	130	140
65-69	84	110	120
70-74	57	80	100
75-79	39	50	70
80-84	38	40	50
85+	26	40	40
Total	1,937	1,990	2,000

Total	2010	2015	2020
0-4	272	240	200
5-9	367	350	320
10-14	392	380	350
15-19	241	320	300
20-24	79	70	70
25-29	76	100	110
30-34	118	130	160
35-39	260	210	230
40-44	283	270	250
45-49	348	280	270
50-54	280	340	270
55-59	280	260	330
60-64	251	260	240
65-69	159	220	230
70-74	106	140	200
75-79	74	90	130
80-84	58	70	90
85+	43	60	60
Total	3,689	3,790	3,810
Median Age	40.7	41.8	43.3

	2010-2015	2015-2020
Births	140	130
Deaths	120	130
Natural Increase	20	0
Net Migration	60	50
Change	80	50

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

Sprague Elementary

Males	2010	2015	2020
0-4	149	120	120
5-9	201	190	170
10-14	221	210	200
15-19	138	190	180
20-24	50	40	70
25-29	49	60	50
30-34	90	80	90
35-39	112	140	140
40-44	175	120	150
45-49	208	170	120
50-54	168	200	170
55-59	147	160	190
60-64	135	140	150
65-69	112	120	120
70-74	74	90	100
75-79	67	70	80
80-84	48	60	60
85+	39	40	50
Total	2,182	2,200	2,210

Females	2010	2015	2020
0-4	126	120	110
5-9	206	170	160
10-14	192	210	170
15-19	164	160	190
20-24	64	70	40
25-29	55	70	80
30-34	100	90	100
35-39	161	150	140
40-44	187	170	170
45-49	240	190	170
50-54	198	240	180
55-59	167	190	230
60-64	151	160	180
65-69	127	140	150
70-74	104	110	130
75-79	83	100	110
80-84	70	80	90
85+	104	100	110
Total	2,501	2,520	2,510

Total	2010	2015	2020
0-4	275	240	230
5-9	407	360	330
10-14	413	420	370
15-19	303	350	370
20-24	114	110	110
25-29	104	130	130
30-34	190	170	190
35-39	274	290	280
40-44	363	290	320
45-49	447	360	290
50-54	366	440	350
55-59	314	350	420
60-64	286	300	330
65-69	239	260	270
70-74	178	200	230
75-79	150	170	190
80-84	118	140	150
85+	144	140	160
Total	4,683	4,720	4,720
Median Age	43.6	45.0	45.5

	2010-2015	2015-2020
Births	180	170
Deaths	210	230
Natural Increase	-30	-60
Net Migration	70	60
Change	40	0

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

Upham Elementary

Males	2010	2015	2020
0-4	60	50	50
5-9	119	90	80
10-14	149	130	100
15-19	109	130	110
20-24	24	20	20
25-29	14	20	20
30-34	18	30	40
35-39	47	40	60
40-44	76	70	70
45-49	110	90	100
50-54	116	110	90
55-59	107	110	100
60-64	79	100	100
65-69	58	60	90
70-74	27	50	60
75-79	17	20	50
80-84	21	10	20
85+	13	20	20
Total	1,162	1,150	1,180

Females	2010	2015	2020
0-4	61	50	50
5-9	88	90	80
10-14	145	100	100
15-19	115	120	80
20-24	17	20	20
25-29	9	20	20
30-34	24	30	40
35-39	55	50	50
40-44	88	80	80
45-49	122	100	110
50-54	129	120	100
55-59	97	130	120
60-64	80	90	120
65-69	57	70	80
70-74	26	50	60
75-79	22	20	50
80-84	18	20	20
85+	21	20	20
Total	1,171	1,180	1,200

Total	2010	2015	2020
0-4	120	100	100
5-9	207	180	160
10-14	295	230	200
15-19	224	250	190
20-24	41	40	40
25-29	23	40	40
30-34	42	60	80
35-39	101	90	110
40-44	163	150	150
45-49	231	190	210
50-54	245	230	190
55-59	205	240	220
60-64	158	190	220
65-69	114	130	170
70-74	53	100	120
75-79	39	40	100
80-84	39	30	40
85+	34	40	40
Total	2,334	2,330	2,380
Median Age	43.5	45.7	47.9

	2010-2015	2015-2020
Births	70	60
Deaths	80	90
Natural Increase	-10	-30
Net Migration	40	40
Change	30	10

