

**A Comprehensive Updated Analysis of  
Demographics, Housing and Related Activities,  
and Other Relevant Factors and Aggregate  
Districtwide Projections of K-12 Enrollments  
in the Palmyra Area School District  
2016-17**

**Prepared by:**

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**December 15, 2016**



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## **MEMORANDUM**

**To:** Mrs. Darcy Brenner-Smith, Director of Business Affairs

**From:** Gerald E. Cross, Executive Director

**Date:** December 15, 2016

**Subject:** PEL Enrollment Study

The Pennsylvania Economy League, Central PA Division, is pleased to submit the attached report provided our detailed examination of demographics, housing and related activity, and projections of public school enrollments in the Palmyra Area School District.

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.

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 which confront them with respect to the future operation of the district.

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CHAPTER 1  
GENERAL CHARACTERISTICS

The Palmyra Area School District is located in the western and southern portions of Lebanon County and borders Dauphin County to the west and Lancaster County to the south. The district encompasses about 36.7 square miles and is comprised of three municipalities: Palmyra Borough and the townships of North Londonderry and South Londonderry.

Based on U.S. Census figures, between 1990 and 2010 Palmyra Area experienced an increase in population from 17,042 to 22,379—a gain of 5,337 or 31.3 percent. The population of the district rose in both of these decades, and well over half of the growth occurred in the 2000s. During this 20-year period, all three of the district's member municipalities recorded gains in population. South Londonderry Township was up by 2,489 (55.3 percent), North Londonderry Township grew by 2,438 (43.3 percent), and Palmyra Borough gained 410 residents (5.9 percent). (See Table 1-1 and Graph 1-1.)

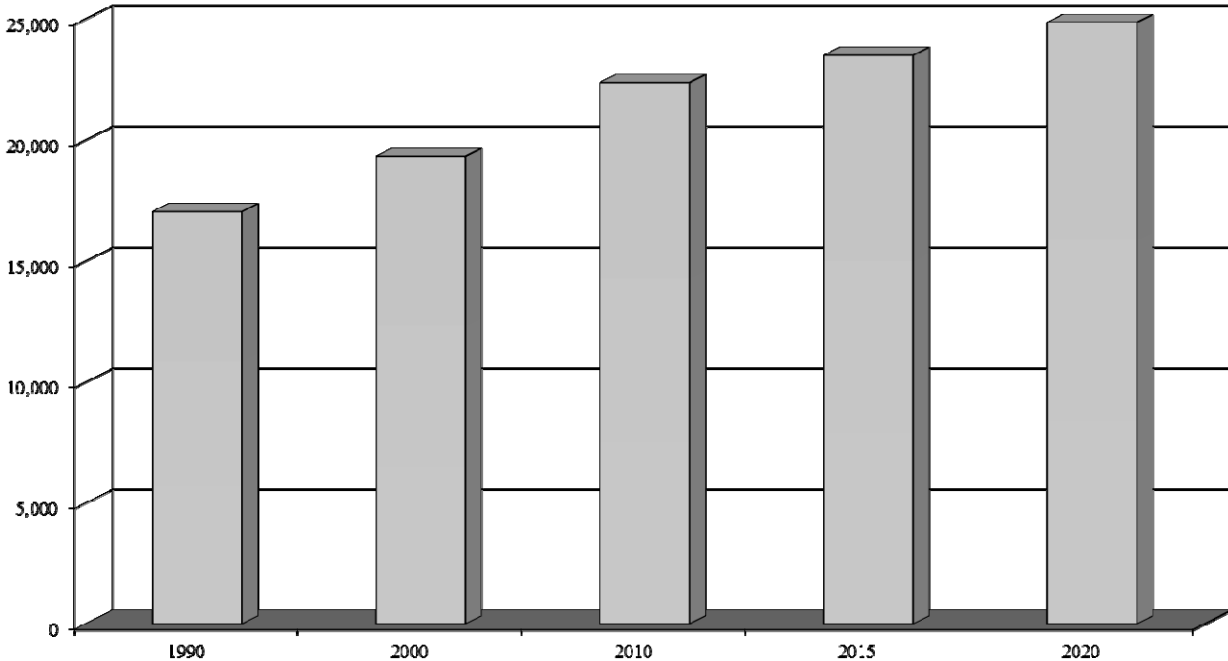
Table 1-1  
PALMYRA AREA SCHOOL DISTRICT  
Population Trend  
1990 to 2010

Municipality	Total Population			Change 1990 to 2010		Change 1990 to 2000		Change 2000 to 2010	
	1990	2000	2010	#	%	#	%	#	%
North Londonderry Twp.	5,630	6,771	8,068	2,438	43.3	1,141	20.3	1,297	19.2
Palmyra Borough	6,910	7,096	7,320	410	5.9	186	2.7	224	3.2
South Londonderry Twp.	<u>4,502</u>	<u>5,458</u>	<u>6,991</u>	<u>2,489</u>	55.3	<u>956</u>	21.2	<u>1,533</u>	28.1
<b>District Total</b>	<b>17,042</b>	<b>19,325</b>	<b>22,379</b>	<b>5,337</b>	<b>31.3</b>	<b>2,283</b>	<b>13.4</b>	<b>3,054</b>	<b>15.8</b>
<b>Lebanon County</b>	<b>113,744</b>	<b>120,327</b>	<b>133,568</b>	<b>19,824</b>	<b>17.4</b>	<b>6,583</b>	<b>5.8</b>	<b>13,241</b>	<b>11.0</b>

SOURCE: U.S. Bureau of the Census.

As a point of reference, Lebanon County's population rose from 113,744 in 1990 to 133,568 in 2010, or by 19,824 or 17.4 percent. Palmyra Area's rate of growth was almost twice that of the county during this period. Like the district, the population of the county as a whole increased at a faster rate in the 2000s than in the 1990s.

Graph 1-1  
 PALMYRA AREA SCHOOL DISTRICT  
Population Trends, Estimates, and Projections  
 1990 to 2020



During the 1990s Palmyra Area recorded a rise in population of 2,283 or 13.4 percent. All of the district municipalities experienced growth during this period. North Londonderry Township grew by 1,141 (20.3 percent), South Londonderry Township rose by 956 (21.2 percent), and Palmyra Borough was up by 186 (2.7 percent). Lebanon County’s population increased by 6,583 or 5.8 percent during the 1990s. The rate of population growth in Palmyra Area was more than twice that of the county during the decade of the 1990s.

Between 2000 and 2010, the district’s population rose by 3,054 or 15.8 percent. Again, each of the district’s three municipalities recorded gains during this period. North Londonderry was up by 1,297 residents (19.2 percent), South Londonderry increased by 1,533 (28.1 percent), and Palmyra’s population grew by 224 (3.2 percent). Between 2000 and 2010 the county’s population increased by 13,241 or 11.0 percent. The rate of growth in the district was noticeably faster than that of the county during this period.

The Palmyra Area School District’s population in the under 18 age group increased by 539 or 12.4 percent between 2000 and 2010; the number of residents age 18 to 64 grew by 1,535

or 13.1 percent; and the number of those 65 or over rose by 980 or 29.8 percent. In 2010, 21.9 percent of the population in the district was under 18 years of age, 59.1 percent was between the ages of 18 and 64, and 19.1 percent was age 65 or over. The proportion of Palmyra Area's population in the under 18 and 18 to 64 age groups decreased between 2000 and 2010; conversely, the percentage of those age 65 or over increased.

