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88 North Franklin Street, Suite 200 ◆ Wilkes-Barre, PA 18701-1393
Phone: 570.824.3559 ◆ Fax: 570.829.8099
www.pelcentral.org ◆ Email: pel@pelcentral.org

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May 21, 2020

Mr. Jeff Curtis
Business Manager
Octorara Area School District
228 Highland Rd., Suite 1
Atglen, PA 19310

Dear Mr. Curtis:

The Pennsylvania Economy League, Central PA Division, is pleased to submit the attached report of its comprehensive analysis of demographics, housing and related activity, and other relevant factors in the Octorara Area School District and projections of your K-12 enrollments covering the next 10 years.

The staff of the district, municipal officials, and a variety of others contributed greatly to the preparation of the study, and their assistance is acknowledged and appreciated. However, the responsibility for any statement of fact or opinion rests solely with the Pennsylvania Economy League.

Under normal circumstances, PEL believes the projections offered in its reports are as reasonable and as realistic as possible in light of the available facts, and—based on our experience, the indicators we rely on, the techniques we use, and our track record—have served many Pennsylvania school districts well in their short- and long-term planning. However, we clearly acknowledge that the Commonwealth and our country are in the midst of responding to the Covid-19 pandemic, which could have an effect on certain of the assumptions on which the projections contained in this study are based. In recognition of this, PEL—if requested—would revisit its projections when warranted (at no additional cost to the district) and make any appropriate adjustments based on information that may be available in the future.

It is hoped that the findings of this report will be of assistance to the Board of School Directors, the district's administrators and staff, and the general public in addressing the issues that confront them with respect to the future operation of the district.

Sincerely,

LeeAnne M. Clayberger
Chief Executive Officer

LMC/blc
Enclosure

A Comprehensive Analysis of Demographics, Housing and Related Activity, and Other Relevant Factors and Aggregate Districtwide Projections of K-12 Enrollments in the Octorara Area School District 2019-20

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Prepared by:

Pennsylvania Economy League, Central PA Division
88 North Franklin Street, Suite 200
Wilkes-Barre, PA 18701-1393

May 2020

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CHAPTER 1
GENERAL CHARACTERISTICS

The Octorara Area School District is located in southeastern Pennsylvania within 30 miles of Lancaster, Reading, and Wilmington, Delaware. The District covers 93 square miles in Chester and Lancaster counties and includes eight municipalities: Atglen Borough, Highland Township, Londonderry Township, Parkesburg Borough, West Fallowfield Township, and West Sadsbury Township in Chester County and Christiana Borough and Sadsbury Township in Lancaster County.

Based on U.S. Census figures, between 1990 and 2010 Octorara Area experienced an increase in population from 14,507 to 17,993—a gain of 3,486 or 24.0 percent. The population of the district rose in both of these decades, and slightly less than one-half of the overall gain occurred during the decade of the 2000s. Each of the district's municipalities recorded net increases in population during this 20-year period. The largest rise in the number of residents during these two decades (906 or 72.9 percent) was in Londonderry Township.

During the 1990s, Octorara recorded an increase in population of 1,918 or 13.2 percent. All of the district's municipalities experienced gains in their number of residents during this period except Highland Township which fell by 74 (6.2 percent). The largest absolute growth in population between 1990 and 2000 (392) occurred in both Atglen Borough and Parkesburg Borough; the largest proportionate rise (47.5 percent) was in Atglen Borough.

In the decade of the 2000s, the district's population rose by 1,568 or 9.5 percent. Unlike the prior decade, all of Octorara's municipalities experienced gains in residents in the 2000s. The largest increase in population during that decade (517 or 37.7 percent) occurred in Londonderry Township. (See Table 1-1 and Graph 1-1.)

The population of the six municipalities that comprise the Chester County portion of Octorara (the boroughs of Atglen and Parkesburg and the townships of Highland, Londonderry, West Fallowfield, and West Sadsbury) totaled 10,750 or 74.1 percent of the district total in 1990, and between then and the 2000 Census they generated a net of 1,526 new residents or 79.6 percent of the districtwide growth during that period. In 2010, the population of the Chester portion of the district totaled 13,430, and its proportionate share of all district residents was up

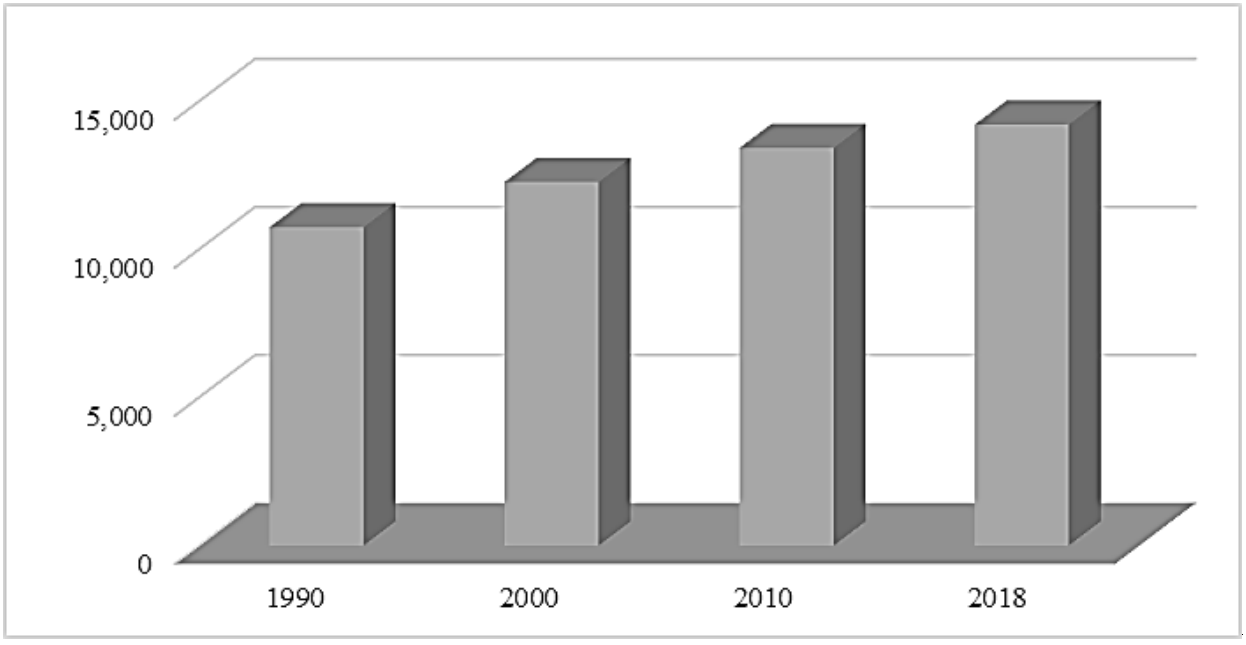
Table 1-1
OCTORARA AREA SCHOOL DISTRICT
Population Trend
1990 to 2010

Municipality	Total Population 1990	2000	2010	Change 1990 to 2010 #	%	Change 1990 to 2000 #	%	Change 2000 to 2010 #	%
Atglen Borough	825	1,217	1,406	581	70.4	392	47.5	189	15.5
Highland Township	1,199	1,125	1,272	73	6.1	-74	-6.2	147	13.1
Londonderry Township	1,243	1,632	2,149	906	72.9	389	31.3	517	31.7
Parkesburg Borough	2,981	3,373	3,593	612	20.5	392	13.1	220	6.5
West Fallowfield Township	2,342	2,485	2,566	224	9.6	143	6.1	81	3.3
West Sadsbury Township	2,160	2,444	2,444	284	13.1	284	13.1	0	0.0
Christiana Borough[1]	1,045	1,124	1,168	123	11.8	79	7.6	44	3.9
Sadsbury Township[1]	2,712	3,025	3,395	683	25.2	313	11.5	370	12.2
District Total	**14,507**	**16,425**	**17,993**	**3,486**	**24.0**	**1,918**	**13.2**	**1,568**	**9.5**
Chester County	**376,396**	**433,501**	**498,886**	**122,490**	**32.5**	**57,105**	**15.2**	**65,385**	**15.1**
Lancaster County	**422,822**	**470,658**	**519,445**	**96,623**	**22.9**	**47,836**	**11.3**	**48,787**	**10.4**

[1] Located in Lancaster County SOURCE: U.S. Bureau of the Census.

SOURCE: U.S. Bureau of the Census.

Graph 1-1
Octorara Area School District
Population Trends and Estimates
1990 to 2018



slightly to 74.6 percent. Conversely, the two Lancaster County municipalities (Christiana Borough and Sadsbury Township) produced a population growth of only 806 or 23.1 percent of the district wide increase during these two decades, and their combined proportionate share of the district total was down slightly from 25.9 percent in 1990 to 25.4 percent in 2010.

As a point of reference, Chester County's total population grew from 376,396 in 1990 to 498,886 in 2010 (by 122,490 or 32.5 percent), and Lancaster County's total population was up from 422,822 to 519,445 during this period (by 96,623 or 22.9 percent). Unlike the district, the absolute growth in the Chester County and Lancaster County populations was slightly larger in the 2000s than in the 1990s.

Octorara's population in the under 18 age group increased by 359 or 7.3 percent between 2000 and 2010, the number of residents age 18 to 64 grew by 954 or 9.9 percent, and those 65 or over rose by 255 or 13.5 percent. In 2010, 29.4 percent of the population in the district was under 18 years of age, 58.7 percent was between the ages of 18 and 64, and 11.9 percent was age 65 or over. The proportion of Octorara's population in the under 18 age group fell from 30.0 percent in 2000 to 29.4 percent in 2010, while the proportion of those between the ages of 18 and 64 rose from 58.5 percent to 58.7 percent and proportion of those 65 or over was up from 11.5 percent to 11.9 percent.

In 2010, Octorara's population under the age of 18 (29.4 percent) was higher than the Chester County figure of 24.9 percent. The district's proportion of the population between the ages of 18 and 64 (58.7 percent) was lower than the county (62.3 percent) and the same was true for the proportion of the population age 65 and over (11.9 percent compared with 12.8 percent). The proportion of the district's population under the age of 18 in 2010 was higher than the Lancaster County figure (24.8 percent), but it was lower than Lancaster's proportion between the ages of 18 and 64 (60.2 percent), and this was also the case for those age 65 and over (15.0 percent). (See Table 1-2.)

In 2010, the median age in the district was 35.9 (up from 34.7 in 2000). In Chester County, the median was 39.1 (up from 37.4 in 2000), and Lancaster County's median in 2010 was 39.3 (up from 36.9 in 2000). Statewide, the median age in 2010 was 40.1 (up from 38.0 in 2000).

Table 1-2
OCTORARA REA SCHOOL DISTRICT
Population by Age Group
2000 to 2010

	2000			2010				
	Octorara ASD		Chester County	Octorara ASD		Chester County	Change in OASD Population 2000 to 2010	
Age Grouping	#	% of Total	% of Total	#	% of Total	% of Total	#	%
Under 18	4,933	30.0	26.3	5,292	29.4	24.9	359	7.3
18-64	9,604	58.5	62.1	10,558	58.7	62.3	954	9.9
65 & Over	1,888	11.5	11.6	2,143	11.9	12.8	255	13.5
Total	**16,425**	**100.0**	**100.0**	**17,993**	**100.0**	**100.0**	**1,568**	**9.5**

SOURCE: U.S. Bureau of the Census.

The U.S. Census Bureau estimates that the population of the Octorara Area School District grew by 893 persons or 5.0 percent from the time of the 2010 Census through July of 2018, and all eight of the district's municipalities recorded gains. Londonderry Township was estimated to have experienced the largest growth in residents (373 or 17.4 percent), followed closely by Parkesburg Borough (327 or 9.1 percent). Combined, these two municipalities reflected almost 80 percent of the district's overall estimated population growth during the decade just ended. Chester County's population was estimated to have been up by 4.6 percent during this period, and Lancaster County's growth was also estimated at 4.6 percent. Based on these estimates, Octorara's proportionate growth between 2010 and 2018 (5.0 percent) slightly exceeded that of both the county's where it is located. (See Table 1-3 and Graph 1-1.)

Table 1-3
OCTORARA AREA SCHOOL DISTRICT
Actual and Estimated Population
2010 to 2018

Municipality	Actual 2010	Estimate 2018	Change 2010 to 2018 #	Change 2010 to 2018 %
Atglen Borough	1,406	1,408	2	0.1
Highland Township	1,272	1,289	17	1.3
Londonderry Township	2,149	2,522	373	17.4
Parkesburg Borough	3,593	3,920	327	9.1
West Fallowfield Township	2,566	2,593	27	1.1
West Sadsbury Township	2,444	2,483	39	1.6
Christiana Borough*	1,168	1,172	4	0.3
Sadsbury Township*	3,395	3,499	104	3.1
District Total	**17,993**	**18,886**	**893**	**5.0**
Chester County	**498,886**	**522,046**	**23,160**	**4.6**
Lancaster County	**519,445**	**543,559**	**24,114**	**4.6**

SOURCE: U.S. Bureau of the Census.
* Located in Lancaster County

❖ ❖ ❖ ❖ ❖

Public school enrollments over the next 10 years will be dependent more on recent and future births, migration patterns, the age composition of the child population, and the role of nonpublic education than on the overall population pattern. If recent experience serves as a valid guide, the trends in public school enrollments will not necessarily directly mirror the changes in total population.

CHAPTER 2
HOUSING AND RELATED ACTIVITY

Data from the U.S. Census Bureau indicate that the total number of occupied and unoccupied housing units in the Octorara Area School District rose from 5,032 in 1990 to 6,372 in 2010—up by 1,340 or 26.6 percent. Growth was experienced in both of these decades, with just slightly more of the district's overall gain in residential units occurring during the 1990s than in the 2000s. Seven of the district's eight municipalities recorded net increases during the 20-year period. Parkesburg Borough recorded the largest absolute gain (351 units) followed closely by Londonderry Township (341 units). Londonderry Township experienced largest proportionate growth (76.1 percent) and Atglen Borough had the second largest proportionate gain (60.5 percent). While Parkesburg had the largest absolute growth, its proportionate rise was only third largest. The only district municipality to not experience a net growth in occupied and unoccupied dwelling units during the 1990s and 2000s was Christiana Borough, where the Census Bureau reported a net decline of three units (0.7 percent). Combined, Parkesburg Borough and Londonderry Township accounted for slightly more than one-half of all net new housing constructed in the district between 1990 and 2010. (See Table 2-1 and Graph 2-1.)

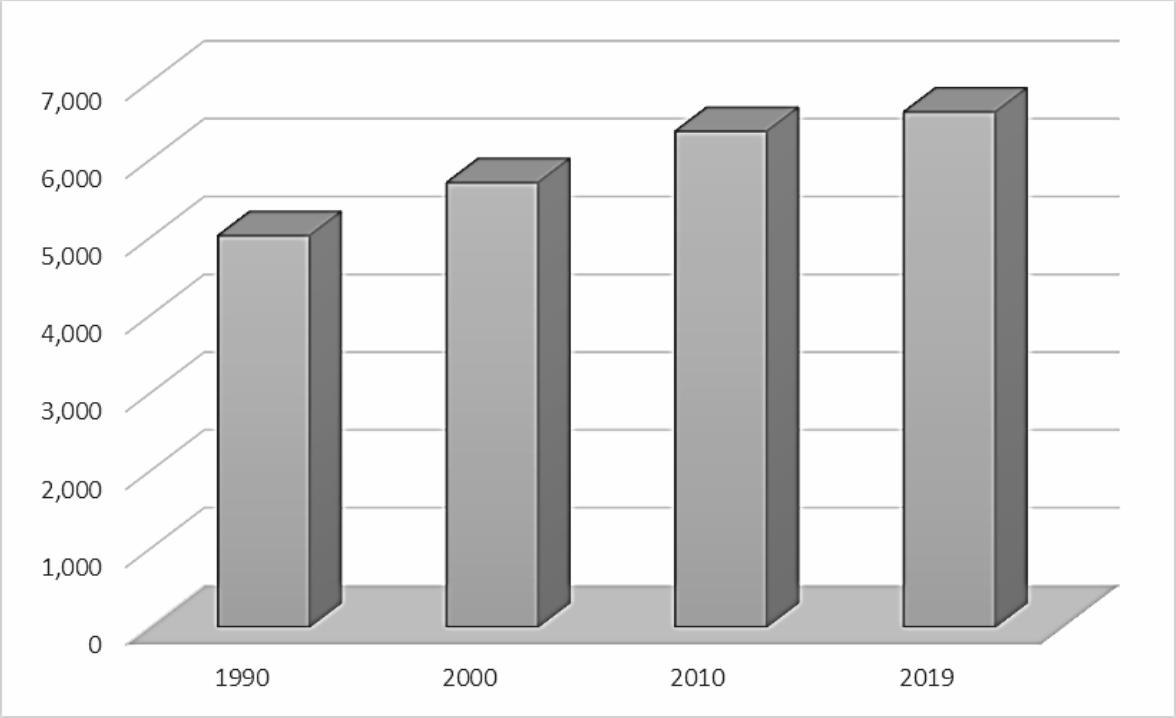
Table 2-1
OCTORARA AREA SCHOOL DISTRICT
Reported Change in Total Number of Housing Units by Municipality
1990 to 2010

Municipality	1990	2000	2010	Change 1990 to 2010 #	Change 1990 to 2010 %	Change 1990 to 2000 #	Change 1990 to 2000 %	Change 2000 to 2010 #	Change 2000 to 2010 %
Atglen Borough	301	429	483	182	60.5	128	42.5	54	12.6
Highland Township	442	459	489	47	10.6	17	3.8	30	6.5
Londonderry Twp.	448	539	789	341	76.1	91	20.3	250	46.4
Parkesburg Borough	1,155	1,321	1,506	351	30.4	166	14.4	185	14.0
West Fallowfield Twp.	792	858	899	107	13.5	66	8.3	41	4.8
West Sadsbury Twp.	690	818	815	125	18.1	128	18.6	-3	-0.4
Christiana Boro.[1]	401	391	398	-3	-0.7	-10	-2.5	7	1.8
Sadsbury Twp.[1]	803	899	993	190	23.7	96	12.0	94	10.5
District Total	**5,032**	**5,714**	**6,372**	**1,340**	**26.6**	**682**	**13.6**	**658**	**11.5**
Chester County	**139,597**	**163,773**	**192,462**	**52,865**	**37.9**	**24,176**	**17.3**	**28,689**	**17.5**
Lancaster County	**156,462**	**179,990**	**202,952**	**46,490**	**29.7**	**23,528**	**15.0**	**22,962**	**12.8**

[1] Christiana Borough and Sadsbury Township are located in the Lancaster County portion of the district.

Source: U. S. Bureau of Census. Figures include occupied and unoccupied units.

Graph 2-1
OCTORARA AREA SCHOOL DISTRICT
Total Housing Units
1990 to 2019



According to the U.S. Census, between 1990 and 2000 the number of housing units in the district grew by 682 or 13.6 percent; all district municipalities except Christiana Borough experienced increases during this decade. The largest absolute rise (166 units) was in Parkesburg Borough, followed by Atglen Borough and West Sadsbury Township (each up by 128 units). The largest proportionate growth was in Atglen Borough (42.5 percent) followed by Londonderry Township (20.3 percent) and West Sadsbury Township (13.9 percent). Christiana Borough reportedly suffered a net loss of 10 units or 2.5 percent of its housing stock during the 1990s.

In the 2000s, the number of housing units in Octorara Area rose at a slightly slower pace than in the preceding decade (by 658 or 11.5 percent), and all of the district's member municipalities recorded net gains. Londonderry Township was the district's fastest-growing municipality in terms of housing during the 2000s rising by 250 units or 46.4 percent. The second largest increase occurred in Parkesburg Borough (185 units or 14.0 percent). Sadsbury Township recorded the third largest absolute gain (94 units), and Atglen Borough had the third largest proportionate growth (12.6 percent).

It should be noted that the Chester County portion of the Octorara Area School District (six of the district's eight municipalities) represented 3,828 or 76.1 percent of the district's total housing count in 1990, and it accounted for 1,153 new housing units or 86.0 percent of the increase during the ensuing 20 years. In 2010, this portion of the district reflected 4,981 units, and its proportionate share of Octorara Area's total was up slightly to 78.2 percent. The Lancaster County portion of the district (Christiana Borough and Sadsbury Township) totaled 1,204 units or 23.9 percent of the district's total housing units in 1990, and it generated 187 net new housing units between 1990 and 2010, reflecting a growth of 14.0 percent. In 2010, the Lancaster County portion of Octorara accounted for 1,391 units, and its proportionate share of the district's total was down to 21.8 percent.

As a point of reference, the total number of housing units in Chester County as a whole rose from 139,507 in 1990 to 192,462 in 2010 (or by 52,865 or 37.9 percent). The count in Lancaster County grew from 156,462 to 202,950 during this period (or by 46,490 or 29.7 percent). Octorara Area's rate of growth in residential units in its Chester County portion during these two decades (30.1 percent) was somewhat below that of Chester County as a whole (37.9 percent), while the district's pace of growth in its Lancaster County portion (15.5 percent) was slightly over one-half the overall rate of growth in Lancaster County as a whole (29.7 percent). Unlike the district, Chester County recorded slightly larger absolute and proportionate increases in the decade of the 2000s than in the 1990s. But, like the district, the absolute and proportionate growth in Lancaster County's total housing count was slightly lower in the decade of the 2000s than in the 1990s.

In 1990, Parkesburg Borough had more housing units than any other district municipality (1,155 or 23.0 percent of the total). Sadsbury Township was the second largest of the district's municipalities based on residential units with 803 (16.0 percent of the total), and West Fallowfield Township had the district's third largest number of units (792 or 15.7 percent of the total).

In 2000, Parkesburg Borough remained the district's largest municipality based on housing with 1,321 units (up just slightly to 23.1 percent of the total), Sadsbury Township was still second largest with 899 residential units (down to 15.7 percent of the district total), and West Fallowfield Township continued as third largest based on housing with 858 units (down to 15.0 percent of the total).

In 2010, Parkesburg Borough was still the district's largest municipality based on the number of residential units (1,506), and its proportion of the district total was up to 23.6 percent. Sadsbury Township's housing count (993) remained second largest (but its share of the district's total was down just slightly to 15.6 percent), and West Fallowfield Township continued as the third largest of the district's municipalities (899 units)—down to 14.1 percent of the total.

Between January of 2010 and December 2019, 249 permits for construction of new housing units were reported to have been issued in the district—a gain of 3.9 percent. The average number of permits issued during this period was down to about 25 per year compared with the much higher numbers of new units in the two prior decades—66 per year during the 2000s and 68 per year during the 1990s. It should be noted that Atglen's count covers only the years 2014 through 2019 and no figures on permits issued for new residential construction during the decade of the 2010s were provided to PEL by municipal officials in Highland Township, West Sadsbury Township, or Sadsbury Township.

Based on the number of permits reported to PEL as having been issued for the construction new residential units in the district between January of 2010 and December 2019, the total number of units in the Octorara Area School District as of December 2019 was up to 6,621. (As noted above, only Atglen Borough, Londonderry Township, Parkesburg Borough, West Fallowfield Township, and Christiana Borough provided information on permits issued for the construction of residential during the period reviewed, and Atglen's count covers only the years 2014 through 2019.) The information that was made available to PEL indicates that just four of the district's eight municipalities reported new units during this period, and the largest reported gain in units was experienced in Londonderry Township (179 units or 22.7 percent). Parkesburg Borough reported it had issued permits for 64 new units (a gain of 4.2 percent), and Atglen Borough stated that permits were issued for at least 5 new units (a growth of 1.0 percent). Christiana Borough reported that just one new housing unit had been permitted for construction (up by 0.3 percent), and West Fallowfield Township indicated it recorded no new units during the decade. Londonderry accounted for 71.9 percent of the reported new housing units in Octorara Area between 2010 and December 2019, Parkesburg accounted for 25.7 percent, and Atglen contributed 2.0 percent**.** All but one of the reported permits for construction of new residential units in the Octorara Area School District during the decade of the 2010s were issued in the Chester County portion of the district. (See Table 2-2 and Graph 2-1.)

Table 2-2
OCTORARA AREA SCHOOL DISTRICT
Reported Number of New Housing Units Authorized by Permit
2010 to 2019[1]

Municipality	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Est. Total 2019	Change 2010-2019 #	Change 2010-2019 %	% of Units Added
Atglen Boro.	NA	NA	NA	NA	0	1	0	1	2	1	≥488	≥5	≥1.0	≥2.0
Highland Twp.	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	≥489	NA	NA	NA
Londonderry Twp.	27	18	13	15	14	14	20	24	18	16	968	179	22.7	71.9
Parkesburg Boro.[2]	6	6	6	6	6	6	6	7	7	8	1,570	64	4.2	25.7
West Fallowfield Twp.	0	0	0	0	0	0	0	0	0	0	899	0	0.0	0.0
West Sadsbury Twp.	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	≥815	NA	NA	NA
Christiana Boro.[3]	0	0	0	0	0	1	0	0	0	0	399	1	0.3	0.4
Sadsbury Twp.[3]	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	≥ 993	NA	NA	NA
District Total	**≥33**	**≥24**	**≥19**	**≥21**	**≥20**	**≥22**	**≥26**	**≥32**	**≥27**	**≥25**	**≥6,621**	**≥249**	**≥3.9**	**100.0**

1 Based on permits issued for new dwelling units construction between January of 2010 and December 2019—excluding any permits for new residential units that may have been issued during this period in Highland Township, West Sadsbury Township, or Sadsbury Township and any that may have been issued in Atglen Borough between 2010 and 2013.

2 In Parkesburg, Borough, **o**nly the total figure for the years reviewed was readily available, so that count was arbitrarily distributed fairly evenly throughout all the years.

3 Christiana Borough and Sadsbury Township are located in the Lancaster County portion of the district.

NA = Not available (No figures on permits issued for new residential construction during the decade of the 2010s were provided to PEL by municipal officials in Highland Township, West Sadsbury Township, or Sadsbury Township, and counts for the years 2010 through 2013 in Atglen Borough were not readily available.

SOURCE: Respective municipalities.

Based on these figures, as of December 2019, Parkesburg Borough continued as the largest of the district's municipalities in terms of housing with 1,570 units, and its proportionate share of the district total was up very slightly from 23.6 percent in 2010 to 23.7 percent. Sadsbury Township remained second largest based on dwelling units with 993 (15.0 percent of the total—down from 15.6 percent in 2010). Given the substantial growth reported between 2010 and December 2019, Londonderry Township became the district's third largest municipality based on housing with 968 units (14.6 percent of all residential units—up from 12.4 percent in 2010). West Fallowfield Township fell to fourth largest as of December 2019 with 899 units—down from 14.1 percent of the total 2010 to 13.6 percent in December 2019.

As of December 2019, officials in Octorara Area's member municipalities reported five approved residential subdivisions that could produce about 186 new housing units, and another subdivision had been approved for 323 units, but due to uncertainties regarding its status, scope, nature, and timing, the project is considered by PEL to be under discussion for the purposes of this study. No other residential development was reported to have been formally proposed or to be in the early planning stage, but at least three of the municipalities expected to experience

modest levels of infill, minor subdivision activity, and/or miscellaneous housing construction during the next 10 years. Further, there is some ongoing speculation with regard to a few possible projects. It should be noted that it is likely that not all of the units in the district's housing pipeline will be constructed within the next 10 years. (All references to housing units reflect lots that remained available for construction as of December 2019—not the total number of units in the subdivision, which would include units already built, those under construction, and those for which building permits had been issued.) (See Table 2-3.)

Officials in Atglen Borough report that in 2005 conditional approval was granted for 62 single-family detached housing units to be built on small lots near the intersection of Zion Hill Road and Liberty Street. The project was to be built in two phases: the first would produce 37 units and the second, the remaining 25. The development is known as Applewood, and the builder is Chetty Builders, Inc. Almost 15 years later, construction of these units has yet to begin, but efforts are underway to resolve some water supply issues. As of early 2020, it was believed that construction of these units could begin within the ensuing 18 months, but no information was available as to the expected pace of the build-out or the precise date of completion. It was noted that while Applewood is the most recent tract in the borough to have been subdivided, there has been discussion about the possibility of constructing six townhouses adjacent to this parcel, but nothing is firm. It was also pointed out that there are several other properties in the borough that could be subdivided—but no action has been taken.

The borough owns and operates water supply and sewage collection and treatment systems. A new well was added in 2014, and the system is reported to be more than adequate in quantity and quality to meet Atglen's needs. The sewage treatment plant was upgraded in 2012-13, and it has the capacity for growth. It was noted that both water supply and sewage collection and treatment services are strictly limited to the borough's territory.

Officials state that there has been natural turnover in the older subdivisions in the borough where the residents are getting to the point where they are choosing to downsize. This, in turn, provides opportunities for younger families to move in. It was also stated that some larger houses in the borough that have recently sold and, overall, properties tend to sell fairly quickly. About 25 percent of the borough's dwelling units are rentals, and, reportedly, these units turnover at a fairly steady—but not dramatic—pace.