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

Appendix E: Live Attend Report

LIVE ATTEND ANALYSIS

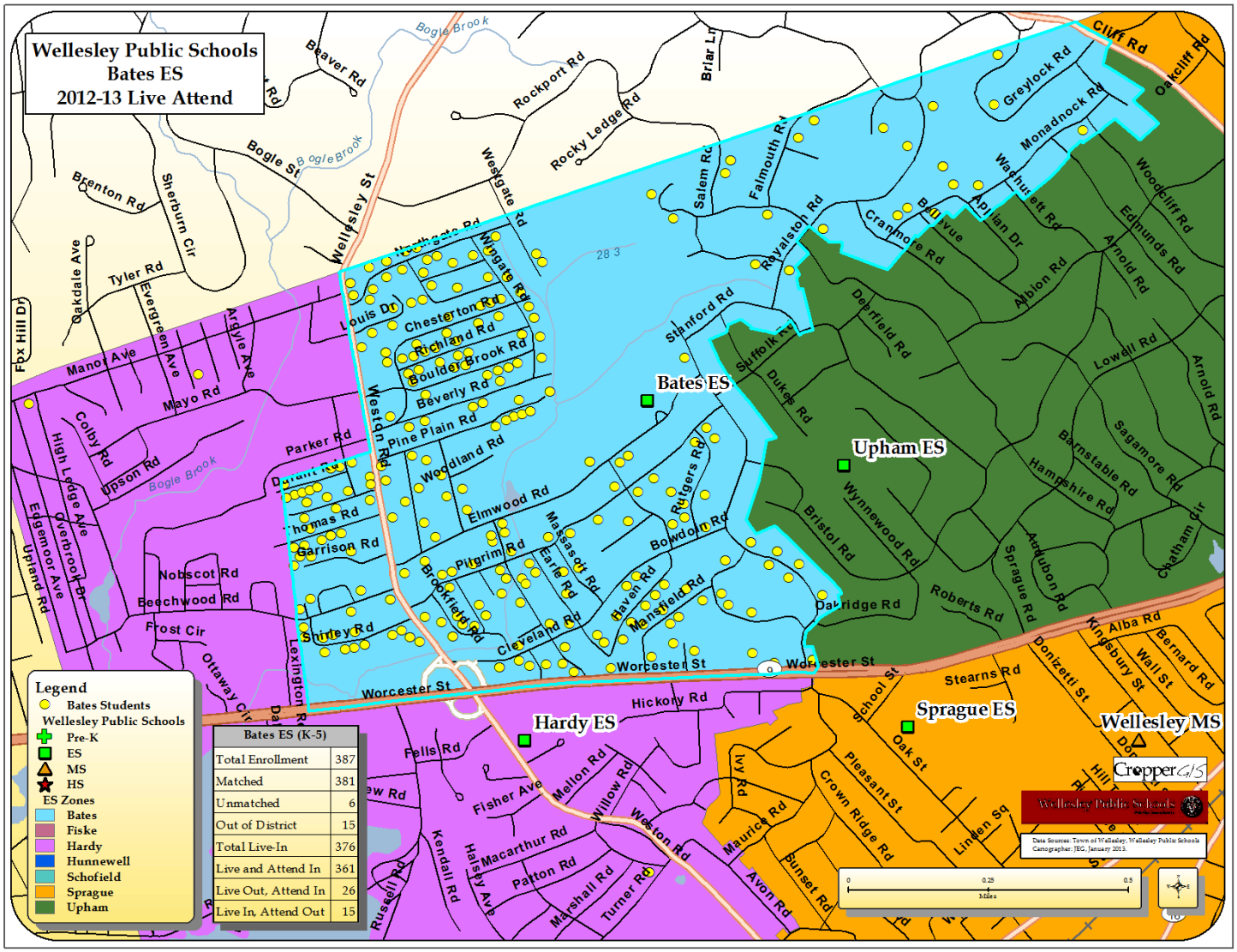
This map series focuses on illustrating the geographic distribution of Wellesley Public Schools' 2012-2013 students in relation to school attendance boundaries.

Here is an example of a map from this series.

Basic Map Elements

The legend explains how different features are represented, either by a point (e.g. schools and students), or by an area/polygon (e.g. attendance boundaries). The scale bar references the distance ratio of the map in relation to the real world. So the length between 0 and 2 on the map image is equal to a real world distance of two miles.

Please note that each yellow dot represents a student's address, at which, multiple students could reside. Therefore, counting the number of dots shown on the map might not reflect the student population accurately.



Live-Attend Tables

Each map has a table listing various statistics about the student data in this region. Here is a guide for reading this table:

Bates ES (K-5)	
Total Enrollment	387
Matched	381
Unmatched	6
Out of District	15
Total Live-In	376
Live and Attend In	361
Live Out, Attend In	26
Live In, Attend Out	15

Total Enrollment – number of students attending Bates ES.

Matched – number of students attending Bates ES whose addresses were located by the GIS, and placed on the map.

Unmatched - number of students whose addresses were not able to be located, and have not been placed on the map.

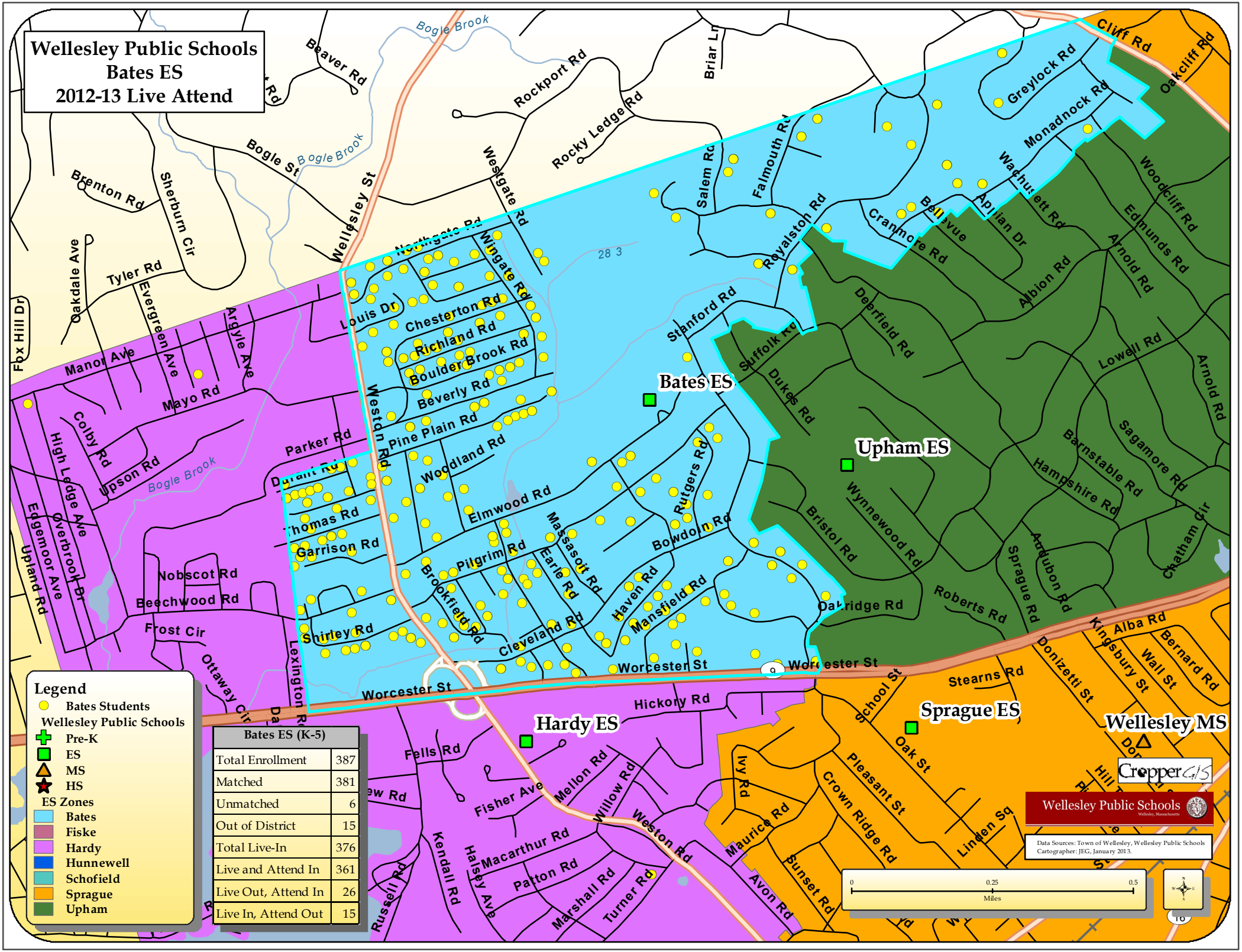
Out of District – number of students who live outside of the Wellesley Public Schools boundaries, yet attend this school.