The proportion of Palmyra Area's 2010 population in the under 18 age group (21.9 percent) was below the county figure (23.0 percent), and the same was true for those between the ages 18 and 64 (59.1 percent versus 60.3 percent). However, the proportion of the district's population age 65 and over (19.1 percent) was above the county figure (16.7 percent). In 2010, the median age in the district was 43.7 (up from 40.2 in 2000); countywide, the median age was 40.1 (up from 38.7 in 2000). Statewide, the median age in 2010 was 40.1 (up from 38.0 in 2000). (See Table 1-2.)

Table 1-2  
PALMYRA AREA SCHOOL DISTRICT  
Population by Age Group  
2000 to 2010

Age grouping	2000		2010		Change in PASD Population 2000 to 2010	
	Palmyra Area	County	Palmyra Area	County	#	%
	#	% of Total	#	% of Total		
Under 18	4,354	22.5	4,893	21.9	539	12.4
18-64	11,681	60.4	13,216	59.1	1,535	13.1
65 & Over	<u>3,290</u>	<u>17.0</u>	<u>4,270</u>	<u>19.1</u>	<u>980</u>	29.8
<b>Total</b>	<b>19,325</b>	<b>100.0</b>	<b>22,379</b>	<b>100.0</b>	<b>3,054</b>	<b>15.8</b>

NOTE: Not all numbers may add due to rounding.

SOURCE: U.S. Bureau of the Census.

The U.S. Census Bureau estimates that the population of the Palmyra Area School District grew by 1,123 persons or 5.0 percent from the time of the 2010 Census through July of 2015. North Londonderry Township was estimated to have experienced an increase of 295 residents (3.7 percent), Palmyra Borough was believed to have risen by 131 (1.8 percent), and South Londonderry Township was estimated to have grown by 697 (10.0 percent).

Lebanon County’s population was estimated to have increased by 3,409 or 2.6 percent during this period. Palmyra Area’s proportionate growth between 2010 and 2015—based on these estimates—was almost double that of the county during this period. (See Table 1-3 and Graph 1-1.)

Table 1-3  
 PALMYRA SCHOOL DISTRICT  
Actual and Estimated Population  
 2010 to 2015

Municipality	Actual 2010	Estimate 2015	Change 2010 to 2015	
			#	%
North Londonderry Twp.	8,068	8,363	295	3.7
Palmyra Borough	7,320	7,451	131	1.8
South Londonderry Twp.	<u>6,991</u>	<u>7,688</u>	<u>697</u>	10.0
<b>District Total</b>	<b>22,379</b>	<b>23,502</b>	<b>1,123</b>	<b>5.0</b>
<b>Lebanon County</b>	<b>133,658</b>	<b>137,067</b>	<b>3,409</b>	<b>2.6</b>

SOURCE: U.S. Bureau of the Census.

According to figures found in the Lebanon County Comprehensive Plan (2007), the district’s population is projected to increase to 24,863 in 2020—or by 2,484 or 11.1 percent over the 2010 Census figure. (Based on the 2015 U.S. Census estimates it would appear that the district as a whole is just very slightly behind the annual pace necessary to reach the projected level by the end of the decade.) North Londonderry Township is expected to grow by 1,520 (18.8 percent), and South Londonderry Township is projected to rise by 1,098 (15.7 percent). Based on these projections, Palmyra Borough will lose 134 residents or 1.8 percent of its population by 2020. The population of the county is projected to increase to 140,075 in 2020—a gain of 6,507 or 4.9 percent over the 2010 Census. The district’s expected rate of growth during the period 2010 to 2020 is a little more than twice that of the county. (It should be noted that these projections were generated prior to the release of 2010 U.S. Census data.) (See Table 1-4 and Graph 1-1.)

Table 1-4  
 PALMYRA AREA SCHOOL DISTRICT  
Actual and Projected Population  
 2010 to 2020

Municipality	Actual 2010	Projected 2020	Change 2010 to 2020	
			#	%
North Londonderry Twp.	8,068	9,588	1,520	18.8
Palmyra Borough	7,320	7,186	-134	-1.8
South Londonderry Twp.	<u>6,991</u>	<u>8,089</u>	<u>1,098</u>	15.7
<b>District Total</b>	<b>22,379</b>	<b>24,863</b>	<b>2,484</b>	<b>11.1</b>
<b>Lebanon County</b>	<b>133,568</b>	<b>140,075</b>	<b>6,507</b>	<b>4.9</b>

SOURCE: Actual 2010: U.S. Bureau of the Census.  
 Projected 2020: Lebanon County Comprehensive Plan (2007).



**Public school enrollments over the next 10 years will be more dependent on recent and future births, migration patterns, the age composition of the child population, and the role of schools and educational programs other than those operated directly by the district 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

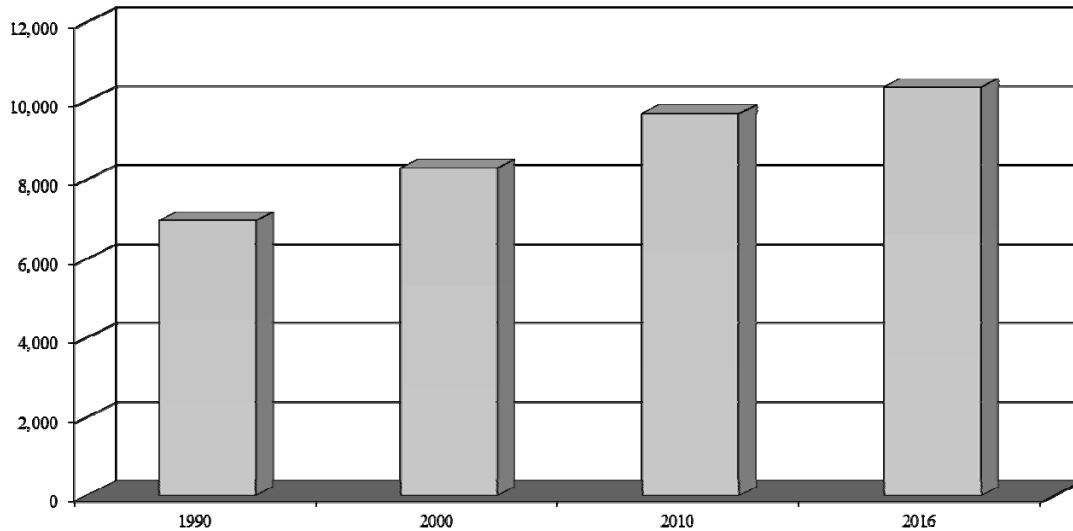
According to the U.S. Census, the number of housing units in the Palmyra Area School District rose from 6,972 in 1990 to 9,670 in 2010—up by 2,698 or 38.7 percent. Growth was experienced in both of these decades, with slightly more than one-half of the increase in the number of residential units occurring during the 2000s; the proportionate rise, however, was slightly lower during that decade than in the 1990s. Each of the district’s three municipalities recorded increases in housing units during the 20-year period. North Londonderry Township grew by 1,222 units (56.2 percent), Palmyra Borough gained 324 units (10.4 percent), and South Londonderry Township rose by 1,152 units (68.6 percent). North Londonderry Township accounted for about 45 percent of all housing units constructed in the district between 1990 and 2010, South Londonderry Township represented almost 43 percent, and Palmyra Borough produced 12 percent of the district’s new residential units during these two decades. (See Table 2-1 and Graph 2-1.)