Table 2-3
OCTORARA AREA SCHOOL DISTRICT
Inventory of Approved and Proposed Residential Subdivisions and Other Housing Activity
(As of December 2019)

Development Activity	Type of Housing[1]	Units to be Completed[2]	Avg Units per Year[2]	Start Date[2]	Probable Completion Date[2]
APPROVED					
Atglen Borough					
Applewood Development	SFD	62	?	?	2029
Highland Township					
None	-	-	-	-	-
Londonderry Township					
Londonderry Meadows	SFD	21	5	U	2025
Honeycroft Village Phase III[3]	SFD	15	7/8	U	2021
Honeycroft Village Phases IV & V[3]	SFD	68	8/9	2022	2029
Parkesburg Borough					
Lindale Village[3]	SFD	30	?	?	2029
West Fallowfield Township					
None	-	-	-	-	-
West Sadsbury Township					
None	-	-	-	-	-
Cristiana Borough[4]					
None	-	-	-	-	-
Sadsbury Township[4]					
None	-	-	-	-	-
PROPOSED					
Atglen Borough					
None	-	-	-	-	-
Highland Township					
None	-	-	-	-	-
Londonderry Township					
None	-	-	-	-	-
Parkesburg Borough					
None	-	-	-	-	-
West Fallowfield Township					
None	-	-	-	-	-
West Sadsbury Township					
None	-	-	-	-	-
Cristiana Borough[4]					
None	-	-	-	-	-
Sadsbury Township[4]					
None	-	-	-	-	-

Table 2-3
OCTORARA AREA SCHOOL DISTRICT
Inventory of Approved and Proposed Residential Subdivisions and Other Housing Activity
(As of December 2019)

Development Activity	Type of Housing[1]	Units to be Completed[2]	Avg Units per Year[2]	Start Date[2]	Probable Completion Date[2]
UNDER DISCUSSION					
Atglen Borough					
None	-	-	-	-	-
Highland Township					
None	-	-	-	-	-
Londonderry Township					
None	-	-	-	-	-
Parkesburg Borough					
Quarry Tract[5]	TH	323	?	?	?
West Fallowfield Township					
None	-	-	-	-	-
West Sadsbury Township					
None	-	-	-	-	-
Cristiana Borough[4]					
None	-	-	-	-	-
Sadsbury Township[4]					
None	-	-	-	-	-
MINOR ACTIVITY					
Atglen Borough	-	-	-	-	-
Highland Township	-	-	-	-	-
Londonderry Township[6]	SFD	?	?	?	?
Parkesburg Borough[6]	SFD	?	?	?	?
West Fallowfield Township	-	-	-	-	-
West Sadsbury Township	-	-	-	-	-
Cristiana Borough[4] [6]	SFD	?	?	?	?
Sadsbury Township[4]	-	-	-	-	-

1 Housing Codes: SFD = Single-Family Detached; TH = Townhouse
2 Estimating the starting date and build-out of the developments in the district's municipalities is difficult given the uncertainties involved; these estimates reflect the best judgments of the parties involved, based on what is known at this time. U = Underway; ? = Unknown
3 Age-Restricted
4 Christiana Borough and Sadsbury Township are located in the Lancaster County portion of the district.
5 The Quarry Tract has been approved for 323 units, but due to uncertainties regarding its status, scope, nature, and timing, the project is considered by PEL to be just under discussion for the purposes of this study.
6 Londonderry Township, Parkesburg Borough, and Christiana Borough (and perhaps others) expect to experience undefined—but modest— levels of infill, minor subdivision activity, and/or miscellaneous housing construction during the next 10 years.

It was also noted that plans for the extension of the Chester Valley Trail are moving along, and it is expected to pass through Atglen and connect with other parts of the regional trail system. It is believed that this could have some positive effects on commercial activity in the borough. However, the master plan must first be completed, then the design phase will begin, and only then will construction get underway. So, completion of this portion of the trail appears to be 5 to 10 years away.

Overall, while there is some additional land that could be made available for residential development in Atglen Borough, there is no reason to believe that housing construction beyond the 62 units in the Applewood project (and possibly the six townhouses on the adjacent parcel) will occur in the near future, and there is a sense that the borough will remain "quiet and quaint" for at least the next several years.

Highland Township officials did not provide any data on past or future development activity in the township or any other factors that may influence the district's future enrollments. However, it is believed that there will be little if any construction new dwelling units in Highland—either in the form of bona fide subdivisions or infill, minor subdivision activity and/or miscellaneous housing construction. Reportedly, the township has no public water supply and no public sewage collection and disposal system.

Londonderry Township was just the fifth largest of the district's municipalities in terms of population in 2010, but it experienced the strongest absolute and proportionate growth in population and housing during the decade of the 2000s. As a result, Londonderry has reportedly become "fairly well built out", and its emphasis has transitioned to preserving and protecting open space and maintaining the rural character of the township. Nonetheless, there are currently three approved subdivisions that are expected to produce 104 single-family detached units. As of December 2019 no other proposals for new residential subdivisions were reported to be in the pipeline, no projects were known to be under serious discussion, but a very modest amount of infill, minor subdivision activity and/or miscellaneous housing construction could occur.

In Londonderry Meadows (at the intersection of Routes 796 and 926) approved plans showed that 21 single-family detached units remain to be built (10 were recently constructed). Homes in this subdivision are erected only after the lots are sold, they are generally in the $200,000 to $300,000 price range, and it was estimated that going forward perhaps five units per year will be constructed—meaning the project would probably be fully built out by 2025.

The two other projects involve phases of Honeycroft Village—an age-restricted community (55 and over, although it was noted that up to 20 percent of units could be made available for those under age 55). Honeycroft Village has been underway for quite some time, and Phase III is nearing completion—just 15 single-family detached units remain to be built, and it is believed all will be constructed by the end of 2021. Phases IV and V are expected to begin soon, and these two phrases will produce an additional 68 single-family detached units (and perhaps a few duplexes). It is likely these units will all be built by the end of the decade.

Officials believe that units in Londonderry Meadows tend to appeal to families with young children or/and couples who are about to have children. However, given that the units at Honeycroft Village are primarily age-restricted, it is expected that these units will produce few, if any, children. But, the purchase of units in Honeycroft Village by empty-nesters in Octorara Area (and neighboring districts) could produce opportunity for younger families with young children (or who are about to have children) to relocate to the vacated properties.

The units in Londonderry Meadows rely on on-lot septic systems and water supply, but Honeycroft Village receives water distribution from the Chester Water Authority and sewage service is provided by a collection system and treatment plant built by the developer for the exclusive use of this development. It was noted that some of the other subdivisions in Londonderry Township also have sewage collection and treatment systems for the sole use of that particular development.

As for the future, Londonderry officials indicated that while open space preservation is a priority, there is still some land that could be developed for residential purposes. One such parcel is off Route 926, and an effort was made some time ago to develop it, but the ground failed to perk. So, it is likely that any housing construction at this location would require large lots and, not only must the perking issue be dealt with, there may also be zoning considerations to be addressed. It was estimated that the parcel could produce up to 25 single-family detached units, but development is not imminent. The level of turnover of mature owner-occupied housing in the township is not believed to be an issue.

Parkesburg Borough is the largest of the district's municipalities in terms of population, but the borough is reported to be relatively built-out with very limited opportunity for growth aside from two specific projects that have received the necessary approvals. However, due to uncertainties regarding its status, scope, nature, and timing, but one of these projects has been "downgraded" by PEL and is considered to be just "under discussion" for the purposes of this

study. No other residential development was reported to have been formally proposed or to be in the early planning stage, but the borough expects to experience a modest level of infill, minor subdivision activity, and/or miscellaneous housing construction during the next 10 years. It was noted that there is a sizable Christmas tree farm on the edge of the borough, but no effort to develop it for residential use is anticipated.

Lindale Village on Beale Street has been approved as a 30-unit manufactured home age-restricted retirement community. However, there has been no tangible progress on this project, and it is believed that this parcel could be sold prior to initiating construction. It was estimated that it could be 2 to 3 years before the development gets underway. While this project will be limited primarily to those age 55 and over and would not necessarily have a direct impact on school-age children, it could result in housing vacated by those moving into these units being made available for younger families with children or who are about to have them.

The other approved project is known as the Quarry Tract, and the plan outlines 323 townhouse units that would be designed to be owner-occupied. However, the project has not moved forward, and it is possible that efforts may be made to change the scope and nature of the development. This would likely involve zoning issues and require the approval of Borough Council. It is also possible that the project could be sold before construction begins. It is believed by some that it could be several years before the project is begun, and then several more years before it is fully built out. Given the uncertainties regarding its status, scope, nature, and timing, the Quarry Tract has been "downgraded" by PEL and for the purposes of this study is considered to be just "under discussion".

It was reported that the borough is comprised of about 60 percent renter-occupied units which tend to experience noticeable turnover. The remaining units are owner-occupied and experience a more normal rate of turnover. As for school-age children, the borough seems to be a stable producer.

Public water distribution and sewage collection and treatment services are available throughout the borough. They are provided by the Pennsylvania-American Water Company, which purchased the borough’s systems several years ago. It is believed that these services are also made available to a small number of users in adjacent areas outside the borough.

While Parkesburg Borough has a sizable number of dwelling units available to be built in the two subdivisions in the pipeline, there is clearly some question as to if and when all these

will be constructed. Further, the borough is unlikely to produce a noticeable number of units beyond those in the two subdivisions described above given the absence suitable tracts.

West Fallowfield Township reported no approved and ongoing subdivisions, none that had been proposed, and none that were known to be under construction. Further, it was noted that no new housing units had been constructed in any subdivisions the township since 2010, although there may have been a few units built by the families on some of the farms in the township.

There is no public water distribution system and the no public sewage collection and treatment system in West Fallowfield, and it is expected that this will the case well into the future. Residents depend strictly on on-site wells and septic systems. Most of the land in the township is actively farmed, there are ag security areas, and there has been some formal preservation of open space. In view of all of this, is not expected that there will be any noticeable amount of residential construction in West Fallowfield in the years to come.

West Sadsbury Township reported negligible recent residential development and no expectation of noticeable growth in future. However, the township noted substantial commercial activity along the Route 30 corridor, particularly where Routes 30 and 10 intersect. Reportedly, this is the only area of the township where public water and sewerage services are readily available. Most of the land in the township is actively farmed, and there is some open space preservation. The general attitude of the municipal leadership is “status quo” relative to commercial and residential growth.

Christiana Borough is one of the two Octorara Area School District member municipalities located in Lancaster County. In 2010, it was the smallest of the district’s eight municipalities based on population and housing units. The Borough Manager reported that the borough was “pretty much landlocked”, but there is still some vacant land available.

The manager highlighted two remaining buildable lots available on Dorinda Drive (parcels that were subdivided many years ago, and Dorinda Drive was the site of the borough's newest dwelling unit), two lots on Linden Street, and some farmland in the west end of the borough that has the potential for residential development. However, there has not been any noticeable interest in moving forward with construction on any of these parcels.

It was also noted that there are two undeveloped tracts owned by the Harrison family—one on Newport Avenue (adjacent to the 113-bed Harrison House Senior Living Facility) that is zoned medium- density residential (but it has yet to be subdivided) and one at Greene and East

Slokum that is zoned high-density residential. The latter parcel was once considered for a senior townhouse complex, but it never materialized. It was indicated that there have been rumors that one or both of the Harrison parcels could be for sale, but at this time development of these parcels is not considered to be imminent. It was also noted that there were 42 wooded acres on Germantown Avenue, but there has been no discussion of any activity there.

The borough's authority owns and operates the water distribution and sewage collection and treatment system. It was stated that there had been recent improvements at the treatment facility and that capacity is more than adequate for the borough's recognized needs. Reportedly, limited areas of Sadsbury Township (also in Lancaster County) receive water supply from the borough and the township's authority is a "bulk customer" for sewage treatment. There is a cap of 45,000 gallons per day of flow, and the township is reported to be well within that limit. It was also indicated that other efforts to expand water and sewerage services outside the borough's limits have been rejected.

It was noted that Christiana is an "old community" and, as such, it was ripe for turnover from empty-nesters to younger families with children or couples who are about to have them, and that housing in the borough is more reasonably priced than elsewhere in the area. It was further noted that there is a sizable number of rental units in the borough and that a noticeable number of rentals are being purchased by young families.

It was reported that the updated Lancaster County "Places 2040" plan designates the borough as an Urban Growth Area (UGA), with the stated "goal" of 5.5 units per acre. A central theme of the planning process in Lancaster County involves directing growth towards the UGAs (already built-up areas with existing sewer and water infrastructure) so that open space and farmland would not continue to be developed, and, instead, preserved.

Given the amount of land that is available in the borough and the designation as a UGA under the new County plan, there is considerable potential for growth, but there hasn't necessarily been a commensurate amount of demand, and, as such, no noticeable upturn in the amount of residential development in the borough is anticipated.

Sadsbury Township (also in Lancaster County) is the second most populous municipality in the district. Officials indicated (via telephone conversation) that the township had not experienced the construction of any new housing since the 2010 Census and none was anticipated. They declined the opportunity to provide any more definitive information with

regard to past or future development activity in the township or any other factors that may influence the district's future enrollments.

It would appear that substantially stronger sustained growth in the Octorara Area School District is unlikely in the years ahead in spite of a noticeable amount of open space. The reasons for this include the lack of widespread public water distribution systems and particularly public sewage collection and treatment systems, a high level of farming activity, ongoing farmland and open space preservation activities and other efforts to discourage—or at least not encourage—growth, and a general lack of demand. But, there are two factors that were mentioned as providing at least some potential for changing the level of demand. One is the possible expansion of the train station in Parkesburg which could boost growth by making it easier to commute to the East or West using Amtrak. Regular daily runs are now occurring, but, reportedly, they don't seem to be much of a factor. The other possibility involves the widening of Route 30, which runs east and west across the upper portion of the district in West Sadsbury Township. At present, Route 30 is an expressway with two lanes in each direction from the East that ends at Route 10–essentially, at the border of the district. The two-lane portion continues for perhaps a quarter of a mile past Route 10, and then it becomes one lane in each direction with a center turning lane. Some believe that continuing the expressway (or at least two lanes in each direction) beyond Route 10 would make commuting to Exton, the Main Line, and other areas to the east much easier and could result in growth in the district. However, the status of both possible actions is unclear, but it is believed that it will be many years into the future before either becomes reality and impacts growth and development in the district.

During the 1990s, 682 new housing units were constructed in the Octorara Area School District and in the decade of the 2000s, 658 new dwelling units were added—24 fewer units (3.5 percent) than in the immediate preceding decade. As stated earlier in this chapter, between January of 2010 and December of 2019—excluding any permits that may have been issued for new dwelling unit construction during this period in Highland Township, West Sadsbury Township, and Sadsbury Township and any that may have been issued in Atglen Borough between 2010 and 2013—249 new housing units were authorized by permit in the district. This was 409 fewer units than were added to the 2000s (or only about 1/3 of the number added in the prior decade). The average number of permits issued during the decade just ended was about 25 per year compared with about 68 per year added during the decade of the 2000s and 66 per year added during the 1990s.

Based on information gathered from interviews and conversations with municipal officials—and data provided by them, the overall inventory of new residential activity in the various known subdivisions in the district's municipalities (plus what may result from infill, minor subdivisions, and/or miscellaneous housing construction) could total as many as 519 units. However, it must be restated that all of the approved units may not necessarily be constructed within the next 10 years, or perhaps not at all. In fact, the largest project in the district's housing pipeline (the Quarry Tract in Parkesburg Borough, which could involve as many as 323 townhouse units) has not moved forward, and it is possible that efforts may be made to change its scope and nature. This would likely involve zoning issues and require the approval of Borough Council. It is also possible that the project could be sold before construction begins, and it is believed by some that, under the best of circumstances, it could be several years before the project is begun, and then several more years before it is fully built out. Given the uncertainties regarding its status, scope, nature, and timing, the Quarry Tract has been "downgraded" by PEL, and, for the purposes of this study, is considered to be just "under discussion". (See Table 2-4.)

Including the Quarry Tract**,** the total number of new residential units in the districts 10-year-line (519) is more than double the number of housing units constructed during the decade just ended (based on permits for construction of new dwelling units issued between January of 2010 and December of 2019—excluding any that may have been issued are during this period in Highland Township, West Sadsbury Township, and Sadsbury Township and any that may have been issued in Atglen Borough between 2010 and 2013). However, it should be noted that the number of units known to have been permitted for construction during the immediate past decade was only about three-fourths the number built in either the 1990s or in the 2000s.

If all 519 units are built in the next 10 years, it would result in the district's housing stock rising by about 7.8 percent—well above the rate of growth during the 2010s (3.9 percent) but well below the 1990s (13.6 percent) and the 2000s (11.5 percent). Again, there is some question as to whether or not all these units will be built in the next 10 years. Exclusive of the Quarry Tract with all its uncertainties, the district's pipeline would be reduced to 196 units which is lower than the number of units known to be to have been issued construction permits in the decade just ended (249 new housing units—excluding any that may have been issued in Highland Township, West Sadsbury Township, and Sadsbury Township and any that may have

Table 2-4
OCTORARA AREA SCHOOL DISTRICT
Estimated Expected Dwelling Unit Construction 2020 to 2029[1]
(as of December 2019)

Development Activity	Type[2]	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Total 2020 to 2029
APPROVED												
Atglen Borough												
Applewood Development	SFD	?	?	?	?	?	?	?	?	?	?	62
Highland Township												
None	-	-	-	-	-	-	-	-	-	-	-	-
Londonderry Township												
Londonderry Meadows	SFD	5	5	5	5	1	-	-	-	-	-	**21**
Honeycroft Village Ph III [3]	SFD	7	8	-	-	-	-	-	-	-	-	**15**
Honeycroft Village Ph IV&V[3]	SFD	-	-	8	8	8	8	9	9	9	9	**68**
Total		12	13	13	13	9	8	9	9	9	9	**104**
Parkesburg Borough												
Lindale Village[3]	SFD	?	?	?	?	?	?	?	?	?	?	30
West Fallowfield Township												
None	-	-	-	-	-	-	-	-	-	-	-	-
West Sadsbury Township												
None	-	-	-	-	-	-	-	-	-	-	-	-
Cristiana Borough[4]												
None	-	-	-	-	-	-	-	-	-	-	-	-
Sadsbury Township[4]												
None	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL APPROVED	-	**≥12**	**≥13**	**≥13**	**≥13**	**≥9**	**≥8**	**≥9**	**≥9**	**≥9**	**≥9**	**196**
PROPOSED												
Atglen Borough												
None	-	-	-	-	-	-	-	-	-	-	-	-
Highland Township												
None	-	-	-	-	-	-	-	-	-	-	-	-
Londonderry Township												
None	-	-	-	-	-	-	-	-	-	-	-	-
Parkesburg Borough												
None	-	-	-	-	-	-	-	-	-	-	-	-
West Fallowfield Township												
None	-	-	-	-	-	-	-	-	-	-	-	-
West Sadsbury Township												
None	-	-	-	-	-	-	-	-	-	-	-	-
Cristiana Borough[4]												
None	-	-	-	-	-	-	-	-	-	-	-	-
Sadsbury Township[4]												
None	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL PROPOSED	-	-	-	-	-	-	-	-	-	-	-	-

Table 2-4
OCTORARA AREA SCHOOL DISTRICT
Estimated Expected Dwelling Unit Construction 2020 to 2029[1]
(as of December 2019)

Development Activity	Type[2]	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Total 2020 to 2029
UNDER DISCUSSION												
Atglen Borough												
None	-	-	-	-	-	-	-	-	-	-	-	-
Highland Township												
None	-	-	-	-	-	-	-	-	-	-	-	-
Londonderry Township												
None	-	-	-	-	-	-	-	-	-	-	-	-
Parkesburg Borough												
Quarry Tract[5]	TH	?	?	?	?	?	?	?	?	?	?	323
West Fallowfield Township												
None	-	-	-	-	-	-	-	-	-	-	-	-
West Sadsbury Township												
None	-	-	-	-	-	-	-	-	-	-	-	-
Cristiana Borough[4]												
None	-	-	-	-	-	-	-	-	-	-	-	-
Sadsbury Township[4]												
None	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL DISCUSSION	-	**?**	**?**	**?**	**?**	**?**	**?**	**?**	**?**	**?**	**?**	**323**
MINOR ACTIVITY												
Atglen Borough	-	-	-	-	-	-	-	-	-	-	-	-
Highland Township	-	-	-	-	-	-	-	-	-	-	-	-
Londonderry Twp[6]	-	?	?	?	?	?	?	?	?	?	?	**?**
Parkesburg Borough[6]	-	?	?	?	?	?	?	?	?	?	?	**?**
West Fallowfield Twp	-	-	-	-	-	-	-	-	-	-	-	-
West Sadsbury Twp	-	-	-	-	-	-	-	-	-	-	-	-
Cristiana Borough[4 6]	-	?	?	?	?	?	?	?	?	?	?	**?**
Sadsbury Township[4]	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL MINOR	-	**?**	**?**	**?**	**?**	**?**	**?**	**?**	**?**	**?**	**?**	**?**
TOTAL APPROVED	-	≥12	≥13	≥13	≥13	≥9	≥8	≥9	≥9	≥9	≥9	**196**
TOTAL PROPOSED	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL DISCUSSION	-	?	?	?	?	?	?	?	?	?	?	**323**
TOTAL MINOR	-	?	?	?	?	?	?	?	?	?	?	?
GRAND TOTAL	-	**≥12**	**≥13**	**≥13**	**≥13**	**≥9**	**≥8**	**≥9**	**≥9**	**≥9**	**≥9**	**≥519**

1 Estimating the starting date and build-out of the developments in the district's municipalities is difficult given the uncertainties involved; these estimates reflect the best judgments of the parties involved, based on what is known at this time. U = Underway; ? = Unknown
2 Housing Codes: SFD = Single-Family Detached; TH = Townhouse
3 Age-Restricted
4 Christiana Borough and Sadsbury Township are located in the Lancaster County portion of the district.
5 The Quarry Tract has been approved for 323 units, but due to uncertainties regarding its status, scope, nature, and timing, the project is considered by PEL to be just under discussion for the purpose of this study.
6 Londonderry Township, Parkesburg Borough, and Christiana Borough (and perhaps others) expect to experience undefined but modest levels of infill, minor subdivision activity, or miscellaneous housing construction during the next 10 years.

been issued in Atglen Borough between 2010 and 2013), and the amount of new residential construction would be more in keeping with the experience of the immediate past decade.

Further, all parties should be sensitive to any age-qualified, age-targeted, and/or similar housing as well as other units that will appeal (totally or partially) to seniors, empty nesters, and/or young singles that have been or may be constructed in the district. Specifically, Honeycroft Village Phases III, IV, and V and Lindale Village have been approved for a combined total of 113 single-family detached age-restricted units. As such, these will likely not have a direct and material impact on the district's enrollments, but they could attract older residents from areas within the district and, in turn, could make the vacated parcels available for younger families.

While new residential construction is often a very visible source of new public school enrollments in many districts, this is not always the case, and it is not the only source of new pupils. Turnover of rental units and mature owner-occupied housing can drive growth in a district's enrollments, as well. Reportedly, modest and relatively stable turnover in these types of housing has been experienced throughout the district, and it is expected to continue. Some turnover can result from the normal process of family relocation, and some can involve older residents being replaced by younger ones with children (or who are about to have them). Clearly, this can affect the demographic mix. Municipal officials indicate no noticeable wave of transition from empty-nesters to younger folks with young children or who are about to have them; however, some municipal officials have noted the potential for this to occur. If turnover from empty-nesters to younger families accelerates dramatically or if the historical mix is materially altered and higher numbers of empty-nesters are replaced by young families with children (or who are about to have them), further changes in the demographic mix could occur, and this may have an impact on enrollments. The district should be mindful of this potential.

PEL's projection methodology for the Octorara Area School District (described in Chapter 5) reflects the numbers and types of new housing that—as of the fall of 2019—municipal officials realistically expected would be constructed in the years ahead in the known subdivisions and the units that could result from infill, minor subdivision activity, and/or miscellaneous housing construction. Further, the methodology recognizes the level of age-qualified, age-targeted, and/or similar housing units, as well as the expected impact of the modest but continuing sale and turnover of mature owner-occupied housing and rental units in the district.

In the 1990s, the population of the Octorara Area School District increased by 1,918 or 13.2 percent, and the number of housing units rose by 682 or 13.6 percent, but the district's enrollments were up by only 63 or 2.5 percent. Between 2000 and 2010, the district's population rose by 1,568 or 9.5 percent, housing increased by 658 units or 11.5 percent, and the pupil count was up by just 71 or 2.8 percent. Since 2010, the district's population is estimated by the U.S. Census Bureau to have risen by ~~a~~ 893 or 5.0 percent (as of July 2018), housing units were up by 224 or 3.5 percent (based on construction permits issued between January 2010 and the end of 2018—excluding any permits for new residential units that may have been issued during this period in Highland Township, West Sadsbury Township, and Sadsbury Township and any that may have been issued in Atglen Borough between 2010 and 2013. The district's pupil count dropped by 281 or 10.8 percent between 2018 (as of October 1, 2018). (See Table 2-5 and Graph 2-2.)

Table 2-5
OCTORARA AREA SCHOOL DISTRICT
Absolute and Proportionate Change in Population, Housing Units and Enrollments[1]
1990 to 2018

	1990-2000		2000-2010		2010-2018	
	#	%	#	%	#	%
Population[2]	1,918	13.2	1,568	9.5	893	5.0
Housing[3]	682	13.6	658	11.5	224	3.5
Total Enrollment[1]	63	2.5	71	2.8	-281	-10.8

1 See Chapter 5 for detail of which categories of pupils are included in the enrollment figures. Counts listed are as of October 1 of the following years: 1991, 2001, 2010, and 2018.

2 Based on July 2018 U.S. Census estimates.

3 Based on permits for the construction of new residential units issued between January 2010 and the end of 2018—excluding any permits that may have been issued during this period in Highland Township, West Sadsbury Township, and Sadsbury Township and any that may have been issued in Atglen Borough between 2010 and 2013.

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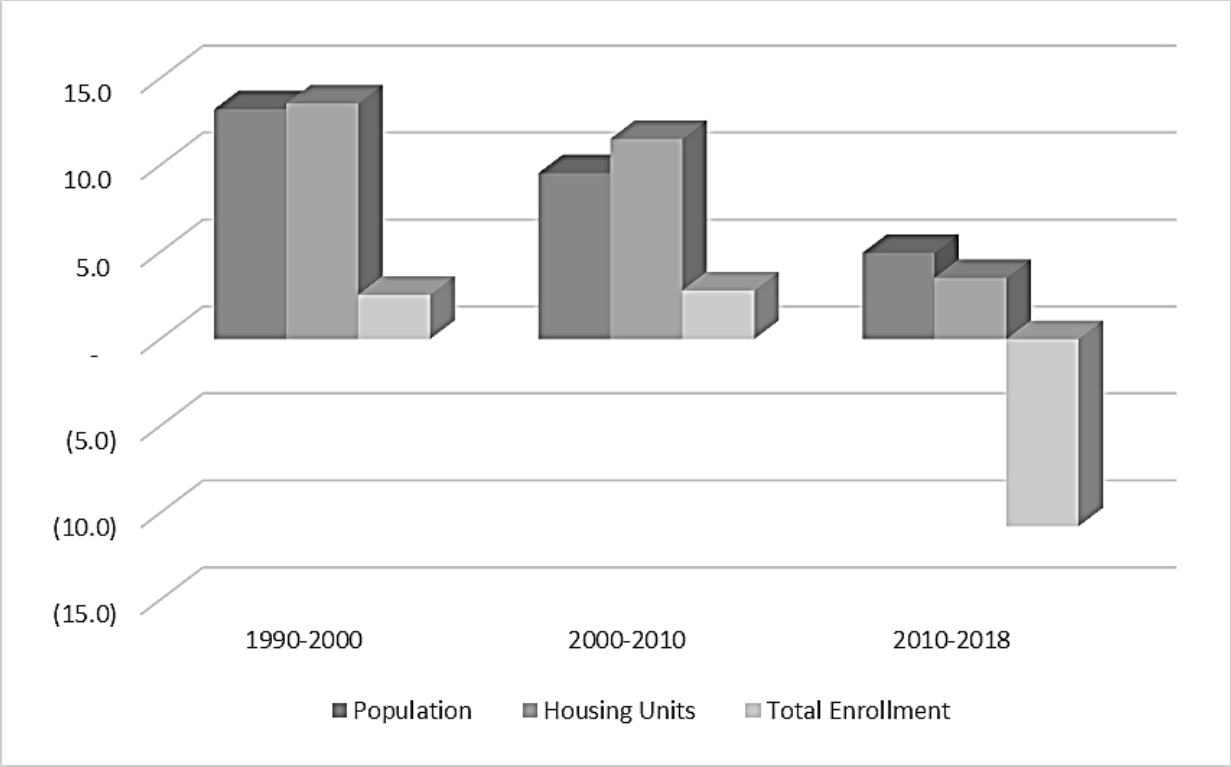
Graph 2-2
OCTORARA AREA SCHOOL DISTRICT
Proportionate Change in Population, Housing Units and Enrollments
1990 to 2018



❖ ❖ ❖ ❖ ❖

During the decades reviewed, changes in enrollments in the Octorara Area School District have not necessarily followed immediately and directly from changes in population and the number of housing units. In the 1990s the district's population grew at a noticeable rate on a proportionate basis, and the same was true for housing units. But, Octorara's enrollments were up just slightly. During the decade of the 2000s, the district's population continued to rise, but did so at a somewhat slower rate than in the prior decade, while the number of residential dwellings rose at a just slightly slower rate than in the 1990s. The pupil count in the district was up only modestly during the 2000s, just as in the 1990s, and, also as in the 1990s, the proportionate rise in enrollments in the 2000s was well short of the proportionate growth in population and housing. During the decade of the 2010s, the district's population (through July of 2018) is estimated to have risen at a markedly slower rate than in the two prior decades, and this was even more the case for new housing units (through of 2018). By the end of the 2010s, it appears that the increase in population will be

less than two-thirds that of the 2000s, and housing growth will be just slightly more than one-third of the absolute gain during the prior decade. The district's enrollments (which began to decline during the decade of the 2000s) fell very noticeably during the 2010s—and at an accelerating average annual rate.

CHAPTER 3
BIRTH PATTERNS

The annual number of resident births in the Octorara Area School District, which is extremely important in the planning process, was higher (on average) in the decade of the 2000s (278) than in the 1990s (254)—up by an average of 24 births or 9.5 percent. But, the average for the first nine years of the decade just ended was down by four births or 1.5 percent from the average for the 2000s to 274. The average for the 2010s through 2018, however, is still 20 births (7.7 percent) higher than the average for the 1990s. (It should be noted that the source of these figures is the State Health Data Center, Pennsylvania Department of Health, Harrisburg, Pennsylvania, and the Department specifically disclaims responsibility for any analyses, interpretations, or conclusions based on these figures.)

The absolute number of births in Octorara Area fell from 258 in 1990 to 229 in 1997 (its lowest point during the 29-year review period). This was followed by a mix of seven yearly increases and two decreases, and the average number annual births in the district reached 312 in 2006—the highest point during the years reviewed. During the subsequent 12 years births in the district fell in seven years and rose in five, and totaled 273 in 2018 (the most recent year for which figures are readily available from the Department of Health).

Overall, births in the district were up in 15 of the years since 1990 and down in 13 (including each of the three most recent years for which data are readily available). In spite of the recent decreases, four of the district's seven highest birth figures during the period reviewed were recorded in the past five years. (See Table 3-1 and Graph 3-1.)

The average number of annual births in the six Chester County municipalities that are part of Octorara Area totaled 193 in the decade of the 2000s and reflected 69.3 percent of all district births. This figure (193) was 18 (10.1 percent) higher than the average for the 1990s (175—69.0 percent of the district total). During the first nine years of the immediate preceding decade, births in the Chester County portion of the district averaged 186 or 68.0 percent of all district births—a decrease of seven (3.5 percent) from the prior decade, but 11 higher (6.3 percent) than the average for the 1990s.