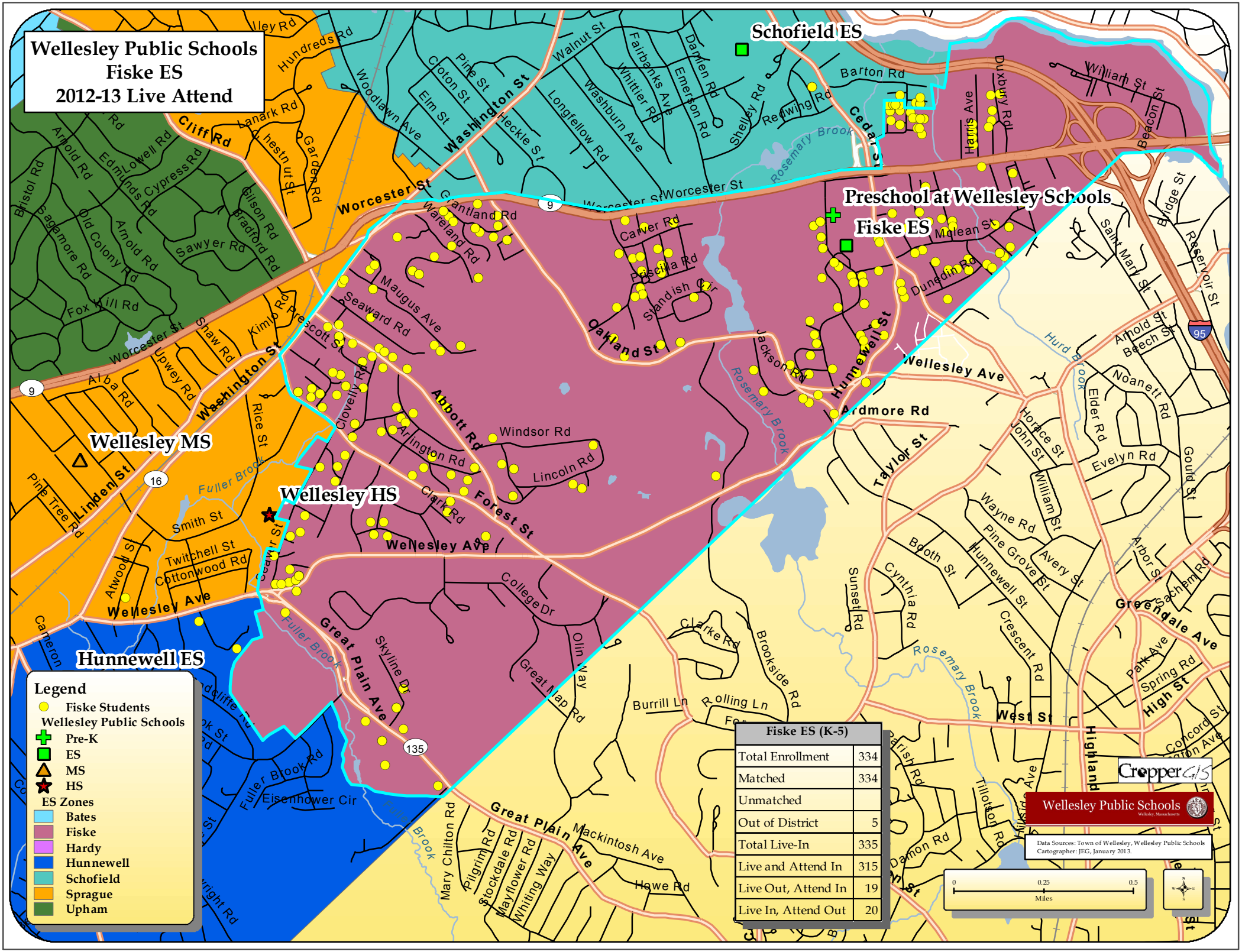
Total Live-In – number of students who live within the school's attendance boundary, who are in the K-5 grade cohort. The 'total-live in' statistic here indicates there are 376 Kindergarten through Fifth grade students living within the Bates ES attendance boundary.