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

<u>Municipality</u>	<u>Housing Units</u>			<u>Reported Change 1990 to 2010</u>		<u>Reported Change 1990 to 2000</u>		<u>Reported Change 2000 to 2010</u>	
	<u>1990</u>	<u>2000</u>	<u>2010</u>	<u>#</u>	<u>%</u>	<u>#</u>	<u>%</u>	<u>#</u>	<u>%</u>
North Londonderry Twp.	2,173	2,782	3,395	1,222	56.2	609	28.0	613	22.0
Palmyra Borough	3,120	3,363	3,444	324	10.4	243	7.8	81	2.4
South Londonderry Twp.	<u>1,679</u>	<u>2,138</u>	<u>2,831</u>	<u>1,152</u>	68.6	<u>459</u>	27.3	<u>693</u>	32.4
<b>District Total</b>	<b>6,972</b>	<b>8,283</b>	<b>9,670</b>	<b>2,698</b>	<b>38.7</b>	<b>1,311</b>	<b>18.8</b>	<b>1,387</b>	<b>16.7</b>
<b>Lebanon County</b>	<b>44,634</b>	<b>49,320</b>	<b>55,592</b>	<b>10,958</b>	<b>24.6</b>	<b>4,686</b>	<b>10.5</b>	<b>6,272</b>	<b>12.7</b>

SOURCE: U.S. Bureau of the Census

Graph 2-1  
 PALMYRA AREA SCHOOL DISTRICT  
Total Housing Units  
 1990 to 2016



As a point of reference, the total number of housing units in Lebanon County increased from 44,634 in 1990 to 55,592 in 2010 (or by 10,958 or 24.6 percent). Palmyra Area’s overall rate of growth in residential units during these two decades (38.7 percent) was noticeably greater than that of the county as a whole. Like the district, Lebanon County experienced a larger absolute rise in its housing count in the decade of the 2000s than in the 1990s, but, unlike the district, the county's proportionate growth was greater during the 2000s than in the decade that preceded it.

Between 1990 and 2000 the number of housing units in the district grew by 1,311 or 18.8 percent; all of the district’s municipalities recorded increases during this decade. North Londonderry Township was up by 609 units (28.0 percent), Palmyra Borough rose by 243 units (7.8 percent), and South Londonderry Township experienced an increase of 459 units (27.3 percent). In the most recent decade, the number of housing units in Palmyra Area rose by 1,387 (16.7 percent); again, each of the district’s municipalities experienced growth. North Londonderry Township increased by 613 units (22.0 percent), Palmyra Borough gained 81 units (2.4 percent), and South Londonderry Township was up by 693 units (32.4 percent).

In 1990 Palmyra Borough had more housing units than either of the district’s other two municipalities (3,120 or 44.8 percent of the total). North Londonderry Township was the second

largest district municipality based on housing with 2,173 units (31.2 percent of the total), and South Londonderry Township was the district's smallest municipality in terms of housing units with 1,679 (24.1 percent of the total).

By 2000, the number of residential units in Palmyra Borough had grown to 3,363, and the borough remained the district's largest municipality based on housing units; however, its proportionate share of the total was down to 40.6 percent. North Londonderry remained second largest with 2,782 units (up to 33.6 percent of the district total), and South Londonderry Township continued as the smallest of the district's municipalities based on residential units with 2,138 (up to 25.8 percent of the total).

In 2010, Palmyra Borough still had the largest number of housing units in the district (3,444), but its proportion of the total had decreased again to 35.6 percent. North Londonderry Township continued as the district's second largest municipality based on housing units with 3,395, and its proportion of the district total had grown to 35.1 percent. South Londonderry Township remained the smallest district municipality in terms of housing with 2,831 units, and its proportionate share of the district total was also up (to 29.3 percent).

Thus far in the current decade (that is, between January of 2010 and the end of June of 2016), 678 additional housing units were permitted for construction in the district (in the absence of data on construction permits, Palmyra Borough's figures are based on sewer connection permits issued). The average number of permits issued throughout the district during this six and one-half year period was 104 per year—down from an average of 139 per year for the prior decade, but up from the average 88 new units per year during the final three years of the 2000s.

The new units permitted for construction (or issued sewer connection permits) in this decade raised the total number of residential units in Palmyra Area (as of the summer of 2016) to 10,348 (up by 7.0 percent over the 2010 Census figure). All three of the district's municipalities recorded new housing during this period. The largest gain was experienced in South Londonderry Township (423 units or 14.9 percent). North Londonderry Township grew by 142 units or 4.2 percent, and Palmyra Borough recorded 113 new units—up by 3.3 percent. South Londonderry Township accounted for 62.4 percent of the new housing units in Palmyra Area between 2010 and the end of June of 2016, North Londonderry generated 20.9 percent of the new housing, and Palmyra Borough contributed 16.7 percent.

Given these figures, as of June of 2016 Palmyra Borough remained the largest of the district's municipalities in terms of housing units with 3,557 (but by only a very small margin),

and its proportionate share of the district total was down still again—from 35.6 percent in 2010 to 34.4 percent. North Londonderry Township was the second largest of the district’s municipal jurisdictions based on housing units, with 3,537 (34.2 percent of the total— down from 35.1 percent in 2010). South Londonderry was still the smallest district municipality in terms of housing with 3,254 units—up from 29.3 percent in 2010 to 31.4 percent. (See Table 2-2 and Graph 2-1.)

Table 2-2  
PALMYRA AREA SCHOOL DISTRICT  
Number of Housing Units Authorized by Permit  
2010 to 2016<sup>1</sup>

<u>Municipality</u>	<u>2010</u>	<u>Reported Number of Housing Units Permitted for Construction<sup>1</sup></u>						<u>Est. Total 2016<sup>1</sup></u>	<u>Change</u>		<u>% of Units Added</u>
		<u>2011</u>	<u>2012</u>	<u>2013</u>	<u>2014</u>	<u>2015</u>	<u>2016</u>		<u>#</u>	<u>%</u>	
N. Londonderry Twp.	34	33	31	25	10	6	3	3,537	142	4.2	20.9
Palmyra Borough	8	8	18	19	30	9	21	3,557	113	3.3	16.7
S. Londonderry Twp.	<u>39</u>	<u>10</u>	<u>59</u>	<u>65</u>	<u>88</u>	<u>88</u>	<u>74</u>	<u>3,254</u>	<u>423</u>	14.9	<u>62.4</u>
<b>District Total</b>	<b>81</b>	<b>51</b>	<b>108</b>	<b>109</b>	<b>128</b>	<b>103</b>	<b>98</b>	<b>10,348</b>	<b>678</b>	<b>7.0</b>	<b>100.0</b>

1 Permit figures for 2016 are through June. It should be noted that in the absence of data on construction permits, all of Palmyra Borough’s figures are based on sewer connection permits. Further, Palmyra’s figures for 2016 reflect the borough’s projection for the full year.

NOTE: All figures may not add due to rounding

SOURCE: Respective municipalities.

According to municipal officials, as of June 2016 there were 11 approved subdivisions in the Palmyra Area School District, two that had been formally proposed, and five that were considered to be in the early planning stages or believed to be under discussion. In addition, two of the district’s three municipalities expected to experience some level of infill, minor subdivision activity, and/or miscellaneous housing construction.

The overall inventory of approved and proposed residential subdivisions and possible other housing activity as of midyear totaled 870 units and included 245 units in the approved subdivisions, another 44 units that could result from residential developments that had been formally proposed, and 541 units that were considered to be in the early planning stages or believed to be under discussion. Infill, minor subdivision activity, and/or miscellaneous housing construction was expected to result in about 40 new units during the next 10 years.

