

**Report For The
Londonderry School District**

Subject:

**Demographic
Analysis/Enrollment
Projections
Update**

**Prepared by:
New Hampshire School Administrators Association**

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I. Introduction

Purpose of Study

New Hampshire School Administrators Association is a private, non-profit organization founded in 1941 to provide support to the leadership of public education in NH, to offer high quality services to its members, and to support and promote public education in New Hampshire. As part of our ongoing service to schools, NHSAA periodically provides specialized services directly to individual public school districts in NH. It is our commitment that we will provide high quality work that meets all components of our agreed upon design, on time or ahead of schedule.

The Londonderry School District contracted with the New Hampshire School Administrators Association to complete update and analysis of the demographic needs for the school district K – 12 student population. This report represents the final product of our work.

Scope of Work and Timeline

NHSAA completed an updated demographic analysis of current and future student enrollments (K – 12), by updating the information on all the tables and graphs contained in the November 2016 study and summarizing with a few observations regarding the changes in information. This special service option is only available to those districts that have completed a full NHSAA Demographic study within the last three years.

The study update, as defined, began in October 2017, and a report was submitted to the Superintendent of Schools on October 23, 2017, in the form of an electronic copy of the updated tables and one printed copy in color.

Overview of Process

During the process of the study update, the consultants created enrollment projections and analyzed local and regional demographic conditions. From projections dated October 2017 (See Appendix A) and information provided by state and local officials, it appeared that the *One-year cohort method* remains the best guideline in helping to forecast future conditions for the Londonderry School District.

To ensure that the selected methodology gave the best results for the district, several other methods were examined using historical data and comparing the results with known student populations. The one-year cohort method remains the most reliable for Londonderry.

II. Consultants' Background

Co-Investigators

A. Lead contact: Dr. Mark V. Joyce (Co-project Investigator)

Education and Professional Experience:

Dr. Joyce earned his BA from Niagara University, a teaching certification and a Masters in Education specializing in Educational Administration from the University of New Hampshire. In 1986, he earned his Doctorate in Education, with highest distinction, from Boston College with a specialization in leadership, curriculum and instruction.

Dr. Joyce has been a teacher of students in grades 7 – 12 and at the graduate school level. In addition, he has served as a secondary and elementary school principal, and an assistant superintendent of schools in New Hampshire. He has also served as a Superintendent of Schools in both New Hampshire and Maine. Mark was formally the Executive Director of the New Hampshire School Administrators Association, and a frequent consultant to school, community and business organizations. Mark is a resident of Newington, N.H.

B. Mr. Keith R. Burke

Education and Professional Experience:

Mr. Burke worked as an educator in New Hampshire for over 36 years. He has held positions as a teacher, curriculum coordinator, high school principal, assistant superintendent, and in 2007 retired as superintendent of schools for SAU #1.

During his career, Mr. Burke has directly supervised more than 15 school building projects. He has demonstrated expertise in all phases of planning, construction, and financing.

Mr. Burke received his Bachelor of Science degree from Norwich University, and his Master's degree from St. Michael's College. In 2001, Mr. Burke was accepted to the Cooperative System Fellows Program of the National Center for Educational Statistics. In addition to his service to school districts, Keith has participated both as a member and chairman of NEASC accreditation teams, and represented New Hampshire in statewide and regional educational leadership initiatives and organizations. Keith is a resident of Hancock, N.H.

III. Demographic Data and Enrollment Projections

Overview

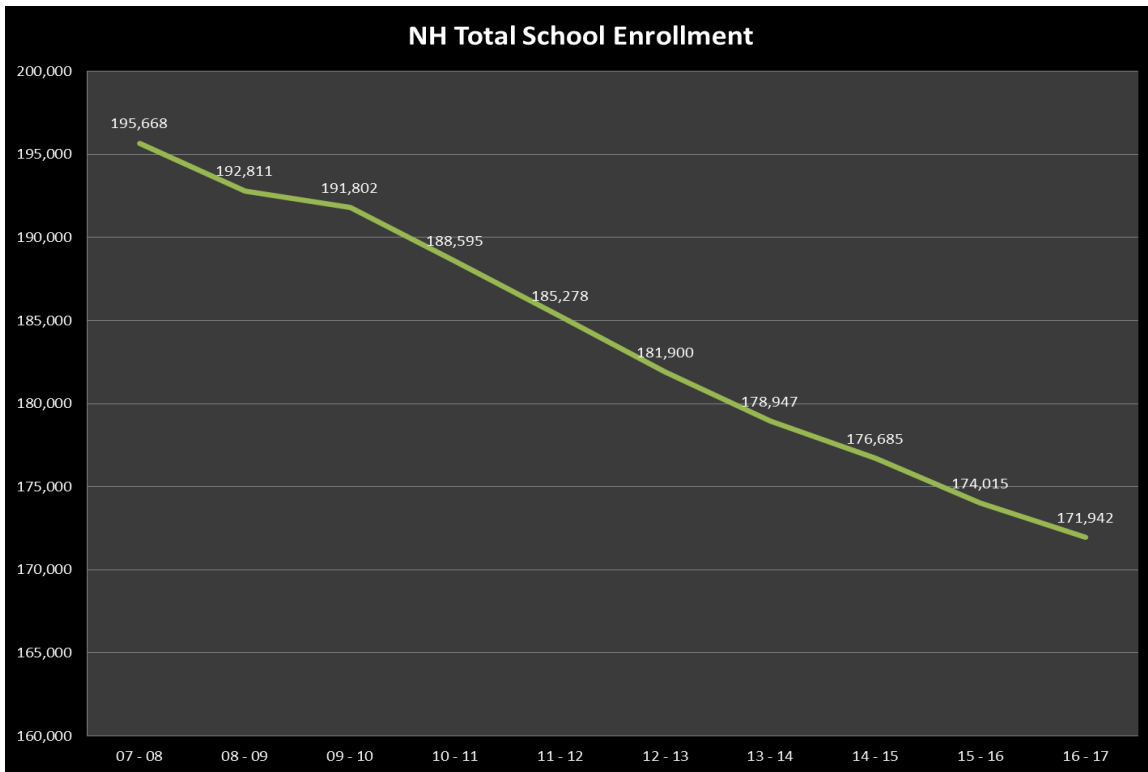
New Hampshire's student enrollments, on average, have shown a decline over the past 11 years from 198,645 in the 2006-07 school year to 171,942 in the 2016-17 school year, a decrease of 26,703 students.

