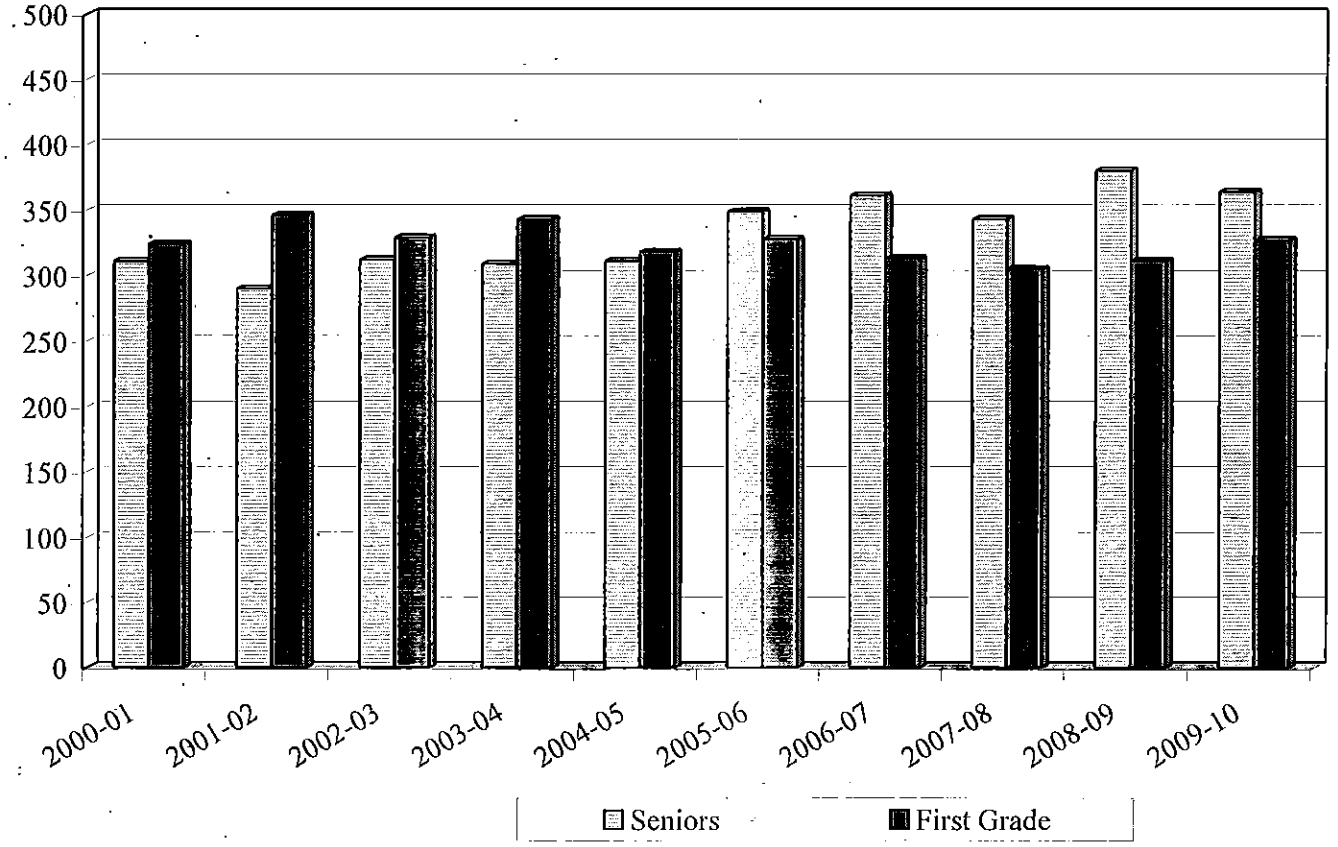
APPENDIX 4

Graph 4-1

Wissahickon School District
Relationship Between Graduating Class
and Entering First Grade Class in the Following Year



CHAPTER 5

ENROLLMENT TRENDS AND PROJECTIONS

Past Enrollment Trends

Enrollments in the Wissahickon School District total 4,441 in 2010-11 and are 76 pupils (1.7 percent) lower than in 2000-01. (Note: Enrollment figures provided by the district include just resident pupils educated in district classrooms on a full-time or part-time basis.) Decreases in pupil population were recorded in six of the past 10 years including each of the past five; increases were experienced in four years during this period. The largest annual decline (61 pupils or 1.3 percent) occurred in 2003-04; the smallest yearly loss (14 pupils or 0.3 percent) was in the current school year. The increases in enrollment ranged from three (0.1 percent) in 2001-02 to 76 (1.7 percent) in 2002-03. The district's pupil count rose by a net of 66 or 1.5 percent during the period 2000-01 to 2005-06 (a net gain of 13 pupils or 0.3 percent yearly, on average); in the five most recent years enrollments fell by 142 or 3.1 percent (an average annual decrease of 28 pupils or 0.6 percent). (See Tables 5-1 and 5-2 and Graph 5-1.)

Table 5-1

WISSAHICKON SCHOOL DISTRICT

Total Enrollment (Grades K-12)[1/]
2000-01 to 2010-11

School Year	Enrollment K-12	Change From Previous Year #	Change From Previous Year %
2000-01	4,517	–	–
2001-02	4,520	3	0.1
2002-03	4,596	76	1.7
2003-04	4,535	-61	-1.3
2004-05	4,546	11	0.2
2005-06	4,583	37	0.8
2006-07	4,554	-29	-0.6
2007-08	4,531	-23	-0.5
2008-09	4,483	-48	-1.1
2009-10	4,455	-28	-0.6
2010-11	4,441	-14	-0.3
Change 2000-01 to 2010-11		-76	-1.7

1/ Based on October 1 figures as provided by the district.

Table 5-2

WISSAHICKON SCHOOL DISTRICT

Total Enrollments by Grade [1/]
2000-01 to 2010-11

Year	K	1	2	3	4	5	**Total K-5**	6	7	8	**Total 6-8**	9	10	11	12	**Total 9-12**	**Total K-12**
2000-01	288	300	338	370	399	362	**2,057**	390	393	365	**1,148**	342	353	306	311	**1,312**	**4,517**
2001-02	322	324	328	337	374	389	**2,074**	363	390	386	**1,139**	350	335	332	290	**1,307**	**4,520**
2002-03	308	346	342	341	355	376	**2,068**	401	364	390	**1,155**	404	330	327	312	**1,373**	**4,596**
2003-04	310	329	349	342	351	344	**2,025**	377	397	364	**1,138**	386	359	318	309	**1,372**	**4,535**
2004-05	291	343	331	355	344	352	**2,016**	338	380	402	**1,120**	352	388	359	311	**1,410**	**4,546**
2005-06	310	318	346	337	355	350	**2,016**	358	358	378	**1,094**	411	343	370	349	**1,473**	**4,583**
2006-07	300	328	316	346	343	343	**1,976**	357	359	364	**1,080**	390	396	351	361	**1,498**	**4,554**
2007-08	297	313	325	332	359	343	**1,969**	348	372	367	**1,087**	361	383	388	343	**1,475**	**4,531**
2008-09	297	305	313	329	330	355	**1,929**	355	350	378	**1,083**	374	357	360	380	**1,471**	**4,483**
2009-10	301	311	309	318	337	322	**1,898**	351	367	362	**1,080**	384	372	357	364	**1,477**	**4,455**
2010-11	323	327	312	326	324	332	**1,944**	326	367	357	**1,050**	358	359	370	360	**1,447**	**4,441**
Pupil Change 2000-01 to 2010-11	35	27	-26	-44	-75	-30	**-113**	-64	-26	-8	**-98**	16	6	64	49	**135**	**-76**
Percent Change 2000-01 to 2010-11	12.2	9.0	-7.7	-11.9	-18.8	-8.3	**-5.5**	-16.4	-6.6	-2.2	**-8.5**	4.7	1.7	20.9	15.8	**10.3**	**-1.7**

1/ Based on October 1 figures as provided by the district. Enrollments include just resident pupils educated in district classrooms on a full-time or part-time basis.