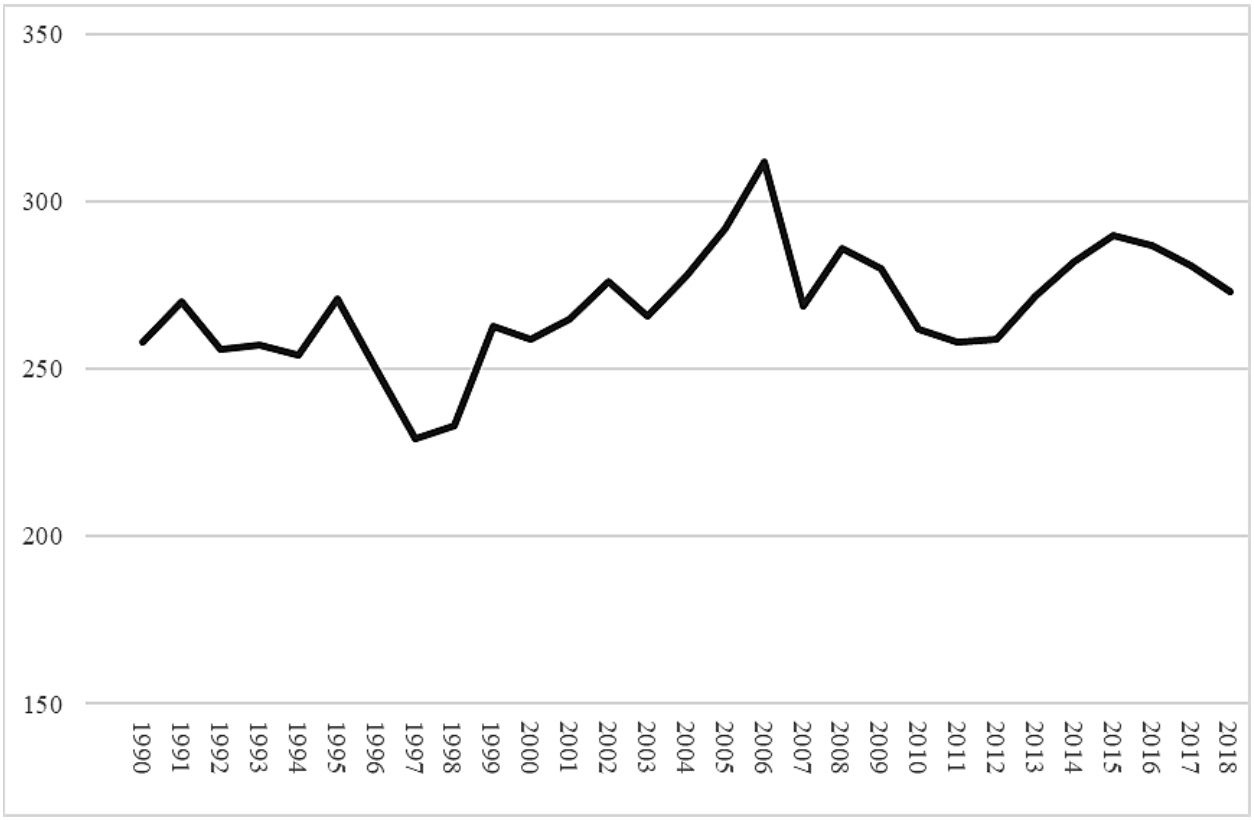
Table 3-1
OCTORARA AREA SCHOOL DISTRICT
Comparison of Birth Trends in the Octorara Area School District
and Chester County
1990 to 2018

Year		Octorara Area SD Total # of Births	Octorara Area SD % Change From Previous Year	Chester County Total # of Births	Chester County % Change From Previous Year	OASD as a % of Chester County
1990		258	-	5,902	-	4.4
1991		270	4.7	5,632	-4.6	4.8
1992		256	-5.2	5,496	-2.4	4.7
1993		257	0.4	5,482	-0.3	4.7
1994		254	-1.2	5,418	-1.2	4.7
1995		271	6.7	5,472	1.0	5.0
1996		250	-7.7	5,356	-2.1	4.7
1997		↓229	-8.4	5,389	0.6	4.2
1998		233	1.7	5,506	2.2	4.2
1999		263	12.9	5,736	4.2	4.6
2000		259	-1.5	5,814	1.4	4.5
2001		265	2.3	5,733	-1.4	4.6
2002		276	4.2	5,918	3.2	4.7
2003		266	-3.6	6,073	2.6	4.4
2004		278	4.5	6,009	-1.1	4.6
2005		292	5.0	6,170	2.7	4.7
2006		↑312	6.8	↑ 6,300	2.1	5.0
2007		269	-13.8	6,052	-3.9	4.4
2008		286	6.3	6,088	0.6	4.7
2009		280	-2.1	5,912	-2.9	4.7
2010		262	-6.4	5,513	-6.7	4.8
2011		258	-1.5	5,578	1.2	4.6
2012		259	0.4	5,441	-2.5	4.8
2013		272	5.0	5,436	-0.1	5.0
2014		282	3.7	5,474	0.7	5.2
2015		290	2.8	5,505	0.6	5.3
2016		287	-1.0	↓ 5,322	-3.3	5.4
2017		281	-2.1	5,326	0.1	5.3
2018		273	-2.8	5,378	1.0	5.1
Change 1990 to 2018	**#**	**15**	**–**	**-524**	**–**	**–**
	%	**5.8**	**–**	**-8.9**	**–**	**–**
Change 2000 to 2018	**#**	**14**	**–**	**-436**	**–**	**–**
	%	**5.4**	**–**	**-7.5**	**–**	**–**
Change 2010 to 2018	**#**	**11**	**–**	**-135**	**–**	**–**
	%	**4.2**	**–**	**-2.4**	**–**	**–**

NOTE: Highest point marked by ↑; lowest point marked with ↓.

SOURCE: State Health Data Center, Pennsylvania Department of Health, Harrisburg, Pennsylvania. The Department specifically disclaims responsibility for any analyses, interpretations, or conclusions.

Graph 3-1
OCTORARA AREA SCHOOL DISTRICT
Annual Births
1990 to 2018



Births in the two Lancaster County municipalities that are in the district averaged 85 during the 2000s—30.7 percent of all births recorded in Octorara Area. Births during that decade were six or 8.2 percent higher than the average for the 1990s (79), when these municipalities accounted for 31.0 percent of all district births. The number of births in the Lancaster County portion of Octorara Area during the first nine years of the immediate past decade averaged 87 or 31.9 percent of total number births in the district.

Unlike Octorara Area, the 2018 birth figure for Chester County as a whole was lower than in 2010 (by 135 or 2.4 percent), lower than in 2000 (by 436 or 7.5 percent), and also lower than in 1990 by (524 or 8.9 percent). Births in Chester County were at their peak during the 29-year review period in 2006 (the same year as the district); the county's low point was recorded in 2016 (compared with 1997 for the district).

The number of births in all of Lancaster County in 2018 was higher than in 2010 (by 10 or 0.1 percent), and also higher than in 2000 (by 81 or 1.2 percent), but Lancaster's 2018 figure was lower than in 1990 (by 330 or 4.5 percent).

Statewide, annual resident births increased fairly consistently from the mid-1970s until 1990; they then declined in seven consecutive years. While births in Pennsylvania were up in 1998, they fell in four of the subsequent six years, and then rose in the next three years. The number of annual births in the state dropped in each of the years from 2008 through 2013, when they hit their third lowest level during the reporting period which began in 1915. The 2014 count was up by 1,689 or 1.2 percent from the prior year, but the 2015 figure dropped (by 1,386 or 1.0 percent), annual births in 2016 were down again (by 1,371 or 0.9 percent), and the 2017 count fell further (by 1,585 or 1.1 percent). The 2018 count continued to fall (by 2,209 or 1.5 percent) to 135,562, making it the lowest annual birth figure recorded during the reporting period. In the nine years of the decade just ended, the Commonwealth experienced its nine lowest annual birth figures since statewide reporting began more than 100 years ago.

Nationally, births fell annually from 1991 through 1997 (when they reached their lowest level since 1987) and rose in all but two of the years between 1997 and 2007. Like in Pennsylvania, the total number of births for the U.S. was down in all years from 2008 through 2013, up in 2014 (by 1.4 percent), and then down in 2015 (by 0.2 percent), 2016 (by 0.8 percent), 2017 (by 2.3 percent), and again in 2018 (by 1.6 percent)—to a 31-year low.

The highest number of annual births recorded in the U.S. was in 2007, and by 2018 the count was down by a net of 12.1 percent. Pennsylvania's figure for 2007—the highest since 1995—was more than 100,000 births (about 41 percent) lower than its historical peak in 1957. The Commonwealth's 2018 figure was down by a net of 14,645 or 9.7 percent from 2007.

Births in Atglen Borough averaged 21 yearly or 8.3 percent of all district births during the 1990s, and for the 2000s, the borough's average was up to 26 or 9.1 percent. Atglen's average for the immediate past decade, however, is down to 21 or 7.7 percent of the district total. (Between 2010 and 2014 the average was 22 or 8.3 percent of the total district count; for the period 2015 through 2018 it was 20 or 6.9 percent.) Atglen Borough's figure for 2018 indicates that it accounted for 26 or 9.5 percent of all district births.

During the decade of the 1990s, annual births in Highland Township averaged 12 or 4.8 percent of total district births. The average for the 2000s was up to 16 or 5.6 percent, but the

average number of births recorded in the township during the first nine years of the decade just ended was down to 13 or 4.7 percent of the district total. (Between 2010 and 2014 the average was 14 or 5.3 percent of all district births; for the period 2015 through 2018 the average was 11 or 3.9 percent.) The birth figure for 2018 reveals that Highland generated only nine births or 3.3 percent of the district total.

Annual births in Londonderry Township during the 1990s averaged 15 or 5.8 percent of all district births. In the 2000s account increased to 20 or 7.1 percent of all district births. Londonderry's average for the immediate preceding decade was up further to 25 or 9.2 percent of the district total. (Between 2010 and 2014 the township's average was 25 or 9.4 percent of the total; for the period 2015 through 2018 the absolute average remained unchanged, but the proportionate share fell to 8.9 percent of the district total.) Londonderry recorded 20 births in 2018—7.3 percent of all district births.

Births in Parkesburg Borough averaged 57 yearly or 22.4 percent of the district total during the 1990s. The borough's absolute average remained unchanged in the 2000s, but its percent of total district births fell to 20.4 percent. The average number of births recorded in Parkesburg during the first nine years of the decade just ended was up slightly to 59 or 21.4 percent of the district total. (Between 2010 and 2014 the average was 53 or 20.0 percent of the total; for the period 2015 through 2018 the average was up to 66 or 23.2 percent.) The 2018 figure shows that Parkesburg Borough produced 65 births or 23.8 percent of the district total.

During the decade of the 1990s, annual births in West Fallowfield Township averaged 43 or 17.1 percent of all district births. In the 2000s the township's average remained the same, but its share of the district total dropped to 15.3 percent. West Fallowfield's average for the immediate past decade fell dramatically to 34 or 12.4 percent of the district total. (Between 2010 in 2014 the average number of births in West Fallowfield Township was 33 or 12.5 percent of the total; for the period 2015 through 2018 the absolute average was up to 35 but the proportionate share of the district total was down to 12.2 percent.) Figures for 2018 indicate that West Fallowfield Township generated 35 births or 12.8 percent of all district births.

Births in West Sadsbury Township during the 1990s averaged 27 yearly or 10.6 percent of all births in the district. The township's average in the 2000s increased to 33 or 11.8 percent of all district births, and the average number of births recorded in West Sadsbury Township during the first nine years of the decade just ended was up further to 35 or 12.7 percent of the

district total. (Between 2010 in 2014 West Sadsbury Township's average was 34 or 12.6 percent of the total; for the period 2015 through 2018, the average grew to 36 or 12.8 percent.) Birth figures for 2018 show that West Sadsbury also accounted for 35 or 12.8 percent of total births in the district.

Births in Christiana Borough (Lancaster County) averaged 18 yearly or 7.0 percent of all district births in the 1990s. During the 2000s, the borough's average was 20 or 7.0 percent of all district births. Christiana's average for the immediate preceding decade fell noticeably to 14 or 5.2 percent of the district total. (Between 2010 in 2014 the average absolute number of births in Christiana Borough was 14 and the percent of total district births was 5.1 percent of the total; for the period 2015 through 2018, the average rose slightly to 15 or 5.2 percent.) The 2018 figure indicates that Christiana generated only 12 births or 4.4 percent of all births in the district.

During the decade of the 1990s, annual births in Sadsbury Township (Lancaster County) averaged 61 or 24.0 percent of all district births. In the 2000s the absolute average grew to 66, while the township's proportionate share of the district total decreased to 23.7 percent. The average number of births in Sadsbury during the first nine years of the decade just ended was up to 73 or 26.8 percent of the district total. (Between 2010 in 2014 the township's average was 71 or 26.7 percent of the total; for the period 2015 through 2018 the average was 76 or 26.9 percent of the total.) Figures for 2018 indicate that Sadsbury Township recorded 71 births or 26.0 percent of all district births. (See Table 3-2.)

A comparison of average numbers births and proportionate shares of total district births in Octorara Area's municipalities reveals that in Atglen Borough and Highland, Londonderry and West Sadsbury townships the average numbers of births per year and shares of total district births were higher in the 2000s than the 1990s. In Sadbury Township (Lancaster County), the average absolute number of births rose from the 1990s to the 2000s, but the proportionate share of the district total decreased slightly. In Christiana Borough (Lancaster County), the absolute number of births were higher in the 2000s than the prior decade, but its proportionate share remained the same. In Parkesburg Borough and West Fallowfield Township the absolute numbers of births were unchanged from the 1990s to the 2000s, but their proportionate shares were lower.

In the 2010s the average annual numbers of births and proportionate shares of all district births were higher than in the 2000s in Parkesburg Borough and in Londonderry, West

Table 3-2
OCTORARA AREA SCHOOL DSITRICT
Birth Trends in the Octorara Area School District, by Municipality
1990 to 2018

Year	Atglen Borough #	Atglen Borough % of Total	Highland Township #	Highland Township % of Total	Londonderry Township #	Londonderry Township % of Total	Parkesburg Borough #	Parkesburg Borough % of Total
1990	↓13	5.0	14	5.4	13	5.0	↑74	28.7
1991	18	6.7	12	4.4	17	6.3	64	23.7
1992	24	9.4	15	5.9	↓8	3.1	64	25.0
1993	19	7.4	12	4.7	15	5.8	61	23.7
1994	21	8.3	15	5.9	14	5.5	66	26.0
1995	20	7.4	14	5.2	17	6.3	53	19.6
1996	24	9.6	14	5.6	20	8.0	51	20.4
1997	25	10.9	↓5	2.2	16	7.0	↓37	16.2
1998	20	8.6	8	3.4	13	5.6	50	21.5
1999	27	10.3	13	4.9	14	5.3	52	19.8
2000	20	7.7	14	5.4	19	7.3	58	22.4
2001	21	7.9	18	6.8	11	4.2	57	21.5
2002	27	9.8	16	5.8	21	7.6	57	20.7
2003	28	10.5	12	4.5	16	6.0	54	20.3
2004	18	6.5	17	6.1	18	6.5	50	18.0
2005	25	8.6	16	5.5	27	9.2	61	20.9
2006	↑39	12.5	18	5.8	↑30	9.6	60	19.2
2007	27	10.0	16	5.9	22	8.2	52	19.3
2008	23	8.0	16	5.6	14	4.9	64	22.4
2009	27	9.6	13	4.6	21	7.5	54	19.3
2010	24	9.2	16	6.1	23	8.8	45	17.2
2011	28	10.9	12	4.7	25	9.7	50	19.4
2012	16	6.2	15	5.8	23	8.9	55	21.2
2013	19	7.0	10	3.7	↑30	11.0	51	18.8
2014	24	8.5	↑18	6.4	25	8.9	66	23.4
2015	19	6.6	11	3.8	↑30	10.3	67	23.1
2016	17	5.9	12	4.2	24	8.4	72	25.1
2017	16	5.7	12	4.3	27	9.6	58	20.6
2018	26	9.5	9	3.3	20	7.3	65	23.8
Change 1990 to 2018 #	**13**	**–**	**-5**	**–**	**7**	**–**	**-9**	**–**
Change 1990 to 2018 %	**100.0**	**–**	**-35.7**	**–**	**53.8**	**–**	**-12.2**	**–**

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

SOURCE: State Health Data Center, Pennsylvania Department of Health, Harrisburg, Pennsylvania. The Department specifically disclaims responsibility for any analyses, interpretations, or conclusions.

Table 3-2
OCTORARA AREA SCHOOL DSITRICT
Birth Trends in the Octorara Area School District, by Municipality
1990 to 2018

Year	West Fallowfield Township #	West Fallowfield Township % of Total	West Sadsbury Township #	West Sadsbury Township % of Total	Christiana Bor. (Lancaster Co.) #	Christiana Bor. (Lancaster Co.) % of Total	Sadsbury Twp. (Lancaster Co.) #	Sadsbury Twp. (Lancaster Co.) % of Total	District Total #	District Total % of Total
1990	43	16.7	27	10.5	15	5.8	59	22.9	258	100.0
1991	38	14.1	27	10.0	25	9.3	69	25.6	270	100.0
1992	35	13.7	34	13.3	23	9.0	↓53	20.7	256	100.0
1993	45	17.5	33	12.8	19	7.4	↓53	20.6	257	100.0
1994	43	16.9	21	8.3	↓9	3.5	65	25.6	254	100.0
1995	48	17.7	36	13.3	19	7.0	64	23.6	271	100.0
1996	48	19.2	23	9.2	16	6.4	54	21.6	250	100.0
1997	48	21.0	↓19	8.3	15	6.6	64	27.9	↓229	100.0
1998	41	17.6	26	11.2	15	6.4	60	25.8	233	100.0
1999	43	16.3	23	8.7	22	8.4	69	26.2	263	100.0
2000	33	12.7	28	10.8	23	8.9	64	24.7	259	100.0
2001	↑52	19.6	32	12.1	19	7.2	55	20.8	265	100.0
2002	51	18.5	27	9.8	18	6.5	59	21.4	276	100.0
2003	40	15.0	31	11.7	18	6.8	67	25.2	266	100.0
2004	47	16.9	35	12.6	23	8.3	70	25.2	278	100.0
2005	37	12.7	35	12.0	15	5.1	76	26.0	292	100.0
2006	43	13.8	↑41	13.1	17	5.4	64	20.5	↑312	100.0
2007	39	14.5	31	11.5	17	6.3	65	24.2	269	100.0
2008	43	15.0	33	11.5	↑27	9.4	66	23.1	286	100.0
2009	40	14.3	35	12.5	18	6.4	72	25.7	280	100.0
2010	43	16.4	27	10.3	13	5.0	71	27.1	262	100.0
2011	30	11.6	32	12.4	13	5.0	68	26.4	258	100.0
2012	32	12.4	34	13.1	18	6.9	66	25.5	259	100.0
2013	↓29	10.7	40	14.7	13	4.8	80	29.4	272	100.0
2014	32	11.3	35	12.4	11	3.9	71	25.2	282	100.0
2015	32	11.0	34	11.7	17	5.9	↑80	27.6	290	100.0
2016	33	11.5	36	12.5	18	6.3	75	26.1	287	100.0
2017	38	13.5	40	14.2	12	4.3	78	27.8	281	100.0
2018	35	12.8	35	12.8	12	4.4	71	26.0	273	100.0
Change 1990 to 2018 #	**-8**	**–**	**8**	**–**	**-3**	**–**	**12**	**–**	**15**	**–**
Change 1990 to 2018 %	**-18.6**	**–**	**29.6**	**–**	**-20.0**	**–**	**20.3**	**–**	**5.8**	**–**

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

SOURCE: State Health Data Center, Pennsylvania Department of Health, Harrisburg, Pennsylvania. The Department specifically disclaims responsibility for any analyses, interpretations, or conclusions.

Sadsbury, and Sadsbury (Lancaster County) townships. In Atglen and Christiana (Lancaster County) boroughs and Highland and West Fallowfield townships both the average number of births and proportionate share were lower in the decade just ended than the prior decade.

Births per 1,000 residents in the Octorara Area School District averaged 16.6 per year during the 1990s, but in the 2000s the average fell to 16.2. In the first nine years of the immediate past decade, the average number of births per 1,000 residents was down further to 14.8. The highest number of births per 1,000 residents (18.4) was recorded in 1991; the lowest number (14.2) occurred in 2012. The figure for 2018 was 14.5. (See Table 3-3 and Graph 3-2.)

The annual number of births per 1,000 housing units in the district averaged 47.7 during the 1990s, and it was down to an average of 46.3 in the 2000s. Based on the number of housing units authorized by permit from 2010 through 2018 and actual birth figures for 2010 through 2018, the average annual number of births per 1,000 housing units in the district in the decade just ended was down again to 42.2. The highest number of births per 1,000 housing units (52.9) was recorded in 1991; the lowest figure (40.1) occurred in 2011. In 2018 there were 41.4 births per 1,000 housing units in Octorara Area. (It should be noted that Atglen Borough's permit count covers only the years 2014 through 2019 and no figures on permits issued for new residential construction during the decade of the 2010s were provided to PEL by municipal officials in Highland Township, West Sadsbury Township, or Sadsbury Township. If the additional housing units from these municipalities were factored in, the yearly figures and overall averages for the immediate preceding decade would be lower still.) (See Table 3-3 and Graph 3-3.)

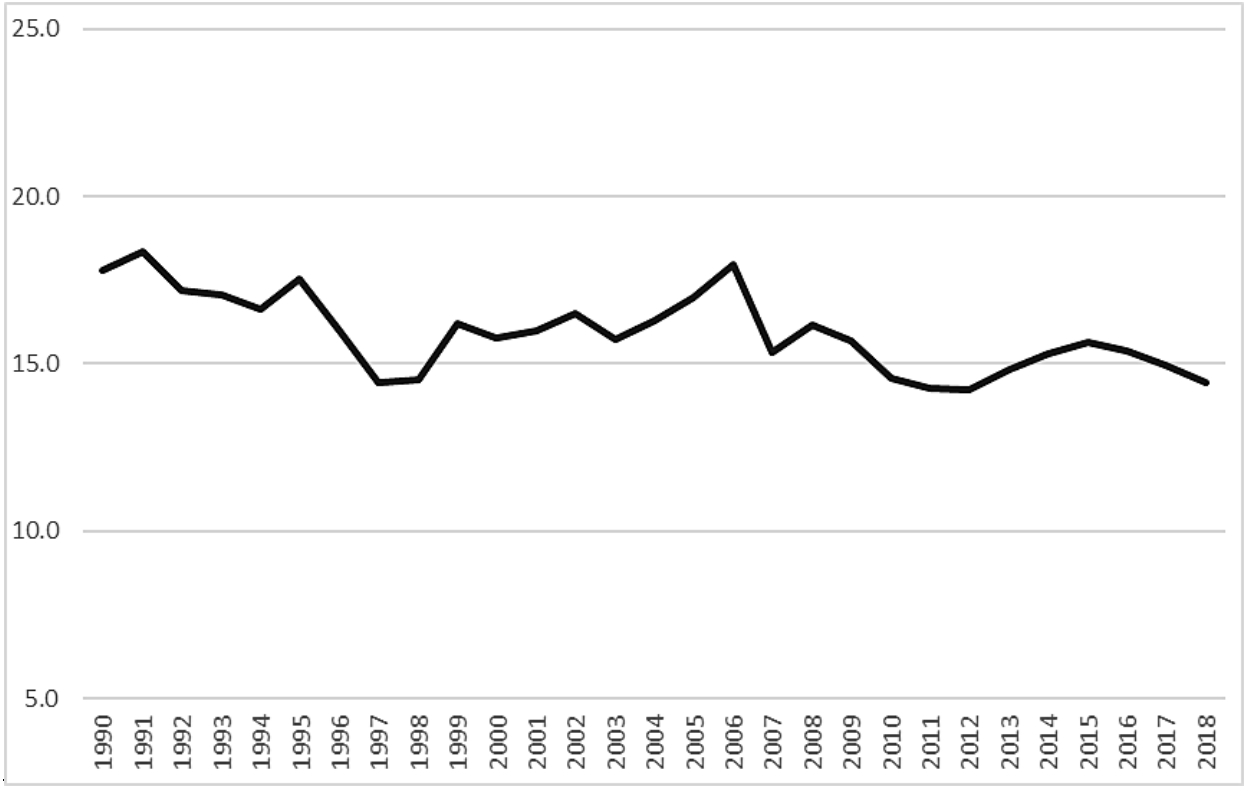
Analyzing Octorara Area's enrollments in relation to its total number of housing units produces a more complete picture of the district's demographics. In the 1991-92 school year (enrollments for 1991-92 was used because 1990-91 figures were not readily available), the average number of public school pupils generated by each housing unit in the district was 0.491. Between 1991-92 and 2001-02 (again, 2001-02 counts were used because 2000-01 figures were not readily available), the number of housing units was up by 4.9 percent and public school enrollments rose by 13.6 percent, causing the ratio of public school pupils to housing units to fall to 0.454. In the decade of the 2000s, the number of housing units in the district increased by 11.5 percent, and public school enrollments were down by 0.5 percent. This caused the number of public school pupils per housing unit in the 2010-11 school year to drop to 0.405.

Table 3-3
OCTOARA AREA SCHOOL DISTRICT
Births Per 1,000 Residents and Per 1,000 Housing Units
1990 to 2018

Year	Births Per 1,000 Residents	Births Per 1,000 Housing Units
1990	17.8	51.3
1991	↑18.4	↑52.9
1992	17.2	49.5
1993	17.0	49.1
1994	16.6	47.9
1995	17.5	50.4
1996	16.0	46.0
1997	14.4	41.6
1998	14.5	41.8
1999	16.2	46.6
2000	15.8	45.3
2001	16.0	45.8
2002	16.5	47.2
2003	15.7	45.0
2004	16.3	46.5
2005	17.0	48.3
2006	18.0	51.1
2007	15.4	43.6
2008	16.2	45.8
2009	15.7	44.4
2010	14.6	41.1
2011	14.3	↓40.1
2012	↓14.2	40.2
2013	14.8	42.0
2014	15.3	43.4
2015	15.6	44.5
2016	15.4	43.9
2017	15.0	42.8
2018	14.5	41.4

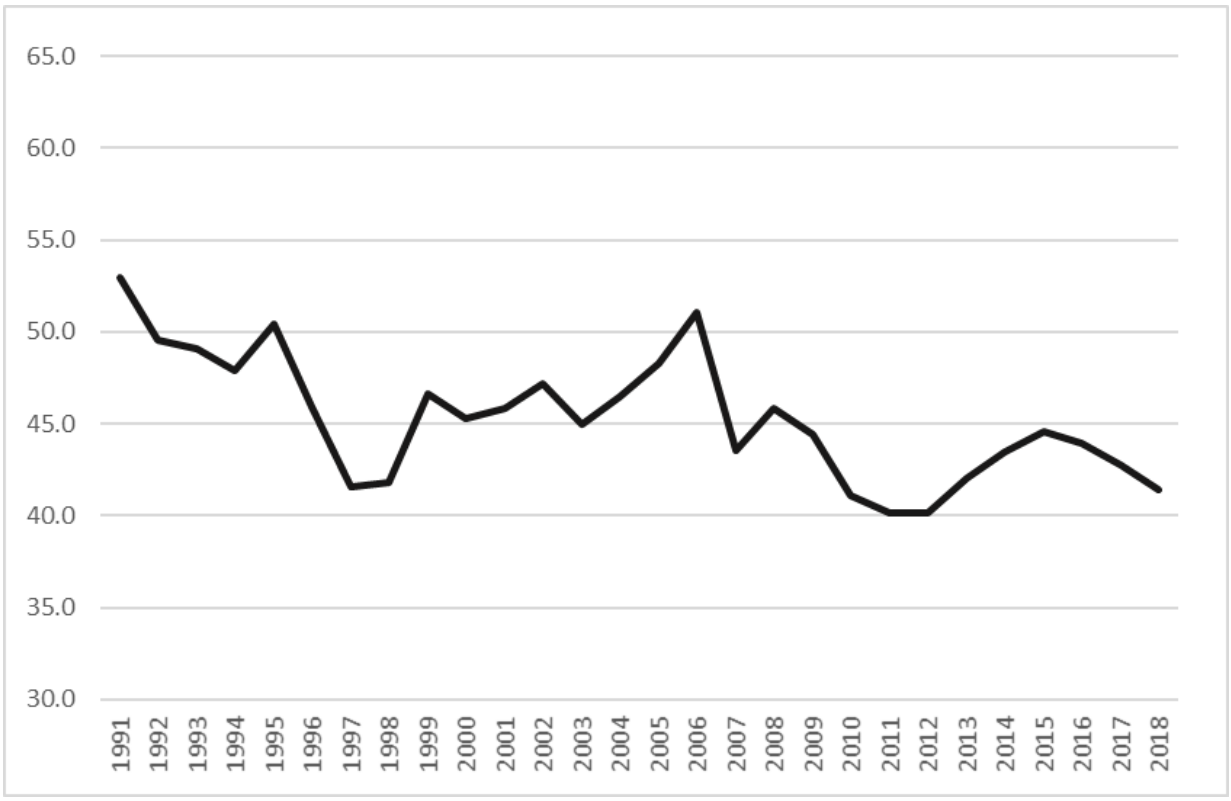
Note: Highest point marked by ↑; lowest point marked with ↓.

Graph 3-2
OCTORARA AREA SCHOOL DISTRICT
Births Per 1,000 Residents
1990 to 2018



Using a housing count based on 2010 Census figures and the number of units authorized by permit between 2010 and December 2019 (up by at least 3.9 percent since the Census—recognizing that Atglen's permit count covers only the years starting with 2014 and no figures on permits issued for new residential construction during the decade just ended were provided to PEL by municipal officials in Highland, West Sadsbury, or Sadsbury townships) and the district's October 2019 enrollment figure (down by a net of 14.1 percent from 2010-11), the number of public school children produced by each housing unit in the 2019-20 school year has fallen dramatically from 0.405 in 2010-11 to 0.335—a net decrease of 17.3 percent. The 2019-20 figure is just over two-thirds the number of pupils generated by each housing unit in 1991-92.