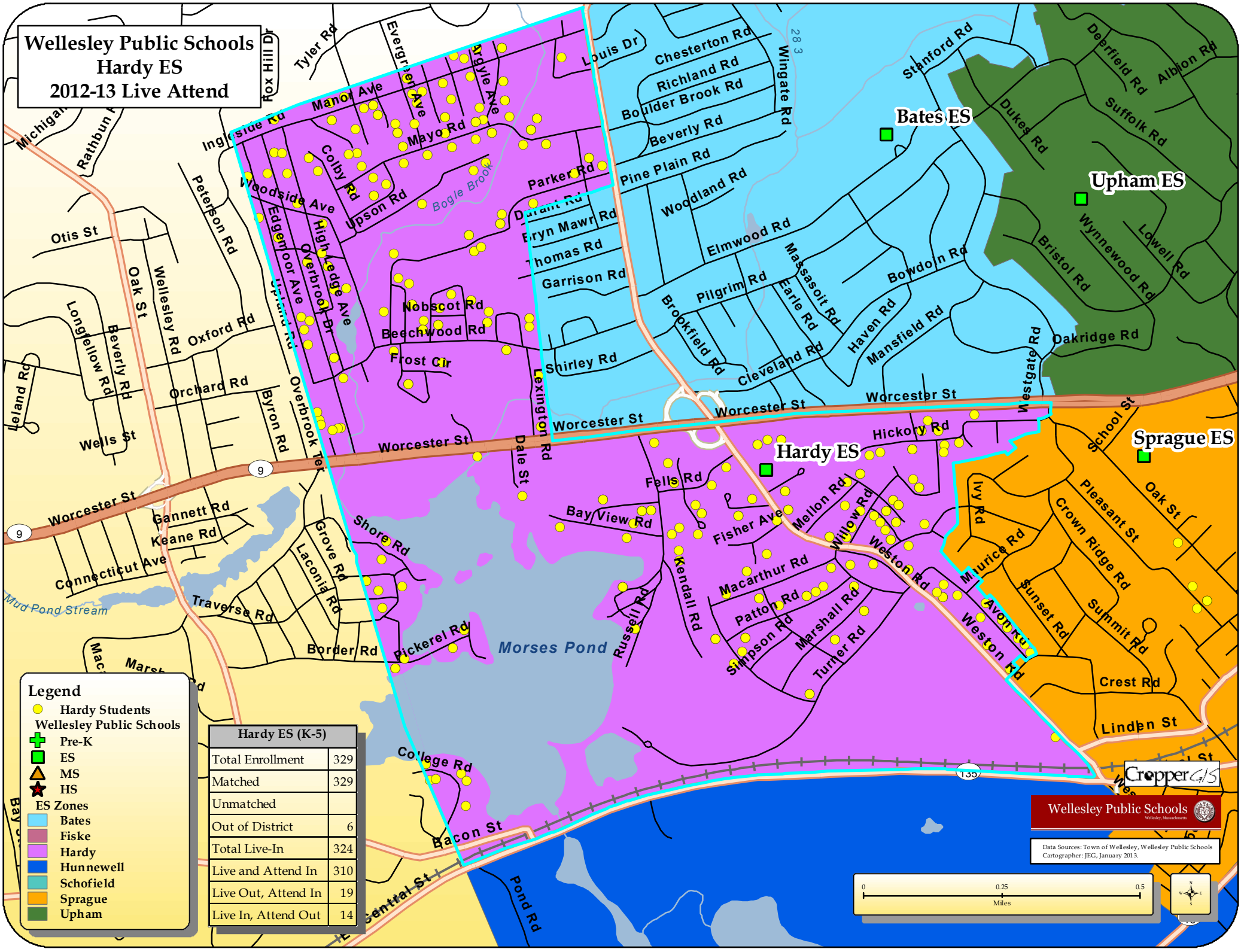
Live and Attend In – number of K-5 students who live within the attendance boundary, and also attend that school. In this example, 361 of the 376 Kindergarten through Fifth grade students who live within the Bates ES attendance boundary also attend Bates ES.

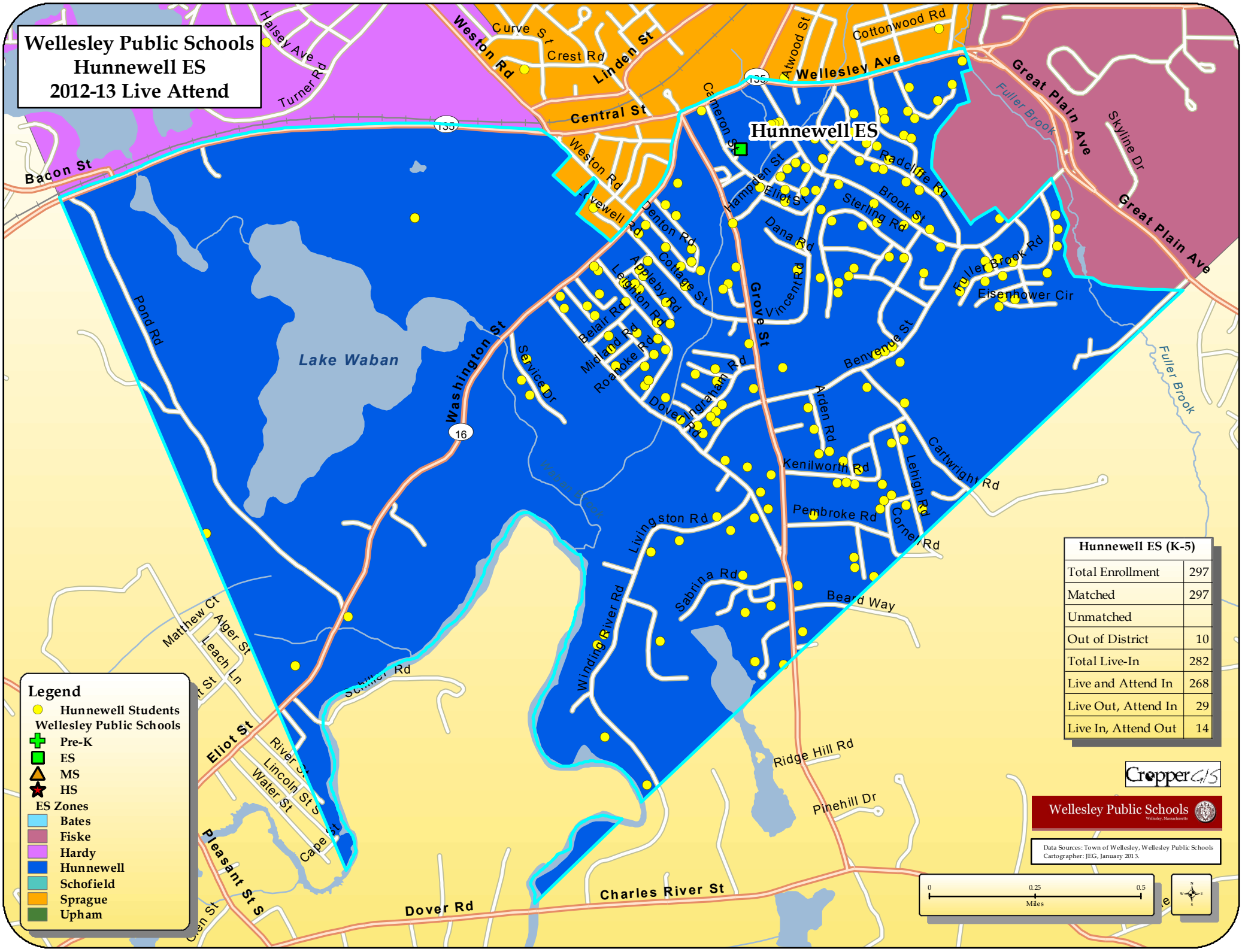
Live Out, Attend In – number of K-5 students who live outside of the Bates ES attendance boundary, but attend Bates ES. Any student records that are unmatched are not included in this count, since it is not known whether or not these unmatched students live within or outside the attendance boundary in question. Due to the methods used to calculate the statistics in this table, this is the only circumstance where this is relevant.