Wissahickon's elementary enrollments (grades K-5) in 2010-11 are 113 pupils or 5.5 percent below the 2000-01 level. During this period the pupil count decreased in seven years, increased in two years, and remained unchanged in one year (2005-06). The largest decline in enrollments (43 or 2.1 percent) was experienced in 2003-04; the smallest drop (six pupils or 0.3 percent) was in 2002-03. In the current school year enrollments in grades K-5 rose 46 or 2.4 percent; the other increase was recorded in 2001-02 (17 or 0.8 percent). Elementary enrollments were down by a net of 41 or 2.0 percent during the period 2000-01 to 2005-06 (a net drop of eight pupils or 0.4 percent yearly, on average); in the five most recent years enrollments in these grades fell by a net of 72 or 3.6 percent (or an average annual net loss of 14 pupils or 0.7 percent). (See Tables 5-2 and 5-3 and Graph 5-2.)

Table 5-3

WISSAHICKON SCHOOL DISTRICT

Elementary Enrollment (Grades K-5) 1/
2000-01 to 2010-11

School Year	Enrollment K-5	Change From Previous Year #	Change From Previous Year %
2000-01	2,057	–	–
2001-02	2,074	17	0.8
2002-03	2,068	-6	-0.3
2003-04	2,025	-43	-2.1
2004-05	2,016	-9	-0.4
2005-06	2,016	NC	NC
2006-07	1,976	-40	-2.0
2007-08	1,969	-7	-0.4
2008-09	1,929	-40	-2.0
2009-10	1,898	-31	-1.6
2010-11	1,944	46	2.4
Change 2000-01 to 2010-11		-113	-5.5

1/ Based on October 1 figures as provided by the district.

Enrollments in the district's middle school grades (6-8) were down by 98 pupils 8.5 percent between the 2000-01 and 2010-11 school years. Decreases were experienced in all years during this period except 2002-03 (when enrollments increased by 16 or 1.4 percent) and 2007-08 (when they rose by seven or 0.6 percent). The largest annual absolute decline was experienced in the current school year (30 or 2.8 percent); the smallest drop (three pupils or 0.3 percent) was in 2009-10. During the period 2000-01 to 2005-06, middle school enrollments fell by a net of 54 or 4.7 percent (a net loss of 11 pupils or 0.9 percent yearly, on average); in the five most recent years enrollments in these grades dropped by a net of 44 or 4.0 percent (an annual average net decrease of nine pupils or 0.8 percent). (See Tables 5-2 and 5-4 and Graph 5-3.)

Table 5-4

WISSAHICKON SCHOOL DISTRICT

Middle School Enrollment (Grades 6-8) 1/
2000-01 to 2010-11

School Year	Enrollment 6-8	Change From Previous Year #	Change From Previous Year %
2000-01	1,148	–	–
2001-02	1,139	-9	-0.8
2002-03	1,155	16	1.4
2003-04	1,138	-17	-1.5
2004-05	1,120	-18	-1.6
2005-06	1,094	-26	-2.3
2006-07	1,080	-14	-1.3
2007-08	1,087	7	0.6
2008-09	1,083	-4	-0.4
2009-10	1,080	-3	-0.3
2010-11	1,050	-30	-2.8
Change 2000-01 to 2010-11		-98	-8.5

1/ Based on October 1 figures as provided by the district.

High school enrollments (grades 9-12) in the Wissahickon School District are 135 pupils (10.3 percent) higher in 2010-11 than in 2000-01. Increases were recorded in five years during this period, and decreases occurred in five years. The largest rise (66 pupils or 5.0 percent) was in 2002-03; the smallest (six pupils or 0.4 percent) was in 2009-10. The largest decrease (30 pupils or 2.0 percent) was experienced in the current school year, and the smallest (one pupil or 0.1 percent) was in 2003-04. High school enrollments rose by a net of 161 or 12.3 percent between 2000-01 and 2005-06 (a net growth of 32 pupils or 2.5 percent yearly, on average); enrollments in these grades, however, were down by a net of 26 or 1.8 percent in the five most recent years (an annual average net decrease of five pupils or 0.4 percent). (See Tables 5-2 and 5-5 and Graph 5-4.)

Table 5-5

WISSAHICKON SCHOOL DISTRICT

High School Enrollment (Grades 9-12)[1/]
2000-01 to 2010-11

School Year	Enrollment 9-12	Change From Previous Year #	Change From Previous Year %
2000-01	1,312	–	–
2001-02	1,307	-5	-0.4
2002-03	1,373	66	5.0
2003-04	1,372	-1	-0.1
2004-05	1,410	38	2.8
2005-06	1,473	63	4.5
2006-07	1,498	25	1.7
2007-08	1,475	-23	-1.5
2008-09	1,471	-4	-0.3
2009-10	1,477	6	0.4
2010-11	1,447	-30	-2.0
Change 2000-01 to 2010-11		135	10.3

1/ Based on October 1 figures as provided by the district.

Based on figures provided by the Wissahickon School District, the reported number of district children attending nonpublic schools (children enrolled in home schools, charter schools, and cyber schools plus just those in private/parochial schools who are transported by the district—that is, exclusive of those who walk or who are transported by their parents or others) fell from 1,713 in 2000-01 to 1,556 in 2010-11, or by 157 or 9.2 percent. Public school enrollments were down by 76 or 1.7 percent during the same period.

The reported number of district residents transported by the district to private/parochial schools totaled 1,532 in 2010-11—162 or 9.6 percent lower than in 2001-02 (the highest point during the period reviewed); the low point of 1,492 occurred in 2007-08). Declines in private/parochial enrollments were recorded six years during this period; increases were recorded in four. The number of district children in charter schools, home schools, and cyber schools rose from 19 in 2001-02 (its lowest point during the review period) to 24 in 2010-11—up by five pupils or 26.3 percent. In the intervening years six increases and four decreases were recorded. Enrollments in these types of schools reached their highest point (46) in 2009-10 and then dropped by 22 (47.8 percent) in the current school year.

On a proportionate basis, in 2001-02 total nonpublic pupils (as defined above) represented 27.5 percent of all district children reported to be in public and nonpublic schools (their highest market share); in 2010-11 the figure was down to 25.9 percent. Nonpublic enrollments recorded their lowest market share during the review period (25.2 percent) in 2002-03. The relationship of nonpublic children to total children in public and nonpublic schools averaged 26.2 percent during the review period.

Conversely, the proportion of children attending public school totaled 72.5 percent in 2000-01 (the lowest level during the period reviewed) and was up to 74.1 percent in the 2010-11 school year. The highest point during this period was 74.8 percent in 2002-03. The relationship of public school children to the total number of children reported to be in public and nonpublic schools averaged 73.8 percent during the period reviewed.

The overall relationship between total public and reported nonpublic enrollments may be affected by any changes over time in the way the number of nonpublic pupils is recorded as well as by any changes over time in the relative number of nonpublic children who are transported by the district to private/parochial schools. However, the figures presented are believed to represent a valid measure of the general relationship between these two groupings of pupils during the

period reviewed—recognizing that the private/parochial figures are limited to those children transported by the district and other nonpublic pupils include just those involved in home schools, charter schools, and cyber schools. If figures on all nonpublic enrollments were available and factored in, the "market share" of the public school system would likely be slightly lower.

The methodology employed to generate the projections of Wissahickon's enrollments recognizes the impact of district residents attending nonpublic schools and factors in the patterns and events of the past several years and expectations for the next several years. (See Table 5-6.)