Graph 3-3
OCTORARA AREA SCHOOL DISTRICT
Births Per 1,000 Housing Units
1990 to 2018



Decreases in the immediate past decade were experienced in all of the district's five grade groupings. Grades K-2 recorded a decline from 0.082 in 2010-11 to 0.068 in 2019-20. (Figures for these grades had decreased from 0.115 in 1991-92 to 0.101 in 2001-02 and to 0.082 in 2010-11.) Grades 3-4 recorded a drop from 0.060 in 2010-11 to 0.047 in 2019-20. (Figures for these grades had fallen from 0.085 in 1991-92 to 0.071 in 2001-02 and to 0.060 in 2010-11.) Grades 5-6 experienced a decline from 0.065 in 2010-11 to 0.053 in 2019-20. (Figures for these grades had decreased from 0.084 in 1991-92 to 0.077 in 2001-02 and to 0.065 in 2010-11.) In grades 7- 8 the figure was down from 0.060 in 2010-11 to 0.051 in 2019-20. (Figures for this grouping rose slightly from 0.073 in 1991-92 to 0.078 in 2001-02, but decreased to 0.060 in 2010-11.) The ratio of public school children to housing units in grades 9 to 12 declined from 0.138 in 2010-11 to 0.116 in 2019-20. (Figures for the high school grades fell from 0.134 in 1991-92 to 0.126 in 2001-02, but were up to 0.138 in 2010-11.) (See Table 3-4 and Graph 3-4.)

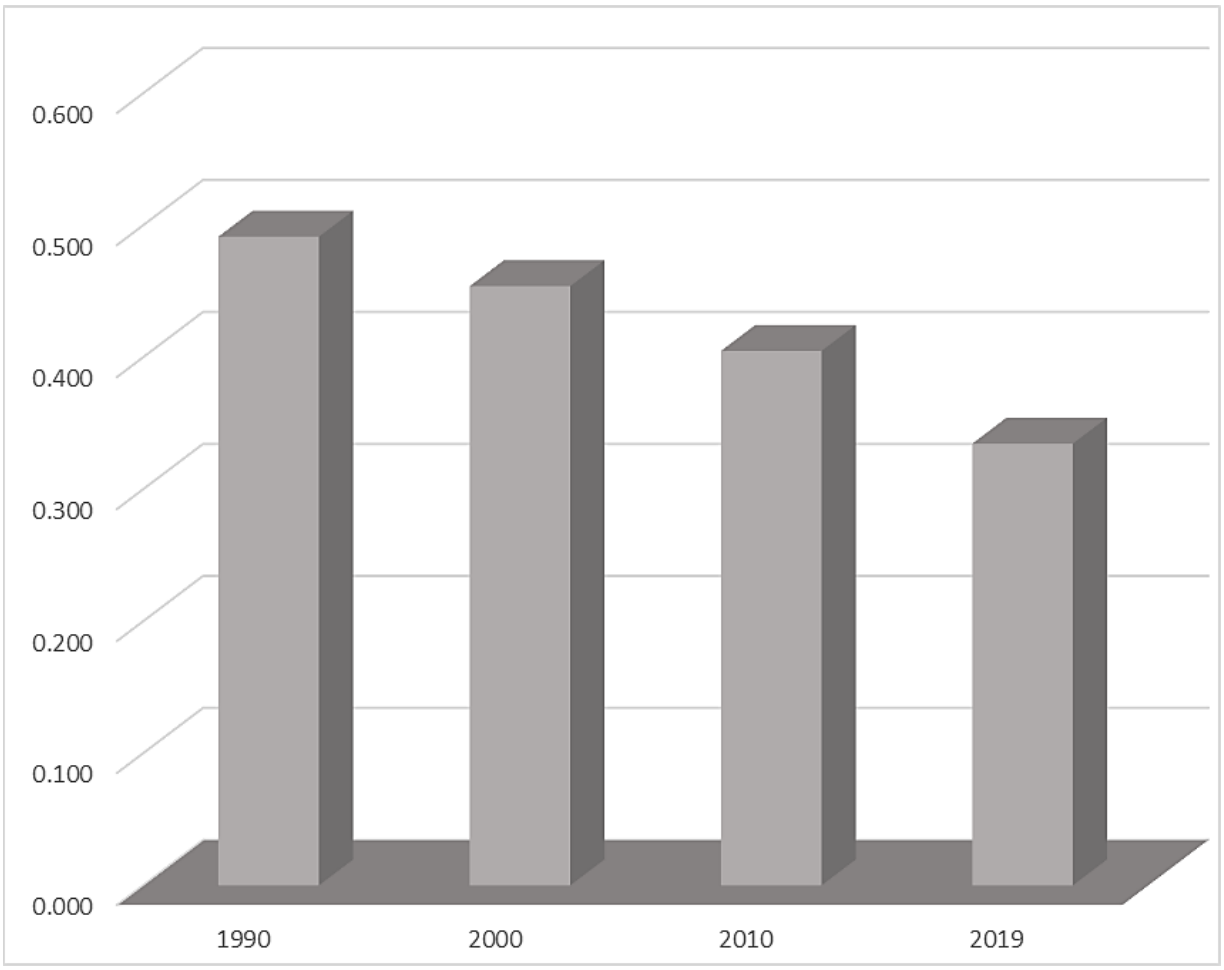
Table 3-4
OCTORARA AREA SCHOOL DISTRICT
Ratio of Public School Children Per Housing Unit
1990-91 TO 2019-20

	1991-92[1]	2001-02[1]	2010-11	2019-20
No. of Housing Units	5,032	5,714	6,372	6,621[2]
District Enrollments				
Grades K-2	581	579	522	447
Grades 3-4	429	408	383	310
Grades 5-6	422	438	412	354
Grades 7-8	367	448	382	337
Grades 9-12	674	721	881	768
Total Grades K-12	**2,473**	**2,594**	**2,580**	**2,216**
Pupils Per Unit				
Grades K-2	0.115	0.101	0.082	0.068
Grades 3-4	0.085	0.071	0.060	0.047
Grades 5-6	0.084	0.077	0.065	0.053
Grades 7-8	0.073	0.078	0.060	0.051
Grades 9-12	0.134	0.126	0.138	0.116
Total Grades K-12	**0.491**	**0.454**	**0.405**	**0.335**

1 Enrollment figures for 1990-91 and 2000-01 were not readily available, so pupil counts for 1991-92 and 2001-02, respectively, were substituted.
2 Housing units are as of December 2019.

SOURCE: U.S. Bureau of the Census, Octorara Area School District, and the district's member municipalities.

Graph 3-4
OCTORARA AREA SCHOOL DISTRICT
Relationship of Public School Enrollment to Housing Units
1990 to 2019



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PEL's analysis of annual birth in the Octorara Area School District reveals a declining overall trend from 1990 through 1997, when district births hit their lowest level during the 29-year review period. Annual births were up in most of the years between then and 2006 when they reached their peak during the years reviewed. Since then, births in the district experienced a mix of increases and decreases and, notably, fell in each of the three most recent years for which figures were readily available. However, in spite of the recent decreases, four of the district's seven highest birth figures during the period reviewed were recorded in the past five years. The average number of births per 1,000 district residents

and births per 1,000 housing units were down slightly from the decade of the 1990s to the 2000s, and then dropped more dramatically during the first nine years of the decade just ended. The highest numbers of both births per 1,000 district residents and births per 1,000 housing units during the years review period was experienced in 1991. The lowest number of births per 1,000 district residents was recorded in 2012; the lowest number of births per 1,000 housing units occurred in 2011. The ultimate impact of birth patterns (combined with migration patterns, new housing construction, the impact of nonpublic education, and dropouts) is that the number of public school pupils generated by each housing unit in the district fell between 1991-92 and 2001-02, between 2001-02 and 2010-11, and again between 2010-11 and the 2019-20 school year. Each housing unit in the district unit now produces about two-thirds the number of pupils as in 1991-92. The differences between the figures for each of the years compared are somewhat less dramatic, but the rate of decline accelerated annually.

CHAPTER 4
MIGRATION PATTERNS

During the 1990s, resident births in the Octorara Area School District totaled 2,541; deaths of district residents during this period totaled 1,324. This produced a "natural" increase in population of 1,217. The district's total population was up by 1,918 during the 1990s, meaning a net in-migration of 701 had occurred (that is, the amount by which the natural growth in population resulting from more births than deaths was exceeded by the net number of individuals and families moving into the district in the course of the decade—based on U.S. Census counts). Between 2000 and 2010, there were 2,783 births and 1,060 deaths in the district, resulting in another natural increase in population of 1,723. Octorara Area's total population, however, grew by only 1,568 in the 2000s, indicating that a net out-migration of 155 residents had taken place (that is, based on U.S. Census figures, a portion of the natural growth from more births than deaths was erased in the course of the decade by residents moving out). From 2010 through 2018, 2,464 births and 1,546 deaths were recorded. This produced a natural increase of just 918 people. The district's population was estimated to have risen by only 893 during this period signifying a net out-migration of 25. (See Table 4-1.)

Table 4-1
OCTORARA AREA SCHOOL DISTRICT
Resident Births, Deaths, and Population Change
1990 to 2018

	1990 to 1999	2000 to 2009	2010 to 2018	1990 to 2018
Births	2,541	2,783	2,464	7,788
Deaths	1,324	1,060	1,546	3,930
Natural Pop. Change	**1,217**	**1,723**	**918**	**3,858**
Total Population (start)	14,507	16,425	17,993	14,507
Total Population (end)	16,425	17,993	18,886	18,886
Total Population Change	**1,918**	**1,568**	**893**	**4,379**
Less Natural Change	1,217	1,723	918	3,858
Net Migration	**+701**	**-155**	**-25**	**+521**

SOURCE: U. S. Bureau of Census and PA Department of Health, which specifically disclaims responsibility for any analyses, interpretations, or conclusions.

Overall, between 1990 and 2018, resident births in Octorara Area totaled 7,788; deaths during these years totaled 3,930. This generated a natural increase in population of 3,858. The actual population change during this period was a gain of 4,379, indicating a net in-migration of 521. Net in-migration was modest in the 1990s. During the 2000s, it transitioned to a slight net out-migration, and in the decade just ended (through 2018), net out-migration continued, but it has slowed noticeably from the 2000s. The net out-migration in the 2010s and 2000s was more than offset the net in-migration in the 1990s and, thus, there was modest overall net in-migration during the period reviewed—totally based on the experience of the 1990s.

The significance of migration for purposes of this examination lies in its effect on school-age children and the district's enrollments, and it can be highlighted by using birth data and actual enrollment figures.

A review of the relationship between Octorara's pupil population and births in the district in the years corresponding to the ages of children in school (essentially, a surrogate for the number of school-age children) normally provides a perspective on the impact of migration. A figure of greater than 100 percent indicates an enrollment that is higher than that resulting solely from the cumulative total of births in the district during the corresponding time period (due to net in-migration in this age grouping); conversely, a figure of less than 100 percent indicates an enrollment that is lower than the cumulative number of births (due primarily to net out-migration and/or district children enrolling in schools and educational programs other than those operated directly by the school district--for example, private/parochial schools; home, charter, and/or cyber schools; perhaps Career and Technical Center (CTC) programs; full-time Intermediate Unit and other special programs and classes; other out-of-district placements; etc.).

The cumulative number of births recorded in the Octorara Area School District during calendar years 2002 through 2014 (which roughly corresponds to children in grades K-12 in the current school year) was 3,592; the number of children enrolled in the district in this school year is 2,216 or 61.7 percent of the corresponding births—significantly below the "neutral" migration figure of 100 percent and the lowest of all the years reviewed. It should be noted that pupil counts are based on October 1 figures as provided by the district for the respective years and reflect all regular classroom pupils as well as all those engaged in the Octorara Area Virtual Academy (the district's cyber program), those in grades 9-12 who participate in the district's in-house career and technical program, those in grades 10-12 who attend the Chester County

Career and Technology Center on a half-time basis for the entire school year, out-of-district students in grades 11 and 12 enrolled in Octorara's "Homeland Security" program on a tuition basis, and some of the district's special education pupils. Excluded from the counts are all district children who are in home schools and external charter and cyber/charter schools; those enrolled in private and parochial schools—for example, Amish schools; children in full-time Intermediate Unit programs; and resident children in alternative education placements, juvenile correction facilities, other institutions, other out-of-district placements, etc.

In 2009-10, the relationship of district pupils to the sum of the births in the years corresponding to the ages of children in school totaled 77.7 percent (the highest of all years reviewed). The figure fell in each subsequent year and hit its lowest point (61.7 percent) in 2019-20. The relationship of district enrollments to the sum of the births in the corresponding years averaged 70.3 percent throughout the years reviewed—74.1 percent for the years 2009-10 to 2014-15 and down precipitously to 65.7 in the five most recent years. In most Pennsylvania school districts, an overall relationship between cumulative births and total public enrollments that is below 100 is often the result of net out-migration of school age children from the district. In Octorara, the unusually low figure does not appear to be as strongly influenced by migration patterns as by the magnitude of the Amish population in the district and the fact that very few (if any) Amish children are reflected in the district's enrollment counts. (See Table 4-2.)

Changes in Octorara Area's enrollments by grade can reflect many factors in addition to migration; for example, shifts to and from private/parochial and other schools, and special classes and other educational programs not provided directly by Octorara Area; changes in promotional and other internal district policies; withdrawals—particularly in the high school grades; etc. However, any large migration would likely be reflected in a comparison of the number of pupils in corresponding grades over a period of years. In 2013-14 there were 515 pupils in grades 1-3 in the district. Three years later (2016-17) when the bulk of this group was in grades 4-6, the number was 533 (an increase of 18 pupils or 3.5 percent over 2013-14). In the current school year (three years later—when these pupils are in grades 7-9), the number is 532—a decrease of one pupil (0.2 percent) from 2016-17, but still 17 pupils or 3.3 percent higher than in the 2013-14 school year. In 2019-20 the number of pupils in grades 4-6 totals 505—22 (4.2 percent) fewer than in grades 1-3 three years earlier.

Table 4-2
OCTORARA AREA SCHOOL DISTRICT
Relationship of Reported Octorara Enrollments
and the Cumulative Number of Births in the Corresponding Years
2009-10 to 2019-20[1]

School Year	Cumulative Births[1]	Octorara Area Enrollments[2] #	Octorara Area Enrollments[2] As a % of Cumulative Births
2009-10	3,357	2,607	↑77.7
2010-11	3,393	2,580	76.0
2011-12	3,448	2,580	74.8
2012-13	3,463	2,508	72.4
2013-14	3,478	2,509	72.1
2014-15	3,508	2,518	71.8
2015-16	3,541	2,486	70.2
2016-17	3,566	2,422	67.9
2017-18	3,562	2,326	65.3
2018-19	3,575	2,258	63.2
2019-20	3,592	2,216	↓61.7

1 Cumulative births represent the sum of actual births for the 13-year period corresponding to the school year. For example, pupils in grades K-12 in school year 2019-20 reflect births during the years 2002 through 2014.

2 It should be noted that pupil counts are based on October 1 figures as provided by the district for the respective years and reflect all regular classroom pupils as well as all those engaged in the Octorara Area Virtual Academy (the district's cyber program), those in grades 9-12 who participate in the district's in-house career and technical program, those in grades 10-12 who attend the Chester County Career and Technology Center on a half-time basis for the entire school year, out-of-district students in grades 11 and 12 enrolled in Octorara's "Homeland Security" program on a tuition basis, and some of the district's special education pupils. Excluded from the counts are all district children who are in home schools and external charter and cyber/charter schools; those enrolled in private and parochial schools—for example, Amish schools; children in full-time Intermediate Unit programs; and resident children in alternative education placements, juvenile correction facilities, other institutions, other out-of-district placements, etc.

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

SOURCE: Octorara Area School District

In 2013-14 the number of pupils in grades 4-6 totaled 581; three years later when these children were in grades 7-9, the total was 591—up by 10 or 1.7 percent. When these children reached grades 10-12 in 2019-20, the number had fallen to 573—down by 18 pupils or 3.0 percent from three years prior. This figure was eight pupils or 1.4 percent below the level of 2013-14, when these pupils were in grades 4-6. A loss (21 or 3.3 percent) was recorded in the number of pupils in grades 10-12 in 2016-17 from the count in the three lower grades three years earlier. (See Table 4-3.)

Table 4-3
OCTORARA AREA SCHOOL DISTRICT
Migration Reflected in Octorara Area's Enrollments, By Grade
2013-14, 2016-17, and 2019-20

2013-14		2016-17		Change 2013 to 2016-17		2019-20		Change 2016-17 to 2019-20		Change 2013-14 to 2019-20	
Grade	Number	Grade	Number	#	%	Grade	Number	#	%	#	%
–	–	1	164	–	–	4	151	-13	-7.9	–	–
–	–	2	172	–	–	5	168	-4	-2.3	–	–
–	–	3	191	–	–	6	186	-5	-2.6	–	–
		Total				**Total**					
–	**–**	**1-3**	**527**	**–**	**–**	**4-6**	**505**	**-22**	**-4.2**	**–**	**–**
1	162	4	176	14	8.6	7	169	-7	-4.0	7	4.3
2	175	5	181	6	3.4	8	168	-13	-7.2	-7	-4.0
3	178	6	176	-2	-1.1	9	195	19	10.8	17	9.6
Total		**Total**				**Total**					
1-3	**515**	**4-6**	**533**	**18**	**3.5**	**7-9**	**532**	**-1**	**-.02**	**17**	**3.3**
4	192	7	188	-4	-2.1	10	185	-3	-1.6	-7	-3.6
5	181	8	172	-9	-5.0	11	180	8	4.7	-1	-0.6
6	208	9	231	23	11.1	12	208	-23	-10.0	0	0.0
Total		**Total**				**Total**					
4-6	**581**	**7-9**	**591**	**10**	**1.7**	**10-12**	**573**	**-18**	**-3.0**	**-8**	**-1.4**
7	186	10	193	7	3.8	–	–	–	–	–	–
8	206	11	213	7	3.4	–	–	–	–	–	–
9	239	12	204	-35	-14.6	–	–	–	–	–	–
Total		**Total**									
7-9	**631**	**10-12**	**610**	**-21**	**-3.3**	**–**	**–**	**–**	**–**	**–**	**–**

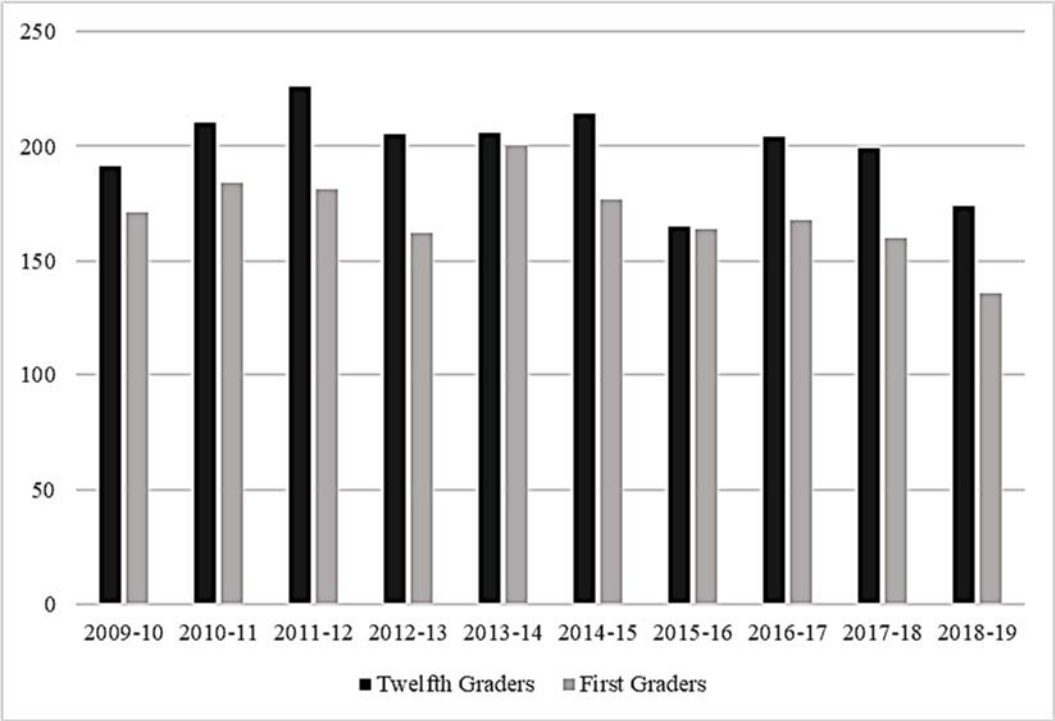
Another factor that can be an indicator of the pattern of future overall enrollments in a school district is the relationship between senior classes and the first grade classes that replace them in the following school year. For example, in the 2010-11 school year 171 first graders replaced 191 twelfth graders in the prior school year, producing a "loss" of 20 pupils or 10.5 percent. The losses continued in each of the nine subsequent years. The loss grew to 26 pupils in 2011-12 (12.4 percent) and then to 45 in 2012-13 (19.9 percent)—the largest annual loss during the review period. The annual losses during the following years ranged from 39 pupils (19.6 percent) in 2018-19 down to one pupil (0.6 percent) in 2016-17 (the smallest decrease in the years reviewed). The losses were noticeably higher in the three most recent years, and the first grade figure for the current school year was down by 38 pupils (21.8 percent) from the 2018-19 senior class—the fourth largest loss during the years reviewed and well above the average annual drop.

Overall, during the 10-year period there was a loss of 291 first grade entries versus the preceding years' senior classes. In the first five years of the review period there was an overall loss of 140 pupils between the senior classes and the following years' first graders—an average annual decrease of 28 pupils (skewed somewhat by the unusually low loss of six in 2014-15). During the most recent five years the loss in the number of first graders compared with twelfth graders in the prior year was up to 151, resulting in an average loss of 30 pupils per year (also skewed somewhat by the loss of just one pupil in 2016-17). (See Table 4-4 and Graph 4-1.)

Table 4-4
OCTORARA AREA SCHOOL DISTRICT
Relationship Between Senior Classes and
Entering First Grade Classes in the Following Year
2009-10 to 2018-19

Senior Class		First Grade Class			
	No. of		No. of	Change	
Year	Pupils	Year	Pupils	Pupils	%
2009-10	191	2010-11	171	-20	-10.5
2010-11	210	2011-12	184	-26	-12.4
2011-12	226	2012-13	181	-45	-19.9
2012-13	205	2013-14	162	-43	-21.0
2013-14	206	2014-15	200	-6	-2.9
2014-15	214	2015-16	177	-37	-17.3
2015-16	165	2016-17	164	-1	-0.6
2016-17	204	2017-18	168	-36	-17.6
2017-18	199	2018-19	160	-39	-19.6
2018-19	174	2019-20	136	-38	-21.8

Graph 4-1
OCTORARA AREA SCHOOL DISTRICT
Relationship Between Twelfth Graders
and Entering First Graders the Following Year
2009-10 to 2018-19



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Modest net in-migration of total population in the Octorara Area School District was evident in the decade of the 1990s, but the trend reversed to slight net out-migration in the 2000s and this slowed noticeably in the first nine years of the decade just ended. The net out-migration in the 2010s and preceding decades was more than offset the net in-migration in the 1990s and, thus, there was modest overall net in-migration during the period reviewed—totally based on the experience of the 1990s. The relationship between cumulative births and Octorara Area's enrollments during the past 10 years suggests that the number of children enrolled in the district has been consistently and very noticeably below the neutral migration figure, and the relationship fell in each year reviewed. The low relationship between the total reported public school enrollments and the cumulative number births in the district does not appear to be as strongly influenced by migration patterns as by the magnitude of the Amish population in the district and the fact that very

few (if any) Amish children are reflected in the district's enrollment counts. Analysis of the movement of children through the public school system during the past several years reveals slight net out-migration in the Primary grades (K-2), and there has been a pattern of decline (on average) in recent years. In the Elementary grades (3-4), the net out-migration has been slightly more noticeable (on average) than in grades K-2, but slightly more stable. In the Intermediate grades (5-6) migration has been essentially neutral and the same is true at in the Middle School grades (7-8). At the High School (grades 9-12), most grades reflect noticeable net out-migration, but grade 9 is a notable and steady exception, and grade 11 and 12 have shown net in-migration in the past two years, likely due to non-resident children participating in the district's "Homeland Security" program on a tuition basis. Also, as a result of migration, birth patterns, and other factors, first grade classes were smaller than the senior classes they replaced in all of the past 10 school years, and, on average, the yearly losses have has grown in recent years. These relationships and indicators as well as a variety of others will be further explored in Chapter 5.

CHAPTER 5
ENROLLMENT TRENDS AND PROJECTIONS

Past Enrollment Trends

Enrollments in the Octorara Area School District total 2,216 in the 2019-20 school year and are 391 pupils (15.0 percent) lower than in 2009-10. Annual decreases in the district's pupil population were recorded in seven years during the period reviewed (including the five most recent years); increases were experienced in two years; and in 2011-12 there was no change from the prior year. The largest decline in the pupil count (96 or 4.0 percent) occurred in the 2017-18 school year, while the smallest drop (27 or 1.08 percent) was in 2010-11. The increases totaled one pupil (less than 0.1 percent) in 2013-14 and nine pupils (0.4 percent) in 2014-15. In the current school year, the district's total enrollments are down by 42 or 1.9 percent. The pupil population fell by a net of 89 or 3.4 percent between 2009-10 and 2014-15 (an annual average decrease of 18 pupils or 0.7 percent); in the five most recent years a much more accelerated loss was recorded—302 pupils or 12.0 percent (an annual net decline of 60 pupils or 2.4 percent, on average).

It should be noted that pupil counts are based on October 1 figures as provided by the district for the respective years and reflect all regular classroom pupils as well as all those engaged in the Octorara Area Virtual Academy (the district's cyber program), those in grades 9-12 who participate in the district's in-house career and technical program, those in grades 10-12 who attend the Chester County Career and Technology Center on a half-time basis for the entire school year, out-of-district students in grades 11 and 12 enrolled in Octorara's "Homeland Security" program on a tuition basis, and some of the district's special education pupils. Excluded from the counts are all district children who are in home schools and external charter and cyber/charter schools; those enrolled in private and parochial schools— for example, Amish schools; children in full-time Intermediate Unit programs; and resident children in alternative education placements, juvenile correction facilities, other institutions, other out-of-district placements, etc. (See Tables 5-1 and 5-2 and Graph 5-1.)

Table 5-1
OCTORARA AREA SCHOOL DISTRICT
Total Enrollments (Grades K-12)[1]
2009-10 to 2019-20

School Year	Enrollment K-12	Change From Previous Year #	Change From Previous Year %
2009-10	2,607	-	-
2010-11	2,580	-27	-1.0
2011-12	2,580	NC	NC
2012-13	2,508	-72	-2.8
2013-14	2,509	1	<0.1
2014-15	2,518	9	0.4
2015-16	2,486	-32	-1.3
2016-17	2,422	-64	-2.6
2017-18	2,326	-96	-4.0
2018-19	2,258	-68	-2.9
2019-20	2,216	-42	-1.9
Change 2009-10 to 2019-20		-391	-15.0

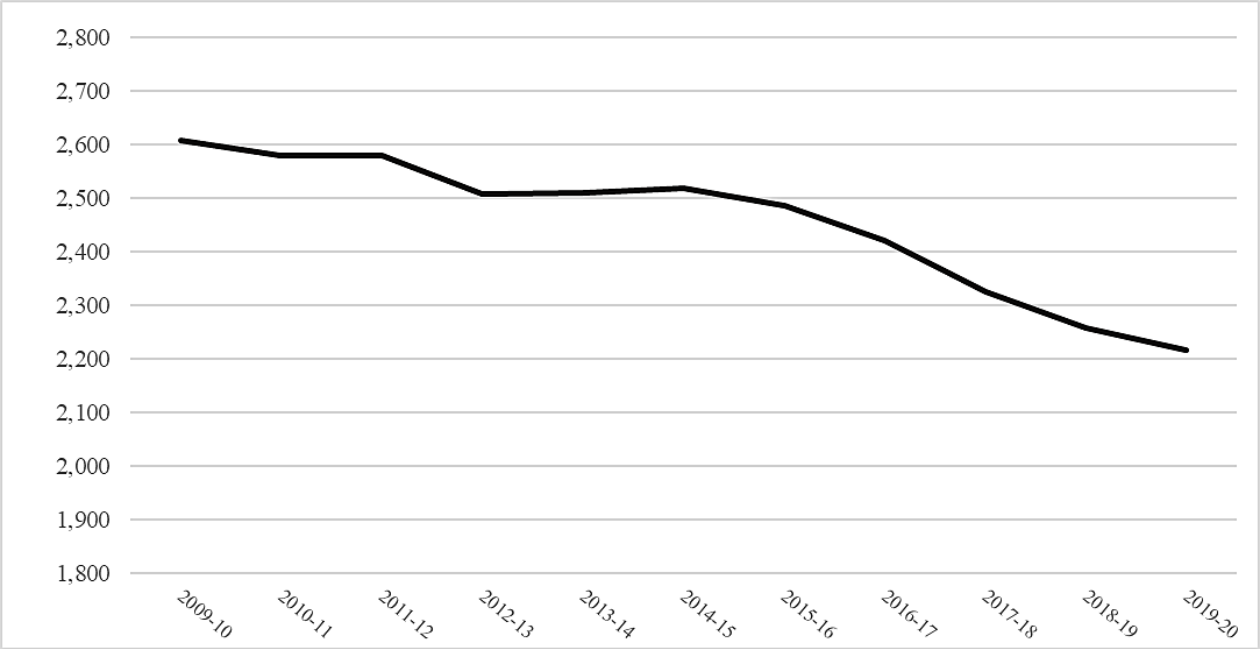
[1] Pupil counts are based on October 1 figures as provided by the district for the respective years and reflect all regular classroom pupils as well as all those engaged in the Octorara Area Virtual Academy (the district's cyber program), those in grades 9-12 who participate in the district's in-house career and technical program, those in grades 10-12 who attend the Chester County Career and Technology Center on a half-time basis for the entire school year, out-of-district students in grades 11 and 12 enrolled in Octorara's "Homeland Security" program on a tuition basis, and some of the district's special education pupils. Excluded from the counts are all district children who are in home schools and external charter and cyber/charter schools; those enrolled in private and parochial schools— for example, Amish schools; children in full-time Intermediate Unit programs; and resident children in alternative education placements, juvenile correction facilities, other institutions, other out-of-district placements, etc.