The State of New Hampshire's overall population has grown significantly over the past 40 years, with the state growing by an average of 14,000 people per year. While this growth has been historically high, it has not been uniform for all N.H. communities. Clearly, communities in the south central and southeastern counties have seen significantly higher growth over time with some northern and western counties witnessing a decline. While regions that border Massachusetts have experienced historic growth, there is also a trend for expanded development for communities that border our cities and major thoroughfares. However, this trend has recently slowed significantly throughout N.H. with communities in the north and west slowly losing population and communities in the central and southeastern areas growing very slowly.

The counties experiencing the most gains in employment, employed residents, and population are Rockingham, Hillsborough, and Strafford counties. There were 9,119 more persons living in Rockingham County in 2016 than in 2007. About 8,500 jobs were gained in covered employment, three times more jobs than were added in Hillsborough County. Interestingly, there was slightly larger gain in resident employment in Strafford County than in Hillsborough County, likely due to more Strafford County residents commuting to Rockingham County for work. These same three counties are those with the smallest shares of population not in the labor force. This suggests that there is a connection between job opportunities, labor force attachment and population growth. However, job opportunities do not necessarily have to be within the county of residence, as long as job opportunities are within a reasonable commute. Job growth can be faster in one county, whereas the neighboring county would concurrently experience larger population and resident employment growth.

Londonderry had the sixth largest percent change and the fourth largest numeric change over 55 years. Population change totaled 22,106, from 2,457 in 1960 to 24,563 in 2015. The largest decennial percent change was a 154 percent increase between 1970 and 1980, which followed a 118 percent increase the previous decade. The 2015 Census estimate for Londonderry was 24,563 residents, which ranked tenth among New Hampshire's incorporated cities and towns.

Graph 1



Source: NH Department of Education

The following is a summary of the Enrollment Projection Analysis completed for the Londonderry School District. Projections are provided for the district as a whole, and individually for each grade and grade grouping. The projection process uses a combination of historical enrollment data, birth trends and projections, housing data, and population trends and projections to create reasonable assumptions about future growth scenarios and the likely impact on the school district.

District Enrollment History

Graph 2 depicts district enrollments since 1990-91. The district's highest enrollment was in 2001-02. Since then it has shown a more or less, steady decline.

Graph 2

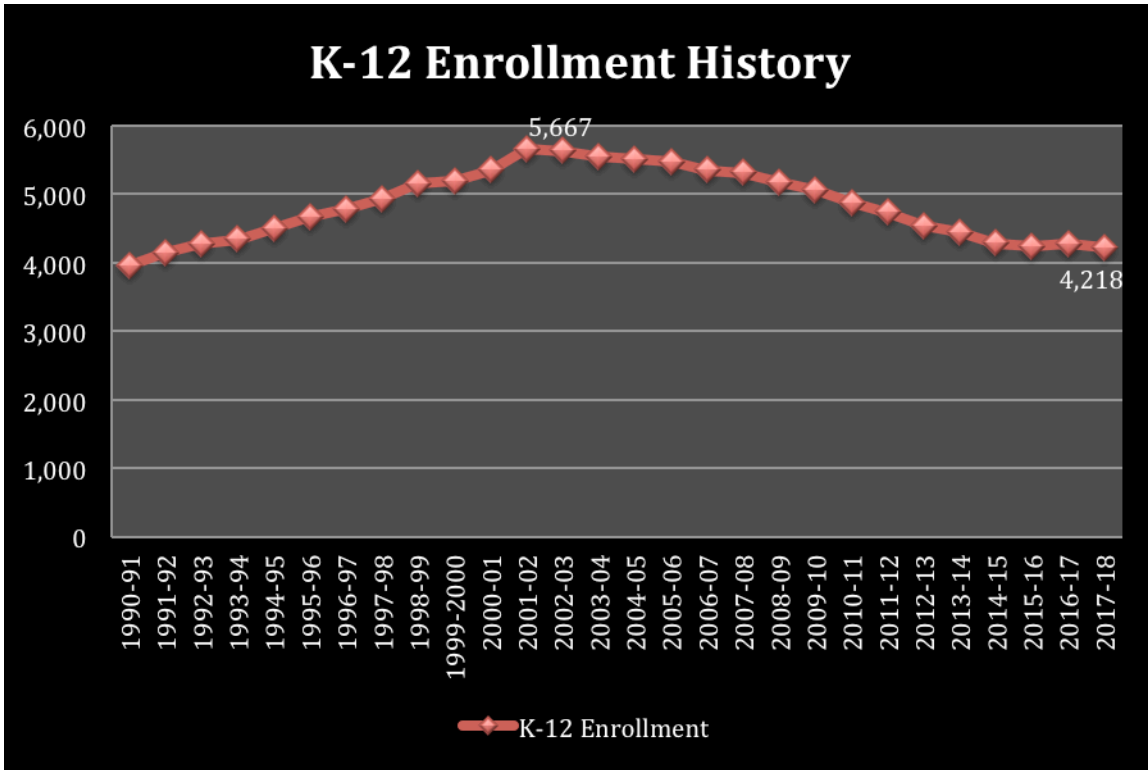


Table 1 represent the last ten years of enrollment history in the Londonderry School District.