Table 5-6

WISSAHICKON SCHOOL DISTRICT

Proportion of District Children Attending Public and Nonpublic Schools
2000-01 to 2010-11

		WSD Enroll-ments	Nonpublic Enrollments			Grand Total Enroll-ments [2/]	WSD as a % of Grand Total [3/]	Nonpublic Enrollments as a % of Grand Total [3/]
			Private/ Parochial	Charter/Home/ Cyber Schools	Total [1/]			
2000-01		4,517	1,694	19	1,713	6,230	↓72.5	↑27.5
2001-02		4,520	1,671	20	1,691	6,211	72.8	27.2
2002-03		4,596	1,520	32	1,552	6,148	↑74.8	↓25.2
2003-04		4,535	1,530	45	1,575	6,110	74.2	25.8
2004-05		4,546	1,517	41	1,558	6,104	74.5	25.5
2005-06		4,583	1,606	37	1,643	6,226	73.6	26.4
2006-07		4,554	1,587	44	1,631	6,185	73.6	26.4
2007-08		4,531	1,492	41	1,533	6,064	74.7	25.3
2008-09		4,483	1,628	42	1,670	6,153	72.9	27.1
2009-10		4,455	1,524	46	1,570	6,025	73.9	26.1
2010-11		4,441	1,532	24	1,556	5,997	74.1	25.9
Change 2000-01	#	**-76**	**-162**	**5**	**-157**	**-233**	—	—
to 2010-11	%	**-1.7**	**-9.6**	**26.3**	**-9.2**	**-3.7**	—	—

1/ Includes district children enrolled in home schools, charter schools, and cyber schools, plus just those private/parochial school pupils who are transported by the district.

2/ Includes district children enrolled in public schools, home schools, charter schools, and cyber schools, plus just those private/parochial school pupils who are transported by the district.

3/ It should be noted that the overall relationship between cumulative births and total reported enrollments may be influenced not only by migration patterns but also by any changes over time in the way the number of children in nonpublic schools is recorded as well as any changes over time in the relative number of private/parochial pupils who are transported by the district.

Note: Highest point marked by ↑; lowest point marked by ↓.

SOURCE: Wissahickon School District.

Mechanics of Enrollment Projections

Enrollment projections for the Wissahickon School District were prepared using the "grade progression" technique, which is based on the ratio of enrollments in a given grade in a given year to enrollments in the next lower grade in the preceding year. The grade progression formula was developed by reviewing the recent experience in the district with respect to pupil progression and tempering that with the various community growth data that were analyzed and the expected impact of nonpublic schools in the area. This approach is designed to detect such factors as in- or out-migration of pupils; transfer of pupils between public and nonpublic schools, and into and out of special programs; withdrawals; promotional policies; and participation in any full-time vocational-technical program.

By way of example, if grade 2 enrollments were 98 in the 2010-11 school year and grade 1 had 100 pupils in the prior school year (2009-10), the grade progression ratio from grade 1 to grade 2 would be 0.98. Ratios below 1.00 are generally indicative of net out-migration, transfers out of the school system or to special programs (e.g., a full-time vocational technical school), failure to promote pupils from the prior grade, and/or dropouts in the high school grades. Ratios above 1.00 usually indicate net in-migration, transfers into the public school system from nonpublic schools or special programs, and/or the failure to promote pupils to the next grade.

In the Wissahickon School District during the 2010-11 school year the progression ratios for all grades except 5, 8, 9, 10, and 11 were 1.00 or higher suggesting net in-migration of pupils. In the grades with a ratio below 1.00 there was not necessarily an absence of in-migration, but any in-migration may not have been as strong as in the other grades, or may have been more than offset by out-migration, transfers to nonpublic schools, entry into special classes, failure to promote pupils from the previous grade, and/or by the dropout of pupils in the high school grades.

Analysis of the progression ratios for the most recent five years reveals that the sum of the individual grade ratios rose in two years, fell in two years, and exceeded the "neutral" migration figure of 12.0 in each year. In 2006-07 the sum of the progression ratios totaled 12.0696. It grew to 12.1322 in 2006-07, but decreased to 12.0062 (its lowest point during the review period) in 2008-09. It then rose to 12.1548 in 2009-10 (its highest point during the review period), but dropped to 12.1064 in the current school year.

A further reinforcement of in- and out-migration patterns is found in the number of individual grade progression ratios that equaled or exceeded 1.0. In 2006-07 eight of the 12 figures equaled or exceeded 1.0; in 2007-08, 2008-09, and 2010-11 seven of the figures equaled or exceeded 1.0; and in 2009-10 nine of the ratios equaled or exceeded 1.0.

The sum of the progression ratios in grades 1 to 5 exceeded the "neutral" migration figure of 5.0 in each of the five years reviewed; there were three annual increases and only one annual decrease during this period. The sum grew from 5.0358 in 2006-07 to 5.1224 in 2007-08, and then fell to 5.0221 (its lowest point during the review period) in 2008-09. In 2009-10 it rose to 5.0763, and in 2010-11 it increased further to 5.1487 (its highest point during the review period). The progression ratios equaled or exceeded 1.0 in four of the elementary grades in 2007-08, 2009-10, and 2010-11; in 2006-07 and 2008-09 three of these grades equaled or exceeded 1.0.

The sum of the progression ratios for grades 6 to 8 exceeded the "neutral" point of 3.0 in all years reviewed; two annual decreases, one annual increase, and one year without a change were recorded during this period. In 2006-07 the sum of the ratios was 3.0396. It increased to 3.0789 (its highest point during the review period) in 2007-08, fell to 3.0568 in 2008-09, and remained at that level in 2009-10. In 2010-11 the sum of the ratios fell to 3.0308 (its lowest point during the review period). In the current school year and in 2009-10 two of the three grades in this grouping had progression ratios that equaled or exceeded 1.0; in 2006-07, 2007-08, and 2008-09 each of the three grades had a ratio that equaled or exceeded 1.0.

The sum of the progression ratios for grades 9 to 12 exceeded the "neutral" point of 4.0 in only one of the past five years; there were three annual decreases and one increase during this period. In 2006-07 the sum of the ratios was 3.9942. It fell to 3.9309 in 2007-08 and to 3.9273 in 2008-09. In 2009-10 the sum of the ratios rose to 4.0217 (its highest point during the review period), but it then dropped to 3.9269 (its lowest point during the review period) in 2010-11. In 2006-07 two of the four high school grades had ratios that equaled or exceeded 1.0; in 2007-08 none of the grades had a ratio that equaled or exceeded 1.0; in 2008-09 and 2010-11 just one of the grades had a ratio which equaled or exceeded 1.0; and in the current school year three of the ratios equaled or exceeded 1.0. The individual grade ratios and the overall ratios for most of the high school grades are normally more strongly influenced by dropouts than by general migration patterns. (See Table 5-7.)

Table 5-7

WISSAHICKON SCHOOL DISTRICT

Grade Progression Ratios by Grade Configuration

Grades	2010-11 Progression Ratios	2009-10 Progression Ratios	2008-09 Progression Ratios	2007-08 Progression Ratios	2006-07 Progression Ratios
1/K	↑1.0864	1.0471	↓1.0269	1.0433	1.0581
2/1	1.0032	↑1.0131	1.0000	↓0.9909	0.9937
3/2	↑1.0550	1.0160	1.0123	1.0506	↓1.0000
4/3	1.0189	1.0243	↓0.9940	↑1.0376	1.0178
5/4	0.9852	0.9758	0.9889	↑1.0000	↓0.9662
Total 1-5	**↑5.1487**	**5.0763**	**↓5.0221**	**5.1224**	**5.0358**
6/5	1.0124	↓0.9887	↑1.0350	1.0146	1.0200
7/6	↑1.0456	1.0338	1.0057	1.0420	↓1.0028
8/7	↓0.9728	↑1.0343	1.0161	1.0223	1.0168
Total 6-8	**↓3.0308**	**3.0568**	**3.0568**	**↑3.0789**	**3.0396**
9/8	↓0.9890	1.0159	1.0191	0.9918	↑1.0317
10/9	↓0.9349	↑0.9947	0.9889	0.9821	0.9635
11/10	0.9946	1.0000	↓0.9399	0.9798	↑1.0233
12/11	1.0084	↑1.0111	0.9794	0.9772	↓0.9757
Total 9-12	**↓3.9269**	**↑4.0217**	**3.9273**	**3.9309**	**3.9942**
Total 1-12	**12.1064**	**↑12.1548**	**↓12.0062**	**12.1322**	**12.0696**

Note: Highest point for each grade marked by ↑; lowest point marked with ↓. Not all figures may add due to rounding.