Table 5-2
OCTORARA AREA SCHOOL DISTRICT
Total Enrollments by Grade[1]
2009-10 to 2019-20

School Year	K	1	2	**Total K-2**	3	4	**Total 3-4**	5	6	**Total 5-6**	7	8	**Total 7-8**	9	10	11	12	**Total 9-12**	**Total K-12**
2009-10	161	178	194	**533**	180	196	**376**	214	184	**398**	212	205	**417**	243	235	214	191	**883**	**2,607**
2010-11	174	171	177	**522**	196	187	**383**	196	216	**412**	176	206	**382**	239	205	227	210	**881**	**2,580**
2011-12	183	184	184	**551**	180	203	**383**	193	206	**399**	209	174	**383**	225	208	205	226	**864**	**2,580**
2012-13	154	181	185	**520**	188	181	**369**	201	187	**388**	196	212	**408**	196	206	216	205	**823**	**2,508**
2013-14	190	162	175	**527**	178	192	**370**	181	208	**389**	186	206	**392**	239	178	208	206	**831**	**2,509**
2014-15	170	200	172	**542**	186	177	**363**	188	182	**370**	210	188	**398**	237	221	173	214	**845**	**2,518**
2015-16	164	177	205	**546**	180	191	**371**	183	189	**372**	173	213	**386**	214	223	209	165	**811**	**2,486**
2016-17	161	164	172	**497**	191	176	**367**	181	176	**357**	188	172	**360**	231	193	213	204	**841**	**2,422**
2017-18	158	168	164	**490**	171	183	**354**	174	177	**351**	178	183	**361**	192	206	173	199	**770**	**2,326**
2018-19	140	160	164	**464**	156	165	**321**	189	165	**354**	179	183	**362**	203	172	208	174	**757**	**2,258**
2019-20	154	136	157	**447**	159	151	**310**	168	186	**354**	169	168	**337**	195	185	180	208	**768**	**2,216**
Pupil Change 2009-10 to 2019-20	-7	-42	-37	**-86**	-21	-45	**-66**	-46	2	**-44**	-43	-37	**-80**	-48	-50	-34	17	**-115**	**-391**
Percent Change 2009-10 to 2019-20	-4.3	-23.6	-19.1	**-16.1**	-11.7	-23.0	**-17.6**	-21.5	1.1	**-11.1**	-20.3	-18.0	**-19.2**	-19.8	-21.3	-15.9	8.9	**-13.0**	**-15.0**

[1] Pupil counts are based on October 1 figures as provided by the district for the respective years and reflect all regular classroom pupils as well as all those engaged in the Octorara Area Virtual Academy (the district's cyber program), those in grades 9-12 who participate in the district's in-house career and technical program, those in grades 10-12 who attend the Chester County Career and Technology Center on a half-time basis for the entire school year, out-of-district students in grades 11 and 12 enrolled in Octorara's "Homeland Security" program on a tuition basis, and some of the district's special education pupils. Excluded from the counts are all district children who are in home schools and external charter and cyber/charter schools; those enrolled in private and parochial schools— for example, Amish schools; children in full-time Intermediate Unit programs; and resident children in alternative education placements, juvenile correction facilities, other institutions, other out-of-district placements, etc.

Graph 5-1
OCTORARA AREA SCHOOL DISTRICT
Total Enrollment Trends
2009-10 to 2019-20



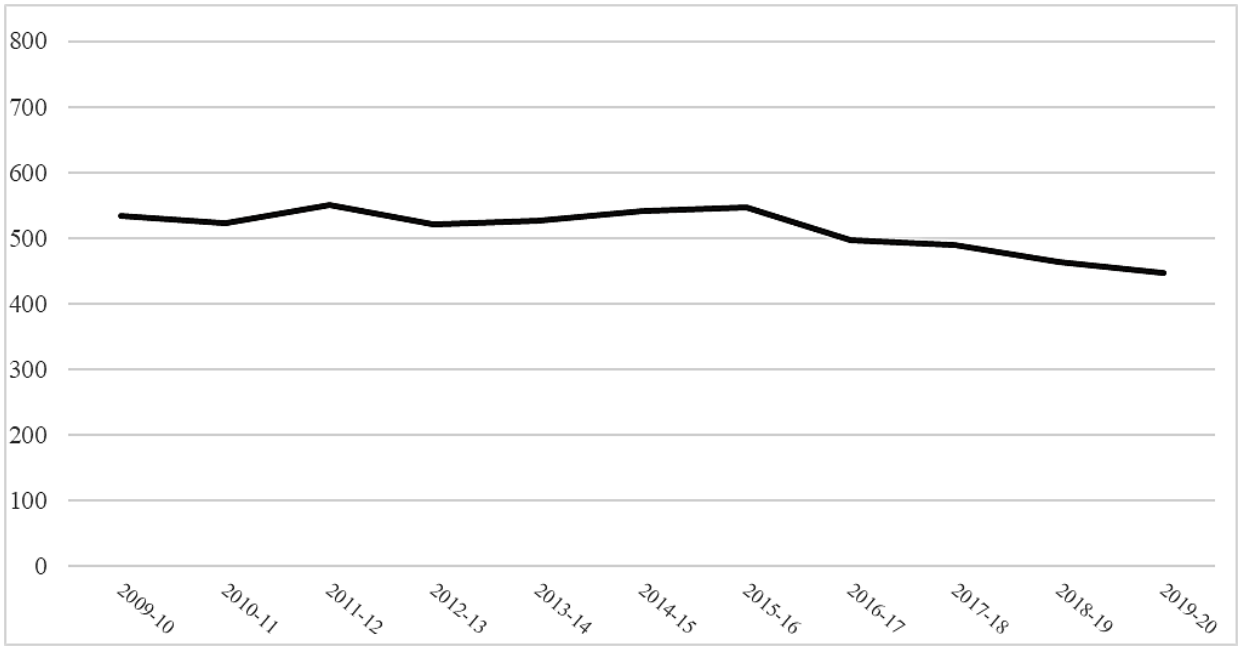
Primary grade pupils (K-2) in Octorara Area total 447 in 2019-20 and are 86 or 16.1 percent below the 2009-10 level. Pupil counts in these grades were down in six of the years during this period including each of the four most recent years. The largest annual decrease (49 pupils or 9.0 percent) occurred in 2016-17, and the smallest loss (seven pupils or 1.4 percent) was in 2017-18. Enrollments in the primary grades were up in four of the years reviewed. These occurred in 2011-12 (29 or 5.6 percent), 2013-14 (seven or 1.4 percent), 2014-15 (15 or 2.8 percent), and 2015-16 (four or 0.7 percent). In the current school year the count in grades K-2 is down by 17 (3.7 percent). The pupil population in the district's primary grades increased by a net of nine or 1.7 percent during the period 2009-10 to 2014-15 (a net rise of two pupils or 0.3 percent yearly, on average); between the 2014-15 and 2019-20 school years the count in grades K-2 was down by 95 or 17.5 percent (or an average annual decline of 19 or 3.5 percent)—a noticeable reversal from the prior five years. (See Tables 5-2 and 5-3 and Graph 5-2.)

Table 5-3
OCTORARA AREA SCHOOL DISTRICT
Primary Enrollments (Grades K-2)[1]
2009-10 to 2019-20

School Year	Enrollment K-2	Change From Previous Year #	%
2009-10	533	-	-
2010-11	522	-11	-2.1
2011-12	551	29	5.6
2012-13	520	-31	-5.6
2013-14	527	7	1.3
2014-15	542	15	2.8
2015-16	546	4	0.7
2016-17	497	-49	-9.0
2017-18	490	-7	-1.4
2018-19	464	-26	-5.3
2019-20	447	-17	-3.7
Change 2009-10 to 2019-20		-86	-16.1

[1] Pupil counts are based on October 1 figures as provided by the district for the respective years and reflect all regular classroom pupils as well as all those engaged in the Octorara Area Virtual Academy (the district's cyber program), those in grades 9-12 who participate in the district's in-house career and technical program, those in grades 10-12 who attend the Chester County Career and Technology Center on a half-time basis for the entire school year, out-of-district students in grades 11 and 12 enrolled in Octorara's "Homeland Security" program on a tuition basis, and some of the district's special education pupils. Excluded from the counts are all district children who are in home schools and external charter and cyber/charter schools; those enrolled in private and parochial schools— for example, Amish schools; children in full-time Intermediate Unit programs; and resident children in alternative education placements, juvenile correction facilities, other institutions, other out-of-district placements, etc.

Graph 5-2
OCTORARA AREA SCHOOL DISTRICT
Primary Enrollment Trends (Grades K-2)
2009-10 to 2019-20



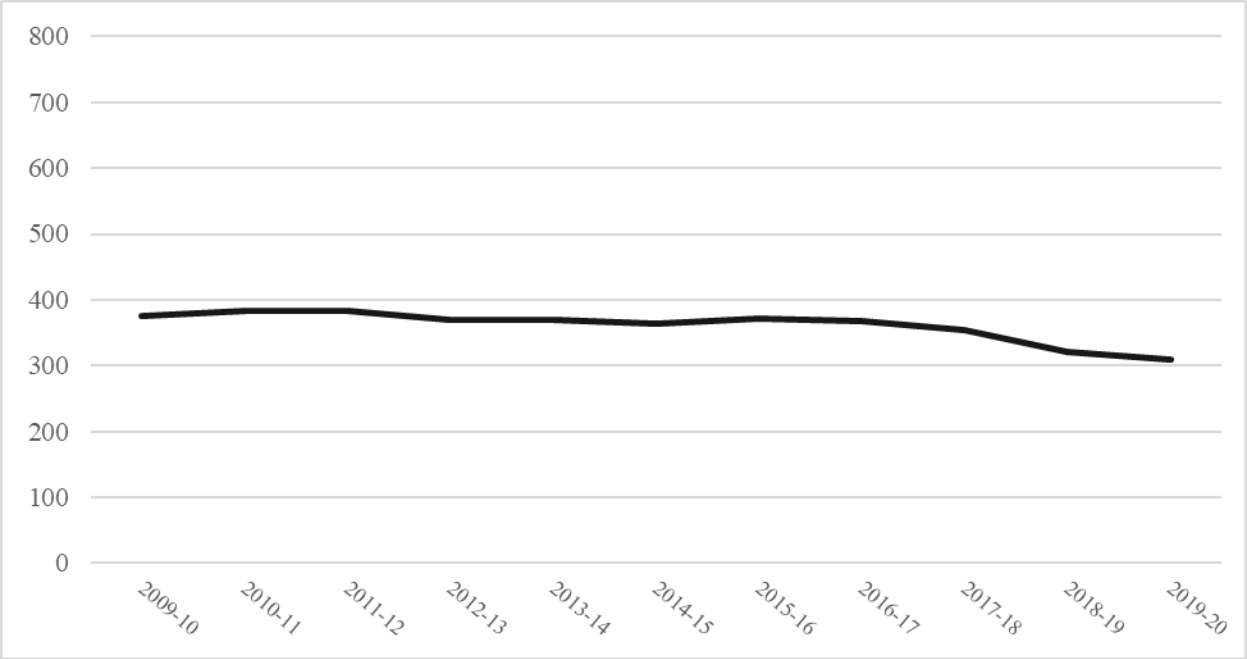
Elementary pupils (grades 3-4) in Octorara Area total 310 in 2019-20 and are down by 66 or 17.6 percent from the 2009-10 level. Pupil counts in these grades fell in six of the years during this period including each of the four most recent years. The largest annual decrease (33 pupils or 9.3 percent) occurred in 2018-19, and the smallest loss (four pupils or 1.1 percent) was in 2017-18. Elementary enrollments were up in three of the years reviewed and remained unchanged in 2011-12. The increases occurred in 2010-11 (seven or 1.9 percent), 2012-13 (one or 0.3 percent), and 2015-16 (eight or 2.2 percent). In the current school year, the count in grades 3-4 is down by 11 (3.4 percent). The pupil population in the district's elementary grades decreased by a net of 13 or 3.5 percent during the period 2009-10 to 2014-15 (a net drop of three pupils or 0.7 percent yearly, on average); between the 2014-15 and 2019-20 school years the count in these grades was down by 53 or 14.9 percent (or an average annual decline of 11 or 2.9 percent)—a substantial decrease from the prior five years. (See Tables 5-2 and 5-4 and Graph 5-3.)

Table 5-4
OCTORARA AREA SCHOOL DISTRICT
Elementary Enrollments (Grades 3-4)[1]
2009-10 to 2019-20

School Year	Enrollment 3-4	Change From Previous Year #	%
2009-10	376	-	-
2010-11	383	7	1.9
2011-12	383	NC	NC
2012-13	369	-14	-3.7
2013-14	370	1	0.3
2014-15	363	-7	-1.9
2015-16	371	8	2.2
2016-17	367	-4	-1.1
2017-18	354	-13	-3.5
2018-19	321	-33	-9.3
2019-20	310	-11	-3.4
Change 2009-10 to 2019-20		-66	-17.6

[1] Pupil counts are based on October 1 figures as provided by the district for the respective years and reflect all regular classroom pupils as well as all those engaged in the Octorara Area Virtual Academy (the district's cyber program), those in grades 9-12 who participate in the district's in-house career and technical program, those in grades 10-12 who attend the Chester County Career and Technology Center on a half-time basis for the entire school year, out-of-district students in grades 11 and 12 enrolled in Octorara's "Homeland Security" program on a tuition basis, and some of the district's special education pupils. Excluded from the counts are all district children who are in home schools and external charter and cyber/charter schools; those enrolled in private and parochial schools— for example, Amish schools; children in full-time Intermediate Unit programs; and resident children in alternative education placements, juvenile correction facilities, other institutions, other out-of-district placements, etc.

Graph 5-3
OCTORARA AREA SCHOOL DISTRICT
Elementary Enrollment Trends (Grades (3-4)
2009-10 to 2019-20



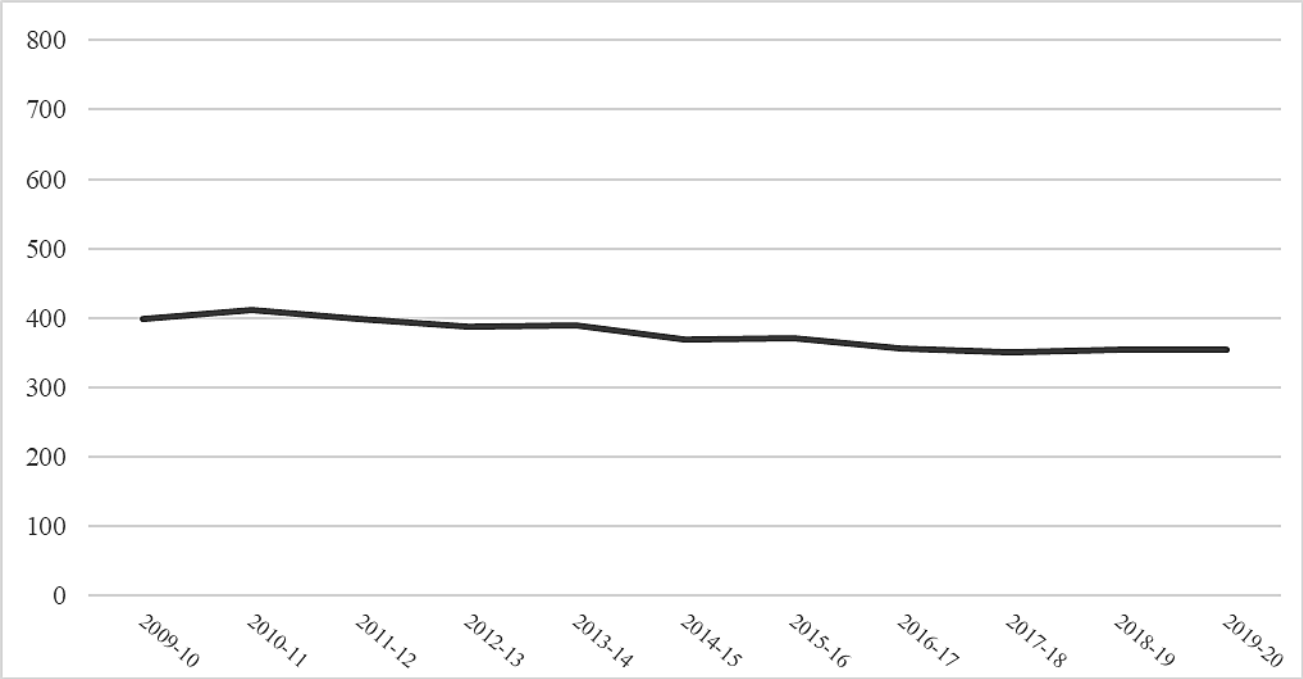
Intermediate pupils (grades 5-6) in Octorara Area total 354 in 2019-20 and are 44 or 11.1 percent below 2009-10. Pupil counts in these grades were down in five of the years during this period, but in only two of the five most recent years. The largest annual decrease (19 pupils or 4.9 percent) occurred in 2014-15, and the smallest loss (six pupils or 1.7 percent) was in 2017-18. Intermediate enrollments were up in four of the years reviewed and remained unchanged in the current school year. The increases occurred in 2010-11 (14 or 3.5 percent), 2013-14 (one or 0.3 percent), 2015-16 (two or 0.5 percent), and 2018-19 (three or 0.9 percent). The pupil population in the district's intermediate grades decreased by a net of 28 or 7.0 percent during the period 2009-10 to 2014-15 (a net loss of six pupils or 1.4 percent yearly, on average); between the 2014-15 and 2019-20 school years the count in grades 5-6 was down by 16 or 4.3 percent (or an average annual decline of 3 or 0.9 percent)—a slower rate of decrease than in the prior five years (unlike the other grade groupings). (See Tables 5-2 and 5-5 and Graph 5-4.)

Table 5-5
OCTORARA AREA SCHOOL DISTRICT
Intermediate Enrollments (Grades 5-6)[1]
2009-10 to 2019-20

School Year	Enrollment 5-6	Change From Previous Year #	%
2009-10	398	-	-
2010-11	412	14	3.5
2011-12	399	-13	-3.2
2012-13	388	-11	-2.8
2013-14	389	1	0.3
2014-15	370	-19	-4.9
2015-16	372	2	0.5
2016-17	357	-15	-4.0
2017-18	351	-6	-1.7
2018-19	354	3	0.9
2019-20	354	NC	NC
Change 2009-10 to 2019-20		-44	-11.1

[1] Pupil counts are based on October 1 figures as provided by the district for the respective years and reflect all regular classroom pupils as well as all those engaged in the Octorara Area Virtual Academy (the district's cyber program), those in grades 9-12 who participate in the district's in-house career and technical program, those in grades 10-12 who attend the Chester County Career and Technology Center on a half-time basis for the entire school year, out-of-district students in grades 11 and 12 enrolled in Octorara's "Homeland Security" program on a tuition basis, and some of the district's special education pupils. Excluded from the counts are all district children who are in home schools and external charter and cyber/charter schools; those enrolled in private and parochial schools— for example, Amish schools; children in full-time Intermediate Unit programs; and resident children in alternative education placements, juvenile correction facilities, other institutions, other out-of-district placements, etc.

Graph 5-4
OCTORARA AREA SCHOOL DISTRICT
Intermediate Enrollment Trends (Grades 5-6)
2009-10 to 2019-20



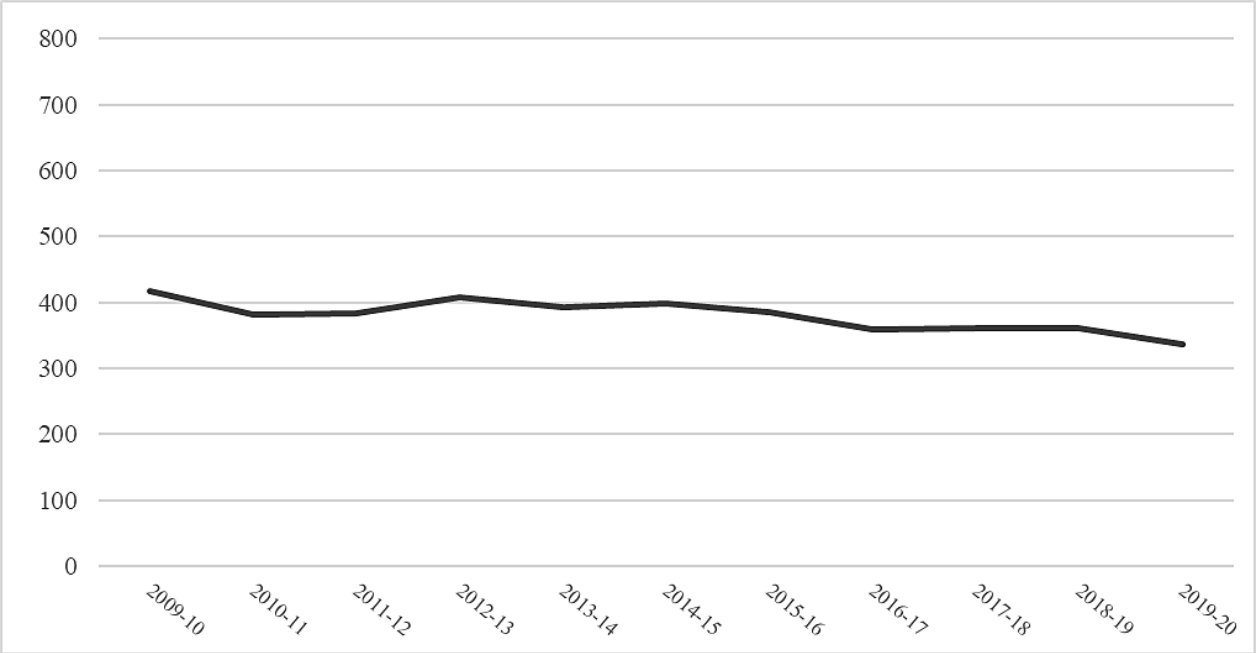
The pupil count in the district's middle school (grades 7-8) in the current school year is 337, and it is down by a net of 80 or 19.2 percent from the 2009-10 school year. Decreases in middle school enrollments were recorded in five of the years during this period; increases also occurred in five years. The annual declines ranged from 12 pupils or 3.0 percent in 2015-16 to 35 pupils or 8.4 percent in 2010-11. The smallest yearly gain in these grades was experienced in three of the years reviewed—2011-12, 2017-18, and 2018-19 (each 1 pupil or 0.3 percent); the largest increase was in the 2014-15 (6 pupils or 1.5 percent). In the current school year, middle school pupil counts dropped by 25 or 6.9 percent. Between school years 2009-10 and 2014-15, enrollments in grades 7-8 fell by a net of 19 or 1.6 percent (a net annual loss of four pupils or 0.9 percent yearly, on average); in the five most recent years the decrease accelerated, and pupil count in these grades was down by a net of 61 or 15.3 percent (an annual average net loss of 12 pupils or 3.1 percent). (See Tables 5-2 and 5-6 and Graph 5-5.)

Table 5-6
OCTORARA AREA SCHOOL DISTRICT
Middle School Enrollments (Grades 7-8)[1]
2009-10 to 2019-20

School Year	Enrollment 7-8	Change From Previous Year #	%
2009-10	417	-	-
2010-11	382	-35	-8.4
2011-12	383	1	0.3
2012-13	408	25	6.5
2013-14	392	-16	-3.9
2014-15	398	6	1.5
2015-16	386	-12	-3.0
2016-17	360	-26	-6.7
2017-18	361	1	0.3
2018-19	362	1	0.3
2019-20	337	-25	-6.9
Change 2009-10 to 2019-20		-80	-19.2

[1] Pupil counts are based on October 1 figures as provided by the district for the respective years and reflect all regular classroom pupils as well as all those engaged in the Octorara Area Virtual Academy (the district's cyber program), those in grades 9-12 who participate in the district's in-house career and technical program, those in grades 10-12 who attend the Chester County Career and Technology Center on a half-time basis for the entire school year, out-of-district students in grades 11 and 12 enrolled in Octorara's "Homeland Security" program on a tuition basis, and some of the district's special education pupils. Excluded from the counts are all district children who are in home schools and external charter and cyber/charter schools; those enrolled in private and parochial schools— for example, Amish schools; children in full-time Intermediate Unit programs; and resident children in alternative education placements, juvenile correction facilities, other institutions, other out-of-district placements, etc.

Graph 5-5
OCTORARA AREA SCHOOL DISTRICT
Middle School Enrollment Trends (Grades 7-8)
2009-10 to 2019-20



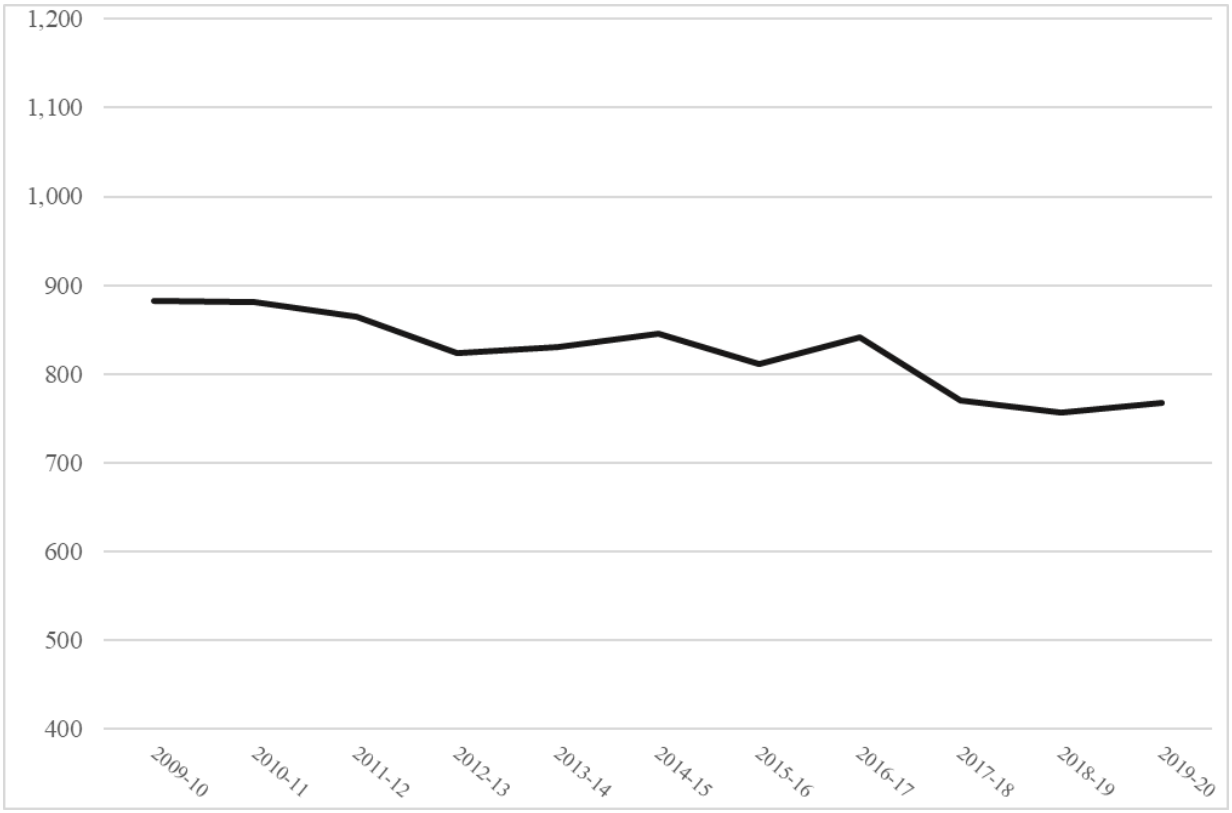
In the 2019-20 school year, high school enrollments (grades 9-12) total 768 and are 115 pupils (13.0 percent) lower than in 2009-10. Decreases were recorded in six of the years during this period (including three of the past five) and increases occurred in four years. The largest yearly drop in the pupil count at the high school (71 or 8.4 percent) was in 2017-18; the smallest loss (two pupils or 0.2 percent) was in 2011-11. The largest annual increase in enrollments in grades 9-12 totaled 30 (3.7 percent) in 2016-17. The smallest yearly gain (eight pupils or 1.0 percent) was recorded in 2013-14. In the current school year, the pupil population at the district's high school is up by 11 or 1.5 percent. Enrollments in grades 9-12 declined by a net of 38 or 4.3 percent between 2009-10 and 2014-15 (a net decrease of eight pupils or 0.9 percent yearly, on average); in the most recent five years a further decrease occurred—the count was down by 77 pupils or 9.1 percent (an average yearly decrease of 15 pupils or 1.8 percent). (See Tables 5-2 and 5-7 and Graph 5-6.)

Table 5-7
OCTORARA AREA SCHOOL DISTRICT
High School Enrollments (Grades 9-12)[1]
2009-10 to 2019-20

School Year	Enrollment 9-12	Change From Previous Year #	Change From Previous Year %
2009-10	883	-	-
2010-11	881	-2	-0.2
2011-12	864	-17	-1.9
2012-13	823	-41	-4.7
2013-14	831	8	1.0
2014-15	845	14	1.7
2015-16	811	-34	-4.0
2016-17	841	30	3.7
2017-18	770	-71	-8.4
2018-19	757	-13	-1.7
2019-20	768	11	1.5
Change 2009-10 to 2019-20		-115	-13.0

[1] Pupil counts are based on October 1 figures as provided by the district for the respective years and reflect all regular classroom pupils as well as all those engaged in the Octorara Area Virtual Academy (the district's cyber program), those in grades 9-12 who participate in the district's in-house career and technical program, those in grades 10-12 who attend the Chester County Career and Technology Center on a half-time basis for the entire school year, out-of-district students in grades 11 and 12 enrolled in Octorara's "Homeland Security" program on a tuition basis, and some of the district's special education pupils. Excluded from the counts are all district children who are in home schools and external charter and cyber/charter schools; those enrolled in private and parochial schools— for example, Amish schools; children in full-time Intermediate Unit programs; and resident children in alternative education placements, juvenile correction facilities, other institutions, other out-of-district placements, etc.

Graph 5-6
OCTORARA AREA SCHOOL DISTRICT
High School Enrollment Trends (Grades 9-12)
2009-10 to 2019-20



Mechanics of Enrollment Projections

Enrollment projections for the Octorara Area 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 refining that information using the various demographic and housing data and the other indicators that were analyzed, as well as the expected impact—as of the fall of 2019—of schools and educational programs other than those operated directly or jointly by Octorara Area or perhaps contracted for by the district (if any). This approach is generally designed to detect such factors as net in- or out-migration of pupils; transfers of pupils in to and out of any special classes and programs, private/parochial and other schools, perhaps a full-time CTC program, and/or any other educational programs not directly or jointly operated or contracted for by the district; changes in promotional and other internal district policies; withdrawals—particularly in the high school grades; etc.

By way of example, if grade 2 enrollments were 98 in the 2019-20 school year and grade 1 had 100 pupils in the prior school year (2018-19), 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 classes or programs, 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 school system from private/parochial and other schools or special classes and programs, and/or the failure to promote pupils to the next grade.