It should be noted that the five parcels representing the 541 units listed as being in the early planning stages or believed to be under discussion in North Londonderry Township simply hold the potential to produce this number of new units. As such, they are part of the inventory in name only and are not reflected in PEL's projection model/methodology. In view of this, a more realistic expectation for housing construction in the district during the next 10 years (based on the most definitive information available as of June 2016) totals 329 units—245 in approved subdivisions, 44 units that have been formally proposed, and 40 units of expected to result from infill, minor subdivision activity, and/or miscellaneous housing construction. No units known to be under serious discussion or in the early planning stages are included in these figures or PEL's projection model/methodology.

All references to housing units in subdivisions reflect lots that remain available for construction as of end of June 2016—not the total number of units in the subdivision which would include units already built, those under construction, and those for which building permits have been issued. (See Table 2-3.)

In North Londonderry Township there are three approved subdivisions, one that has been formally proposed, and five that are considered to be in the early planning stages or believed to be under discussion. The township anticipates a very limited amount of annual infill, minor subdivision activity, or miscellaneous housing construction in the years ahead.

The approved subdivisions are expected to result in 13 new units, the proposed project reflects an additional 40 units, and the developments considered to be in the early planning stages or believed to be under discussion hold the potential to produce about 541 units. The infill, minor subdivision activity, and/or miscellaneous housing construction is likely to generate an average of just one unit per year or a total of 10 units during the next 10 years—primarily on large lots in the northern portion of the township.

The number of units that remain to be constructed in the approved subdivisions in North Londonderry (all of which are single-family detached homes) include four at Heather Glen, another four at Edison Woods, and five at Tiffany's Equine Estates. Heather Glen is expected to be fully built-out by the end of 2020; no reliable estimates were available on the timelines for construction of the remaining units at Edison Woods or Tiffany's Equine Estates.

Table 2-3  
 PALMYRA AREA SCHOOL DISTRICT  
Approved and Proposed Residential Subdivisions and Other Housing Activity  
 (as of June 2016)

<u>Development Activity</u>	<u>Type of Housing<sup>1</sup></u>	<u>Units to be Completed<sup>2</sup></u>	<u>Avg. Units/Year<sup>2</sup></u>	<u>Start Date<sup>2</sup></u>	<u>Estimated Completion Date<sup>2</sup></u>
<b><u>APPROVED</u></b>					
<u>North Londonderry Township</u>					
Heather Glen	SFD	4	1	U	2020
Edison Woods	SFD	4	?	U	?
Tiffany's Equine Estates	SFD	5	?	U	?
<u>Palmyra Borough</u>					
Londonderry Apartments <sup>3</sup>	APT	- <sup>3</sup>	-	U	2016
MacIntosh Crossing	APT/SFD	22	6	U	2020
<u>South Londonderry Township</u>					
Carriage Park	SFD	19	10	U	2018
Forest Ridge Estates	SFD	19	3	U	2022
Foxhill Estates	SFD	1	?	U	?
Northside Crossing	MIX	70	35	U	2018
Village at Springbrook Farms <sup>4</sup>	TH	53	26	U	2018
Windermere	MIX	48	8	U	2022
<b><u>PROPOSED</u></b>					
<u>North Londonderry Township</u>					
London Croft (next phase)	SFD	40	?	?	?
<u>Palmyra Borough</u>					
None	-	-	-	-	-
<u>South Londonderry Township</u>					
Vanderhoef	SFD	4	?	?	?

Table 2-3  
 PALMYRA AREA SCHOOL DISTRICT  
Approved and Proposed Residential Subdivisions and Other Housing Activity  
 (as of June 2016)

<u>Development Activity</u>	<u>Type of Housing<sup>1</sup></u>	<u>Units to be Completed<sup>2</sup></u>	<u>Avg. Units/Year<sup>2</sup></u>	<u>Start Date<sup>2</sup></u>	<u>Estimated Completion Date<sup>2</sup></u>
<b><u>UNDER DISCUSSION</u></b>					
<u>North Londonderry Township</u>					
J. Brandt Farm <sup>5</sup>	SFD	56	?	?	?
MFS Parcel <sup>5</sup>	SFD	100	?	?	?
S. McDonald Farm <sup>5</sup>	SFD	119	?	?	?
G. Musser <sup>5</sup>	SFD	85	?	?	?
L. Sensening Farm <sup>5</sup>	SFD	181	?	?	?
<u>Palmyra Borough</u>					
None	-	-	-	-	-
<u>South Londonderry Township</u>					
None	-	-	-	-	-
<b><u>MINOR ACTIVITY</u></b>					
North Londonderry Twp.	SFD	10	1	U	2025
Palmyra Borough	-	-	-	-	-
South Londonderry Township	SFD	30	1	U	2025

1 Housing codes are as follows: SFD = Single-Family Detached; APT = Apartments; TH = Townhouse; MIX = Townhouses, Duplexes, and/or Apartments; ?? = Unknown  
 2 Estimating the starting date and build-out at the district’s various developments 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 All sewer connection permits have been issued for the units in the Londonderry Apartments in Palmyra Borough. Therefore, these units are reflected on Table 2-2. For that reason, the units in this complex are not included on this table or on Table 2-4 as units remaining to be built. Although not formally age-qualified, it is believed that the resulting units in the Londonderry Apartments will be rented to seniors.  
 4 Partially age-qualified (55 and over) or similar in nature.  
 5 Units listed for this parcel in North Londonderry reflect only the potential number that could be generated. No project is believed to be imminent and, in fact, may never materialize during the 10-year horizon of this study. The number of units remains part of the overall inventory in name only, and these potential units are not reflected in PEL’s enrollment projection model/methodology. It is important to note, however, that township officials report that there has been some recent expression of interest in the MFS parcel, the S. McDonald farm, and the L. Sensening Farm.

It should be noted that since the time of PEL's prior study for the district the Arbor Greene and the initial phases of London Croft have been fully built out.

The proposed development is the newest phase of the London Croft subdivision, and it involves 40 single-family detached units. It is not known when approval for this project will be given, and, therefore, it is uncertain when construction will be initiated, what the pace of the build-out will be, or when the subdivision is expected to be completed.

The developments that are listed as under discussion or in the early planning stages reflect the potential for about 541 single-family detached units and include the MFS parcel (100 units); the S. McDonald farm (119 units); the Gerald Musser parcel (85 units); the J. Brandt tract (56 units); and the L. Sensening farm (181 units). These five parcels lie to the south and east of Palmyra Borough and are in areas of North Londonderry that are not connected to the township's new sewage treatment plant. In order for development to proceed, an interceptor line would need to be constructed, and township officials indicate that construction of such a line would be a complex undertaking involving multiple parcels and the cost would have to be borne by the developers. Because of this, the construction of these 541 units that are listed as "projects under discussion" is regarded only as potential by municipal officials. But, it is reported that recent interest has been shown in three of the tracts (the MFS parcel, the S. McDonald farm, and the L. Sensening farm). There are no signs of any movement on the two other parcels in this group.

Given all this—and although some reason interest has been expressed in the MFS, McDonald, and, Sensening parcels—the 541 potential new units reflected by these projects are not included in the realistic expectations of new housing construction during the next 10 years or in PEL's enrollment projection model/methodology. These potential projects/units remain as part of the inventory in name only and are not considered imminent at this time.