The impact of the district's progression ratios is clearly demonstrated by measuring their effect on children entering kindergarten and then moving through each of the grades. Using the grade-by-grade progression ratios for 2010-11, 100 children entering kindergarten this year would in theory increase to 117 fourth grade pupils, fall to 115 fifth graders, peak at 121 seventh graders, drop to 118 eighth grade pupils, and then steadily decrease to 108 pupils in the 11th grade before increasing slightly to 109 pupils in the 12th grade. These figures contrast with those that would result from using the ratios for the 2008-09 school year—the lowest aggregate figure of the past five years (the aggregate figure for the current school year is the third highest of the five most recent years). Based on the 2008-09 figures, 100 kindergarten entries in that school year would rise to 104 third grade pupils, fall to 102 fifth grade pupils, grow to 109 eighth

graders, and peak at 111 pupils in the ninth grade before dropping to 101 pupils in the 12th grade.

In practice, neither of these patterns would necessarily materialize as outlined due to changes in progression ratios over time. However, the theoretical impact of the progression ratios based on these points of reference reveals the effect of the migration of school-age children, transfers into and out of the public school system and special programs, promotion policies, dropouts, and so forth.

The only new input needed in projecting enrollments in this manner is kindergarten entries. In order to determine future kindergarten entries, ratios must be developed between historic kindergarten enrollments in specific school years and resident births in the district five years earlier. These ratios (or "cohort survival rates") are then analyzed and—along with the number of births in the district—are used to calculate future kindergarten enrollments. This approach, like the grade progression technique, detects net in- and out-migration and the impact of nonpublic schools and special programs. A figure below 1.0 suggests that kindergarten entries are lower than the number of births in the district five years earlier indicating net out-migration and/or families opting to enroll their children in nonpublic kindergarten programs. Conversely, a figure of greater than 1.0 suggests more kindergarten entries than births in the district five years earlier indicating in-migration that outweighs any impact nonpublic education may play.

The ratio of kindergarten entries to births in the Wissahickon School District five years prior was higher in the current school year (0.8730) than in 2006-07 (0.8000). In the interim years, the ratio of kindergarten entries to births in the district five years prior decreased to 0.7500 in 2007-08, grew to 0.8486 in 2008-09, then fell slightly to 0.8157 in 2009-10 before rising to 0.8730 in the current school year. (See Table 5-8.)

The best available source of data on resident births in the district is the annual compilations by the PA Department of Health. However, it should be noted that birth figures for purposes of the projection methodology are based on the school year and age requirements for entry into the school system rather than the calendar year as reported elsewhere in this study. The district requires that children be five years old by September 1 to be eligible to enter kindergarten in that school year.

Table 5-8

WISSAHICKON SCHOOL DISTRICT

Ratios of Kindergarten Entries to Births
2006-07 to 2010-11

School Year	Kindergarten Enrollment	School Year Births 5 Years Earlier School Year	Births	Ratio of K Entries to Births
2006-07	300	2000-01	375	0.8000
2007-08	297	2001-02	396	0.7500
2008-09	297	2002-03	350	0.8486
2009-10	301	2003-04	369	0.8157
2010-11	323	2004-05	370	0.8730

The resulting figures reveal that there were 322 births in calendar year 2006; for the school year September 2005 through August 2006 (those who will enter kindergarten in 2011-12) the figure was 327. Birth figures for calendar year 2007 were 312, and for school year 2006-07 births totaled 319. Calendar year births for 2008 were 310, and for school year 2007-08 the figure was 307. Birth figures for 2009 were 341, and for school year 2008-09 births were 318. (See Table 5-9.)

Table 5-9

WISSAHICKON SCHOOL DISTRICT

Relationship Between Calendar Year and School Year Births
2006 to 2009[1/]

Kindergarten Year	Calendar Year Births CY	#	School Year Births SY	#
2011-12	2006	322	2005-06	327
2012-13	2007	312	2006-07	319
2013-14	2008	310	2007-08	307
2014-15	2009[1/]	341	2008-09[1/]	318

1/ Preliminary figures.

The use of resident births and the "cohort survival rate" to project kindergarten entries restricts "high confidence" estimates of future enrollments for all grades to the fifth school year beyond the most recent year for which birth data are available. For example, preliminary data on resident births for the Wissahickon School District are currently available through calendar year 2009. Projections of kindergarten enrollments, then, can be made through the 2014-15 school year based on the cohort survival rate and the birth figures covering September 2008 through August 2009 (which represent the main source of kindergarten entries in the 2014-15 school year). PEL's primary projections, however, extend five years beyond the current school year or to school year 2015-16—one year beyond the birth data available to determine kindergarten entries. To fill this gap, the average birth figure for the two most recent years was used to calculate kindergarten entries in 2015-16. When preliminary birth figures for 2009 are replaced with final figures, the projection of kindergarten pupils for 2014-15 may change slightly. Similarly when birth figures for 2010 become available, the projections of kindergarten pupils for the 2015-16 school year may change.

Enrollment projections for the secondary grades could be carried five years further because they are based primarily on births that have already occurred and on pupils currently in the elementary levels of the school system. Extended projections of district enrollments beyond the 2015-16 school year are provided later in this chapter.

The effect of changing births patterns can be demonstrated by measuring their impact on total enrollments in the absence of net in- or out-migration, the impact of nonpublic schools and special programs, and dropouts; that is, the ratios of kindergarten entries to births in the district five years prior would equal 1.0, as would all grade progression ratios. A school district that had experienced a steady 18-year pattern of 100 births annually—in the absence of net in- or out-migration and any impact from nonpublic schools, special programs, or dropouts—would have a total K-12 enrollment of 1,300 pupils. If this district were to begin experiencing increases in births of five per year (that is, in the first year, five more births than in the base year, in the second year, 10 more than the base year, etc.), the effect on total enrollments (again, in the absence of net in-or out-migration and any impact from nonpublic schools, special programs, or dropouts) would be an increase of five pupils in the fifth year after births began to rise (the year when children from the first year of the increase would enter kindergarten). The total enrollment in that year would be 1,305 or just 0.4 percent higher than in the base year. However, in

subsequent years the increase would compound and grow to 75 pupils in the ninth year after births began to rise—equivalent to PEL's fifth projected year (when the children resulting from the first year of the increase in births would reach the fourth grade). Total enrollments in that year would reach 1,375—an increase of 5.8 percent over the base year. The increase would further compound to 275 pupils in the 15th year after births began to rise—equivalent to PEL's 10th projected year (when the children resulting from the first year of the increase would reach the ninth grade). Total enrollments in that year would reach 1,575 and be 21.2 percent higher than in the base year.

Conversely, if the same district were to begin experiencing decreases in births of five per year, the effect on total enrollments—in the absence of net in- or out-migration and any impact from nonpublic schools, special programs, or dropouts—would be a loss of five pupils in the fifth year after births began to fall. Total enrollments would decline slightly in that year to 1,295 or by 0.4 percent. The decrease in enrollments would compound to 75 pupils in the 10th year after births began to drop—equivalent to PEL's fifth projected year—when enrollments would total 1,225 and be 5.8 percent below the base year. The decrease would further compound to 275 pupils in the 15th year after births began to decrease—equivalent to PEL's 10th projected year—and total enrollments in that year would be 1,025, down by 21.2 percent from the base year.