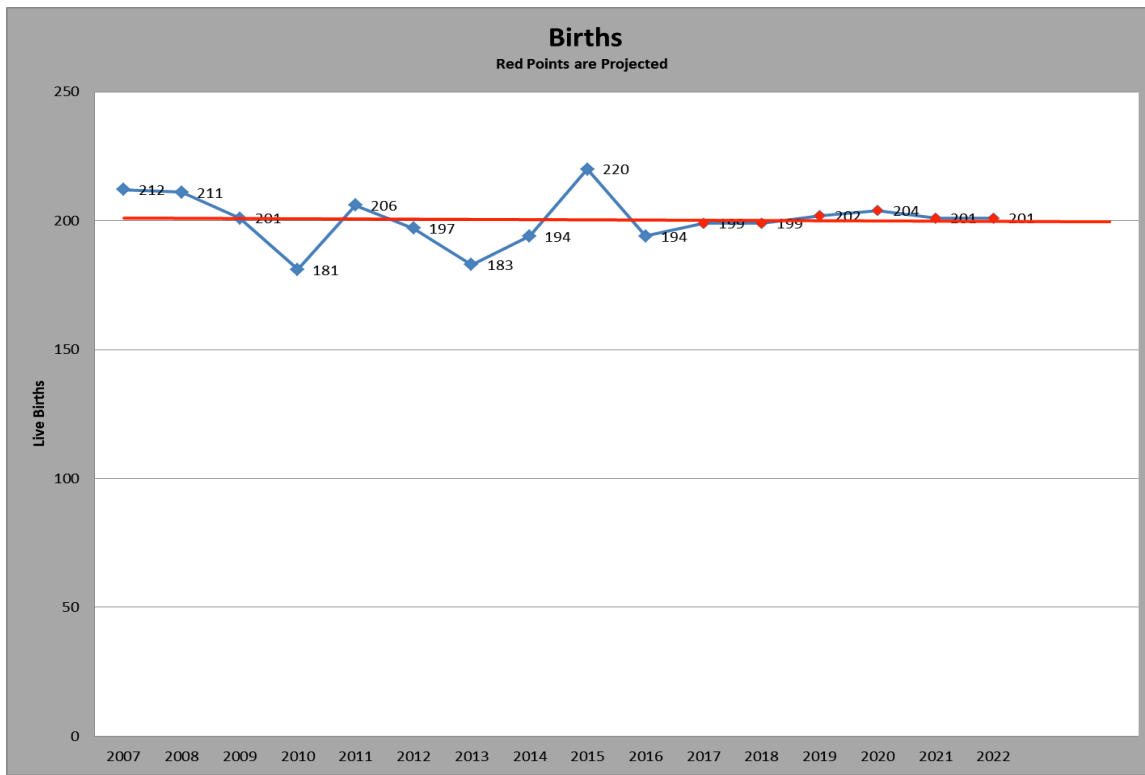
Table 1

ENROLLMENT HISTORY										
LONDONDERRY										
October 1, 2008 To October 1, 2017										
Grade	08-09	09-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18
K	310	311	255	251	234	243	224	237	283	273
1	335	334	329	288	266	260	264	249	283	313
2	320	335	329	326	302	274	273	287	263	290
3	395	326	336	323	323	314	274	280	300	261
4	357	407	330	338	322	324	319	281	305	313
5	398	353	405	336	336	328	322	326	299	305
6	407	399	355	410	340	345	331	327	336	302
7	423	410	405	354	399	336	344	332	341	336
8	422	425	409	412	350	403	345	337	343	330
9	466	426	434	398	403	406	413	376	356	374
10	427	463	432	426	399	408	398	411	375	362
11	471	415	454	425	427	390	401	397	402	357
12	444	458	410	452	434	417	383	400	388	402
TOTAL	5,175	5,062	4,883	4,739	4,535	4,448	4,291	4,240	4,274	4,218
K-5	2,115	2,066	1,984	1,862	1,783	1,743	1,676	1,660	1,733	1,755
6-8	1,252	1,234	1,169	1,176	1,089	1,084	1,020	996	1,020	968
9-12	1,808	1,762	1,730	1,701	1,663	1,621	1,595	1,584	1,521	1,495

Birth Trends and Projections

We use historical and projected birth data to forecast the number of Kindergarten students who will enroll in the Londonderry School District in future years. Graph 3 shows the number of births collected from NH Vital Records and birth projections based on a statistical model. The Baseline Regression (which examines overall trends) projects how the number of births will trend over time.