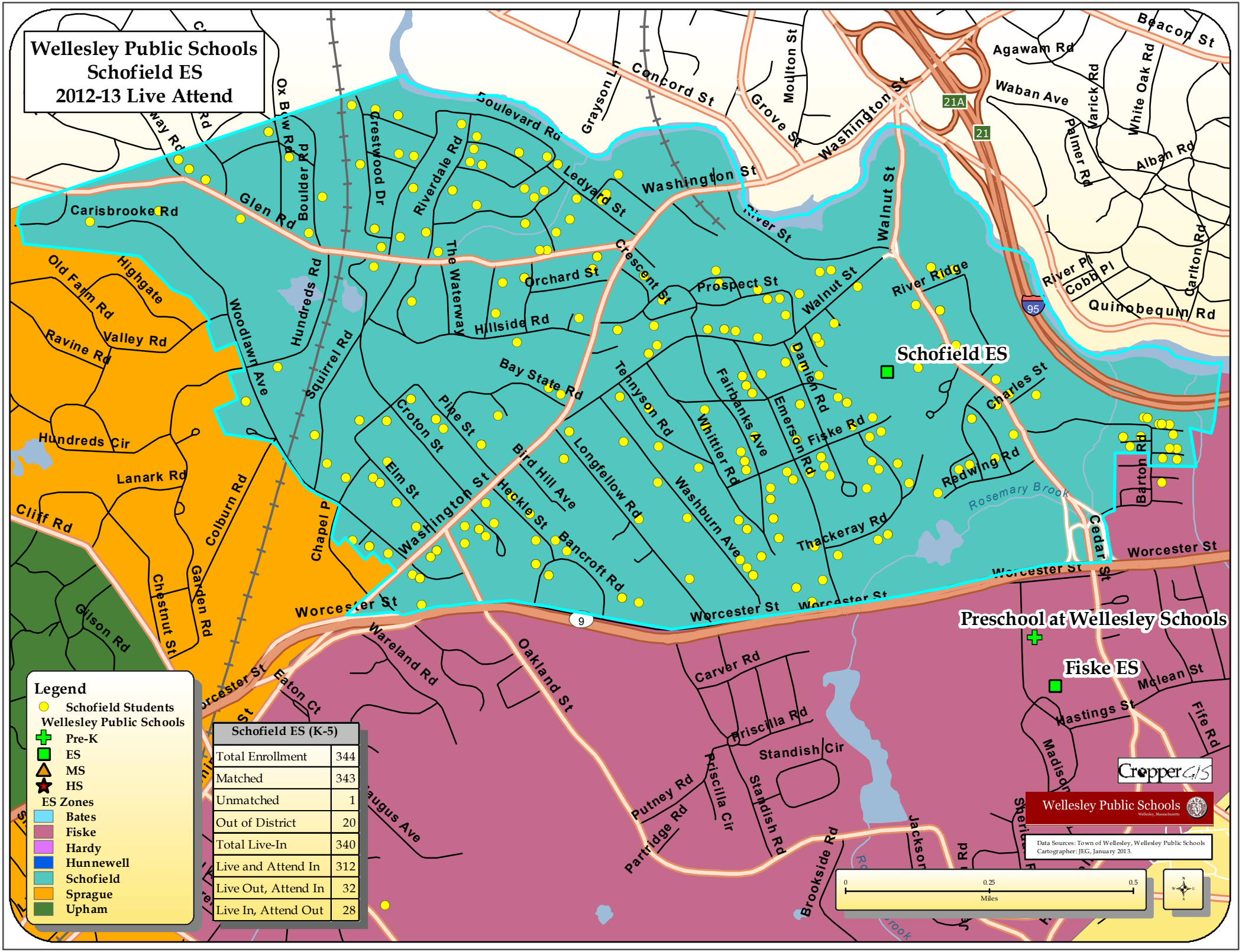
Live In, Attend Out – number of K-5 students who live inside the Bates ES attendance boundary, yet attend a different elementary school.


Wellesley Public Schools
Bates ES
2012-13 Live Attend
Bates ES
Upham ES
Hardy ES
Sprague ES
Wellesley MS
Bogle Brook
Worcester St
Legend
Bates Students
Wellesley Public Schools
Pre-K
ES
MS
HS
ES Zones
Bates
Fiske
Hardy
Hunnewell
Schofield
Sprague
Upham
Bates ES (K-5)
Total Enrollment 387
Matched 381
Unmatched 6
Out of District 15
Total Live-In 376
Live and Attend In 361
Live Out, Attend In 26
Live In, Attend Out 15
Cropper GIS
Wellesley Public Schools
Data Sources: Town of Wellesley, Wellesley Public Schools
Cartographer: JEG, January 2013.
0
0.25
0.5
Miles


Wellesley Public Schools
Fiske ES
2012-13 Live Attend
Schofield ES
Preschool at Wellesley Schools
Fiske ES
Wellesley MS
Wellesley HS
Hunnewell ES
Legend
Fiske Students
Wellesley Public Schools
Pre-K
ES
MS
HS
ES Zones
Bates
Fiske
Hardy
Hunnewell
Schofield
Sprague
Upham
Fiske ES (K-5)
Total Enrollment 334
Matched 334
Unmatched
Out of District 5
Total Live-In 335
Live and Attend In 315
Live Out, Attend In 19
Live In, Attend Out 20
Worcester St
Washington St
Cliff Rd
Oakland St
Abbott Rd
Forest St
Great Plain Ave
Wellesley Ave
Hunnewell St
Linden St
Rosemary Brook
Fuller Brook
Data Sources: Town of Wellesley, Wellesley Public Schools
Cartographer: JEG, January 2013.
Miles