The theoretical impact of the changes in birth patterns based on these points of reference would likely not occur precisely as outlined in these examples because of year-to-year variations in birth patterns and the effect of in- and out-migration during the pre-school years and as children move through the grades. But, the impact that changing births patterns can have on enrollments is apparent: births have a powerful influence on enrollments independent of migration patterns and any impact from nonpublic schools, special programs, or dropouts (that can compound or neutralize the impact of changing birth patterns); there is a five-year delay in the impact of changes in birth patterns; and a series of similar changes will have a compounding effect. With respect to the scenario used here, it should also be noted that the precise size of the changes in enrollments would be influenced by the relative magnitude of the births in a given district and by the relative and absolute size of the changes in birth patterns. For example, births in the Wissahickon School District during the decade just ended—on average—were more than three and one-half times the figure used in this example, and during this period they fell by about six per year, on average—or just slightly more than the figure in the model outlined above.

Enrollment Projections—Primary Period

The projections that follow are based on the numbers and type of new housing that municipal officials expect will be built in the Wissahickon School District during the next 10 years, as well infill, minor subdivision activity, and miscellaneous housing construction that can reasonably be assumed to occur during this period (all as outlined in Chapter 2). The methodology is also sensitive to the number of age-restricted and similar housing in the pipeline and the ongoing turnover of mature housing. Further, the methodology assumes that overall migration and related patterns will remain consistent with expected patterns, that the role of nonpublic education will be compatible with the recent past and current expectations, and that the district will continue its current policies relative to its kindergarten, voc-tech, and special education programs and maintain its other key policies.

Given these assumptions and conditions, PEL projects that district enrollments will total 4,177 in 2015-16 and be down by 264 pupils (5.9 percent) from 2010-11. Decreases are expected in all years during this period. The largest annual decline (66 or 1.5 percent) will occur in both 2012-13 and 2013-14. The smallest absolute loss in pupils (42) will be in both 2011-12 and 2014-15; the smallest proportionate drop (0.9 percent) will occur in 2011-12. The overall projected decrease averages 53 pupils yearly compared with an annual average drop of 28 pupils during the most recent five years. (See Tables 5-10 and 5-11 and Graph 5-1.)

Table 5-10

WISSAHICKON SCHOOL DISTRICT

Total Enrollment Projections (Grades K-12)
2010-11 to 2015-16

School Year	Enrollment K-12	Change From Previous Year #	Change From Previous Year %
2010-11 (actual)	4,441	-14	-0.3
2011-12	4,399	-42	-0.9
2012-13	4,333	-66	-1.5
2013-14	4,267	-66	-1.5
2014-15	4,225	-42	-1.0
2015-16	4,177	-48	-1.1
Change 2010-11 to 2015-16		-264	-5.9

Table 5-11

WISSAHICKON SCHOOL DISTRICT

Total Projected Enrollments by Grade
2010-11 to 2015-16

Year	K	1	2	3	4	5	**Total K-5**	6	7	8	**Total 6-8**	9	10	11	12	**Total 9-12**	**Total K-12**
2010-11(actual)	323	327	312	326	324	332	**1,944**	326	367	357	**1,050**	358	359	370	360	**1,447**	**4,441**
2011-12	276	345	330	323	333	318	**1,925**	332	339	368	**1,039**	358	345	358	374	**1,435**	**4,399**
2012-13	269	294	348	342	330	327	**1,910**	318	345	340	**1,003**	369	345	344	362	**1,420**	**4,333**
2013-14	259	287	296	360	349	324	**1,875**	327	331	346	**1,004**	341	356	344	347	**1,388**	**4,267**
2014-15	269	276	289	307	368	342	**1,851**	324	340	332	**996**	347	329	355	347	**1,378**	**4,225**
2015-16	264	287	278	299	314	361	**1,803**	342	337	341	**1,020**	333	335	328	358	**1,354**	**4,177**
Pupil Change 2010-11 to 2015-16	-59	-40	-34	-27	-10	29	**-141**	16	-30	-16	**-30**	-25	-24	-42	-2	**-93**	**-264**
Percent Change 2010-11 to 2015-16	-18.3	-12.2	-10.9	-8.3	-3.1	8.7	**-7.3**	4.9	-8.2	-4.5	**-2.9**	-7.0	-6.7	-11.4	-0.6	**-6.4**	**-5.9**

Projections of elementary enrollments (grades K-5) suggest that they will total 1,803 in 2015-16 and be 141 pupils or 7.3 percent lower than in 2010-11. Decreases will occur in all years during this period. The largest annual loss in pupil population (48 or 2.6 percent) will be in 2015-16; the smallest decline (15 pupils or 0.8 percent) will be recorded in 2012-13. The overall projected decrease in enrollments in these grades averages 28 yearly compared with a net annual drop of 14 (on average) during the past five years. The acceleration in the overall rate of decline in the pupil count at the elementary level is caused primarily by the noticeable decrease in the number of annual births in the district during the second half of the past decade, partially offset by a modest rise during the most recent years in the average relationship between kindergarten entries and births in the district five years prior. (See Tables 5-11 and 5-12 and Graph 5-2.)

Table 5-12

WISSAHICKON SCHOOL DISTRICT

Elementary Enrollment Projections (Grades K-5)
2010-11 to 2015-16

School Year	Enrollment K-5	Change From Previous Year #	Change From Previous Year %
2010-11 (actual)	1,944	46	2.4
2011-12	1,925	-19	-1.0
2012-13	1,910	-15	-0.8
2013-14	1,875	-35	-1.8
2014-15	1,851	-24	-1.3
2015-16	1,803	-48	-2.6
Change 2010-11 to 2015-16		-141	-7.3

Middle school enrollments (grades 6-8) are projected to drop to 1,020 in 2015-16—30 pupils or 2.9 percent lower than in the current school year. Decreases will be recorded in all years during this period except 2013-14 (when an increase of one pupil or 0.1 percent will occur) and 2015-16 (when a gain of 24 pupils or 2.4 percent is expected). The largest annual decline in pupils will be experienced in 2012-13 (36 or 3.5 percent); the smallest drop will occur in 2014-15 (eight pupils or 0.8 percent). The projected net loss in pupils in grades 6-8 will average six annually compared with an average net yearly decrease of nine during the most recent five-years. The slight slowing in the pace of the decline in enrollments in the middle school grades during the primary projection period is largely a function of the movement into these grades of some smaller actual and projected classes from the elementary level, that, in turn, reflect the lower numbers of annual births during the latter years of the past decade. (See Tables 5-11 and 5-13 and Graph 5-3.)

Table 5-13

WISSAHICKON SCHOOL DISTRICT

Middle School Enrollment Projections (Grades 6-8)
2010-11 to 2015-16

School Year	Enrollment 6-8	Change From Previous Year #	Change From Previous Year %
2010-11 (actual)	1,050	-30	-2.8
2011-12	1,039	-11	-1.0
2012-13	1,003	-36	-3.5
2013-14	1,004	1	0.1
2014-15	996	-8	-0.8
2015-16	1,020	24	2.4
Change 2010-11 to 2015-16		-30	-2.9

Projections for the high school (grades 9-12) indicate that enrollments will fall to 1,354 in 2015-16—down by 93 (6.4 percent) from the current school year. Decreases in pupils are expected to occur in all years during this period. The largest annual drop (32 pupils or 2.3 percent) is projected for 2013-14; the smallest decline (10 pupils or 0.7 percent) will be in 2014-15. The projected average annual loss is 19 pupils compared with an average yearly net decrease of five pupils during the most recent five years. The noticeable increase in the decline in enrollments in the high school during the next five years is consistent with actual and projected enrollments in the lower grades in the preceding years. (See Tables 5-11 and 5-14 and Graph 5-4.)

Table 5-14

WISSAHICKON SCHOOL DISTRICT

High School Enrollment Projections (Grades 9-12)
2010-11 to 2015-16

School Year	Enrollment 9-12	Change From Previous Year #	Change From Previous Year %
2010-11 (actual)	1,447	-30	-2.0
2011-12	1,435	-12	-0.8
2012-13	1,420	-15	-1.0
2013-14	1,388	-32	-2.3
2014-15	1,378	-10	-0.7
2015-16	1,354	-24	-1.7
Change 2010-11 to 2015-16		-93	-6.4

Enrollment Projections—Extended Period

As stated in the discussion of the methodology employed to generate these projections, high confidence projections can be offered for a limited period beyond the most recent year for which actual birth figures are available. To go further would involve estimating or projecting future births, the key component in new kindergarten entries. This limitation, however, does not apply to secondary enrollments because they rely largely on children already born and/or in the school system. In order to provide a long-term perspective while recognizing methodological limitations, extended projections for the district's enrollments have been prepared for the years 2016-17 through the 2020-21.