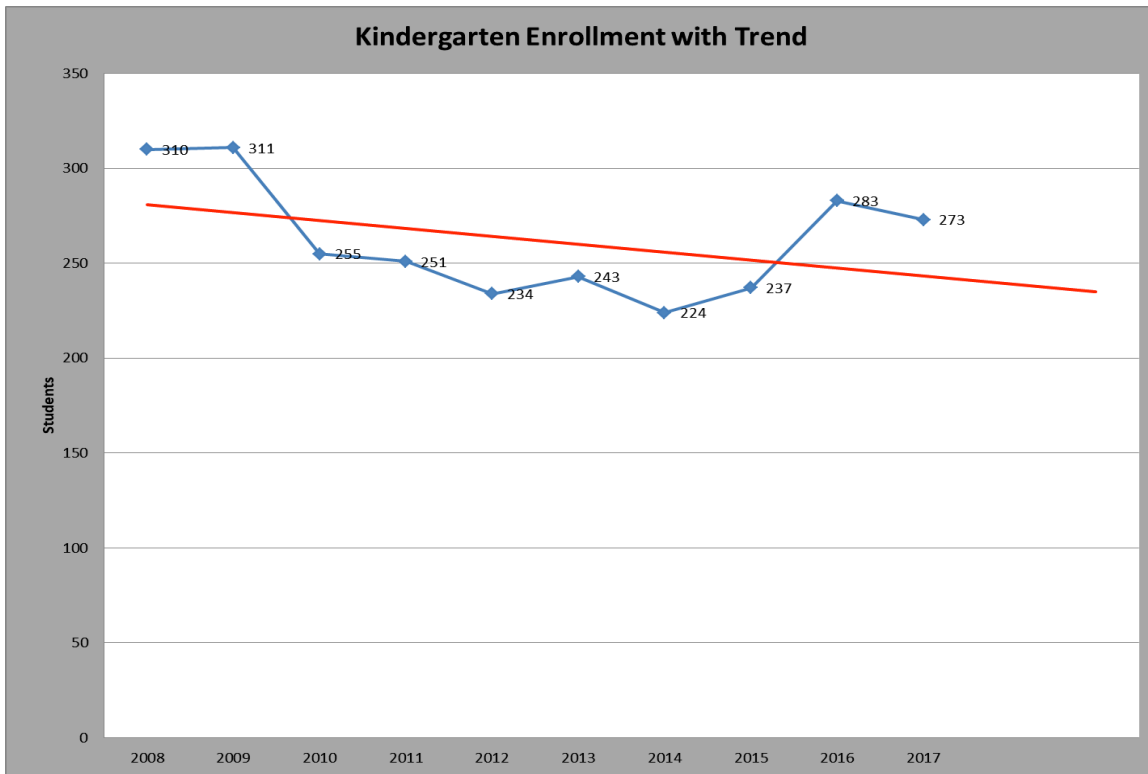
Graph 3



Kindergarten Enrollment Trends

Examining trends in Kindergarten enrollment is particularly informative for gaining perspective on future district enrollment because today's kindergarteners will gradually make up tomorrow's students at the higher grade levels as they age and move through the school system. Graph 4 shows Kindergarten enrollment history in blue, and trend lines depicting Kindergarten enrollment in red. The average trend represents the average Kindergarten enrollment. In Londonderry, Kindergarten enrollment has been somewhat erratic, but an examination of the trend would indicate it may be slowly decreasing over time. However, during the last two years the kindergarten numbers have increased. This fact needs to be closely monitored to see if it continues in the future, which may indicate a rising trend.

Graph 4

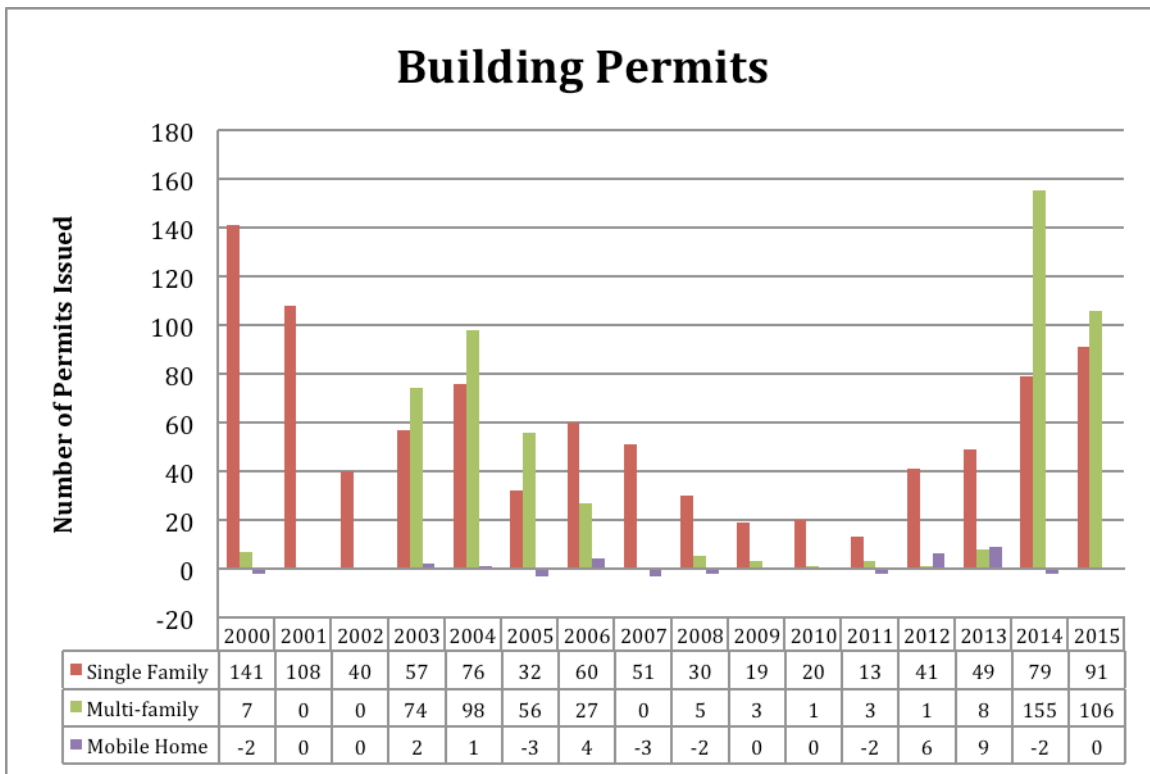


Residential Development

Examining trends in recent housing development can help to explain how in-migration into the Londonderry School District area might be affecting school enrollment. If the number of housing starts in the district area is expected to be reasonably consistent for the next several years, then we assume that in-migration of school-age children will also remain relatively consistent. If the number of housing starts is expected to increase significantly above and beyond recent levels, in-migration may play an increasing role in school district enrollment. However, it is important to recognize that the number of housing starts in any given year is dependent upon a large number of confounding variables (decisions of local, county, and state policy makers, residential developers, interest rates, and demand for housing) making future growth patterns difficult to predict.