In the past, North Londonderry received sewage treatment services from Palmyra Borough—but only in the southern portion of the township, and at the time of PEL's 2012 study for Palmyra Area a self-imposed moratorium on sewer connections had been in place for several years due to conveyance issues. The moratorium (which did not affect projects that had been approved at the time that the moratorium was put in place) was lifted in 2012 when the North Londonderry Township Authority completed construction a new regional wastewater treatment plant to serve the township and Palmyra Borough. Thus, since December 2012 all flows from North Londonderry and the borough have been conveyed to the new facility. Palmyra decommissioned its treatment plant, but it continues to own and operate its wastewater collection



and conveyance system. The new North Londonderry plant operates under DEP National Pollutant Discharge Elimination System permit number PA 0261262 and has a peak monthly design wastewater flow capacity of 2.0 MGD. The treatment plant is also designed for organic loading of 5,705 pounds BOD/day. Capacity at the plant is believed to be more than adequate to meet the townships needs well into the future.

Public water supply is provided to portions of the township by the Pennsylvania American Water Company.

Most of the new housing construction in North Londonderry Township is expected to occur in the southern quadrant (south of Route 422) where virtually all unimproved land (including farms) is zoned R2. Housing construction in the northern portion of the township (where all water and sewerage services are on-lot) generally involves larger and more expensive homes on single lots of 5 to 10 acres. The level of activity in this part of the township has been negligible compared with the other areas. It was reported that soils tend to make parking problematic in some cases, and this commonly results in more costly treatment methods. According to municipal officials, the type of housing built in the northern part of the township normally does not generate a high number of public school children.

Turnover of mature owner-occupied housing does not appear to be a major factor affecting the township's demographics, nor is the presence of (or turnover in) renter occupied units.

The number of new units that will be built in North Londonderry during the next several years is expected to remain at a relatively modest level as was the case in 2014, 2015, and thus far in 2016. Further, new residential construction will likely remain at modest levels beyond the next several years unless some of the parcels that have the potential to be developed are connected to the new sewage treatment plant. If this is the case there would be a noticeable upturn in residential construction.

In Palmyra Borough there are two approved and ongoing subdivisions; no other project has been formally proposed and none is known to be under discussion or in the early planning stage. Further, borough officials report that they anticipate no infill, minor subdivision activity, or miscellaneous housing construction during the next several years.

The approved project projects are MacIntosh Crossing (where 22 townhouses remain to be constructed) and the Londonderry Apartments (where eight units are being constructed). It should be noted that all sewer connection permits have been issued for the units in the

Londonderry Apartments. Therefore, the units in this complex are not considered “remaining to be built” and are not included on tables 2-3 or 2-4; instead, these units are reflected in the number of recently issued permits on Table 2-2. It is believed that construction at MacIntosh Crossing will average of about six new units per year and full build-out will occur in 2020; it is expected that the Londonderry Apartments will be completed this year. Although the project is not formally age-qualified, it is believed that the Londonderry Apartments will be rented almost exclusively to seniors.

At the time of PEL’s 2012 study for the district, a proposal for garden apartments (then referred to as the Spruce Street Apartments, and now known as Grace Meadows) was pending. Since then, 42 units were approved and constructed, and, reportedly, all are rented. Similarly, there was a subdivision involving five single-family detached units on the Helm tract that was known to be under discussion at the time of PEL’s prior study, and, in the intervening years, this project was formally proposed, approved, and is fully built out.

Borough officials noted that Palmyra is almost fully built out, and they identified only two sizable parcels that have the potential to be subdivided and produce additional housing units. One is a tract owned by Len Chimel (on the extension of North Chestnut Street) where a plan for 21 single-family detached units was discussed several years ago. At that time, borough officials noted that there were some environmental issues involving the site, and the scope of the project might have to be reduced. The plan was never advanced. It is now believed that the parcel (which is zoned R1) could produce a larger number of age-qualified condominiums. The other parcel is the 12-acre Handshaw tract (on the south side of Ridge Road). It is reported that this property was recently sold and that any residential construction on this site would be limited to single-family detached units. No plans have been submitted for either of these parcels, and, in fact, no activity has even been rumored.

With respect to infill, minor subdivision activity, and/or miscellaneous housing construction, borough officials noted that very few vacant parcels remain (perhaps a half dozen at most), and there is no reason to believe that any of these will be developed during the next 10 years. As such, no infill, minor subdivision activity, or miscellaneous housing construction in the borough is reflected on any of the tables in this chapter.

Historically, borough has operated its own sewage collection system and treatment plant serving the entire municipality and also portions of North Londonderry Township. However, when the new North Londonderry treatment plant became fully operational in 2012, the

borough's wastewater flow was redirected to that plant, and the borough's plant was put out of service. The borough still operates the collection and conveyance systems. It is believed that the borough has access to sufficient capacity at the North Londonderry plant to meet its current and anticipated needs.

Public water supply in the borough is provided by the Pennsylvania American Water Company.

Borough officials report a rising number of rental units (now about 44 percent of all housing) and have observed some turnover involving these types of units and also owner occupied housing. This has resulted in some changes in the demographic mix from older folks to younger families with children.

Palmyra officials expect that residential construction activity in the borough during the next several years will likely reflect a bit of a downturn from the average of the past several years and be limited to MacIntosh Crossing. When this project runs its course, the level of new housing activity will become negligible, given the absence of parcels that are readily available for residential development.

In South Londonderry Township there are six approved subdivisions and one project that has been formally proposed. No other project is known to be under discussion or in the early planning stage, but the township anticipates a modest level of infill, minor subdivision activity, and/or miscellaneous housing construction. It is believed that the approved developments will result in 210 new housing units, and the proposed project will generate four additional residential units. The infill, minor subdivision activity, and/or miscellaneous housing construction is likely to produce an average of three new units annually or a total of 30 units during the next 10 years.

The approved project that will result in the most new units during the next several years is Northside Crossing, where 70 units (primarily townhouses and duplexes) remain to be built. Two other approved subdivisions with a sizable number of units remaining to be built are the Village at Springbrook Farms (where 53 townhouses are expected to be constructed, some of which will be age-qualified—55 and over) and Windermere (where 48 townhouses and duplexes remain to be built). It is believed that the Village at Springbrook Farms will be built out by the end of 2018, and Windermere is likely to be completed by the end of 2022.

At Carriage Park, 19 single-family detached units remain to be built, and it is expected that all will be completed by 2018. Forest Ridge Estates also has 19 single-family detached units remaining to be constructed, and this project is expected to be completed in 2022. In Fox Hill

Estates there is just one single-family remaining to be built, and it is unknown when this might occur.

The proposed project (Vanderhoef) involves four single-family detached units. It is believed that the proposal will be approved in a timely fashion and that the project will be fully built out by 2019.

It should be noted that since the completion of PEL's 2012 study for the district, the single-family detached units at Springbrook Farms, Stone Knoll, and Timber Ridge developments were all built.

Four sewage treatment plants serve South Londonderry, but very little treatment capacity is available beyond that which has been allocated to the approved and proposed developments. However, a developer recently "returned" between 25 and 30 EDUs at the East Treatment Plant making them available for use in that service area.

Generally speaking, the units outlined above and identified on Table 2-3 and Table 2-4 essentially represent all housing that will be constructed in the areas of the township covered by public sewage collection and treatment systems—unless and until such time as additional treatment capacity becomes available.

It should be noted that the township will be constructing a replacement for one of its treatment plants, but there will only be a negligible increase in the number of EDUs available. Further increases in sewage treatment capacity in some areas of the township is viewed as problematic for several reasons including zoning issues, agricultural preservation zones, and difficulty in getting DEP permits due to potential discharge into sensitive and "at risk" waterways.