Wellesley Public Schools
Hardy ES
2012-13 Live Attend
Bates ES
Upham ES
Hardy ES
Sprague ES
Morses Pond
Mud Pond Stream
Bogle Brook
Worcester St
Manor Ave
Mayo Rd
Colby Rd
Upson Rd
Parker Rd
Nobscot Rd
Beechwood Rd
Frost Cir
Shirley Rd
Lexington Rd
Dale St
Fells Rd
Bay View Rd
Fisher Ave
Mellon Rd
Willow Rd
Weston Rd
Macarthur Rd
Patton Rd
Simpson Rd
Marshall Rd
Turner Rd
Russell Rd
Kendall Rd
Shore Rd
Pickerel Rd
Border Rd
Traverse Rd
Grove Rd
Laconia Rd
Gannett Rd
Keane Rd
Connecticut Ave
Oxford Rd
Orchard Rd
Byron Rd
Wells St
Oak St
Wellesley Rd
Beverly Rd
Longfellow Rd
Peterson Rd
Overbrook Dr
Overbrook Ter
Edgemoor Ave
High Ledge Ave
Woodside Ave
Ingleside Rd
Argyle Ave
Evergreen Ave
Tyler Rd
Fox Hill Dr
Louis Dr
Chesterton Rd
Richland Rd
Boulder Brook Rd
Beverly Rd
Pine Plain Rd
Woodland Rd
Wingate Rd
Elmwood Rd
Pilgrim Rd
Brookfield Rd
Earle Rd
Massasoit Rd
Bowdoin Rd
Haven Rd
Mansfield Rd
Cleveland Rd
Westgate Rd
Oakridge Rd
Hickory Rd
Ivy Rd
Maurice Rd
Avon Rd
Pleasant St
Crown Ridge Rd
Sunset Rd
Summit Rd
Crest Rd
Linden St
School St
Oak St
Stanford Rd
Dukes Rd
Suffolk Rd
Deerfield Rd
Albion Rd
Bristol Rd
Wynnewood Rd
Lowell Rd
College Rd
Bacon St
Central St
Pond Rd
Rathbun Rd
Michigan
Otis St
Leland Rd
Garrison Rd
Thomas Rd
Bryn Mawr Rd
Durant Rd
Legend
Hardy Students
Wellesley Public Schools
Pre-K
ES
MS
HS
ES Zones
Bates
Fiske
Hardy
Hunnewell
Schofield
Sprague
Upham
Hardy ES (K-5)
Total Enrollment 329
Matched 329
Unmatched
Out of District 6
Total Live-In 324
Live and Attend In 310
Live Out, Attend In 19
Live In, Attend Out 14
Cropper GIS
Wellesley Public Schools
Data Sources: Town of Wellesley, Wellesley Public Schools
Cartographer: JEG, January 2013.
0
0.25
0.5
Miles


Wellesley Public Schools
Hunnewell ES
2012-13 Live Attend
Hunnewell ES
Lake Waban
Wellesley Ave
Central St
Weston Rd
Linden St
Curve St
Crest Rd
Halsey Ave
Turner Rd
Bacon St
Cottonwood Rd
Atwood St
Great Plain Ave
Fuller Brook
Skyline Dr
Cameron St
Hampden St
Elliot St
Radcliffe Rd
Brook St
Sterling Rd
Dana Rd
Vincent Rd
Grove St
Fuller Brook Rd
Eisenhower Cir
Benvenue St
Denton Rd
Cottage St
Appleby Rd
Leighton Rd
Belair Rd
Midland Rd
Roanoke Rd
Dover Rd
Ingraham Rd
Service Dr
Washington St
Pond Rd
Arden Rd
Kenilworth Rd
Lehigh Rd
Cartwright Rd
Pembroke Rd
Cornell Rd
Livingston Rd
Sabrina Rd
Beard Way
Winding River Rd
Ridge Hill Rd
Pinehill Dr
Charles River St
Dover Rd
Pleasant St S
Eliot St
Matthew Ct
Alger St
Leach Ln
Lincoln St S
Water St
Cape St
Legend
Hunnewell Students
Wellesley Public Schools
Pre-K
ES
MS
HS
ES Zones
Bates
Fiske
Hardy
Hunnewell
Schofield
Sprague
Upham
Hunnewell ES (K-5)
Total Enrollment 297
Matched 297
Unmatched
Out of District 10
Total Live-In 282
Live and Attend In 268
Live Out, Attend In 29
Live In, Attend Out 14
CropperGIS
Wellesley Public Schools
Data Sources: Town of Wellesley, Wellesley Public Schools
Cartographer: JEG, January 2013.
0 0.25 0.5
Miles