Table 2 shows the past housing issued permits (not to be confused with actual buildings) by housing type (single family and multi-family) for the district area. In the past eight (8) years, the majority of housing development has occurred in single-family construction. There was a significant increase in multi-family complex permits generated in 2014 and 2015. Households in multi-family complexes, on average, contain fewer school-aged children than single-family homes.

Table 2



It is also important to consider that the turnover in ownership of existing housing stock contributes to changes in enrollment. The district can maintain or even increase enrollment depending upon the cycle of resident homeowners, regardless of housing starts. For instance, a younger community will have a higher children-per-household ratio, whereas an older community will have a lower children-per-household ratio. Yet, within a few years a turnover in ownership in an older community may result in an increase in children-per-household. As younger families move into the area, the result is new students enrolling into the district's schools. Absent new housing development or housing turnover, families age in place and the number of school aged children in the area eventually declines. Please see page 13 where the impact of new development in Londonderry is discussed.

Cohort Survival Enrollment Projections

Accurate enrollment forecasting is particularly important to school boards and administrators. Enrollment estimates have an obvious impact on the budget, facility planning, and staffing.

Projecting future student enrollments is a difficult task at best. The cohort survival method is generally the most reliable measure used as a short-range (one to five years) forecasting tool. It is based on the calculation of a series of survival rates that indicate the fraction of students in one grade, in a given year, who "survive" to the next grade in the next year. First grade enrollments are calculated independently

on the basis of past (six year prior) birth data, i.e. the birth to first grade ratio is always the result of comparing grade one enrollments to the number of births six years prior. Projections are then made using a grade progression ratio multiplied by the enrollment for a previous grade in a prior year. Kindergarten estimates are based on the first grade projection for the next year divided by the kindergarten to first grade ratio. Thus, kindergarten projections are an inverse operation since they are based on the first grade estimate for the following year.

The basic idea behind this technique is that what has happened historically can be used to project trends for the future. It is important to note that the technique does not predict, but rather it is a process by which trends can be identified. It is good practice to keep this information updated on an annual basis, and for the district to keep abreast of demographic and economic changes in the area, which could potentially affect the local school population and the resources needed to support it.

When considering all the projections provided in this update, it is important to recognize that school enrollment projections are more accurate in the immediate future than they are into the extended future. More specifically, our projections are more reliable over the first five years than they are in the following years.

The enrollment projections contained in this report are presented in three formats. The first is a five-year average, which briefly defined, is an average of the grade-to-grade progressions over the past five-years (shown as 5 yr. avg.). The second format takes into account some of the trends of the most recent years as well as, considering some of the historical trends. This procedure is identified as a three-year weighted average, in which greater weight is given to the most recent year and correspondingly less weight for those years further back in history (shown as 3 yr. wav). The third simply compares the last two years and uses that data as a basis for a projection (shown as 1 yr. avg.). The one-year average may fluctuate more because it is looking at only the last two years of data, and it does not reflect the longer-term data. It is, though, a good means for spotting trends, which may indicate some change in the normal patterns experienced by the district. Some examples of this may be a major business opening or closing, significant housing changes or changes in employment opportunities.

Information used to develop the survival percentages came from two sources: (1) to determine the projections for the first year of school (first grade), resident live births, as collected by the New Hampshire Bureau of Vital Statistics, are used to compare with the number of children who actually show up in first grade six years later and (2) the yearly October 1 enrollment data by grades as provided by the Superintendent of School's Office to the NH Department of Education.

The data does not include students classified as out-of-district special education or home study. The reason for this is that these children are not reported in a particular grade grouping, nor is the figure apt to be a stable one. However, it is necessary to consider these children in any analysis of the need for space. One way to determine a potential number for the future is to calculate the percentage of these children as related to the total number of students. If, for example, the resulting percentage was 10%, then for planning purposes the projected populations should be increased by that percentage to account for those so classified. Home study children would not be a part of this percentage. However, if at some point they do enter the

public school system, then depending upon the numbers, some adjustments may be necessary.

Appendix A contains detailed, grade-by-grade enrollment projections for Londonderry. It also includes a comparison of the projected vs. actual enrollment for the district's review. The data is presented in chart and graphic form.

IV. Summary

Information used to develop the survival percentages came from two sources: (1) to determine the projections for the first year of school (first grade), resident live births, as collected by the New Hampshire Bureau of Vital Statistics, are used to compare with the number of children who actually show up in first grade six years later and (2) the yearly October 1 enrollment data by grades as provided by the Superintendent of School's Office to the NH Department of Education.

There are times when resident live birth data is not available for the more recent years from the New Hampshire Bureau of Vital Statistics. In such instances, an average of the last available five years is applied. If this process is used it will be noted on page two of the projection summary.

The data does not include students classified as out-of-district special education or home study. The reason for this is that these children are not reported in a particular grade grouping, nor is the figure apt to be a stable one. However, it is necessary to consider these children in any analysis of the need for space. One way to determine a potential number for the future is to calculate the percentage of these children as related to the total number of students. If, for example, the resulting percentage was 10%, then for planning purposes the projected populations should be increased by that percentage to account for those so classified. Home study children would not be a part of this percentage. However, if at some point they do enter the public school system, then depending upon the numbers, some adjustments may be necessary.

The charts include historic enrollment data, resident live births, and projections using the three methods described herein.

The cohort survival method relies on historical birth and enrollment data to calculate the various grade progression ratios. It is a common method used by demographers to estimate future school enrollments. It has proven to be accurate in most situations; however, it is a historical approach and assumes that all conditions will remain substantially unchanged. There is, however, no built-in consideration for an extraneous factor's impact, such as new industry, a significant change in economic conditions or a significant change in land availability or use. Grade by grade projections require counts for each grade, therefore, any out-of-district special education; home schooled or private school students have not been included.