In Octorara Area during the current school year the progression ratios for grades 5, 7, 9, 11 and 12 are 1.0 or higher suggesting net in-migration of pupils in these grades. In the grades with a ratio below 1.0 (1, 2, 3, 4, 6, 8, and 10) there was not necessarily an absence of in-migration, but any in-migration may not have been as strong as in the other grades, and/or may have been more than offset by out-migration, transfers to private/parochial and other schools, entry into special classes and programs, failure to promote pupils from the previous grade, and/or 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 increased in two years and decreased in two, and the ratios exceeded the "neutral" migration figure of 12.0 in just one of the five years. In 2015-16, the sum of the 12

individual progression ratios was 12.1223 (the highest level recorded during the review period). The figure fell to 11.6972 (its lowest level during the years reviewed) in 2016-17, grew to 11.7859 in 2017-18, and then rose again to 11.9461 in 2018-19. In the current school year, the figure fell to 11.8785.

A further reinforcement of in- and out-migration is found in the number of individual grade progression ratios that equaled or exceeded 1.0. In 2015-16 eight of the district's 12 ratios equaled or exceeded 1.0; in 2016-17 just two of the ratios equaled or exceeded 1.0; four of the ratios equaled or exceeded 1.0 in 2017-18, seven of the ratios equaled or exceeded 1.0 in 2018-19; and in the current school, year five of the ratios equaled or exceeded 1.0.

The sum of the progression ratios in grades 1 to 2 exceeded the "neutral" migration figure of 2.0 in two of the five years reviewed. There was one annual increase and three decreases during this period. The sum of the ratios fell from 2.0662 (its highest point during the years reviewed) in 2015-16 to 1.9718 in 2016-17, rose to 2.0435 in 2017-18, then declined to 1.9889 in 2018-19, and decreased further in the current school year to 1.9527 (its lowest point during the years reviewed). Both of the Primary grade ratios equaled or exceeded 1.0 in 2015-16 and 2017-18; only one did so in 2016-17 and 2018-19; and in the current school year neither of the ratios equaled or exceeded 1.0.

The sum of the progression ratios in grades 3 and 4 exceeded the "neutral" migration figure of 2.0 in only the most distant of the five years reviewed. There were two annual increases and two decreases during this period. The sum of the ratios fell from 2.0734 (its highest point during the years reviewed) in 2015-16 to 1.9095 (its lowest point during the years reviewed) in 2016-17. The sum of the ratios then rose to 1.9523 in 2017-18, but declined to 1.9161 in 2018-19, and in the current school year it decreased again to 1.9374. Both of the Elementary ratios equaled or exceeded 1.0 in 2015-16; in each of the subsequent four years none of the ratios in grades 3 and 4 equaled or exceeded 1.0.

The sum of the progression ratios in grades 5 and 6 exceeded the "neutral" migration figure of 2.0 in two of the five years reviewed. There were three annual increases and one decrease during this period. The sum of the ratios fell from 2.0392 (its highest point during the years reviewed) in 2015-16 to 1.9093 (its lowest point during the years reviewed) in 2016-17, was up to 1.9665 in 2017-18, increased to 1.9811 in 2018-19, and rose further to 2.0023 in the current school year. Both of the Intermediate ratios equaled or exceeded 1.0 in 2015-16, one of

the two ratios equaled or exceeded 1.0 in 2018-19 and 2019-20, and in 2016-17 and 2017-18, neither of the ratios equaled or exceeded 1.0

The sum of the progression ratios for grades 7 and 8 exceeded the "neutral" point of 2.0 in just one of the past five years; there were two annual increases and two decreases during this period. In 2015-16 the sum of the ratios was 1.9648, in 2016-17 it rose to 1.9889, and in 2017-18 it fell negligibly to 1.9848. The sum then grew to 2.0394 (its highest point during the review period) in 2018-19, before falling to 1.9627 (its lowest point during the years reviewed) in the current school year. In 2018-19 both ratios equaled or exceeded 1.0; in 2015-16, 2017-18, and 2019-20 only one of the Middle School grades had a ratio that equaled or exceeded 1.0; and in the 2016-17 school year, neither grade recorded 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 each of the two most recent of the five years reviewed; two annual increases and two decreases were recorded during the period. The sum of the ratios in 2015-16 was 3.9787, it fell to 3.9177 in 2016-17, and dropped further to 3.8388 (its lowest point during the years reviewed). In 2017-18, the sum of the ratios increased noticeably to 4.0206 in 2018-19, and it was up again in the current school year to 4.0234 (its highest point during the review period). In 2015-16, 2016-17 and 2017-18, only one of the four High School grades had a ratio that equaled or exceeded 1.0; in 2018-19 and 2019-20, three of these grades had ratios that equaled or exceeded 1.0. The individual grade ratios and the overall ratios at the high school level are often more strongly influenced by dropouts than by general migration patterns. However, Octorara's consistently positive grade 9 progression ratios reflect the entry of pupils from private, parochial, and possibly other K-8 educational programs, and the rise in the ratios in grades 11 and 12 in the two most recent years to 1.0 and higher may, in part, be the result of the district's "Homeland Security" program that recently started taking tuition students from neighboring districts. These and other factors will be addressed later in this chapter. (See Table 5-8.)

Table 5-8
OCTORARA AREA SCHOOL DISTRICT
Grade Progression Ratios by Grade Groupings
2015-16 to 2019-20

Grades	2019-20 Progression Ratios	2018-19 Progression Ratios	2017-18 Progression Ratios	2016-17 Progression Ratios	2015-16 Progression Ratios
1/K	↓0.9714	1.0127	↑1.0435	1.0000	1.0412
2/1	0.9813	0.9762	1.0000	↓0.9718	↑1.0250
Total K-2	**1.9527**	**1.9889**	**2.0435**	**1.9718**	**↑2.0662**
3/2	0.9695	0.9512	0.9942	↓0.9317	↑1.0465
4/3	0.9679	0.9649	↓0.9581	0.9778	↑1.0269
Total 3-4	**1.9374**	**1.9161**	**1.9523**	**↓1.9095**	**↑2.0734**
5/4	1.0182	1.0328	0.9886	↓0.9476	↑1.0339
6/5	0.9841	↓0.9483	0.9779	0.9617	↑1.0053
Total 5-6	**2.0023**	**1.9811**	**1.9665**	**↓1.9093**	**↑2.0392**
7/6	↑1.0242	1.0113	1.0114	0.9947	0.9505
8/7	↓0.9385	↑1.0281	0.9734	0.9942	1.0143
Total 7-8	**↓1.9627**	**↑2.0394**	**1.9848**	**1.9889**	**1.9648**
9/8	↓1.0656	1.1093	1.1163	1.0845	↑1.1383
10/9	0.9113	0.8958	↓0.8918	0.9019	↑0.9409
11/10	↑1.0465	1.0097	↓0.8964	0.9552	0.9457
12/11	1.0000	↑1.0058	↓0.9343	0.9761	0.9538
Total 9-12	**↑4.0234**	**4.0206**	**↓3.8388**	**3.9177**	**3.9787**
Total 1-12	**11.8785**	**11.9461**	**11.7859**	**↓11.6972**	**↑12.1223**

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

The impact of Octorara Area'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 ratios for the current school year (the middle of the five years of aggregate figures reviewed), 100 kindergarten entries this year would, in theory, fall to 89 fourth graders, increase to 92 in the seventh grade, and fall to 86 in eighth grade, and then jump to 92 pupils in grade 9, before falling to 88 in grades 11 and 12. These outcomes contrast noticeably with those that would result from using the ratios from the 2015-16 school year—the highest aggregate figure of the five most recent years. Based on these figures, 100 kindergarten pupils would rise steadily to 119 in grades 5 and 6, peak at 131 in the ninth grade, and then decline to 111 seniors. A still different pattern results from using the ratios from the 2016-17 school year (11.6972—the

lowest of the five most recent years). Based on these figures, 100 kindergarten pupils would begin to decline in the second grade and reach a low of 80 in grades seven and eight. The figure would rise to 87 in the ninth grade and then decline to just 73 pupils in grade 12.

In practice, these patterns would not 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 out of or into district classrooms and to or from private/parochial and other schools and special classes and programs, changes in promotional and other internal district 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 private/parochial and other schools as well as special classes and 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 in the pre-school ages and/or families opting to enroll their children in kindergarten classes or programs provided by entities other than the public school district. Conversely, a figure of greater than 1.0 suggests more kindergarten entries than births in the district five years earlier indicating in-migration of children that outweighs any role that non-district schools and educational programs and special classes and programs may play.

The ratio of kindergarten entries to births in Octorara Area five years prior was lower in the current school year (0.5746) than in 2015-16 (0.6052). In the interim years, the ratio of kindergarten entries to births in the district five years prior rose to 0.6122 in 2016-17 and to 0.6371 in 2017-18 (its highest level during the years reviewed). The ratio then dropped very noticeably to 0.5166 (its lowest level during the years reviewed) in 2018-19, and in 2018-19, it was up 0.5746. (See Table 5-9.)

Table 5-9
OCTORARA AREA SCHOOL DISTRICT
Ratios of Kindergarten Entries to Births
2015-16 to 2019 -20

School Year	Kindergarten Enrollment	School Year Births Five Years Earlier: School Year	Births	Ratio of K Entries to Births
2015-16	164	2009-10	271	0.6052
2016-17	161	2010-11	263	0.6122
2017-18	158	2011-12	248	0.6371
2018-19	140	2012-13	271	0.5166
2019-20	154	2013-14	268	0.5746

The best available source of data on births in the district is the annual compilation by the Pennsylvania Department of Health, which specifically disclaims responsibility for any analyses, interpretations, or conclusions based on these figures. However, it should be noted that birth figures for purposes of the projection model are based on the school year and age eligibility requirements rather than the calendar year as reported elsewhere in this study. Octorara requires that children be five years of age by September 1 in order to enter kindergarten in that year.

There were 290 births in the Octorara Area School District in calendar year 2015; for the school year (that is, births from September 2014 through August 2015—those who will enter kindergarten in 2020-21), the figure was 305. Birth figures in calendar 2016 were 287, and for school year 2015-16, births totaled 269. Calendar year births for 2017 were 281, and for school year 2016-17 the figure was 285. The figure for calendar 2018 (the most recent year for which figures were readily available from the PA Department of Health) was 273, and for school year 2017-18 (kindergarten entries in 2023-24) births totaled 275. (See Table 5-10.)

Table 5-10
OCTORARA AREA SCHOOL DISTRICT
Relationship Between Calendar Year and School Year Births
2015 to 2018

Calendar Year Birth: CY	#	School Year Births: SY	#
2015	290	2014-15	305
2016	287	2015-16	269
2017	281	2016-17	285
2018	273	2017-18	275

The use of resident births and the "cohort survival rate" to project kindergarten entries restricts "high confidence" estimates of future enrollments to the "primary" projection period—the first five school years beyond the most recent year for which birth data are available. Data on resident births for Octorara Area are currently available through calendar year 2018. In view of this, projections of kindergarten enrollments can be made through 2023-24 (the fourth projected year) based on the cohort survival rate and birth figures covering September 2017 through August 2018 (which represents the main source of kindergarten entries in the 2023-24 school year). Because PEL's primary projections extend one year beyond the birth data available to determine kindergarten entries (to school year 2024-25), an estimate must be used to fill this gap. As a result, the average birth figure for the three most recent years was used to calculate kindergarten entries in 2024-25.

For years 2025-26 through 2029-30, estimates also need to be made with regard to the number of births that would serve as the source for kindergarten enrollments in those school years. But, it should be noted that the use of these estimated birth figures influences only kindergarten in 2025-26; in 2026-27, only kindergarten and grade 1 are affected; in 2027-28, only kindergarten and grades 1 and 2; in 2028-29, only kindergarten and grades 1 through 3; and in the final projected year, only kindergarten and grades 1 through 4. The use of estimated birth figures has no effect on projections beyond grade 4 during the next 10 years.

Because all projections for grades 5 and higher for all years are based primarily on pupils currently in school and children already born, high confidence projections for these grades can be carried five years further. Projections of enrollments beyond the primary projection period 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 role of schools and educational programs other than those provided directly by the district, special classes and programs, changes in promotional and other internal district policies, dropouts, etc.; 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 schools and programs other than those provided directly by the public school district, special classes and programs, changes in promotional and other internal district policies, dropouts, etc.—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 schools and educational programs other than those operated directly by the district, special classes and programs, changes in promotional and other internal district policies, dropouts, etc.) 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 schools and educational programs other than those operated directly by the district, special classes and programs, changes in promotional and other internal district policies, dropouts, etc.—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 5th 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 can have a powerful influence on enrollments independent of migration patterns and any impact from schools and educational programs other than those operated directly by the district, special classes and programs, changes in promotional and other internal district policies, dropouts, etc. (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 presented 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, in Octorara Area, calendar year births during the past 10 years—on average—were almost triple the figure used in this example, and during this period births in the district were down by an average of about 1.3 per year, or substantially less than the figure used in the model outlined above.

Enrollment Projections—First Five Years

The projections that follow are based on the numbers and type of new housing that, as of the fall of 2019, were expected to be built in the various subdivisions in the Octorara Area School District during the years ahead, as well as any infill, minor subdivision activity, and miscellaneous housing construction that could reasonably be assumed to occur during this period (all as outlined in Chapter 2). The methodology also recognizes any anticipated age-qualified or similar housing units in the pipeline and is sensitive to the impact of the continued sale and turnover of mature owner-occupied housing and rental units in the district. Further, the methodology assumes that overall migration and related patterns will remain consistent with expectations as of the fall of 2019, that the role of schools and educational programs other than those operated directly or jointly by Octorara Area or contracted for by the district (if any) will be compatible with expected patterns at that time, and that the district will continue its current practices relative to kindergarten, CTC, and special education programs and maintain other key programs, practices, and policies—and that the number of out-of-district students in grades 11 and 12 enrolled in Octorara's "Homeland Security" program on a tuition basis will remain at (or near) 2019-20 levels.

Given these assumptions and conditions, PEL projects that the overall pattern of enrollment decline that Octorara Area has experienced throughout the period reviewed in this study will continue during the next five years (the primary projection period), but at a noticeably slower average annual pace than in the past five years. The district's pupil count will fall to 2,025 in 2024-25 and be down by 191 or 8.6 percent from the 2019-20 school year. Losses in the pupil population will occur in all years during this period. The largest decrease (47 pupils or 2.1 percent) will be recorded in 2020-21; the smallest drop (26 pupils or 1.3 percent) will be in 2024-25. The projected decline in total enrollments during the next five years averages 38 pupils yearly compared with an annual average net decrease of 60 pupils during the most recent five years.

Pupil counts are based on October 1 figures for the respective years and reflect all regular classroom pupils as well as all those engaged in the Octorara Area Virtual Academy (the district's cyber program), those in grades 9-12 who participate in the district's in-house career and technical program, those in grades 10-12 who attend the Chester County Career and Technology Center on a half-time basis for the entire school year, out-of-district students in

grades 11 and 12 enrolled in Octorara's "Homeland Security" program on a tuition basis, and some of the district's special education pupils. Excluded from the counts are all district children who are in home schools and external charter and cyber/charter schools; those enrolled in private and parochial schools—for example, Amish schools; children in full-time Intermediate Unit programs; and resident children in alternative education placements, juvenile correction facilities, other institutions, other out-of-district placements, etc. (See Tables 5-11 and 5-12 and Graph 5-7.)

Table 5-11
OCTORARA AREA SCHOOL DISTRICT
Total Enrollment Projections (Grades K-12)
2019-20 to 2024-25

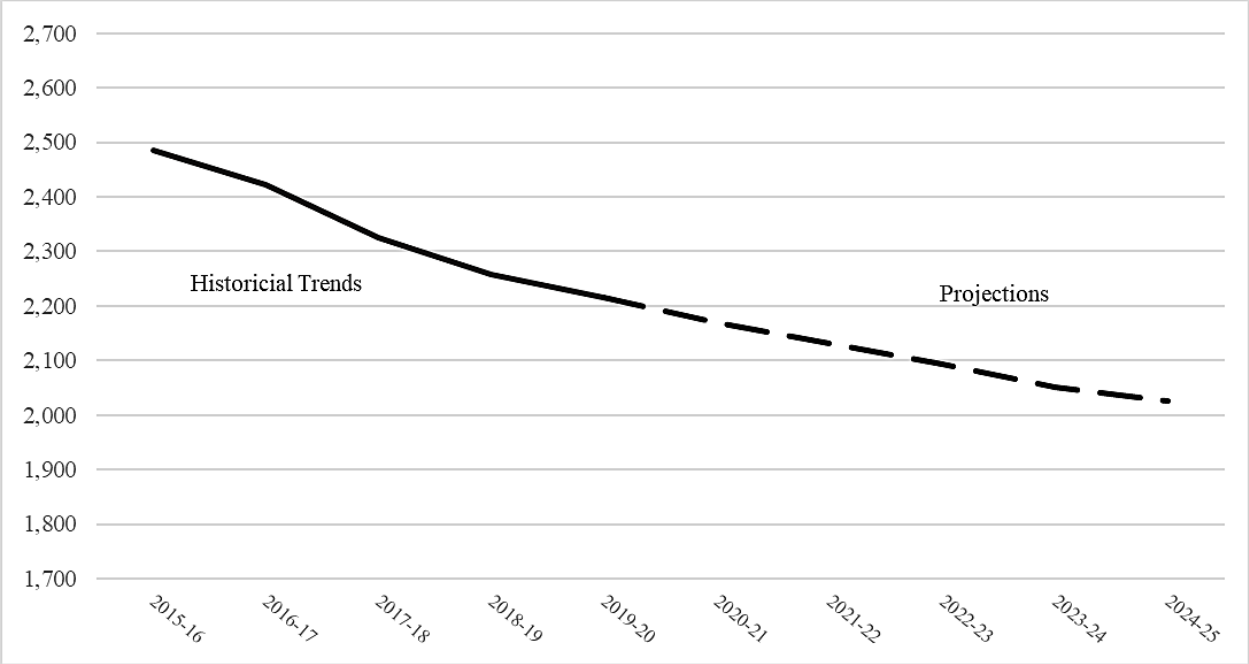
School Year	Enrollment K-12	Change From Previous Year #	%
2019-20 (actual)	2,216	-42	-1.8
2020-21	2,169	-47	-2.1
2021-22	2,131	-38	-1.8
2022-23	2,093	-38	-1.8
2023-24	2,051	-42	-2.0
2024-25	2,025	-26	-1.3
Change 2019-20 to 2024-25		-191	-8.6

Table 5-12
OCTORARA AREA SCHOOL DISTRICT
Projected Total Enrollments by Grade[1]
2019-20 to 2024-25

School Year	K	1	2	**Total K-2**	3	4	**Total 3-4**	5	6	**Total 5-6**	7	8	**Total 7-8**	9	10	11	12	**Total 9-12**	**Total K-12**
2019-20 (actual)	154	136	157	**447**	159	151	**310**	168	186	**354**	169	168	**337**	195	185	180	208	**768**	**2,216**
2020-21	176	153	133	**462**	151	154	**305**	155	162	**317**	189	166	**355**	183	176	190	181	**730**	**2,169**
2021-22	155	175	150	**480**	128	146	**274**	158	150	**308**	165	186	**351**	181	165	181	191	**718**	**2,131**
2022-23	164	154	171	**489**	144	124	**268**	150	153	**303**	153	162	**315**	202	164	170	182	**718**	**2,093**
2023-24	158	163	151	**472**	164	139	**303**	127	145	**272**	156	150	**306**	176	183	169	170	**698**	**2,051**
Pupil Change 2019-20 to 2023-24	5	21	3	**29**	-14	7	**-7**	-25	-63	**-88**	-21	-15	**-36**	-32	-26	8	-39	**-89**	**-191**
Percent Change 2019-20 to 2023-24	3.2	15.4	1.9	**6.5**	-8.8	4.6	**-2.3**	-14.9	-33.9	**-24.9**	-12.4	-8.9	**-10.7**	-16.4	-14.1	4.4	-18.8	**-11.6**	**-8.6**

[1] Pupil counts are based on October 1 figures as provided by the district for the respective years and reflect all regular classroom pupils as well as all those engaged in the Octorara Area Virtual Academy (the district's cyber program), those in grades 9-12 who participate in the district's in-house career and technical program, those in grades 10-12 who attend the Chester County Career and Technology Center on a half-time basis for the entire school year, out-of-district students in grades 11 and 12 enrolled in Octorara's "Homeland Security" program on a tuition basis, and some of the district's special education pupils. Excluded from the counts are all district children who are in home schools and external charter and cyber/charter schools; those enrolled in private and parochial schools— for example, Amish schools; children in full-time Intermediate Unit programs; and resident children in alternative education placements, juvenile correction facilities, other institutions, other out-of-district placements, etc.

Graph 5-7
OCTORARA AREA SCHOOL DISTRICT
Total Enrollment Trends/Projections
2015-16 to 2024-25



Projections of enrollments in the Primary grades (K-2) suggest they will be up by a net of 29 (6.5 percent) to 476 in 2024-25. Increases will be recorded in all but one of the years during the first five-year projection period. The largest increase (18 pupils or 3.9 percent) is expected in 2021-22; the smallest gain (four pupils or 0.8 percent) will be in 2024-25. In 2023-24, the number of Primary grade pupils will be down by 17 or 3.5 percent from the prior year. The projected overall net increase in enrollments in grades K-2 during the next five years averages six pupils yearly—a substantial change from the average annual drop of 19 pupils during the past five years.

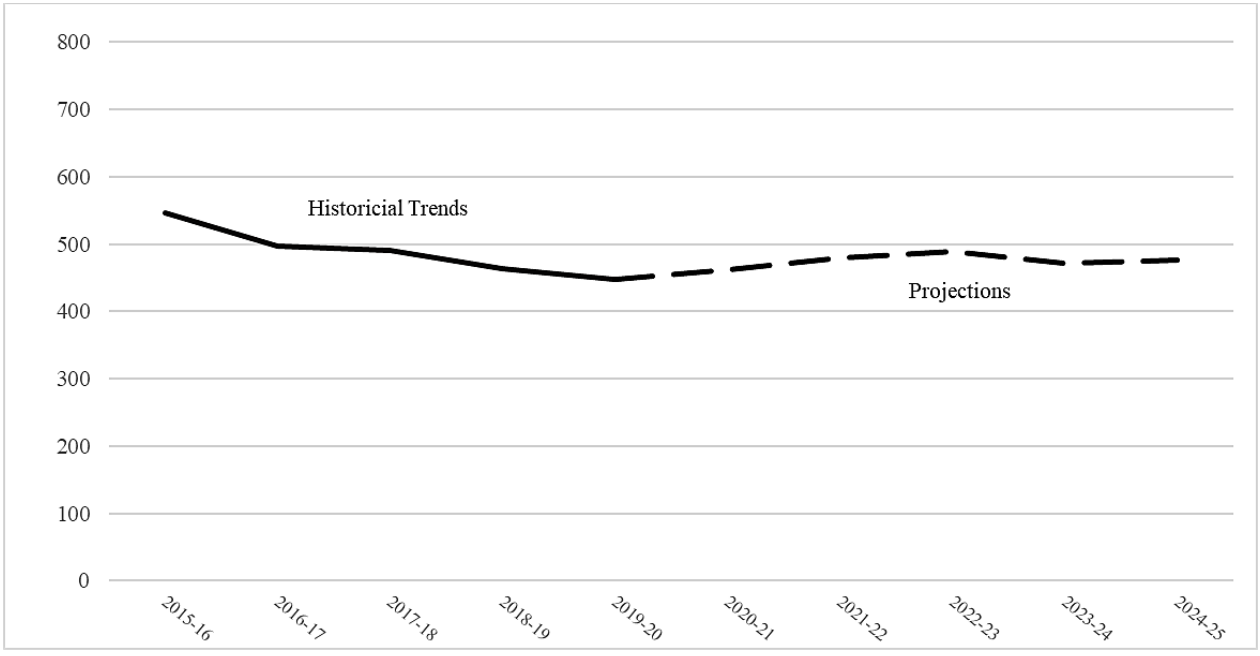
The net increase in the pupil count in grades K-2 during the first five-year projection period is influenced primarily by the modestly higher numbers of annual school year births during the middle and late years of the 2010s—compared with the later years of the decade of the 2000's and the early years of the decade just ended. Specifically, the average number of births that will drive kindergarten entries during the next five years is 280—up from the average of 264 births that drove kindergarten entries during the past five years, but still down from the average for years six through 10 going back (289). The impact of the modest recent rise in births

is mitigated somewhat by cohort survival rates (the relationship between kindergarten entries and births in the district five years earlier) that are extraordinarily negative and down in recent years. Further, the progression ratios in these grades are just somewhat negative and (like the cohort survival rates) have been on the decline in the most recent years. (See Tables 5-12 and 5- 13 and Graph 5-8.)

Table 5-13
OCTORARA AREA SCHOOL DISTRICT
Enrollment Projections (Grades K-2)
2019-20 to 2024-25

School Year	Enrollment K-2	Change From Previous Year #	%
2019-20 (actual)	447	-17	-3.7
2020-21	462	15	3.4
2021-22	480	18	3.9
2022-23	489	9	1.9
2023-24	472	-17	-3.5
2024-25	476	4	0.8
Change 2019-20 to 2024-25		29	6.5

Graph 5-8
OCTORARA AREA SCHOOL DISTRICT
Primary Enrollment Trends/Projections (Grades K-2)
2015-16 to 2024-25



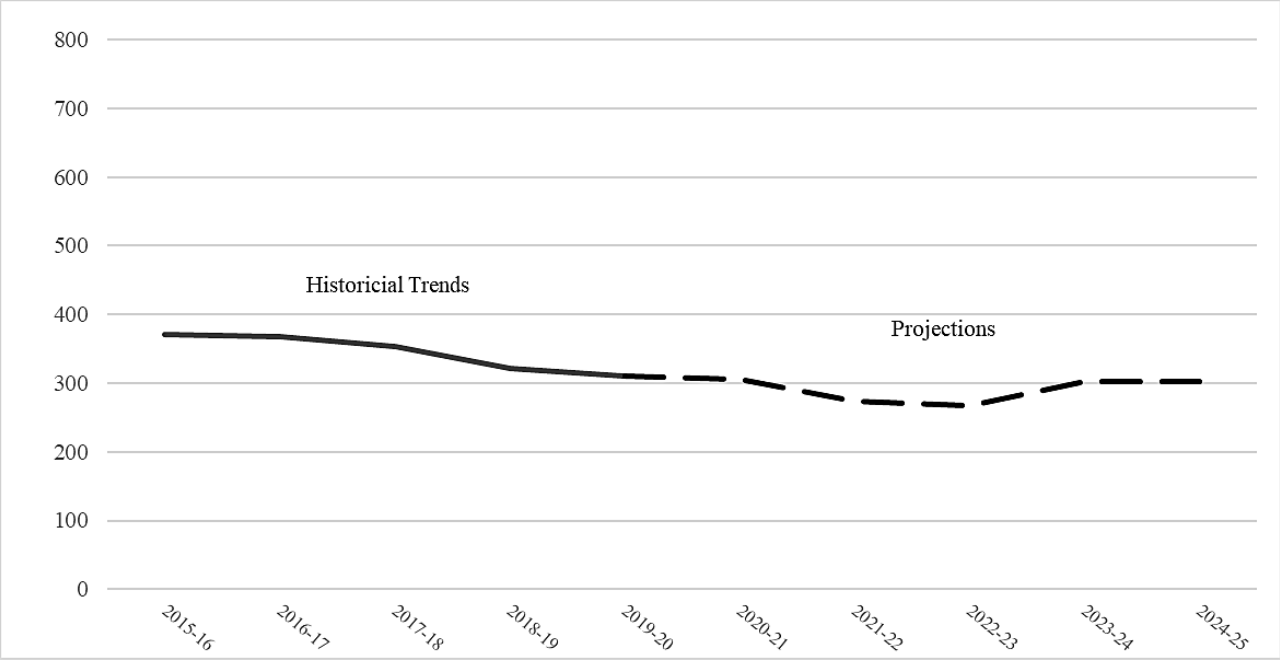
Projected Elementary pupils (grades 3-4) for 2024-25 are down by a net of seven (2.3 percent) from the current school year to 203. Decreases will be recorded in each of the next three years. The largest decline (31 pupils or 10.2 percent) is expected in 2021-22; the smallest loss (five pupils or 1.6 percent) will be in 2020-21. In 2023-24, however the number of elementary pupils will be up by 35 or 13.3 percent over the prior year. In the final year of the primary projection period there will be no change from the previous year. The projected overall net decrease in enrollments in grades 3-4 during the next five years averages seven pupils yearly—a slightly smaller average annual loss than during the past five years (11).

The slower rate of decline in the pupil count in grades 3-4 during the next five years can be traced, in part, to the pattern of births in the early years of the immediate past decade which, in turn, drive kindergarten entries, and, subsequently, the movement of children into grade 3 and 4. But, the influence of births patterns is more strongly mitigated by the slightly more negative (on average) grade progression ratios in grades 3 and 4 than in grades K-2. However, unlike in grades K-2, the progression ratios in grades 3-4 have been slightly more stable (on average). (See Tables 5-12 and 5-14 and Graph 5-9.)