Infill, minor subdivision activity, and/or miscellaneous housing construction has been limited primarily in the southern part of township, which is not part of any of the sewage collection systems. The level of construction has been quite modest, and, in spite of an ample amount of land, it is anticipated that only limited activity will occur in these areas in the future (an average of three units per year or 30 over the next 10 years). In the sections of the township where water supply and sewerage must be provided for on-site, there are some poor soil conditions and a high water table suggesting that perking can be problematic. However, lot sizes are often quite large (a minimum of two acres), and difficulty with perking simply results in still larger lot sizes and/or more costly treatment mechanisms.

The Pennsylvania American Water Company provides public water supply to some areas of the township.

It was reported that the housing turnover in South Londonderry Township is fairly stable, and rental properties are not a major component of the housing stock.

While a considerable amount of land in the township remains undeveloped, in the absence of readily available sewage treatment capacity, expansion of the plants and other infrastructure improvements would be necessary for development of these areas to occur. Township officials have clearly stated that such infrastructure improvements would occur only at the developers' expense, and it is estimated that the planning, approval, permitting, and construction of any expansion to a sewage treatment plant would take a minimum of three years. Further, the terms of the joint comprehensive plan involving the school district and all of the municipalities that constitute the district directs high density growth to North Londonderry Township, thereby suggesting that, in the future, this type of residential development is unlikely to occur in South Londonderry.

In view of all this, after the full build-out of the approved and proposed subdivisions, housing construction in South Londonderry will likely be limited to minor subdivisions in the southern portion of the township involving larger lots carved out of farmers' fields and served by on-site water supply and sewage treatment mechanisms.

It would appear that the amount of housing construction in South Londonderry Township during the next five to six years will total between 200 and 220 units, which is equal to roughly one-half the number of units built in the township during the first 6.5 years of this decade. In subsequent years there will likely be a decline in the annual number of new units built and, eventually, new housing construction will stabilize at a very modest level.

According to the U.S. Census, during the 1990s, 1,311 new housing units were constructed in the Palmyra Area School District compared with 1,249 units in the 1980s and 1,440 units during the 1970s. In the decade of the 2000s, a total of 1,387 new dwelling units were added—a figure that exceeded the number of units built in the immediate preceding decade (by 76 or 5.8 percent) and the number built in the 1980s (by 138 or 11.0 percent), but which fell slightly short of the number of units built in the 1970s (by 53 or 3.7 percent).

It should be noted that the vast majority of new housing in the Palmyra Area School District during the period 2000 to 2010 was built between 2000 and 2006, when an average of 168 units were constructed yearly. In 2007 the annual figure dropped to 98, in 2008 it fell further

to 80, and in 2009 the count was 87. The number of new units built during the final three years of the past decade averaged only 88—just slightly more than one-half the average for the first seven years of the decade.

As stated earlier in this chapter, thus far in the current decade (that is, between January of 2010 and the end of June 2016), 678 additional housing units were permitted for construction in the district (or, in the absence of data on construction permits, Palmyra Borough's figures are based on sewer connection permits issued). The average number of permits issued throughout the district during this six and one-half year period was 104 per year—down from an average of 139 per year for the prior decade, but up from the average 88 new units per year during the final three years of the 2000s.

Based on information gathered from interviews and conversations with municipal officials—and data provided by them—the current overall inventory of new residential units in the approved and proposed subdivisions and other housing activity totals 870 and includes 245 units in the approved developments, another 44 units that could result from residential subdivisions that have been formally proposed, and 541 units that are considered to be under discussion or believed to be in the early planning stages. Infill, minor subdivision activity, and/or miscellaneous housing construction is expected to result in 40 more new units during the next 10 years. However, municipal officials believe that construction of the projects and potential units listed as being under discussion or in the early planning stages in the overall inventory of future housing activity are not imminent, so they remain as part of the inventory in name only.

Given all this, the 541 of the potential new residential units are not included in the realistic expectations of new housing construction during the next 10 years or in PEL's enrollment projection model/methodology. As a result, the anticipated level of new housing in the district during the next 10 years totals 329 units and includes 245 approved units, 44 proposed units, and 40 units of infill, minor subdivision activity, and/or miscellaneous housing construction. (See Table 2-4.)

The number of new residential units expected to be constructed in the next 10 years is well below the level of housing construction during the decades of the 2000s, 1990s, 1980s, and 1970s, and the first six years and six months of this decade. The expected pace of growth would result in the district's housing stock rising by only about 3.2 percent in the next 10 years—compared with 33.6 percent in the 1970s, 21.8 percent in the 1980s, 18.8 percent in the 1990s, 16.7 percent in the 2000s, and 7.0 percent thus far in this decade.

Table 2-4  
 PALMYRA AREA SCHOOL DISTRICT  
 Estimated Expected Dwelling Unit Construction<sup>1</sup>  
 2016 to 2025  
 (as of June 2016)

Development Activity	Type of Housing <sup>2</sup>	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Total 2016 to 2025
<b>APPROVED</b>												
<u>North Londonderry Township</u>												
Heather Glen	SFD	-	1	1	1	1	-	-	-	-	-	4
Edison Woods	SFD	-	?	?	?	?	?	?	?	?	?	4
Tiffany's Equine Estates	SFD	-	?	?	?	?	?	?	?	?	?	5
Total	-	-	≥1	≥1	≥1	≥1	?	?	?	?	?	13
<u>Palmyra Borough</u>												
Londonderry Apartments <sup>3</sup>	APT	-	-	-	-	-	-	-	-	-	-	- <sup>3</sup>
MacIntosh Crossing	APT/SFD	-	6	6	5	5	-	-	-	-	-	22
Total	-	-	6	6	5	5	-	-	-	-	-	22
<u>South Londonderry Township</u>												
Carriage Park	SFD	-	10	9	-	-	-	-	-	-	-	19
Forest Ridge Estates	SFD	-	3	3	3	3	3	4	-	-	-	19
Foxhill Estates	SFD	-	?	?	?	?	?	?	?	?	?	1
Northside Crossing	MIX	-	35	35	-	-	-	-	-	-	-	70
Village at Springbrook Farms <sup>4</sup>	TH	-	26	27	-	-	-	-	-	-	-	53
Windermere	MIX	-	8	8	8	8	8	8	-	-	-	48
Total	-	-	≥82	≥82	≥11	≥11	≥11	≥12	?	?	?	210
<b>TOTAL APPROVED</b>	-	-	<b>≥89</b>	<b>≥89</b>	<b>≥17</b>	<b>≥17</b>	<b>≥11</b>	<b>≥12</b>	<b>?</b>	<b>?</b>	<b>?</b>	<b>245</b>
<b>PROPOSED</b>												
<u>North Londonderry Township</u>												
London Croft (next phase)	SFD	-	?	?	?	?	?	?	?	?	?	40
<u>Palmyra Borough</u>												
None	SFD	-	-	-	-	-	-	-	-	-	-	-
<u>South Londonderry Township</u>												
Vanderhoef	-	-	?	?	?	?	?	?	?	?	?	4
<b>TOTAL PROPOSED</b>	-	-	<b>?</b>	<b>?</b>	<b>?</b>	<b>?</b>	<b>?</b>	<b>?</b>	<b>?</b>	<b>?</b>	<b>?</b>	<b>44</b>

Table 2-4  
 PALMYRA AREA SCHOOL DISTRICT  
 Estimated Expected Dwelling Unit Construction<sup>1</sup>  
 2016 to 2025  
 (as of June 2016)