Based on an examination of the cohort models, the number of births, the history of building permits and the population change, it is our belief that enrollments projected by the One Year Cohort model continues to be the most reliable and that the district should adopt the model as the "reasonable" basis for assessing future student populations and facility needs.

The One-Year Cohort model shows the student enrollment will decline but slowly increase. Two additional factors that point to the One-Year Cohort model is the "historical test" which was applied to all three models. This test consists of using historical data to determine which model yields the most accurate predictions, and the estimated increases in student population projected by the town of Londonderry as a result of on-going housing development.

If the estimates provided by the town were added a much more rapid increase in student population would occur, but we believe that the projections of the One-Year Cohort model is reasonably aggressive at this point. We would urge the district to monitor the student enrollment increases as a result of the new developments to determine if the projections need to be adjusted accordingly.

V. Notation of Research Sources

1. New Hampshire School Administrator's Association – Enrollment Studies
2. New Hampshire Office of Energy and Planning – Reports on the Town of Londonderry
3. Various documents and internal reports, Londonderry
4. US Census Data
5. Council of Chief State School Officers
6. NH Department of Revenue Administration Tax Data
7. NH Department of Education Enrollment Data
8. NH Department of Vital Statistics
9. NH Economic and Labor Market Information Bureau

Appendix A

Enrollment Projections

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A-1

ENROLLMENT PROJECTIONS - 5 Year Average Method										
LONDONDERRY										
2018 - 2019 to 2027 - 2028										
Grade	18-19	19-20	20-21	21-22	22-23	23-24	24-25	25-26	26-27	27-28
K	221	235	266	242	240	240	244	246	243	243
1	267	248	263	298	271	269	269	274	276	272
2	328	280	260	276	313	284	282	282	287	290
3	296	335	286	266	282	320	290	288	288	293
4	270	306	346	296	275	292	331	300	298	298
5	319	275	312	352	302	280	297	337	306	304
6	311	325	280	318	359	308	285	303	343	312
7	304	313	327	282	320	361	310	287	305	345
8	337	305	314	328	283	321	362	311	288	306
9	357	365	330	340	355	306	348	392	337	312
10	374	357	365	330	340	355	306	348	392	337
11	354	366	349	357	323	332	347	299	340	383
12	352	349	361	344	352	319	328	342	295	335
TOTAL	4,090	4,059	4,059	4,029	4,015	3,987	3,999	4,009	3,998	4,030
K-5	1,701	1,679	1,733	1,730	1,683	1,685	1,713	1,727	1,698	1,700
6-8	952	943	921	928	962	990	957	901	936	963
9-12	1,437	1,437	1,405	1,371	1,370	1,312	1,329	1,381	1,364	1,367