If births hold steady at the average level of the two most recent years for which data are available (313), the total number and type of housing units in the district rise at the expected rate (as outlined in Chapter 2), overall migration and related patterns, including the role of nonpublic education, remain in keeping with expected patterns, and key policies relative to the district's kindergarten program, the voc-tech program, special education programs, etc., remain unchanged, total enrollments in the Wissahickon School District will decrease from 4,177 in 2015-16 to 3,987 in 2020-21. The figure projected for 2020-21 is 190 or 4.5 percent lower than the projection for 2015-16, and, given the drop of 264 pupils projected between 2010-11 and 2015-16, will be 454 pupils or 10.2 percent below the actual figure for the current school year.

Decreases will occur in all years during the extended projection period. The largest annual loss in pupils (58 or 1.4 percent) will occur in 2016-17; the smallest decrease (26 pupils or 0.6 percent) will be in 2019-20. The annual decline during the extended period will average 38 pupils compared with an average drop of 53 pupils per year during the first five projected years and an average decrease of 28 pupils per year during the past five years. Based on the assumptions used, beyond school year 2020-21 total enrollments are likely to decrease somewhat, then increase negligibly, and stabilize at a level noticeably below the figure projected for the final year covered in the study. (See Tables 5-15 and 5-16 and Graph 5-5.)

Table 5-15

WISSAHICKON SCHOOL DISTRICT

Extended Total Enrollment Projections (Grades K-12) [1/]
2015-16 to 2020-21

School Year	Enrollment K-12	Change From Previous Year #	Change From Previous Year %
2015-16	4,177	-48	-1.1
2016-17	4,119	-58	-1.4
2017-18	4,088	-31	-0.8
2018-19	4,049	-39	-1.0
2019-20	4,023	-26	-0.6
2020-21	3,987	-36	-0.9
Change 2015-16 to 2020-21		-190	-4.5
Change 2010-11 to 2020-21		-454	-10.2

1/ Based on births fixed at 313.

Table 5-16

WISSAHICKON SCHOOL DISTRICT

Extended Total Enrollment Projections by Grade Based on Births Fixed at 313
2015-16 to 2020-21

Year	K	1	2	3	4	5	**Total K-5**	6	7	8	**Total 6-8**	9	10	11	12	**Total 9-12**	**Total K-12**
2015-16	264	287	278	299	314	361	**1,803**	342	337	341	**1,020**	333	335	328	358	**1,354**	**4,177**
2016-17	264	282	289	288	305	308	**1,736**	361	356	338	**1,055**	342	321	334	331	**1,328**	**4,119**
2017-18	264	282	284	299	294	299	**1,722**	308	375	357	**1,040**	339	330	320	337	**1,326**	**4,088**
2018-19	264	282	284	294	305	288	**1,717**	299	320	376	**995**	358	327	329	323	**1,337**	**4,049**
2019-20	264	282	284	294	300	299	**1,723**	288	311	321	**920**	377	345	326	332	**1,380**	**4,023**
2020-21	264	282	284	294	300	294	**1,718**	299	299	312	**910**	322	364	344	329	**1,359**	**3,987**
Pupil Change 2015-16 to 2020-21	–	-5	6	-5	-14	-67	**-85**	-43	-38	-29	**-110**	-11	29	16	-29	**5**	**-190**
Percent Change 2015-16 to 2020-21	–	-1.7	2.2	-1.7	-4.5	-18.6	**-4.7**	-12.6	-11.3	-8.5	**-10.8**	-3.3	8.7	4.9	-8.1	**0.4**	**-4.5**
Pupil Change 2010-11 to 2020-21	-59	-45	-28	-32	-24	-38	**-226**	-27	-68	-45	**-140**	-36	5	-26	-31	**-88**	**-454**
Percent Change 2010-11 to 2020-21	-18.3	-13.8	-9.0	-9.8	-7.4	-11.4	**-11.6**	-8.3	-18.5	-12.6	**-13.3**	-10.1	1.4	-7.0	-8.6	**-6.1**	**-10.2**

Enrollments at the elementary level (grades K-5) are expected to total to 1,718 in 2021-22—a net decrease of 85 pupils (4.7 percent) from 2015-16. Enrollments in these grades in 2020-21 will be 226 or 11.6 percent lower than in 2010-11 in view of the decrease of 141 pupils projected for the period 2010-11 to 2015-16. Enrollments at the elementary level will fall in all years during the extended period except 2019-20 when an increase of six (0.3 percent) is expected. The largest absolute loss in pupils (67 or 3.7 percent) will be recorded in 2016-17; the smallest decline (five pupils or 0.3 percent) will be in both 2018-19 and 2020-21. The net decrease in enrollments in grades K-5 during the extended period will average 17 pupils yearly compared with an average annual decrease of 28 pupils per year during the first five projected years and an average net decline of 14 pupils per year during the most recent five years. The slowing in the loss of pupil population in grades K-5 during the extended projection period is largely the result of the constant number of births on which the projection model is based. After 2020-21—given the assumptions used—enrollments in grades K-5 can be expected to remain stable. (See Tables 5-16 and 5-17 and Graph 5-6.)

Table 5-17

WISSAHICKON SCHOOL DISTRICT

Extended Elementary Enrollment Projections (Grades K-5) 1/
2015-16 to 2020-21

School Year	Enrollment K-5	Change From Previous Year #	Change From Previous Year %
2015-16	1,803	-48	-2.6
2016-17	1,736	-67	-3.7
2017-18	1,722	-14	-0.8
2018-19	1,717	-5	-0.3
2019-20	1,723	6	0.3
2020-21	1,718	-5	-0.3
Change 2015-16 to 2020-21		-85	-4.7
Change 2010-11 to 2020-21		-226	-11.6

1/ Based on births fixed at 313.

Middle school enrollments (grades 6-8) will total 910 in 2020-21 and be 110 or 10.8 percent lower than in 2015-16. Decreases will occur in all years during this period except 2016-17 when an increase of 35 pupils (3.4 percent) is expected. The annual losses in pupil population will range from 10 (1.1 percent) in 2020-21 to 75 (7.5 percent) in 2019-20. Enrollments in these grades in 2020-21 will be 140 pupils or 13.3 percent lower than in 2010-11 given the drop of 30 pupils projected for the period 2010-11 through 2015-16. The annual net decrease in enrollments in grades 6-8 during the extended period will average 22 pupils yearly compared with an average net loss of six pupils per year during the first five projected years and an average annual net drop of nine pupils during the most recent five-year period. The overall acceleration in the pace of the enrollment decline in the middle school during the extended period is consistent with the pattern of elementary enrollments that is projected for the first half of this decade. Given the assumptions used, subsequent to 2020-21 enrollments in grades 6-8 can be expected to experience a mix of very slight annual decreases and increases and stabilize at a level just below the figure projected for that year. (See Table 5-16 and 5-18 and Graph 5-7.)