Table 5-14
OCTORARA AREA SCHOOL DISTRICT
Elementary Enrollment Projections (Grades 3-4)
2019-20 to 2024-25

School Year	Enrollment 3-4	Change From Previous Year #	%
2019-20 (actual)	310	-11	-3.4
2020-21	305	-5	-1.6
2021-22	274	-31	-10.2
2022-23	268	-6	-2.2
2023-24	303	35	13.1
2024-25	303	NC	NC
Change 2019-20 to 2024-25		-7	-2.3

Graph 5-9
OCTORARA AREA SCHOOL DISTRICT
Elementary Enrollment Trends/Projections (Grades 3-4)
2015-16 to 2024-25



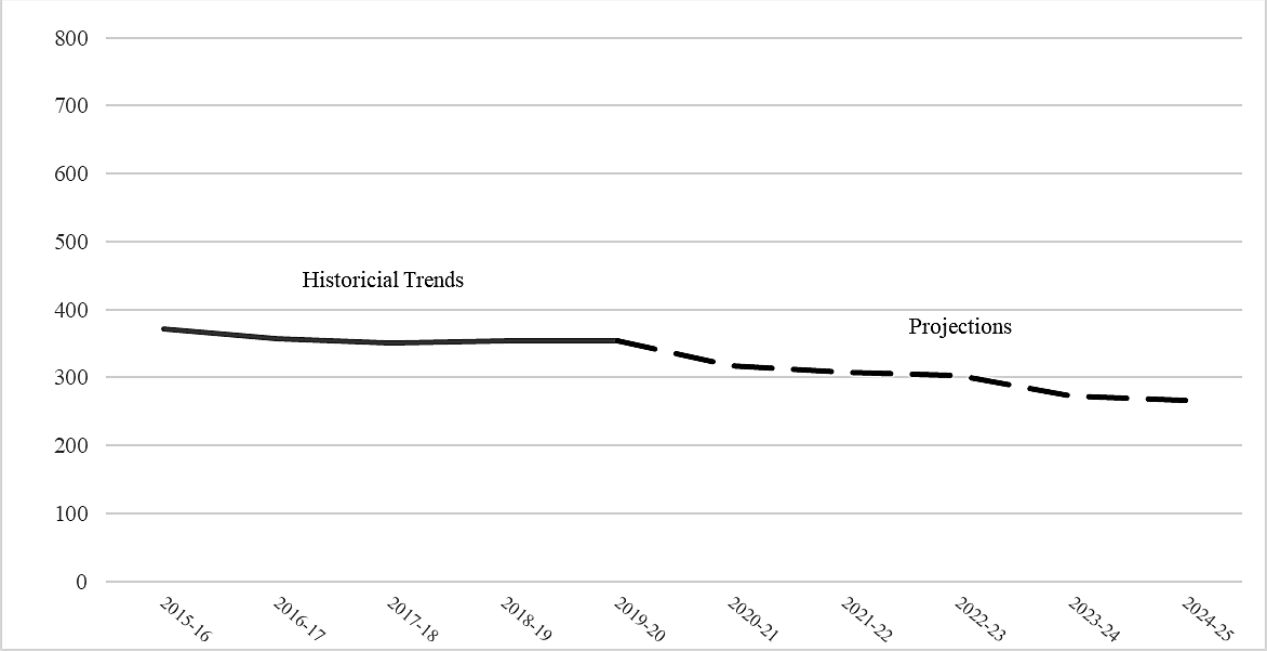
Projections for the Intermediate grades (5-6) indicate that enrollments will be down by 88 (24.9 percent) to 266 in 2024-25. Decreases will be recorded in all years during this period. The largest decline (37 pupils or 10.5 percent) is expected in 2020-21; the smallest loss (five pupils or 1.6 percent) will be experienced in 2022-23. The projected overall decrease in enrollments in grades 5-6 during the next five years averages 18 pupils yearly—a much stronger loss than the average annual drop of three pupils during the past five years.

The accelerated rate of the average annual decrease in the pupil count in the Intermediate grades in the next five years is consistent with the recent actual and projected pattern of enrollment decline in grades 3-4 and the movement through grades 5-6 of these somewhat smaller classes. Enrollments in grades 5-6 throughout the next five years will also be influenced by the essentially neutral—on average—recent progression ratios. (See Tables 5-12 and 5-15 and Graph 5-10.)

Table 5-15
OCTORARA AREA SCHOOL DISTRICT
Intermediate Enrollment Projections (Grades 5-6)
2019-20 to 2024-25

School Year	Enrollment 5-6	Change From Previous Year #	%
2019-20 (actual)	354	NC	NC
2020-21	317	-37	-10.5
2021-22	308	-9	-2.8
2022-23	303	-5	-1.6
2023-24	272	-31	-10.2
2024-25	266	-6	-2.2
Change 2019-20 to 2024-25		-88	-24.9

Graph 5-10
OCTORARA AREA SCHOOL DISTRICT
Intermediate Enrollment Trends/Projections (Grades 5-6)
2015-16 to 2024-25



Middle School enrollments (grades 7-8) are projected to drop to 301 in 2024-25—a net of 36 pupils (10.7 percent) lower than in 2019-20. Annual decreases will be experienced in the last four of the five years of the primary projection period. The largest decline (36 pupils) will be recorded in 2022-23 (10.3 percent). The smallest drop (four pupils or 1.1 percent) will occur in

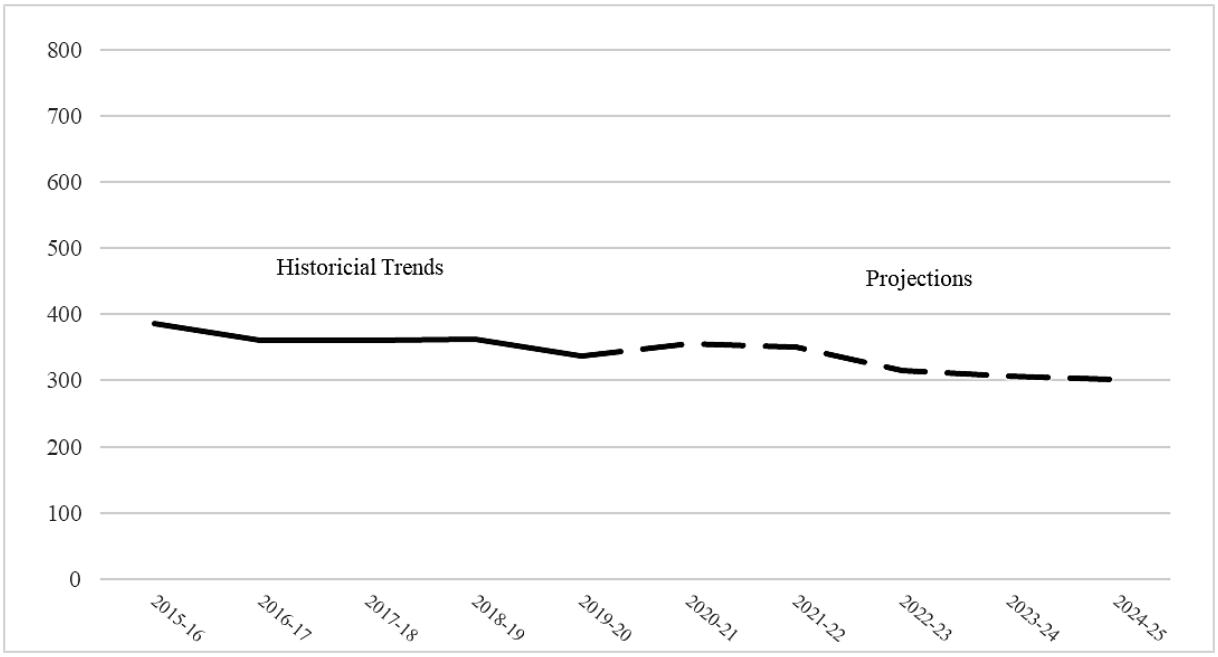
2021-22. The sole projected gain (18 pupils or 5.3 percent) is expected to occur in 2020-21. The expected net decrease in the number of pupils in grades 7-8 during the next five years will average seven annually compared with an average net yearly drop of 12 pupils during the most recent five years.

The slight slowing of the projected average yearly loss in middle school pupils during the next five years, compared with the past five years is in keeping with the actual and projected pattern of enrollment decline in the Intermediate grades in the recent past. The pupil population in grades 7-8 throughout the primary projection years will continue to be influenced by essentially neutral—on average—progression ratios. (See Tables 5-12 and 5-16 and Graph 5-11.)

Table 5-16
OCTORARA AREA SCHOOL DISTRICT
Middle School Enrollment Projections (Grades 7-8)
2019-20 to 2024-25

School Year	Enrollment 7-8	Change From Previous Year #	Change From Previous Year %
2019-20 (actual)	337	-25	-6.9
2020-21	355	18	5.3
2021-22	351	-4	-1.1
2022-23	315	-36	-10.3
2023-24	306	-9	-2.9
2024-25	301	-5	-1.6
Change 2019-20 to 2024-25		-36	-10.7

Graph 5-11
OCTOARARA AREA SCHOOL DISTRICT
Middle School Enrollment Trends/Projections (Grades 7-8)
2015-16 to 2024-25



Projections for the high school level (grades 9-12) suggest that enrollments will decline to 679 in 2024-25—down by 89 or 11.6 percent from the current school year. The pupil population will decrease in the all but one year of the next five years. The annual losses will range from 38 pupils (4.9 percent) in 2020-21 down to 12 pupils (1.6 percent) in 2021-22. There will be no change in the number of pupils in 2022-23. The projected average annual decline in enrollments in grades 9-12 during the next five years is 18 compared with a net average annual decline of 15 during the most recent five years.

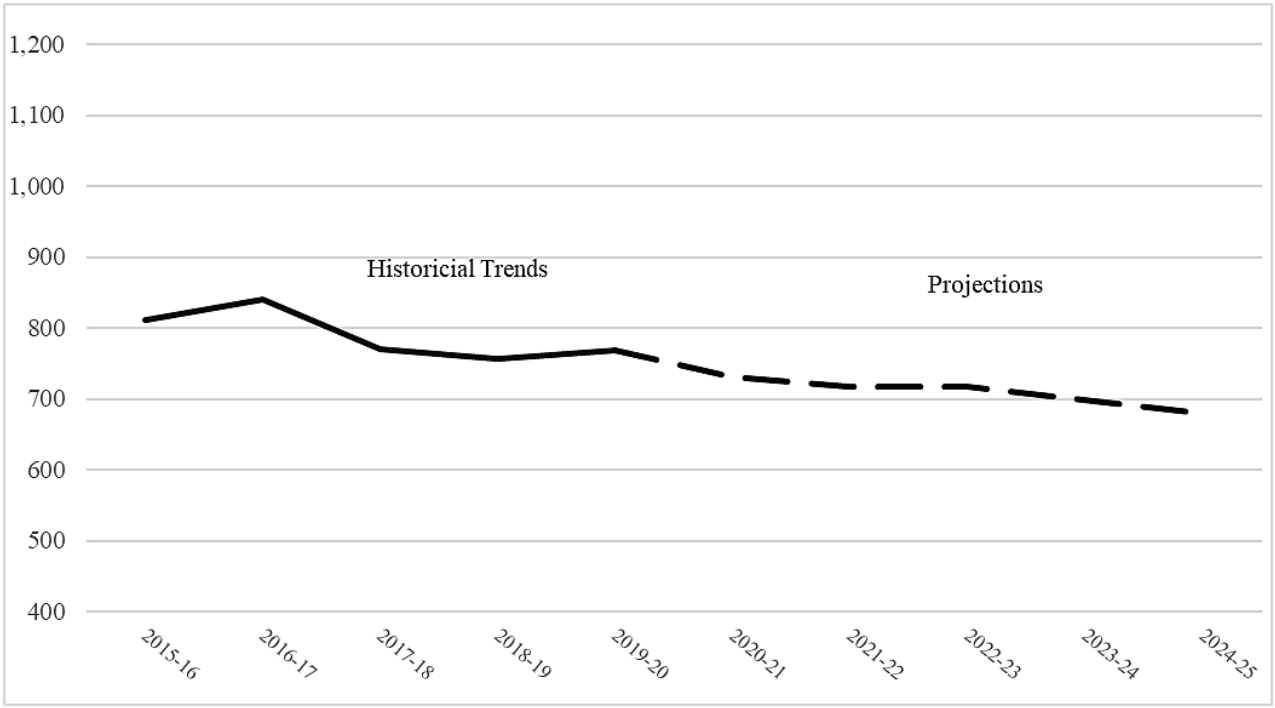
The slight acceleration in the average annual loss in enrollments at the high school during the past five years will continue during the next five years and is caused mainly by the smaller actual and projected classes from the lower grades in the preceding years reaching grades 9-12. However, it must be noted that upon reaching the high school, these smaller class classes have grown as a result of Octorara's consistently positive grade 9 progression ratios (reflecting the entry of pupils from private, parochial, and possibly other K-8 educational programs). This growth was then offset by the negative ratios in grade 10 (reflecting dropouts), and then augmented in grades 11 and 12 by ratios in the two most recent years as the result of the

district's recently started "Homeland Security" program which brings in tuition students from neighboring districts). **(**See Tables 5-12 and 5-17 and Graph 5-12.)

Table 5-17
OCTORARA AREA SCHOOL DISTRICT
High School Enrollment Projections (Grades 9-12)
2019-20 to 2024-25

School Year	Enrollment 9-12	Change From Previous Year #	%
2019-20 (actual)	768	11	1.5
2020-21	730	-38	-4.9
2021-22	718	-12	-1.6
2022-23	718	NC	NC
2023-24	698	-20	-2.8
2024-25	679	-19	-2.7
Change 2019-20 to 2024-25		-89	-11.6

Graph 5-12
OCTORARA AREA SCHOOL DISTRICT
High School Enrollment Trends/Projections (Grades 9-12)
2015-16 to 2024-25



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. Projecting further requires estimating future births, the key component in new kindergarten entries. This limitation, however, does not apply to enrollments in grade 5 and higher because they rely largely on children currently in the school system. With a view to providing a longer-term perspective while recognizing methodological limitations, extended projections of the district's enrollments have been prepared for the five-year period 2025-26 through the 2029-30.

If births hold steady at the average level of the three most recent years for which data are available, the total number and type of housing units in the district rise at the expected rate as of the fall of 2019 (as outlined in Chapter 2), overall migration and related patterns, including the role of schools and educational programs other than those operated directly or jointly by Octorara Area or contracted for by the district (if any) remain in keeping with expectations at that time, and the district continues its current practices relative to kindergarten, CTC, and special education programs and maintains other key programs, practices, and policies—including maintaining the number of out-of-district students in grades 11 and 12 enrolled in Octorara's "Homeland Security" program on a tuition basis at 2019-20 level**,** the average pace of the projected decline in Octorara Area's total enrollments during the first five projected years will essentially continue during extended projection period (the second five years).

Octorara Area's total enrollments will fall by 101 or 5.0 percent between 2024-25 and 2029-30, and the district's pupil population will be down from 2,025 to 1,924. The figure projected for 2029-30 will be 292 pupils or 13.2 percent lower than the count for the current school year given the decrease of 191 pupils expected to occur in the first five projected years.

Decreases in enrollments will be recorded in all years during the extended projection period and will range from 45 (2.2 percent) in 2026-27 to six (0.3 percent) in 2028-29. The annual decline in the number of pupils during the extended period will average 20 compared with an average loss of 38 per year during the first five projected years and an average annual drop of 60 pupils during the past five years.

Based on the assumptions used, beyond school year 2029-30 total enrollments in Octorara Area are likely to experience a series of modest annual increases and decreases before

stabilizing at a level only slightly higher than the figure projected for the final year covered in the study but very noticeably lower than the pupil population in the current school year. (See Tables 5-18 and 5-19 and Graph 5-13.)

Table 5-18
OCTORARA AREA SCHOOL DISTRICT
Extended Enrollment Projections (Grades K-12) [1]
2019-20 to 2024-25

School Year	Enrollment K-12	Change From Previous Year #	%
2024-25	2,025	-26	-1.3
2025-26	2,001	-24	-1.2
2026-27	1,956	-45	-2.2
2027-28	1,937	-19	-1.0
2028-29	1,931	-6	-0.3
2029-30	1,924	-7	-0.4
Change 2024-25 to 2029-30		-101	-5.0
Change 2019-20 to 2029-30		-292	-13.2

[1]Based on births fixed at 276

Again, projected pupil counts are based on October 1 figures for the respective years and reflect all regular classroom pupils as well as all those engaged in the Octorara Area Virtual Academy (the district's cyber program), those in grades 9-12 who participate in the district's in-house career and technical program, those in grades 10-12 who attend the Chester County Career and Technology Center on a half-time basis for the entire school year, out-of-district students in grades 11 and 12 enrolled in Octorara's "Homeland Security" program on a tuition basis, and some of the district's special education pupils. Excluded from the counts are all district children who are in home schools and external charter and cyber/charter schools; those enrolled in private and parochial schools—for example, Amish schools; children in full-time Intermediate Unit programs; and resident children in alternative education placements, juvenile correction facilities, other institutions, other out-of-district placements, etc.

Graph 5-13
OCTORARA AREA SCHOOL DISTRICT
Total Enrollment Projections/Extended Projections
2020-21 to 2029-30

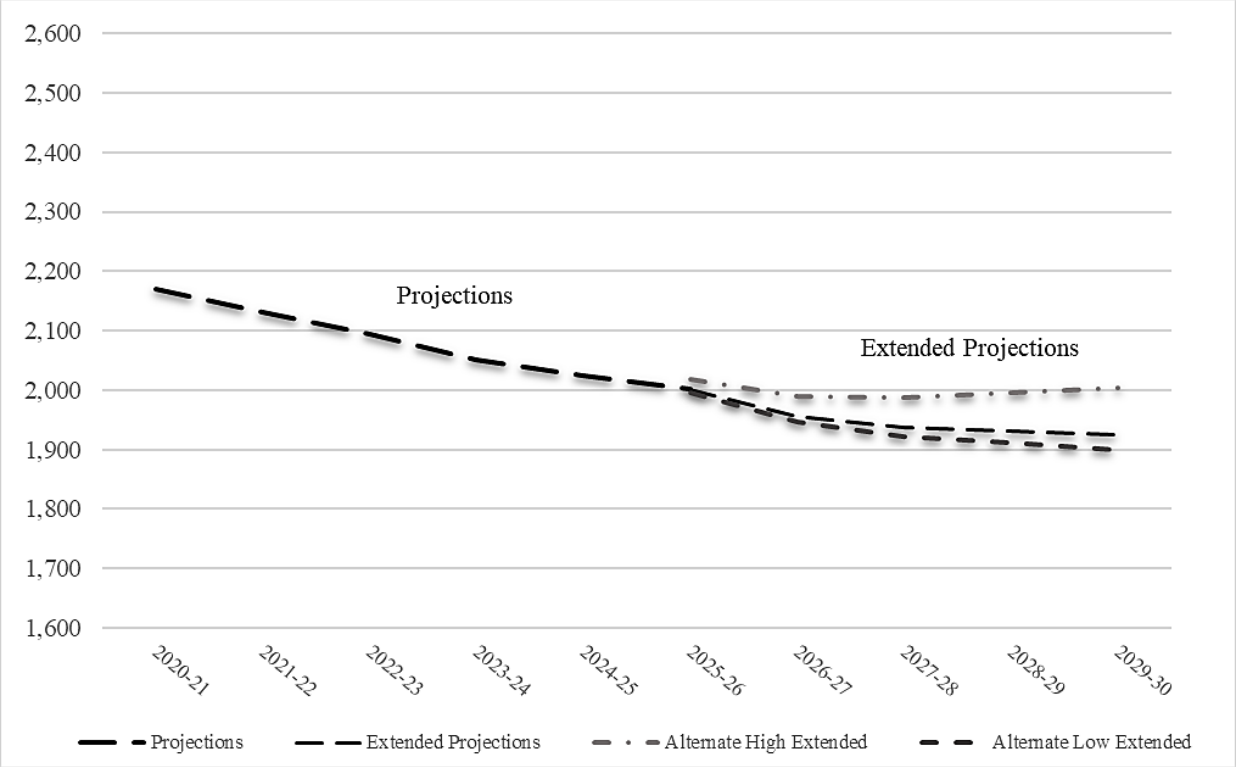


Table 5-19
OCTORARA AREA SCHOOL DISTRICT
Extended Total Enrollment Projections by Grade Based on Births Fixed at 276
2024-25 to 2029-30

School Year	K	1	2	**Total K-2**	3	4	**Total 3-4**	5	6	**Total 5-6**	7	8	**Total 7-8**	9	10	11	12	**Total 9-12**	**Total K-12**
2024-25	159	157	160	**476**	145	158	**303**	143	123	**266**	148	153	**301**	163	159	188	169	**679**	**2,025**
2025-26	159	158	154	**471**	154	140	**294**	162	138	**300**	125	146	**271**	166	147	163	189	**665**	**2,001**
2026-27	159	158	155	**472**	148	149	**297**	144	157	**301**	140	123	**263**	159	150	151	163	**623**	**1,956**
2027-28	159	158	155	**472**	149	143	**292**	153	139	**292**	160	138	**298**	134	144	154	151	**583**	**1,937**
2028-29	159	158	155	**472**	149	144	**293**	147	148	**295**	141	157	**298**	150	121	148	154	**573**	**1,931**
2029-30	159	158	155	**472**	149	144	**293**	148	142	**290**	151	139	**290**	171	136	124	148	**579**	**1,924**
Pupil Change 2024-25 to 2029-30	NC	1	-5	**-4**	4	-14	**-10**	5	19	**24**	3	-14	**-11**	8	-23	-64	-21	**-100**	**-101**
Percent Change 2024-25 to 2029-30	NC	0.6	-3.1	**-0.8**	2.8	-8.9	**-3.3**	3.5	15.4	**9.0**	2.0	-9.2	**-3.7**	4.9	-14.5	-34.0	-12.4	**-14.7**	**-5.0**
Pupil Change 2019-20 to 2029-30	5	22	-2	**25**	-10	-7	**-17**	-20	-44	**-64**	-18	-29	**-47**	-24	-49	-56	-60	**-189**	**-292**
Percent Change 2019-20 to 2029-30	3.2	16.2	-1.3	**5.6**	-6.3	-4.6	**-5.5**	-11.9	-23.7	**-18.1**	-10.7	-17.3	**-13.9**	-12.3	-26.5	-31.1	-28.8	**-24.6**	**-13.2**

Enrollments in grades K-2 are expected to total to 472 in 2029-30 and reflect a net loss of four pupils (0.8 percent) from 2024-25. The 2029-30 figure, however, will still be 25 pupils (5.6 percent) higher than in 2019-20 in view of the net gain of 29 pupils (6.5 percent) projected for the years 2019-20 through 2024-25. A decrease in the pupil count in the primary grades during the extended projection period will occur in the first projected year (five pupils or 1.1 percent), and an increase will be recorded in the second year (one pupil or 0.2 percent). In the final three years of the extended projection period enrollments will remain unchanged. The net decline in the pupil population in grades K-2 during the extended period will average just one yearly compared with average annual net increase of six pupils the first five projected years and an average annual net decrease of 19 the most recent five years.

The swing from a slight net average annual gain in grades K-2 enrollments in the first five projected years to a very small net loss the second five projected years is primarily a function of the fixed number of births on which the projection model is based—a figure that is just slightly lower than the average number of births that will drive kindergarten entries during the first five projected years, but still modestly higher the figure that drove births kindergarten entries in the five most recent school years. The projections for the grades K-2 will continue to be influenced by cohort survival rates that are extraordinarily negative **(**on average) and by progression ratios that are just somewhat negative.

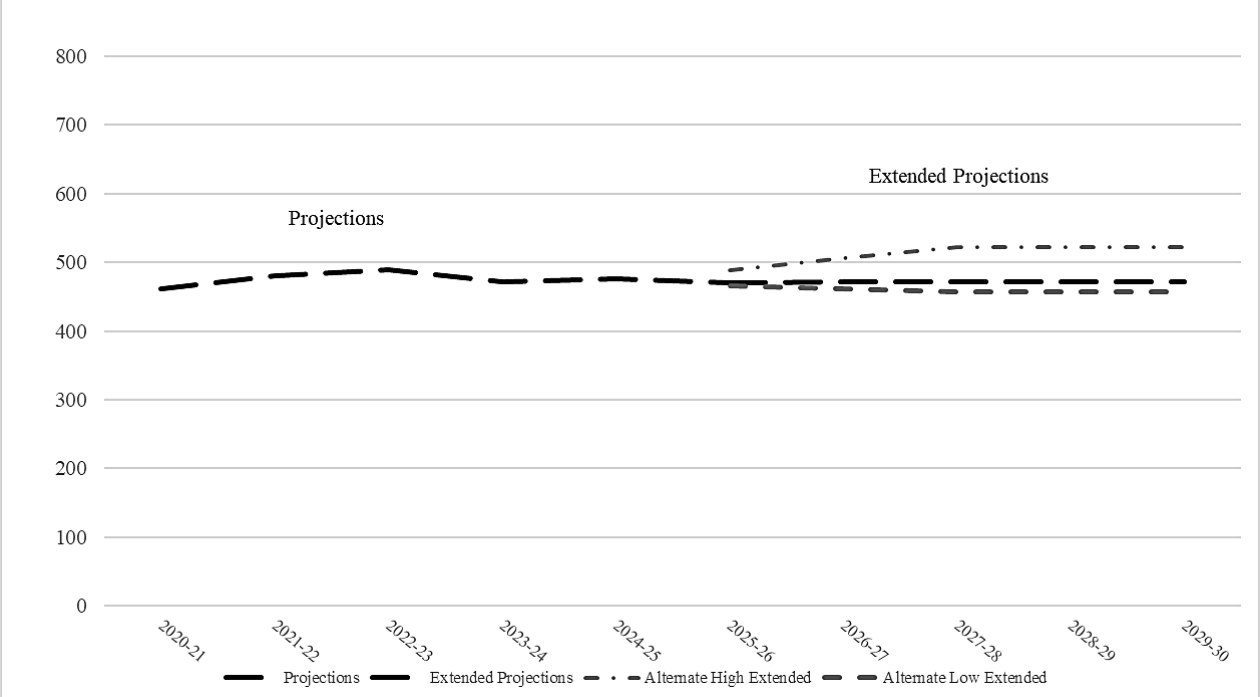
After 2029-30—given the assumptions used—the pupil count in grades K-2 is expected to remain unchanged at a level equal to the projection for 2029-30 but somewhat higher than the figure for the current school year. (See Tables 5-19 and 5-20 and Graph 5-14.)

Table 5-20
OCTORARA AREA SCHOOL DISTRICT
Extended Primary Grade Enrollment Projections (K-2)[1]
2024-25 to 2029-30

School Year	Enrollment K-2	Change From Previous Year #	%
2024-25	476	4	0.8
2025-26	471	-5	-1.1
2026-27	472	1	0.2
2027-28	472	NC	NC
2028-29	472	NC	NC
2029-30	472	NC	NC
Change 2024-25 to 2029-30		-4	-0.8
Change 2019-20 to 2029-30		25	5.6

[1]Based on births fixed at 276.

Graph 5-14
OCTORARA AREA SCHOOL DISTRICT
Enrollment Projections/Extended Projections (K-2)
2020-21 to 2029-30



Enrollments at the Elementary level (grades 3-4) are expected to total to 293 in 2029-30 and reflect a net loss of ten pupils (3.3 percent) from 2024-25. The 2029-30 figure will be 17 (5.5 percent) lower than in 2019-20 in view of the net drop of seven (2.3 percent) projected for the years 2019-20 through 2024-25. Decreases in pupils in these grades during the extended projection period will occur in two years, increases will be recorded in two years, and in the final year the count will remain unchanged. The losses in pupils will range from five (1.7 percent) in 2027-28 to nine (3.0 percent) in 2025-26. The increases will be recorded in 2026-27 (three pupils or 1.0 percent) and 2028-29 (one pupil or 0.3 percent). The net decline in the pupil population in grades K-5 during the extended period will average two yearly compared with average annual net decreases of just one in the first five projected years and 11 in the most recent five years.

The projected net average annual loss in elementary enrollments in the second five projected years is materially unchanged from the first five projected years is a result of fairly stable numbers of projected K-2 pupils moving through grades 3-4, which, in turn, is a function of the fixed number of births on which the extended projection model is based. The projections for the Elementary grades will continue to be influenced by stable negative cohort survival rates.

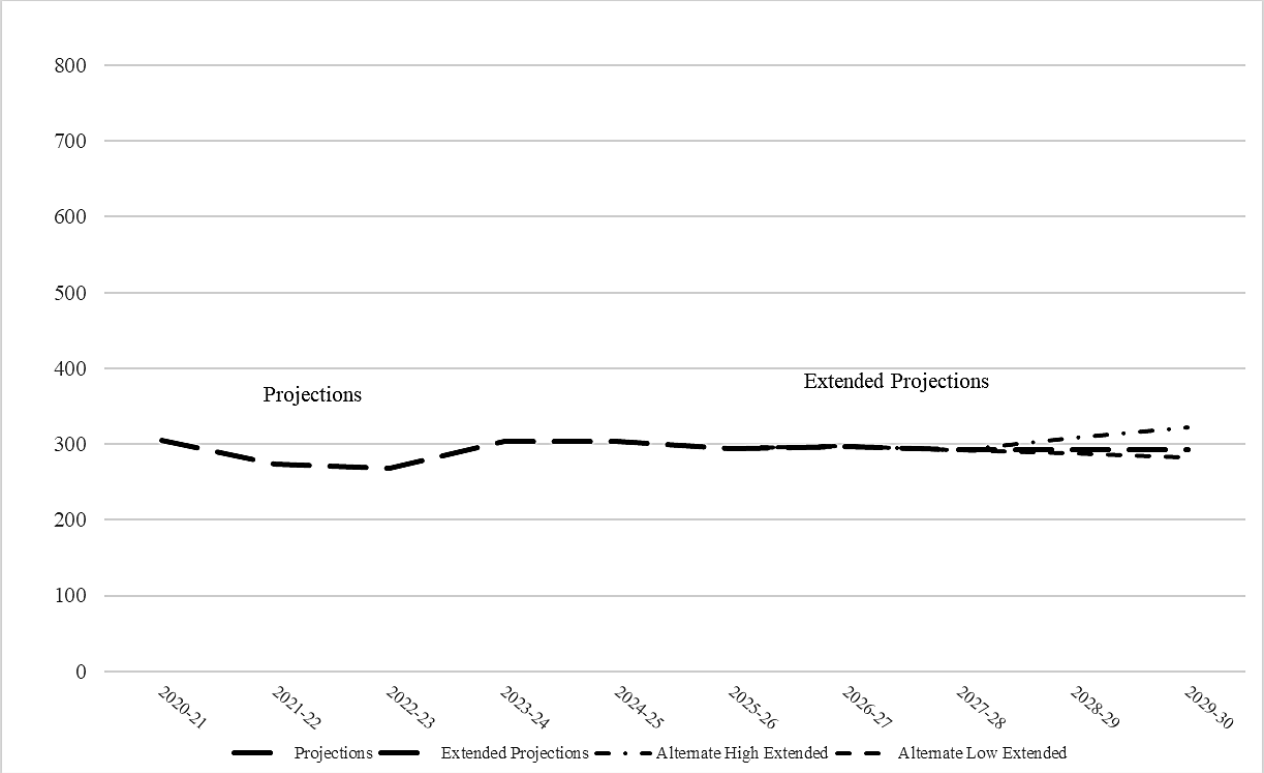
After 2029-30—given the assumptions used—the pupil count in grades 3-4 is expected to remain unchanged at a level equal to the projection for 2029-30 but moderately lower than the figure for the current school year. (See Tables 5-19 and 5-21 and Graph 5-15.)

Table 5-21
OCTORARA AREA SCHOOL DISTRICT
Extended Elementary Grade Enrollment Projections (3-4)[1]
2024-25 to 2029-30

School Year	Enrollment 3-4	Change From Previous Year #	%
2024-25	303	NC	NC
2025-26	294	-9	-3.0
2026-27	297	3	1.0
2027-28	292	-5	-1.7
2028-29	293	1	0.3
2029-30	293	NC	NC
Change 2024-25 to 2029-30		-10	-3.3
Change 2019-20 to 2029-30		-17	-5.5

[1]Based on births fixed at 276.