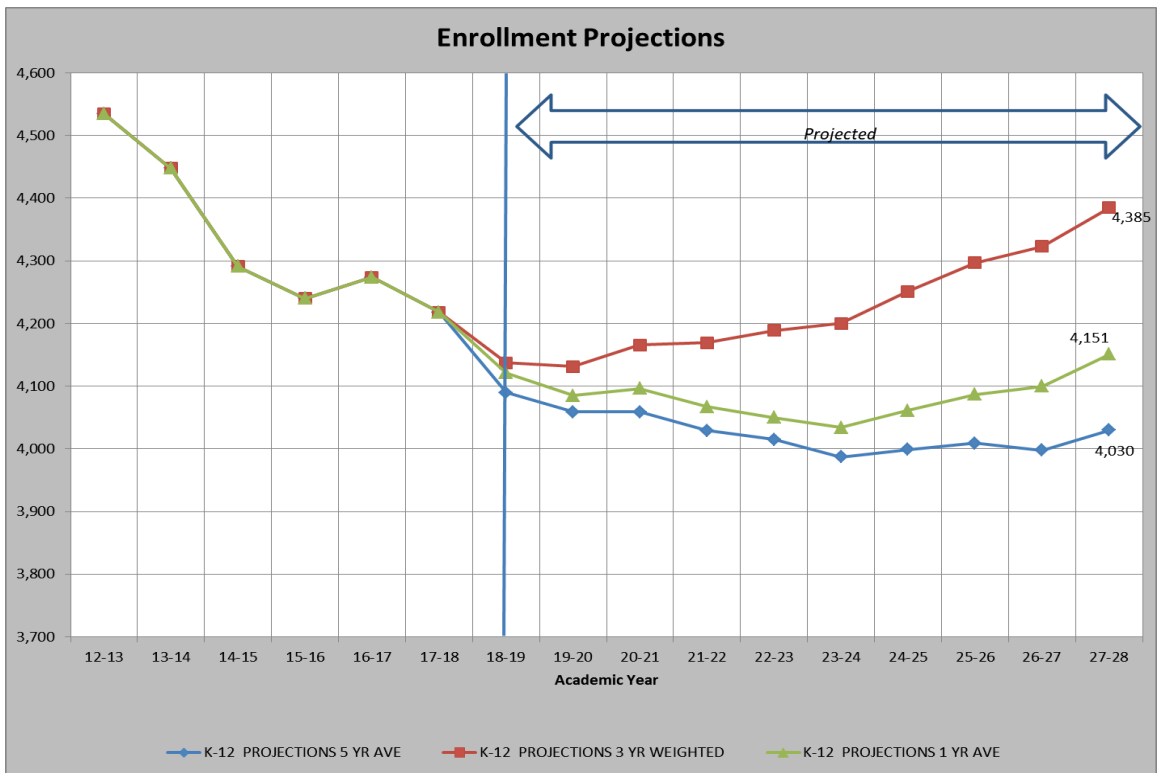
A-2

ENROLLMENT PROJECTIONS - 3 Year Weighted Method										
LONDONDERRY										
2018 - 2019 to 2027 - 2028										
Grade	18-19	19-20	20-21	21-22	22-23	23-24	24-25	25-26	26-27	27-28
K	240	254	288	262	261	261	265	267	264	263
1	293	272	288	327	297	296	296	300	303	299
2	327	306	284	301	342	310	309	309	313	317
3	295	332	311	289	306	348	315	314	314	318
4	275	311	350	328	305	323	367	332	331	331
5	320	282	318	358	336	312	331	376	340	339
6	311	326	287	324	365	342	318	337	383	346
7	306	316	331	291	329	370	347	323	342	389
8	333	303	313	328	288	326	367	344	320	339
9	356	359	327	338	354	311	352	396	371	345
10	376	358	361	329	340	356	313	354	398	373
11	351	364	347	350	319	329	345	303	343	386
12	354	348	361	344	347	316	326	342	301	340
TOTAL	4,137	4,131	4,166	4,169	4,189	4,200	4,251	4,297	4,323	4,385
K-5	1,750	1,757	1,839	1,865	1,847	1,850	1,883	1,898	1,865	1,867
6-8	950	945	931	943	982	1,038	1,032	1,004	1,045	1,074
9-12	1,437	1,429	1,396	1,361	1,360	1,312	1,336	1,395	1,413	1,444

A-3

ENROLLMENT PROJECTIONS - 1 Year Cohort Method										
LONDONDERRY										
2018 - 2019 to 2027 - 2028										
Grade	18-19	19-20	20-21	21-22	22-23	23-24	24-25	25-26	26-27	27-28
K	251	267	302	275	273	273	278	280	276	276
1	299	278	295	334	304	302	302	307	310	305
2	321	306	285	302	342	312	309	309	315	318
3	288	319	304	283	300	339	310	307	307	313
4	272	300	333	317	295	313	354	323	320	320
5	313	272	300	333	317	295	313	354	323	320
6	308	316	275	303	336	320	298	316	358	326
7	302	308	316	275	303	336	320	298	316	358
8	325	292	298	306	266	293	325	310	288	306
9	360	354	318	325	334	290	319	354	338	314
10	380	366	360	323	330	340	295	324	360	344
11	345	362	348	343	307	314	324	281	308	343
12	357	345	362	348	343	307	314	324	281	308
TOTAL	4,121	4,085	4,096	4,067	4,050	4,034	4,061	4,087	4,100	4,151
K-5	1,744	1,742	1,819	1,844	1,831	1,834	1,866	1,880	1,851	1,852
6-8	935	916	889	884	905	949	943	924	962	990
9-12	1,442	1,427	1,388	1,339	1,314	1,251	1,252	1,283	1,287	1,309

A-4



A-5

ENROLLMENT HISTORY PROJECTIONS - Model Comparisons										
LONDONDERRY										
2018 - 2019 to 2027 - 2028										
Model	18-19	19-20	20-21	21-22	22-23	23-24	24-25	25-26	26-27	27-28
5 Year Average	4,090	4,059	4,059	4,029	4,015	3,987	3,999	4,009	3,998	4,030
3 Year Weighted	4,137	4,131	4,166	4,169	4,189	4,200	4,251	4,297	4,323	4,385
1 Year Cohort	4,121	4,085	4,096	4,067	4,050	4,034	4,061	4,087	4,100	4,151