Development Activity	Type of Housing <sup>2</sup>	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Total 2016 to 2025
<b>UNDER DISCUSSION</b>												
<u>North Londonderry Township</u>												
J. Brandt Farm <sup>5</sup>	SFD	?	?	?	?	?	?	?	?	?	?	?
MFS Parcel <sup>5</sup>	SFD	?	?	?	?	?	?	?	?	?	?	?
S. McDonald Farm <sup>5</sup>	SFD	?	?	?	?	?	?	?	?	?	?	?
G. Musser <sup>5</sup>	SFD	?	?	?	?	?	?	?	?	?	?	?
L. Sensening Farm <sup>5</sup>	SFD	<u>?</u>	<u>?</u>	<u>?</u>	<u>?</u>	<u>?</u>	<u>?</u>	<u>?</u>	<u>?</u>	<u>?</u>	<u>?</u>	<u>?</u>
Total	-	?	?	?	?	?	?	?	?	?	?	?
<u>Palmyra Borough</u>												
None	-	-	-	-	-	-	-	-	-	-	-	-
<u>South Londonderry Township</u>												
None	-	=	=	=	=	=	=	=	=	=	=	=
<b>TOTAL UNDER DISC.</b>	-	?	?	?	?	?	?	?	?	?	?	?
<b>MINOR ACTIVITY</b>												
North Londonderry Twp.	SFD	1	1	1	1	1	1	1	1	1	1	10
Palmyra Borough	-	-	-	-	-	-	-	-	-	-	-	-
South Londonderry Township	SFD	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>	<u>30</u>
<b>TOTAL MINOR ACTIVITY</b>	-	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>40</b>
<b>TOTAL APPROVED</b>	-	-	<b>≥89</b>	<b>≥89</b>	<b>≥17</b>	<b>≥17</b>	<b>≥11</b>	<b>≥12</b>	?	?	?	<b>245</b>
<b>TOTAL PROPOSED</b>	-	-	?	?	?	?	?	?	?	?	?	<b>44</b>
<b>TOTAL UNDER DISC.</b>	-	-	?	?	?	?	?	?	?	?	?	?
<b>TOTAL MINOR ACTIVITY</b>	-	<b><u>4</u></b>	<b><u>4</u></b>	<b><u>4</u></b>	<b><u>4</u></b>	<b><u>4</u></b>	<b><u>4</u></b>	<b><u>4</u></b>	<b><u>4</u></b>	<b><u>4</u></b>	<b><u>4</u></b>	<b><u>40</u></b>
<b>GRAND TOTAL</b>	-	<b><u>4</u></b>	<b><u>≥93</u></b>	<b><u>≥93</u></b>	<b><u>≥21</u></b>	<b><u>≥21</u></b>	<b><u>≥15</u></b>	<b><u>≥16</u></b>	<b><u>≥4</u></b>	<b><u>≥4</u></b>	<b><u>≥4</u></b>	<b><u>≥329</u></b>

1 Housing codes are as follows: Single-Family Detached; APT = Apartments; SFD = TH = Townhouse; MIX = Townhouses, Duplexes, and/or Apartments; ?? = Unknown  
 2 Estimating the starting date and build-out at the district's various developments is difficult given the various uncertainties involved; estimates reflect the best judgments of the parties involved based on what is known at this time. U = Underway; and ? = Unknown.  
 3 All sewer connection permits have been issued for the units in the Londonderry Apartments in Palmyra Borough. Therefore, these units are reflected on Table 2-2. For that reason, the units in this complex are not included on this table or on Table 2-4 as units remaining to be built. Although not formally age-qualified, it is believed that the resulting units in the Londonderry Apartments will be rented to seniors.  
 4 Partially age-qualified (55 and over) or similar in nature.  
 5 Units listed for this parcel in North Londonderry reflect only the potential number that could be generated. No project is believed to be imminent and, in fact, may never materialize during the 10-year horizon of this study. The number of units remains part of the overall inventory in name only, and these potential units are not reflected in PEL's enrollment projection model/methodology. It is important to note, however, that township officials report that there has been some recent expression of interest in the MFS parcel, the S. McDonald farm, and the L. Sensening Farm.

NOTE: All columns and rows may not add.



All parties should be sensitive to the number of age-qualified/senior-oriented and similar housing units that are under consideration for construction in the years ahead. Specifically, the Village at Springbrook Farms development in South Londonderry was originally approved for a total of 169 units, and 53 of these remain to be constructed. About one-half of the overall number of approved units in this project was to involve age-qualified quads. These types of units are not expected to have a direct or material impact on the district's enrollments. However, housing geared to senior citizens has been known to draw older residents from nearby areas 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. Some turnover in these types of housing has been experienced in parts of the Palmyra Area School District, and it is expected to continue. While some of the turnover results from the normal process of family relocation, some involves older residents relocating to smaller housing within the district, and some is believed to involve older residents being replaced by younger ones with children (or who are about to have them). Clearly, this can affect the demographic mix. 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 a greater impact on enrollments. The district should be mindful of this potential.

PEL's projection methodology (described in Chapter 5) reflects only the new housing that is expected by municipal officials to be constructed in the approved and proposed subdivisions during the next 10 years—plus expected infill, minor subdivision, and miscellaneous housing activity and any units listed as under discussion or in the early planning stages that can reasonably assumed to be constructed during this period. Further, the methodology recognizes the anticipated age-qualified/senior oriented and similar housing units and the turnover of mature housing in the district.

During the 1970s, the population of the Palmyra Area School District increased by 1,633 or 11.6 percent, the number of housing units rose by 1,440 or 33.6 percent, and public school enrollments fell by 606 or 17.7 percent. Between 1980 and 1990 the district's population was up by 1,288 or 8.2 percent, housing units increased by 1,249 or 21.8 percent, and public school

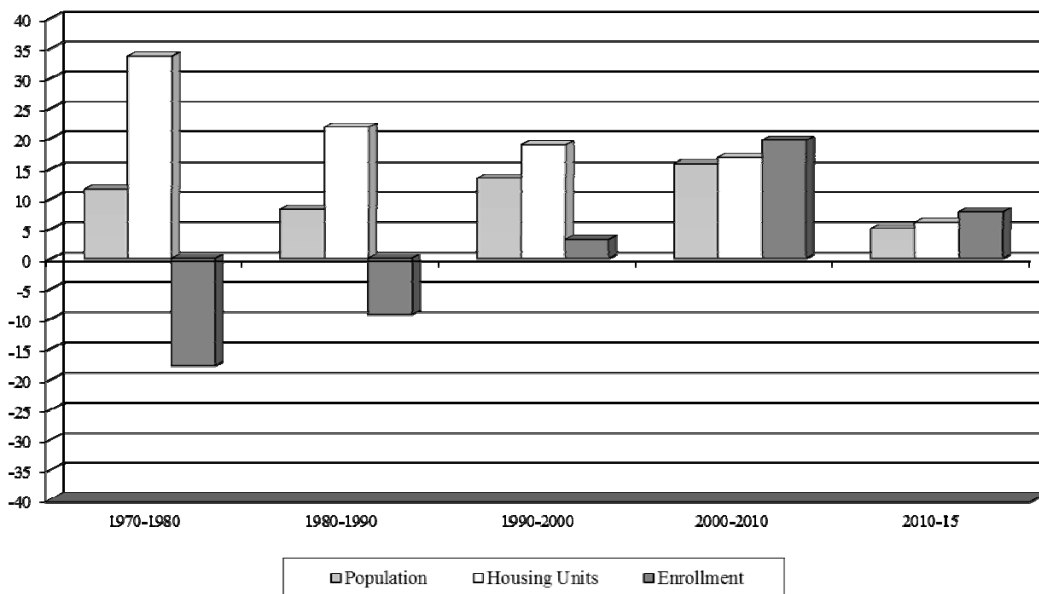
enrollments decreased by 270 or 9.3 percent. Between 1990 and 2000, the population of Palmyra Area increased by 2,283 or 13.4 percent, housing units grew by 1,311 or 18.8 percent, and public school enrollments were up by 84 or 3.2 percent. Between 2000 and 2010 the district’s population rose by 3,054 or 15.8 percent, housing units grew by 1,387 or 16.7 percent, and public school enrollments increased by 531 or 19.6 percent. Since 2010, the district’s population is estimated to have risen by 1,123 or 5.0 (as of July 2015), housing units grew by 580 or 6.0 percent (through December 2015), and public school enrollments rose by 267 or 8.2 percent (as of October 1, 2015). (See Table 2-5 and Graph 2-2.)