Graph 5-15
OCTORARA AREA SCHOOL DISTRICT
Elementary Grade Enrollment Projections /Extended Projections (3-4)
2020-21 to 2029-30



Enrollments at the Intermediate level (grades 5-6) are expected to total to 290 in 2029-30 and reflect a net gain of 24 pupils (9.0 percent) from 2024-25. The 2029-30 figure, however, will be down by 64 pupils (18.1 percent) from 2019-20 in view of the loss of 88 pupils (5.0 percent) projected for the years 2019-20 through 2024-25. Increases in the pupil count in the intermediate grades during the extended projection period will occur in three years, and decreases will be recorded in two. The largest increase (34 pupils or 12.8 percent) will be recorded in 2025-26 and the smallest (one pupil or 0.3 percent) will occur in 2026-27. The losses will total five pupils (1.7 percent) in 2029-30 and nine pupils (3.0 percent) in 2027-28. The net increase in the pupil population in grades 5-6 during the extended period will average five yearly compared with average annual net decreases of 18 in the first five projected years and six in the most recent five years.

The reversal from the average annual change in intermediate enrollments from the first five projected years to a more modest average annual rise in the second five projected years

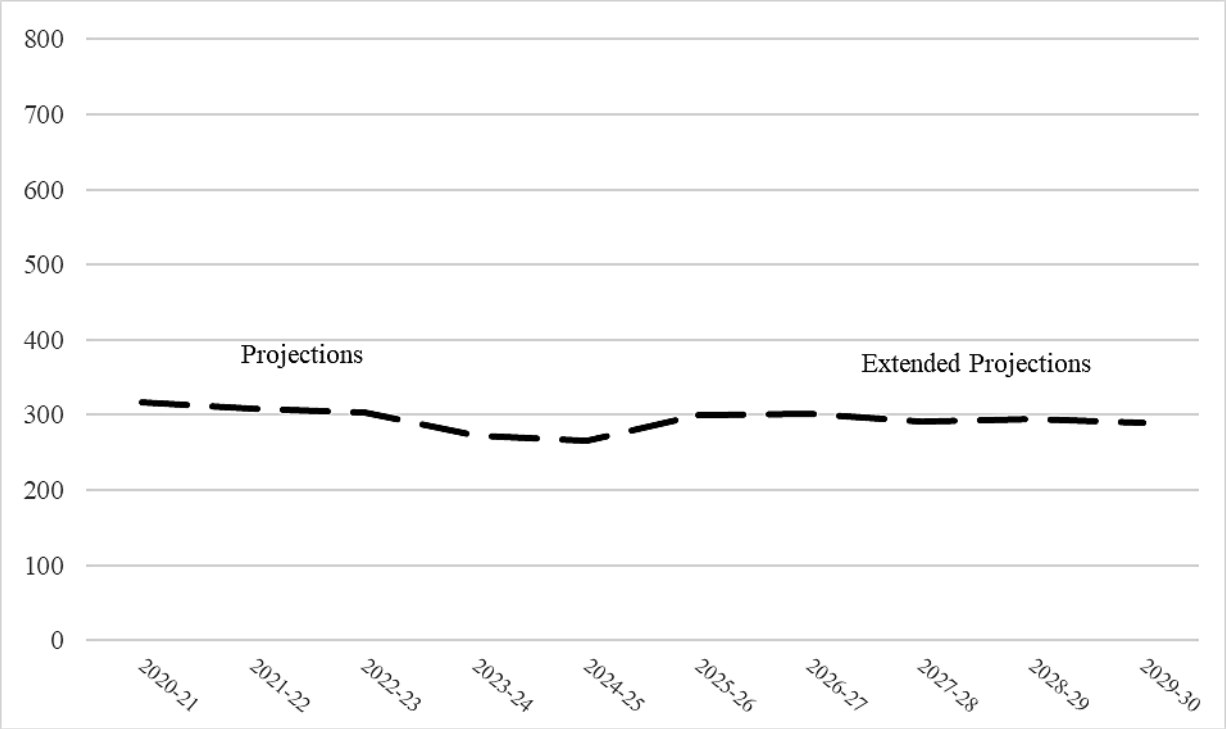
results primarily from the strength of the gain in 2025-26 which, in turn, reflects a single unusually large class. The projections for the intermediate grades 5-6 will be influenced by grade-to-grade progression ratios that have been essentially neutral (on average) in the most recent years.

After 2029-30—given the assumptions used—the pupil count in grades 5-6 is expected to be essentially unchanged from the projection for 2029-30 but noticeably lower than the figure for the current school year. (See Tables 5-19 and 5-22 and Graph 5-16.)

Table 5-22
OCTORARA AREA SCHOOL DISTRICT
Extended Intermediate Grade Enrollment Projections (5-6)
2024-25 to 2029-30

School Year	Enrollment 5-6	Change From Previous Year #	%
2024-25	266	-6	-2.2
2025-26	300	34	12.8
2026-27	301	1	0.3
2027-28	292	-9	-3.0
2028-29	295	3	1.0
2029-30	290	-5	-1.7
Change 2024-25 to 2029-30		24	9.0
Change 2019-20 to 2029-30		-64	-18.1

Graph 5-16
OCTORARA AREA SCHOOL DISTRICT
Intermediate Grade Enrollment Projections/Extended Projections (5-6)
2020-21 to 2029-30



Middle School enrollments (grades 7-8) will total 290 in 2029-30 and be down by 11 or 3.7 percent from 2024-25 and the pupil population in these grades in 2029-30 will be 47 or 13.9 percent lower than in the current school year considering the decrease of 36 pupils projected for the period 2019-20 through 2024-25. Declines in the enrollment in grades 7-8 will occur in three of the years during the extended projection period and will range from eight pupils in both 2026-27 and 2029-30 (3.0 percent and 2.7 percent, respectively) to 30 pupils (10.0 percent) in 2025-26. There will be a 35-pupil increase (13.3 percent) in 2027-28, and in 2028-29 there will be no change in pupil count. The net annual loss in the pupil population in the middle school grades during for the extended projection period will average just two pupils compared with an average net decrease of 18 pupils per year during the first five projected years and an average net yearly loss of 12 pupils in the most recent five-year period.

The noticeably slower rate of the net decline in enrollments in grades 7-8 during the extended projection period from that of the first five projected years results from the movement through these grades of a mix of the several larger and mostly smaller projected Intermediate

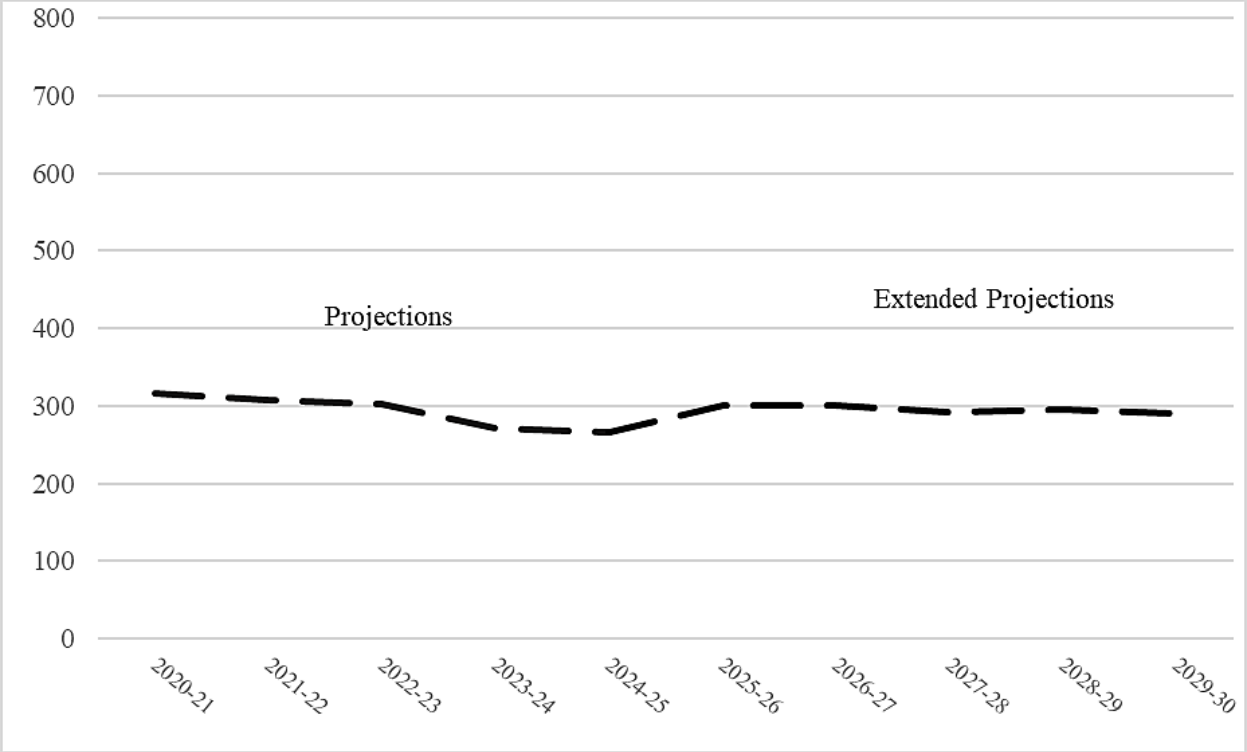
grade classes from the prior five years. During the extended projection years, enrollments in grades 7-8 will continue to be influenced the essentially neutral (on average) progression ratios.

In view of the assumptions used, subsequent to 2029-30 enrollments in grades 7-8 can be expected to experience a slight annual increase followed by a slight decrease followed by a similarly slight increase before becoming constant at the same level projected for 2029-30, but noticeably lower than the pupil count in the 2019-20 school year. (See Table 5-19 and 5-23 and Graph 5-17.)

Table 5-23
OCTORARA AREA SCHOOL DISTRICT
Extended Middle School Enrollment Projections (Grades 7-8)
2024-25 to 2029-30

School Year	Enrollment 7-8	Change From Previous Year #	%
2024-25	301	-5	-1.6
2025-26	271	-30	-10.0
2026-27	263	-8	-3.0
2027-28	298	35	13.3
2028-29	298	NC	NC
2029-30	290	-8	-2.7
Change 2024-25 to 2029-30		-11	-3.7
Change 2019-20 to 2029-30		-47	-13.9

Graph 5-17
OCTORARA AREA SCHOOL DISTRICT
Middle School Enrollment Projections/Extended Projections (7-8)
2020-21 to 2029-30



High school enrollments (grades 9-12) are projected to total 579 in 2029-30 and will, reflect a net drop of 100 pupils (14.7 percent) from the 2024-25 projection. Four decreases will be recorded during these years and there will be one increase—six pupils or 1.0 percent in the final projected year. The losses in pupils will range from 10 (1.7 percent) in 2028-29 to 42 (6.3 percent) in 2026-27. Enrollments in grades 9-12 in 2029-30 will be 189 pupils or 24.6 percent below the 2019-20, given the decrease of 89 pupils expected during the first five projected years. The net decline in enrollments in the high school grades during the extended period will average 20 pupils yearly compared with a net average annual loss of 18 pupils during the first five projected years and a net average decrease of 15 pupils per year during the most recent five years.

The progressive annual net decline in enrollments at the high school level during the primary projection period is consistent with the pattern of enrollments in the lower grades in the preceding school years and is influenced by Octorara's consistently positive grade 9 progression

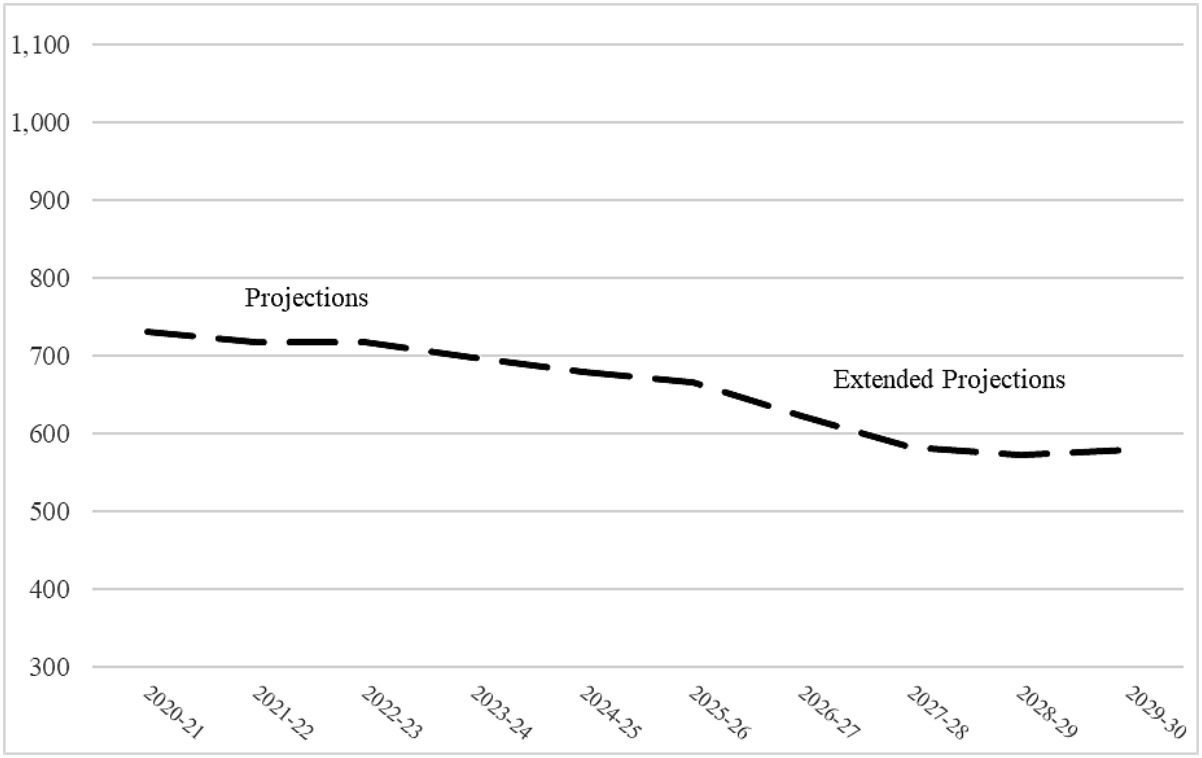
ratios, negative ratios in grade 10 likely caused by dropouts, and positive ratios in grades 11 and 12 resulting from the district's "Homeland Security" program.

After 2029-30, based on the assumptions used, enrollments in grades 9-12 will experience a mix of seven modest annual decreases and increases and then stabilize at a level slightly higher the figure projected for 2029-30 but substantially lower than the pupil count in the current school year. (See Table 5-19 and 5-24 and Graph 5-18.)

Table 5-24
OCTORARA AREA SCHOOL DISTRICT
Extended High School Enrollment Projections (Grades 9-12)
2024-25 to 2029-30

School Year	Enrollment 9-12	Change From Previous Year #	Change From Previous Year %
2024-25	679	-19	-2.7
2025-26	665	-14	-2.1
2026-27	623	-42	-6.3
2027-28	583	-40	-6.4
2028-29	573	-10	-1.7
2029-30	579	6	1.0
Change 2024-25 to 2029-30		-100	-14.7
Change 2019-20 to 2029-30		-189	-24.6

Graph 5-18
OCTORARA AREA SCHOOL DISTRICT
High School Enrollment Projections/Extended Projections (9-12)
2020-21 to 2029-30



Alternative Extended Enrollment Projections

In contrast with the extended projections based on the average number of school year births of the most recent three years for which data are available (the "preferred" projections), alternative extended projections based on the births fixed at the highest school year figure during the past several years (305—in 2014-15) suggest that total enrollments in 2029-30 would be 2,003—79 pupils (4.1 percent) higher than the preferred extended projection resulting from using the average school year birth figure of the past three years. The resulting count (2,003) would still be down by 22 pupils or 1.1 percent from the projected number for 2024-25 and 213 or 9.6 percent lower than the actual 2019-20 level. It should be noted that this alternative scenario relies on a birth figure (305) that is 29 or 10.5 percent higher than the district's average for the past three years and, as such, is a bit of an aberration based on the district's recent history. This should be considered in assessing these alternative projections. (See Table 5-25.)

Enrollments in grades K-2 using this alternative approach would be 522 in 2029-30—50 or 10.6 percent higher than the preferred extended projection of 472. This figure (522) is 46 or 9.7 percent higher than the projection for 2024-25 and 75 pupils or 16.8 percent higher than the actual figure for 2019-20. Enrollments in grades 3-4 using this alternative approach would be 322 in 2029-30—29 or 9.9 percent higher than the preferred extended projection of 293. This figure (322) is 19 or 6.3 percent higher than the projection for 2024-25 and 12 pupils or 3.9 percent higher than the actual figure for 2019-20. Intermediate, Middle School and High School enrollments would be unchanged from the preferred extended projection because the use of different birth figures has no effect on these projections beyond grade 4 during the next 10 years, and, therefore any impact would not be reflected in these grades until after the final projected year in this study.

A noticeably different picture develops if projections are based on the assumption that school year births will remain constant at the lowest level of the past several years (268—the 2013-14 school year count which is just eight births or 2.9 percent lower than the figure on which the preferred projections are based). Total enrollments using this approach would be 1,899 in 2029-30—126 pupils (6.2 percent) below the projection for 2024-25, and 317 pupils (14.3 percent) lower than the 2019-20 count. The resulting 2029-30 figure would be 25 pupils (1.3 percent) lower than the preferred extended projection and 104 pupils (5.2 percent) lower than the projection based on the highest recent school year birth figure. (See Table 5-26.)

Table 5-25
OCTORARA AREA SCHOOL DISTRICT
Alternative Extended Total Enrollment Projections by Grade Based on Births Fixed at 305
2024-25 to 2029-30

School Year	K	1	2	**Total K-2**	3	4	**Total 3-4**	5	6	**Total 5-6**	7	8	**Total 7-8**	9	10	11	12	**Total 9-12**	**Total K-12**
2024-25	159	157	160	**476**	145	158	**303**	143	123	**266**	148	153	**301**	163	159	188	169	**679**	**2,025**
2025-26	176	158	154	**488**	154	140	**294**	162	138	**300**	125	146	**271**	166	147	163	189	**665**	**2,018**
2026-27	176	175	155	**506**	148	149	**297**	144	157	**301**	140	123	**263**	159	150	151	163	**623**	**1,990**
2027-28	176	175	171	**522**	149	143	**292**	153	139	**292**	160	138	**298**	134	144	154	151	**583**	**1,987**
2028-29	176	175	171	**522**	164	144	**308**	147	148	**295**	141	157	**298**	150	121	148	154	**573**	**1,996**
2029-30	176	175	171	**522**	164	158	**322**	148	142	**290**	151	139	**290**	171	136	124	148	**579**	**2,003**
Pupil Change 2024-25 to 2029-30	17	18	11	**46**	19	NC	**19**	5	19	**24**	3	-14	**-11**	8	-23	-64	-21	**-100**	**-22**
Percent Change 2024-25 to 2029-30	10.7	11.5	6.9	**9.7**	13.1	NC	**6.3**	3.5	15.4	**9.0**	2.0	-9.2	**-3.7**	4.9	-14.5	-34.0	-12.4	**-14.7**	**-1.1**
Pupil Change 2019-20 to 2029-30	22	39	14	**75**	5	7	**12**	-20	-44	**-64**	-18	-29	**-47**	-24	-49	-56	-60	**-189**	**-213**
Percent Change 2019-20 to 2029-30	14.3	28.7	8.9	**16.8**	3.1	4.6	**3.9**	-11.9	-23.7	**-18.1**	-10.7	-17.3	**-13.9**	-12.3	-26.5	-31.1	-28.8	**-24.6**	**-9.6**

Table 5-26
OCTORARA AREA SCHOOL DISTRICT
Alternative Extended Total Enrollment Projections by Grade Based on Births Fixed at 268
2024-25 to 2029-30

School Year	K	1	2	**Total K-2**	3	4	**Total 3-4**	5	6	**Total 5-6**	7	8	**Total 7-8**	9	10	11	12	**Total 9-12**	**Total K-12**
2024-25	159	157	160	**476**	145	158	**303**	143	123	**266**	148	153	**301**	163	159	188	169	**679**	**2,025**
2025-26	154	158	154	**466**	154	140	**294**	162	138	**300**	125	146	**271**	166	147	163	189	**665**	**1,996**
2026-27	154	153	155	**462**	148	149	**297**	144	157	**301**	140	123	**263**	159	150	151	163	**623**	**1,946**
2027-28	154	153	150	**457**	149	143	**292**	153	139	**292**	160	138	**298**	134	144	154	151	**583**	**1,922**
2028-29	154	153	150	**457**	144	144	**288**	147	148	**295**	141	157	**298**	150	121	148	154	**573**	**1,911**
2029-30	154	153	150	**457**	144	139	**283**	148	142	**290**	151	139	**290**	171	136	124	148	**579**	**1,899**
Pupil Change 2024-25 to 2029-30	-5	-4	-10	**-19**	-1	-19	**-20**	5	19	**24**	3	-14	**-11**	8	-23	-64	-21	**-100**	**-126**
Percent Change 2024-25 to 2029-30	-3.1	-2.5	-6.3	**-4.0**	-0.7	-12.0	**-6.6**	3.5	15.4	**9.0**	2.0	-9.2	**-3.7**	4.9	-14.5	-34.0	-12.4	**-14.7**	**-6.2**
Pupil Change 2019-20 to 2029-30	NC	17	-7	**10**	-15	-12	**-27**	-20	-44	**-64**	-18	-29	**-47**	-24	-49	-56	-60	**-189**	**-317**
Percent Change 2019-20 to 2029-30	NC	12.5	-4.5	**2.2**	-9.4	-7.9	**-8.7**	-11.9	-23.7	**-18.1**	-10.7	-17.3	**-13.9**	-12.3	-26.5	-31.1	-28.8	**-24.6**	**-14.3**

Enrollments in grades K-2 using this alternative approach would be 457 in 2029-30—15 or 3.2 percent lower than the preferred extended projection of 472. This figure (457) is 19 or 4.0 percent lower than the projection for 2024-25 but still 10 pupils or 2.2 percent above the actual figure for 2019-20. Enrollments in grades 3-4 using this alternative approach would be 283 in 2029-30—10 or 3.4 percent lower than the preferred extended projection of 293. This figure (283) is 20 or 6.6 percent lower than the projection for 2024-25 and 27 pupils or 8.7 percent lower than the actual figure for 2019-20. Again, Intermediate, Middle School and High School enrollments would be unchanged from the preferred extended projections.

The alternative projections grades K-2 in 2029-309 based on the higher birth figure produce 50 (10.6 percent) more pupils than the preferred extended projections; conversely, alternative projections for these grades in 2029-30 using the lower birth figure would be 15 (3.2 percent) below the preferred extended projection. (See Table 5-27 and Graph 5-14.)

Table 5-27
OCTORARA AREA SCHOOL DISTRICT
Comparison of Preferred and Alternative Extended
Primary Projections (Grades K-2)
2024-25 to 2029-30

School Year		**Preferred** Based on Births Fixed at 276	**Alternative B** Based on Births Fixed at 305	**Alternative C** Based on Births Fixed at 268
2024-25		476	476	476
2025-26		471	488	466
2026-27		472	506	462
2027-28		472	522	457
2028-29		472	522	457
2029-30		472	522	457
Change- 2024-25	**#**	**-4**	**46**	**-19**
to 2029-30	**%**	**-0.8**	**9.7**	**-4.0**
Change 2019-20	**#**	**25**	**75**	**10**
to 2029-30	**%**	**5.6**	**16.8**	**2.2**

The alternative projections for the Elementary level (grades 3-4) in 2029-30 based on the higher birth figure produce 29 (9.9 percent) more pupils than the preferred extended projections; conversely, alternative projections for these grades in 2029-30 using the lower birth figure would be 10 (3.4 percent) below the preferred extended projection. (See Table 5-28 and Graph 5-15.)

Table 5-28
OCTORARA AREA SCHOOL DISTRICT
Comparison of Preferred and Alternative Extended
Elementary Projections (Grades 3-4)
2024-25 to 2029-30

School Year		**Preferred** Based on Births Fixed at 276	**Alternative B** Based on Births Fixed at 305	**Alternative C** Based on Births Fixed at 268
2024-25		303	303	303
2025-26		294	294	294
2026-27		297	297	297
2027-28		292	292	292
2028-29		293	308	288
2029-30		293	322	283
Change- 2024-25	**#**	**-10**	**19**	**-20**
to 2029-30	**%**	**-3.3**	**6.3**	**-6.6**
Change 2019-20	**#**	**-17**	**12**	**-27**
to 2029-30	**%**	**-5.5**	**3.9**	**-8.7**

Intermediate, Middle School, and High School enrollments using these 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 the projected total enrollments produced by the three approaches is narrower on a proportionate basis than at the grade K-3 and 3-4 levels. At their widest point (2029-30), the alternative projection resulting from use of the higher birth figure is 79 pupils or 4.1 percent more than the preferred extended projection; using the smaller birth figure, the alternative is 25 pupils or 1.3 percent lower than the preferred extended projection. (See Table 5-29 and Graph 5-13.)

Table 5-29
OCTORARA AREA SCHOOL DISTRICT
Comparison of Preferred and Alternative Extended Projections (Grades K-12)
2024-25 to 2029-30

School Year		**Preferred** Based on Births Fixed at 276	**Alternative B** Based on Births Fixed at 305	**Alternative C** Based on Births Fixed at 268
2024-25		2,025	2,025	2,025
2025-26		2,001	2,018	1,996
2026-27		1,956	1,990	1,946
2027-28		1,937	1,987	1,922
2028-29		1,931	1,996	1,911
2029-30		1,924	2,003	1,899
Change- 2024-25	**#**	**-101**	**-22**	**-126**
to 2029-30	**%**	**-5.0**	**-1.1**	**-6.2**
Change 2019-20	**#**	**-292**	**-213**	**-317**
to 2029-30	**%**	**-13.2**	**-9.6**	**-14.3**

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 the focus 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 the projections in other districts that relied on similar methodologies with the actual enrollments that resulted. The mechanism for doing this is known as the Mean Absolute Percentage Error (or MAPE—which is also known as the Mean Absolute Percentage Deviation). The MAPE and its companion, the Mean Absolute Deviation (which measures absolute values rather than percentage deviation), are the most widely used statistical measurements of average error in quantitative forecast models and indicators of expected accuracy. (Use of the percentage deviation is preferable to the absolute deviation given that figures reflect school districts with enrollments ranging from about 1,000 to over 20,000, so there would be an issue of scale when dealing with absolute values; this is not the case with percentages.)

The calculation of the MAPE involves taking the difference between the actual enrollment figure for a given year in a given district and the figure PEL projected for that district in that year and dividing it by the actual figure and then converting it to a percentage. The resulting figures for each year in all districts are then summed—without regard to signs—and divided by the number of data points. The reason the signs are disregarded is that in data sets such as these where the differences or deviations may be higher or lower than the actual figures the failure to do so would result in the negative differences canceling out those that are positive. This would result in a misleadingly low error calculation. Eliminating the signs avoids this potential problem.

Since 1986, on more than 200 occasions PEL's Central PA Division has examined demographics, housing and related activity, and enrollment trends in central and eastern Pennsylvania school districts and, using the techniques employed in this analysis, generated projections of enrollments covering a 10-year period. And, we regularly evaluate the accuracy of these projections by determining the MAPEs. Projections generated more than 10 years ago have all 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; for others there has been only one year of actual figures on which to make judgments regarding PEL's accuracy.

Based on actual enrollments through the 2013-14 school year (and based on 900 data points) the average MAPE for the first five years of projections is just over +/-3.0 percent (essentially, about +/-1 percent the first year, +/-2.0 percent the second year, etc., and by the fifth year, the figure is about +/-5 percent). For years six through 10, our calculations are based on 725 data points and the difference between the projected and actual figures averages +/-7.7 percent. The overall average MAPE reflecting 1,625 data points in all 10 projected years is +/-5.2 percent. The literature indicates that accuracy of +/-5.0 percent *after five years* is acceptable.

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The projections generated by PEL for the Octorara Area School District are the 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 the expected levels of construction in the various subdivisions as of the fall of 2019 as well as any additional housing that could reasonably be assumed to be built during the years ahead (all as outlined in Chapter 2). The methodology recognizes any anticipated age-qualified and similar housing units in the pipeline and is sensitive to the expected impact of the continued sale and turnover of mature owner-occupied housing and rental units in the district. Further, the methodology assumes that overall migration and related patterns will remain consistent with expectations at the time data was gathered, that the role of schools and educational programs other than those operated directly or jointly by Octorara Area or contracted for by the district (if any) will be compatible with expected patterns at that time, and the district will continue its current policies relative to its kindergarten, CTC, and special education programs and maintain its other key policies—and that the number of out-of-district students in grades 11 and 12 enrolled in Octorara's "Homeland Security" program on a tuition basis will remain at (or near) 2019-20 levels.

Projections represent calculations based on hard data and analysis of relevant events in the Octorara Area 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. Unexpected 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.

Perhaps more notably, at the time of this report, the Commonwealth and our country are in the midst of responding to the Covid-19 pandemic, which could have an effect on certain of the assumptions on which the projections contained in this study are based. The overall impact on the national, regional, and local economies, employment, the housing and numerous other industries, and—given the early closure of the public school system in the spring of 2020—possible changes in the roles of home, external cyber, and charter schools could all have an almost immediate effect on Octorara's enrollments and could alter numerous factors critical to the district's longer-term enrollment patterns. Further, possible changes in birth patterns could impact the district's enrollments starting five years from now. Combined, these factors and conditions heighten the uncertainty about the potential accuracy of the projections put forth in this report.

Under normal circumstances PEL believes the projections offered in its reports are as reasonable and as realistic as possible in light of the available facts, and—based on our experience, the indicators we rely on, the techniques we use, and our track record—have served many Pennsylvania school districts well in their short- and long-term planning.

Having said that, while it is always essential that district officials continually monitor and analyze the various factors that can influence their enrollments to quickly identify any significant changes in order to make the appropriate adjustments in the projections, given the breadth of the unknowns at this time, district officials should maintain an even stronger watchful eye on these and other emerging patterns and unforeseen consequences to determine whether the district's enrollments remain within the parameters set forth in this analysis. If they do not, PEL—if requested—would revisit its projections when warranted (at no additional cost to the district) and make any appropriate adjustments based on information that may be available in the future.