Table 5-18

WISSAHICKON SCHOOL DISTRICT

Extended Middle School Enrollment Projections (Grades 6-8) [1/]
2015-16 to 2020-21

School Year	Enrollment 6-8	Change From Previous Year #	Change From Previous Year %
2015-16	1,020	24	2.4
2016-17	1,055	35	3.4
2017-18	1,040	-15	-1.4
2018-19	995	-45	-4.3
2019-20	920	-75	-7.5
2020-21	910	-10	-1.1
Change 2015-16 to 2020-21		-110	-10.8
Change 2010-11 to 2020-21		-140	-13.3

High school enrollments (grades 9-12) in 2020-21 will be up slightly to 1,359—five pupils or 0.4 percent above the 2015-16 level. However, increases in pupil population will be recorded only in 2018-19 (11 or 0.8 percent) and 2019-20 (43 or 3.2 percent). The largest of the three annual decreases (26 pupils or 1.9 percent) will occur in 2016-17; the smallest (two pupils or 0.2 percent) will be in 2017-18. High school enrollments in 2020-21 will be 88 or 6.1 percent lower than in 2010-11 in view of the loss of 93 pupils projected for the period 2010-11 through 2015-16. The net rise in enrollments in grades 9-12 during the extended period will average one pupil yearly compared with an average drop of 19 pupils per year during the first five projected years and an average annual net decrease of five pupils during the most recent five-year period. The apparent change in the pattern of enrollments at the high school from a noticeable average annual loss in the primary projection period to a very slight net average annual increase during the extended projection period is just temporary and results from increases in two projected years. These constitute exceptions to what otherwise is a consistent pattern of projected decline. After 2020-21, given the assumptions used, enrollments in grades 9-12 can be expected to experience several more decreases, a single increase, and ultimately stabilize at a level noticeably below the figure projected for 2020-21. (See Table 5-16 and 5-19 and Graph 5-8.)

Table 5-19

WISSAHICKON SCHOOL DISTRICT

Extended High School Enrollment Projections (Grades 9-12)
2015-16 to 2020-21

School Year	Enrollment 9-12	Change From Previous Year #	Change From Previous Year %
2015-16	1,354	-30	-2.0
2016-17	1,328	-26	-1.9
2017-18	1,326	-2	-0.2
2018-19	1,337	11	0.8
2019-20	1,380	43	3.2
2020-21	1,359	-21	-1.5
Change 2015-16 to 2020-21		5	0.4
Change 2010-11 to 2020-21		-88	-6.1

Alternative Extended Enrollment Projections

In contrast with the extended projections based on the average of births of the most recent two years for which data are available (the "preferred" projections), alternative extended projections based on the births fixed at the highest annual figure during the past several years (327—the 2005-06 school year figure) suggest that total enrollments in 2020-21 would be 4,064—77 pupils (1.9 percent) higher than the preferred extended projection resulting from using the average birth figure of the past two years. This figure (4,064) is 125 pupils or 3.0 percent below the figure projected for 2015-16 and 377 or 8.5 percent lower than the actual 2010-11 level.

Enrollments in grades K-5 using this alternative approach would be 1,795 in 2020-21 compared with the preferred extended projection of 1,718. This figure (1,795) is 20 or 1.1 percent lower than in 2015-16 and 149 or 7.7 percent lower than in 2010-11. Middle and high school enrollments would be unchanged from the preferred extended projections because the use of different birth figures has no effect on the extended projections beyond grade 5 during the next 10 years, and, therefore, any impact would not be reflected in these grades until after the final year projected in this study. (See Table 5-20.)

A somewhat different picture develops if projections are based on the assumption that births will remain constant at the lowest level of the past several years (307—the 2007-08 school year figure). Total enrollments using this alternative approach would fall to 3,952 in 2020-21—220 pupils (5.3 percent) below the projected figure for 2015-16 and 489 pupils (11.0 percent) lower than in 2010-11. The resulting 2020-21 figure would be 35 pupils (0.9 percent) lower than the preferred extended projection and 112 pupils (2.8 percent) lower than the projection based on the use of the highest recent school year birth figure.

Enrollments in grades K-5 resulting from this alternative scenario would be 1,683 in 2020-21 compared with the preferred extended projection of 1,718. This figure (1,683) is 115 pupils or 6.4 percent lower than the projected level for 2015-16, and 261 pupils or 13.4 percent lower than in 2010-11. Again, middle and high school enrollments would be unchanged from the preferred extended projections. (See Table 5-21.)

Table 5-20

WISSAHICKON SCHOOL DISTRICT

Alternative Extended Total Enrollment Projections by Grade Based on Births Fixed at 327
2015-16 to 2020-21

Year	K	1	2	3	4	5	Total K-5	6	7	8	Total 6-8	9	10	11	12	Total 9-12	Total K-12
2015-16	276	287	278	299	314	361	**1,815**	342	337	341	**1,020**	333	335	328	358	**1,354**	**4,189**
2016-17	276	294	289	288	305	308	**1,760**	361	356	338	**1,055**	342	321	334	331	**1,328**	**4,143**
2017-18	276	294	296	299	294	299	**1,758**	308	375	357	**1,040**	339	330	320	337	**1,326**	**4,124**
2018-19	276	294	296	307	305	288	**1,766**	299	320	376	**995**	358	327	329	323	**1,337**	**4,098**
2019-20	276	294	296	307	314	299	**1,786**	288	311	321	**920**	377	345	326	332	**1,380**	**4,086**
2020-21	276	294	296	307	314	308	**1,795**	299	299	312	**910**	322	364	344	329	**1,359**	**4,064**
Pupil Change 2015-16 to 2020-21	–	7	18	8	0	-53	**-20**	-43	-38	-29	**-110**	-11	29	16	-29	**5**	**-125**
Percent Change 2015-16 to 2020-21	–	2.4	6.5	2.7	0.0	-14.7	**-1.1**	-12.6	-11.3	-8.5	**-10.8**	-3.3	8.7	4.9	-8.1	**0.4**	**-3.0**
Pupil Change 2010-11 to 2020-21	-47	-33	-16	-19	-10	-24	**-149**	-27	-68	-45	**-140**	-36	5	-26	-31	**-88**	**-377**
Percent Change 2010-11 to 2020-21	-14.6	-10.1	-5.1	-5.8	-3.1	-7.2	**-7.7**	-8.3	-18.5	-12.6	**-13.3**	-10.1	1.4	-7.0	-8.6	**-6.1**	**-8.5**

Table 5-21

WISSAHICKON SCHOOL DISTRICT

Alternative Extended Total Enrollment Projections by Grade Based on Births Fixed at 307
2015-16 to 2020-21

Year	K	1	2	3	4	5	Total K-5	6	7	8	Total 6-8	9	10	11	12	Total 9-12	Total K-12
2015-16	259	287	278	299	314	361	**1,798**	342	337	341	**1,020**	333	335	328	358	**1,354**	**4,172**
2016-17	259	276	289	288	305	308	**1,725**	361	356	338	**1,055**	342	321	334	331	**1,328**	**4,108**
2017-18	259	276	278	299	294	299	**1,705**	308	375	357	**1,040**	339	330	320	337	**1,326**	**4,071**
2018-19	259	276	278	288	305	288	**1,694**	299	320	376	**995**	358	327	329	323	**1,337**	**4,026**
2019-20	259	276	278	288	294	299	**1,694**	288	311	321	**920**	377	345	326	332	**1,380**	**3,994**
2020-21	259	276	278	288	294	288	**1,683**	299	299	312	**910**	322	364	344	329	**1,359**	**3,952**
Pupil Change 2015-16 to 2020-21	–	-11	–	-11	-20	-73	**-115**	-43	-38	-29	**-110**	-11	29	16	-29	**5**	**-220**
Percent Change 2015-16 to 2020-21	–	-3.8	–	-3.7	-6.4	-20.2	**-6.4**	-12.6	-11.3	-8.5	**-10.8**	-3.3	8.7	4.9	-8.1	**0.4**	**-5.3**
Pupil Change 2010-11 to 2020-21	-64	-51	-34	-38	-30	-44	**-261**	-27	-68	-45	**-140**	-36	5	-26	-31	**-88**	**-489**
Percent Change 2010-11 to 2020-21	-19.8	-15.6	-10.9	-11.7	-9.3	-13.3	**-13.4**	-8.3	-18.5	-12.6	**-13.3**	-10.1	1.4	-7.0	-8.6	**-6.1**	**-11.0**

The alternative projections for the elementary level (grades K-5) in 2020-21 based on the higher birth figure produce 77 (4.5 percent) more pupils than the preferred extended projections; conversely, alternative projections for these grades in 2020-21 using the lower birth figure would be 35 (2.0 percent) below the preferred extended projection. (See Table 5-22 and Graph 5-6.)