Wellesley Public Schools
Schofield ES
2012-13 Live Attend
Schofield ES
Fiske ES
Preschool at Wellesley Schools
Legend
Schofield Students
Wellesley Public Schools
Pre-K
ES
MS
HS
ES Zones
Bates
Fiske
Hardy
Hunnewell
Schofield
Sprague
Upham
Schofield ES (K-5)
Total Enrollment 344
Matched 343
Unmatched 1
Out of District 20
Total Live-In 340
Live and Attend In 312
Live Out, Attend In 32
Live In, Attend Out 28
Data Sources: Town of Wellesley, Wellesley Public Schools
Cartographer: JEG, January 2013.
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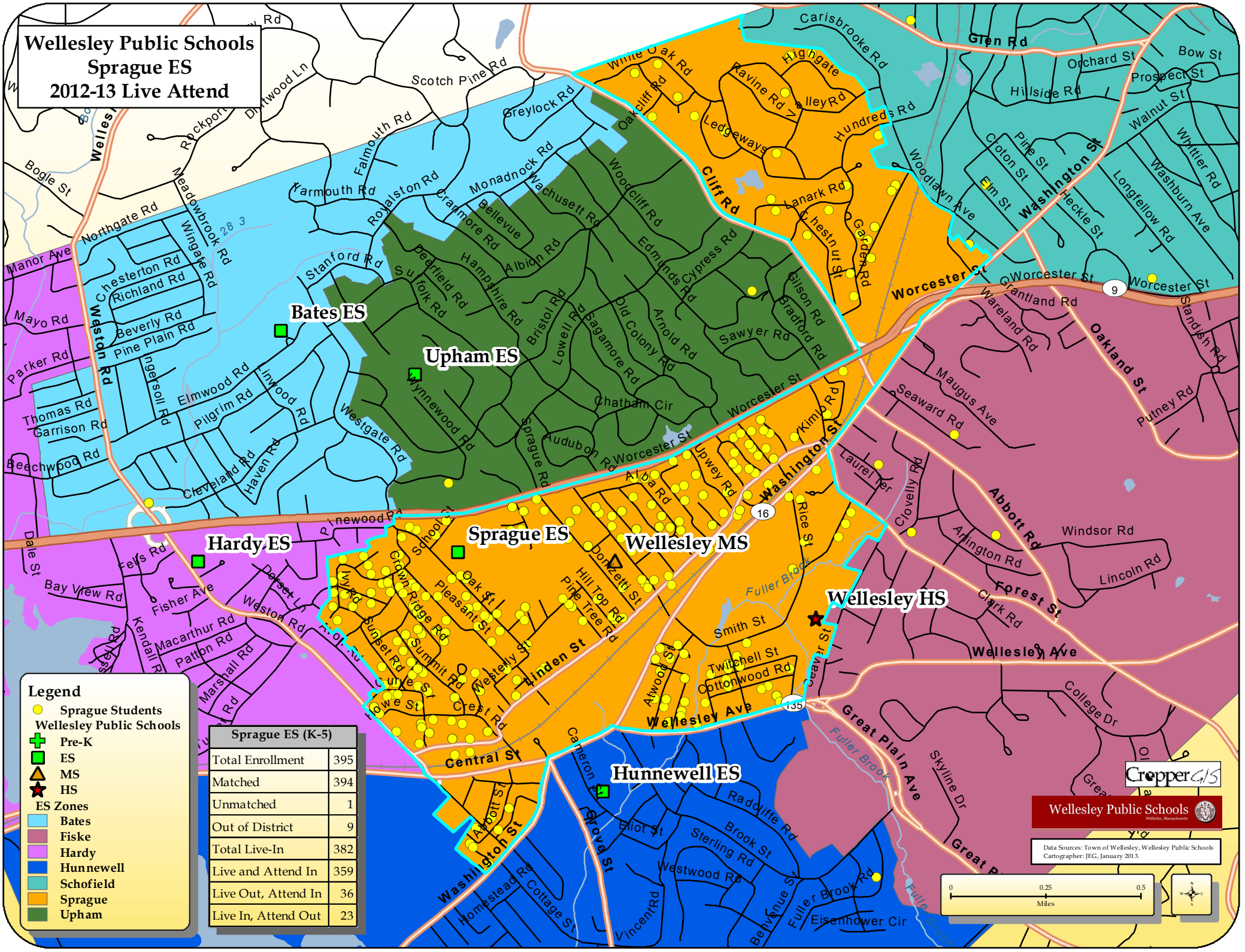
0.25
0.5
Miles
Cropper GIS
Wellesley Public Schools
Wellesley, Massachusetts
Boulevard Rd
Grayson Ln
Concord St
Moulton St
Grove St
Washington St
Beacon St
Agawam Rd
Waban Ave
Varick Rd
White Oak Rd
Palmer Rd
Albany Rd
Carlton Rd
River Pl
Cobb Pl
Quinobequin Rd
River Ridge
Walnut St
Prospect St
Orchard St
Crescent St
Hillside Rd
The Waterway
Riverdale Rd
Crestwood Dr
Ledyard St
Ox Bow Rd
Boulder Rd
Glen Rd
Carisbrooke Rd
Highgate
Old Farm Rd
Valley Rd
Ravine Rd
Woodlawn Ave
Hundreds Rd
Squirrel Rd
Hundreds Cir
Lanark Rd
Cliff Rd
Colburn Rd
Chapel P
Bay State Rd
Croton St
Pine St
Elm St
Bird Hill Ave
Heckle St
Longfellow Rd
Washington St
Tennyson Rd
Whittier Rd
Fairbanks Ave
Emerson Rd
Damien Rd
Fiske Rd
Charles St
Redwing Rd
Barton Rd
Rosemary Brook
Thackeray Rd
Washburn Ave
Bancroft Rd
Cedar St
Worcester St
Chestnut St
Garden Rd
Gilson Rd
Wareland Rd
Oakland St
Eaton Ct
Carver Rd
Priscilla Rd
Standish Cir
Standish Rd
Priscilla Cir
Putney Rd
Partridge Rd
Brookside Rd
Jackson Rd
Hastings St
Mclean St
Fife Rd
Madison
21A
21
95
9