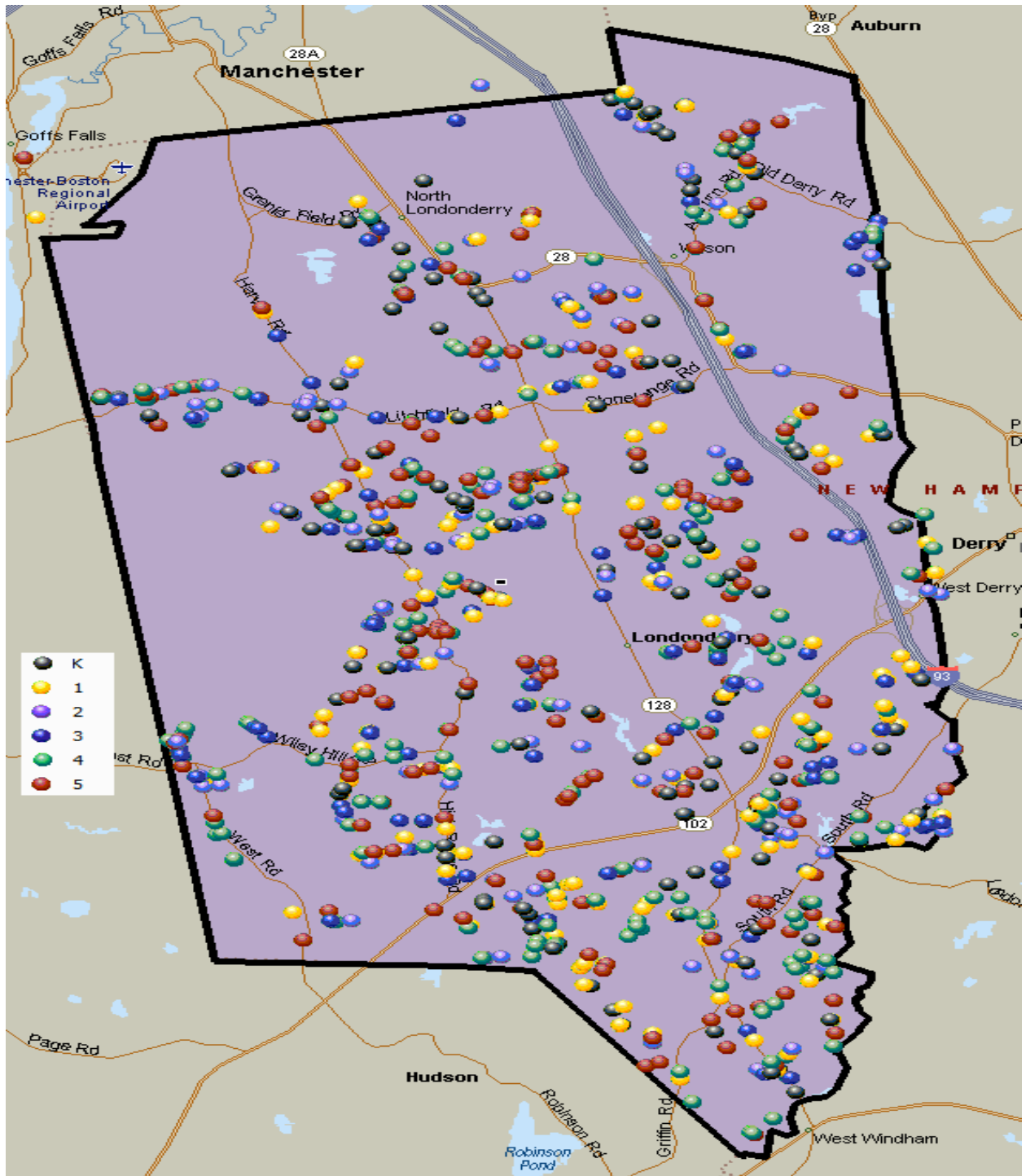
Appendix B

Student Distribution Data and Maps

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B-3	Grades 9 – 12 Distribution	22

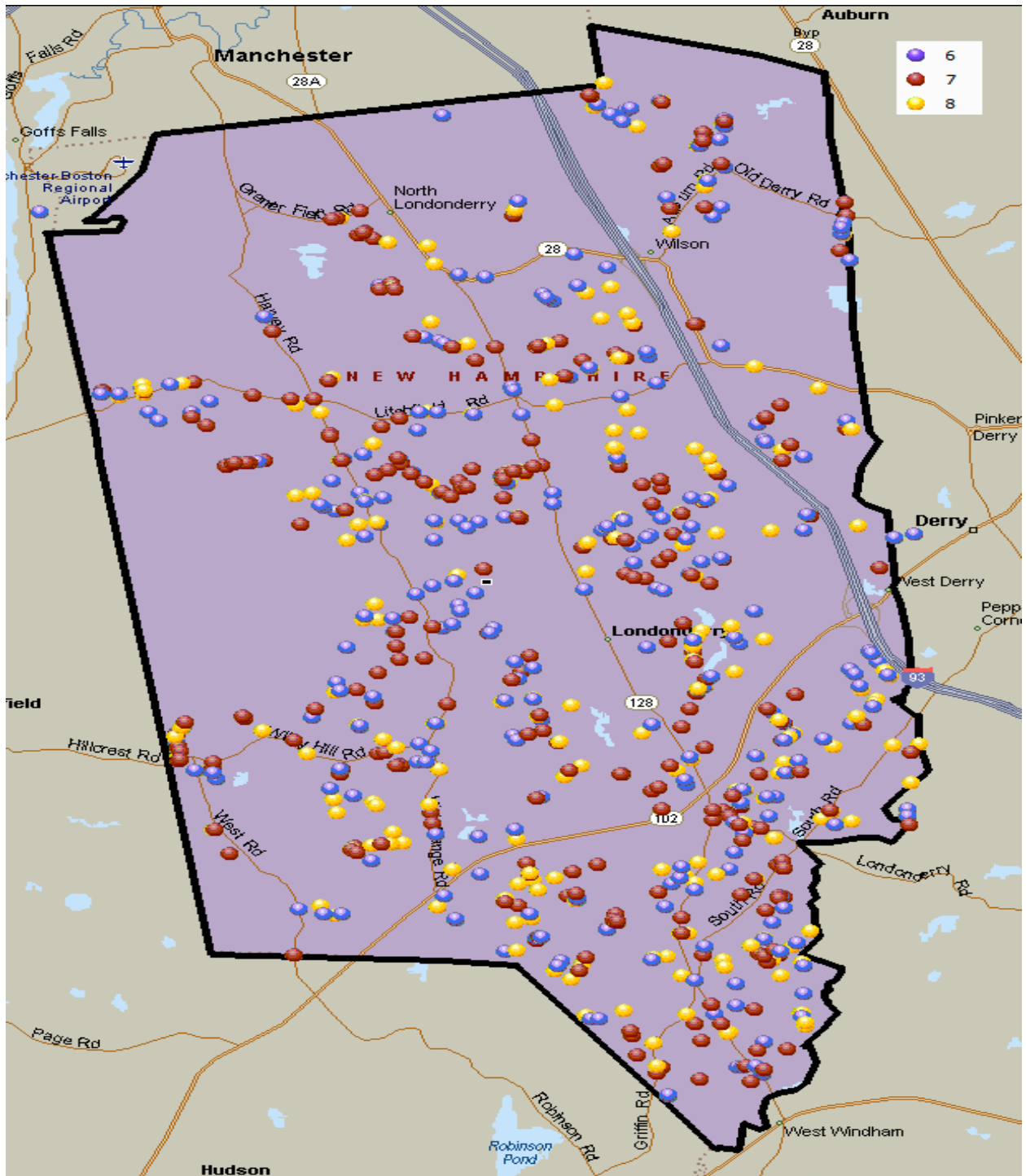
B-1

Grades K – 5 Distribution



B-2

Grades 6 – 8 Distribution



B-3

Grades 9 – 12 Distribution