Table 5-22

WISSAHICKON SCHOOL DISTRICT

Comparison of Preferred and Alternative Extended
Elementary Projections (Grades K-5)
2015-16 to 2020-21

School Year		**Preferred** Based On Births Fixed at 313	**Alternative B** Based On Births Fixed at 327	**Alternative C** Based On Births Fixed at 307
2015-16		1,803	1,815	1,798
2016-17		1,736	1,760	1,725
2017-18		1,722	1,758	1,705
2018-19		1,717	1,766	1,694
2019-20		1,723	1,786	1,694
2020-21		1,718	1,795	1,683
Change 2015-16	**#**	**-85**	**-20**	**-115**
to 2020-21	**%**	**-4.7**	**-1.1**	**-6.4**
Change 2010-11	**#**	**-226**	**-149**	**-261**
to 2020-21	**%**	**-11.6**	**-7.7**	**-13.4**

Middle and high school enrollments using these two alternative approaches do not differ from each other or from the preferred projection because the effect of using the different birth figures would not be reflected in these grades until after the final year projected in this study. As such, the variation in projected total enrollments produced by the three approaches is narrower on a proportionate basis than at the elementary level. At their widest point (in 2020-21), the alternative projection resulting from use of the higher birth figure is 77 pupils or 1.9 percent more than the preferred extended projection; using the smaller birth figure, the alternative is 35 pupils or 0.9 percent lower than the preferred extended projection. (See Table 5-23 and Graph 5-5.)

Table 5-23

WISSAHICKON SCHOOL DISTRICT

Comparison of Preferred and Alternative Extended Total Projections
2015-16 to 2020-21

School Year		**Preferred** Based On Births Fixed at 313	**Alternative B** Based On Births Fixed at 327	**Alternative C** Based On Births Fixed at 307
2015-16		4,177	4,189	4,172
2016-17		4,119	4,143	4,108
2017-18		4,088	4,124	4,071
2018-19		4,049	4,098	4,026
2019-20		4,023	4,086	3,994
2020-21		3,987	4,064	3,952
Change 2015-16	**#**	**-190**	**-125**	**-220**
to 2020-21	**%**	**-4.5**	**-3.0**	**-5.3**
Change 2010-11	**#**	**-454**	**-377**	**-489**
to 2020-21	**%**	**-10.2**	**-8.5**	**-11.0**

Perspective on Accuracy

Accurate projections of public school enrollments for periods of five to 10 years or more are difficult, at best, because of so many unpredictable variables. Furthermore, such efforts are highly dependent on "full disclosure" and accurate and complete data from state, county, school, and municipal officials, as well as the candid views of developers, real estate professionals, and others. The resulting projections cannot rise above inaccurate and incomplete data.

The difficulty of generating accurate projections increases as one moves from a large base (such as a state) down to counties, to local school districts, and to individual buildings within districts. Generally, the larger the area involved, the greater the accuracy in terms of the amount of percentage deviation from the projection because differences in smaller areas within the larger area tend to balance each other out.

The best way to assess the potential accuracy of PEL's projections of public school enrollments is by comparing projections in districts that relied on similar methodologies with the actual enrollments that PEL attempted to project, and calculating the mean absolute percentage error (MAPE). The MAPE "is the most frequently utilized forecast error measure for quantitative forecast models. By averaging the percentage errors in absolute terms, the forecaster is being given an indicator of expected error, on average." (Howard A. Frank, Budgetary Forecasting In Local Government: New Tools and Techniques, Westport Connecticut and London: Quorum Books, 1993, p 82.)

Since 1986 PEL's Central PA Division has examined demographics, community growth, and enrollment trends in numerous central and eastern Pennsylvania school districts and, using the techniques employed in this analysis, generated projections of enrollments covering a 10-year period. Those projections undertaken more than 10 years ago have 10 years on which to judge accuracy; some projections allow only eight or nine years' experience to be viewed; some six, five, and so forth; and for others there has been only one year of actual figures on which to make judgments regarding PEL's accuracy.

Based on actual enrollment figures through the fall of 2008, the Mean Absolute Percentage Error in all central and eastern Pennsylvania districts studied by PEL for the primary projection period—the first five years—is 2.90 percent; for all years for which there are actual figures to compare with PEL projections (which in many districts includes all 10 years), the

MAPE is 4.57 percent. (The literature suggests that projections within 5.0 percent (+/-) *after five years* are "acceptable.")

Enrollment projections generated by PEL for the Wissahickon School District in November of 2000 allow for all 10 years to be compared with actual enrollment figures. The average of the annual differences between PEL's projections and the actual figures for the first five years was 2.6 percent; the average of the differences for all 10 years (based on PEL's primary projections for the second five years) is 4.3 percent. The average accuracy of PEL's projections during the first five years (2.6 percent) is well within the five year zone of acceptability (5.0 percent +/-), and, in fact, even after 10 years the accuracy PEL's projections (4.3 percent) remained within the acceptable range.

As outlined earlier in this Chapter, PEL provides alternative sets of projections for the extended projection period because of the uncertainty involved in using estimated birth figures in the projection model. These alternative projections are based on higher and lower birth assumptions than those on which the preferred projections are based. Because it would appear that the downturn in births during the second half of the prior decade strongly influenced the resulting enrollments and was largely responsible for the differences between PEL's primary projections and the actual enrollments during those years, a review of the accuracy of PEL's alternative projections is appropriate. If an assessment of PEL's accuracy for these years were measured against the alternative "low-end" projections, it would reveal that the average accuracy for all 10 years would be 2.6 percent (identical to that of the first five years) and would be even more comfortably within the zone of acceptability.

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It must be recognized that the projections generated for the Wissahickon School District are a product of certain assumptions. Specifically, it was assumed that the total number and type of new housing units in the district will be in keeping with expected levels of construction in the approved and proposed subdivisions as well as additional housing that can reasonably be assumed to be built during the next 10 years (all as outlined in Chapter 2). The methodology is also sensitive to the number of age-restricted and similar housing units that are in the pipeline and the ongoing turnover of mature housing. Further, the methodology assumes that overall

migration and related patterns will remain consistent with expected patterns, that the role of nonpublic education will be compatible with the recent past and current expectations, and the district will continue its current policies relative to its kindergarten, voc-tech, and special education programs and maintain its other key policies.

Projections represent calculations based on hard data and analysis of relevant events in the Wissahickon School District in recent years. Because the projections were made on the basis of averages of data which varied from year to year, future enrollments can be expected to vary from year to year from these projections. Although actual enrollments in future years may fluctuate around the projections, over a period of years the projections generated in this manner will normally present a valid picture of the enrollment trend in a given district.

Uncertain events that can influence and alter pupil projections are such that no projections, no matter how carefully constructed, can guarantee complete accuracy. Changes in birth patterns; nonpublic school enrollments; migration patterns; internal policies (such as, retention and acceleration of pupils, age requirements for admission to school, half-day/full-day kindergarten programs, and who provides special education programs and to whom they are provided); statewide policies on "school choice," vouchers, and other aspects of the educational program; the formation and/or termination of charter schools; economic climate; zoning and land use controls; infrastructure considerations; and interest rates, the housing market, and the state of the mortgage industry as they influence residential development activity and the turnover of mature housing, can all affect these projections. Also, policy changes by external parties, such as major employers, can have a significant and lasting impact on enrollment patterns as can a teachers' strike or even the serious threat of a strike. As such, various influencing factors must be monitored and analyzed every year by district officials. In this way, significant changes in current and projected patterns can be quickly identified and the appropriate adjustments can be made.

Despite these words of caution, PEL believes the projections offered in this report are as reasonable and as realistic as possible in light of the available facts, and they should serve the district well in its short- and long-term planning.