Wellesley Public Schools
Sprague ES
2012-13 Live Attend
Bates ES
Upham ES
Hardy ES
Sprague ES
Wellesley MS
Wellesley HS
Hunnewell ES
Legend
Sprague Students
Wellesley Public Schools
Pre-K
ES
MS
HS
ES Zones
Bates
Fiske
Hardy
Hunnewell
Schofield
Sprague
Upham
Sprague ES (K-5)
Total Enrollment 395
Matched 394
Unmatched 1
Out of District 9
Total Live-In 382
Live and Attend In 359
Live Out, Attend In 36
Live In, Attend Out 23
Cliff Rd
Worcester St
Washington St
Central St
Linden St
Wellesley Ave
Great Plain Ave
Oakland St
Abbott Rd
Forest St
Weston Rd
Cropper GIS
Wellesley Public Schools
Data Sources: Town of Wellesley, Wellesley Public Schools
Cartographer: JEG, January 2013.
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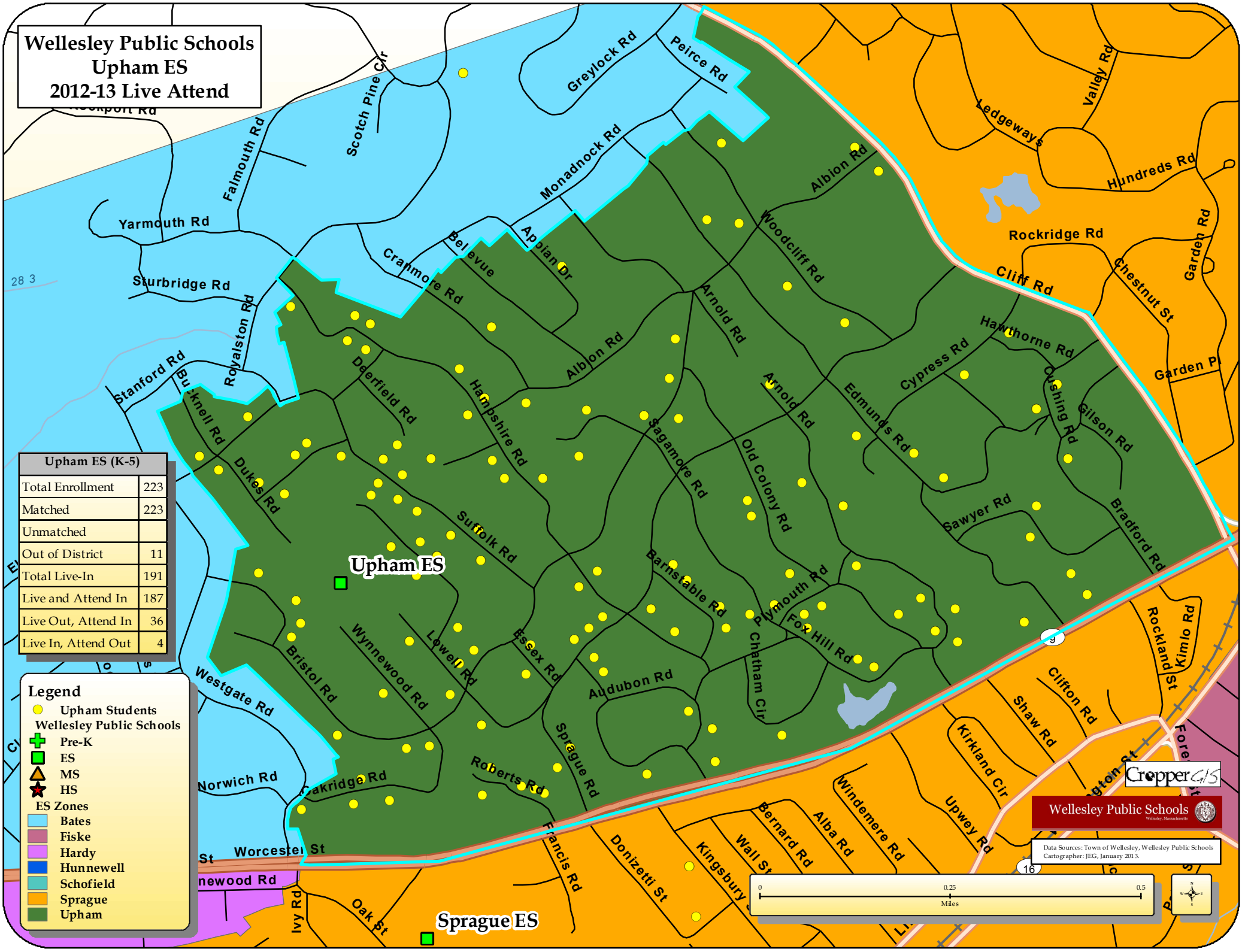
Miles


Wellesley Public Schools
Upham ES
2012-13 Live Attend
Upham ES (K-5)
Total Enrollment 223
Matched 223
Unmatched
Out of District 11
Total Live-In 191
Live and Attend In 187
Live Out, Attend In 36
Live In, Attend Out 4
Legend
Upham Students
Wellesley Public Schools
Pre-K
ES
MS
HS
ES Zones
Bates
Fiske
Hardy
Hunnewell
Schofield
Sprague
Upham
Upham ES
Sprague ES
Greylock Rd
Peirce Rd
Scotch Pine Cir
Falmouth Rd
Monadnock Rd
Yarmouth Rd
Sturbridge Rd
Royalston Rd
Stanford Rd
Bucknell Rd
Dukes Rd
Deerfield Rd
Hampshire Rd
Suffolk Rd
Bristol Rd
Wynnewood Rd
Lowell Rd
Essex Rd
Westgate Rd
Norwich Rd
Oakridge Rd
Roberts Rd
Sprague Rd
Audubon Rd
Barnstable Rd
Plymouth Rd
Fox Hill Rd
Old Colony Rd
Sagamore Rd
Arnold Rd
Albion Rd
Woodcliff Rd
Bellevue
Appian Dr
Cranmore Rd
Albion Rd
Arnold Rd
Edmunds Rd
Cypress Rd
Hawthorne Rd
Cushing Rd
Gilson Rd
Bradford Rd
Sawyer Rd
Cliff Rd
Rockridge Rd
Chestnut St
Garden Rd
Garden Pl
Hundreds Rd
Ledgeways
Valley Rd
Rockland St
Kimlo Rd
Clifton Rd
Shaw Rd
Kirkland Cir
Upwey Rd
Windemere Rd
Alba Rd
Bernard Rd
Wall St
Kingsbury
Donizetti St
Francis Rd
Worcester St
Oak St
Ivy Rd
Chatham Cir
9
16
Cropper GIS
Wellesley Public Schools
Data Sources: Town of Wellesley, Wellesley Public Schools
Cartographer: JEG, January 2013.
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0.5
Miles

Wellesley Public Schools
Wellesley, Massachusetts

LIVE ATTEND MATRIX

The table below gives details on the schools that students attend and the school zones where they live. The schools of attendance are listed across the top while the zones where students live are listed on the left. The table includes all students in Kindergarten through Fifth Grade. The numbers highlighted in green are counts of students who attend the assigned schools for the zones where they live.

Where Students Attend School

Where Students Live: K-5 Live Attend Matrix	Total Live In	Bates	Fiske	Hardy	Hunnewell	Schofield	Sprague	Upham	No Data	Live In, Attend Out
Total Attending		387	334	329	297	344	395	223	5	
Bates School District	376	**361**	1		2	3	2	7		15
Fiske School District	335		**315**		5	4	9	2		20
Hardy School District	324	4		**310**	5	1	2	2		14
Hunnewell School District	282		2	6	**268**	2	1	2	1	14
Schofield School District	340		10	2	1	**312**	10	4	1	28
Sprague School District	382	1	1	5	6	1	**359**	8	1	23
Upham School District	191						2	**187**	2	4
Out of District	76	15	5	6	10	20	9	11		
Unmatched	8	6				1	1			
Live Out, Attend In		26	19	19	29	32	36	36		

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