Table 2-5  
 PALMYRA AREA SCHOOL DISTRICT  
Absolute and Proportionate Change in Population, Housing Units, and Enrollments  
 1970 to 2015

	1970 – 1980		1980 – 1990		1990 – 2000		2000 – 2010		2010 – 2015	
	#	%	#	%	#	%	#	%	#	%
Population	+1,633	+11.6	+1,288	+8.2	+2,283	+13.4	+3,054	+15.8	+1,123 <sup>2</sup>	+5.0 <sup>2</sup>
Housing Units	+1,440	+33.6	+1,249	+21.8	+1,311	+18.8	+1,387	+16.7	+580 <sup>3</sup>	+6.0 <sup>3</sup>
Total Enrollment	-606 <sup>1</sup>	-17.7	-270	-9.3	+84	+3.2	+531	+19.6	+267 <sup>4</sup>	+8.2 <sup>4</sup>

- 1 1971 enrollment figure.
- 2 Based on July 2015 estimates.
- 3 Through December 2015.
- 4 As of October 1, 2015

Graph 2-2  
 PALMYRA AREA SCHOOL DISTRICT  
Proportionate Change in Population, Housing Units, and Enrollments  
 1970 to 2015





Enrollments in the Palmyra Area School District have not had a direct correlation with trends in population and housing units. During the 1970s the district's population grew noticeably, and the number of housing units rose at a rate three times faster than population, yet public school enrollments decreased substantially. During the 1980s the district's population and housing units continued to rise—but at slower rates than during the 1970s, and enrollments fell again—also at a slower rate than in the prior decade. During the 1990s growth in population accelerated and exceeded the pace of each of the two prior decades, but the rise in housing units continued to slow. Unlike in the decades of 1970s and 1980s, public school enrollments rose during the 1990s—but just slightly. In the decade of the 2000s the pace of growth in population accelerated slightly, while the gain in housing units slowed slightly (in proportionate terms). However, the rise in public school enrollments accelerated noticeably, and, in fact, it was more than six times that of the prior decade. Further, the proportionate increase in enrollments outpaced the growth of population and housing during the 2000s. In the current decade, the district's population (through July of 2015) is estimated to have grown at a slower annual rate than in the prior decade, and the average annual number of permits issued for new housing units (as of the end of 2015) was also down from the average for the decade of the 2000s. Public school enrollments in this decade (as of October 1, 2015) grew at essentially the same yearly rate as in the 2000s.

## CHAPTER 3 BIRTH PATTERNS

The annual number of resident births in the Palmyra Area School District, which is extremely important in the planning process, was higher in the decade of the 2000s (on average) than in any of the three preceding decades, and the figure for the first six years of the current decade was higher still. The average number of annual births in the district in this decade (232) was seven (3.1 percent) higher than the average for 2000s (225), which was 20 (9.8 percent) higher than the average for the 1990s (205), which, in turn, was nine (4.6 percent) higher than the average for the period 1980 to 1989 (196). The average for the 1980s was down by 17 births (8.0 percent) from the average for the 1970s (213).

The absolute numbers of births in Palmyra Area fell from 269 in 1970 to 166 in 1975 (the district's lowest annual figure during the 46 years reviewed). Births then rose modestly in most of the years through the mid-1990s, and this was followed by a noticeable acceleration in the rate of growth during the remaining years of that decade. In 1999 the district recorded its highest annual number of births during the years reviewed (270). In the decade of 2000s, annual births in the district experienced a mix of increases and decreases, and, on average, births were higher during the second half of that decade than in the first half. Births rose in the first two years of the current decade, but fell markedly in 2012. This was followed by two increases, and the 2014 figure reached 243—the highest level since 2007. In 2015 births were down, but the count was still the third highest since 2007. In fact, the figures for 2014 and 2015 (both of which are preliminary) were the fourth and sixth highest, respectively, since the early years of the 1970s. Further, five of the district's 10 highest annual birth figures since the 1970s were recorded in the past six years—and many of these children have not yet entered the school system.

Overall, births in Palmyra Area increased in 24 of the years since 1970, including 13 of the past 20 and four of most recent six years. The preliminary figure for 2015 was five births (2.2 percent) higher than in 2010, 36 births (18.0 percent) higher than the 2000 level, 31 (15.1 percent) higher than in 1990, and 55 births (30.4 percent) higher than in 1980, but it was 33 births (12.3 percent) lower than the 1970 figure. (See Table 3-1 and Graph 3-1.)

Table 3-1  
 PALMYRA AREA SCHOOL DISTRICT  
 Comparison of Birth Trends in the Palmyra Area School District  
and Lebanon County  
 1970 to 2015<sup>1</sup>

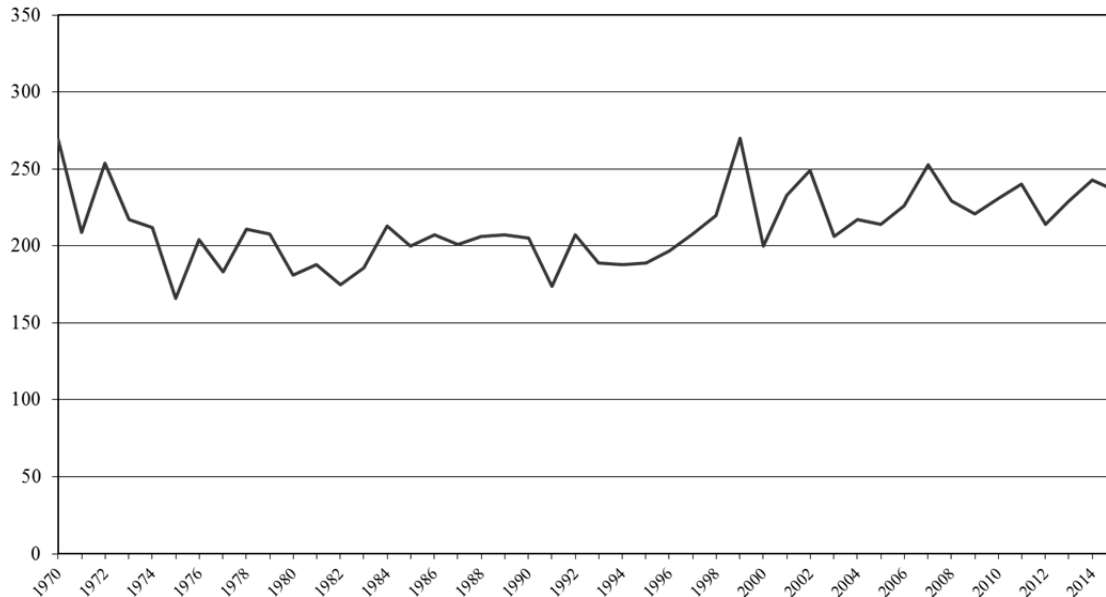
Year	Palmyra Area SD		Lebanon County		PASD as a % of the County	
	Total # of Births	% Change From Previous Year	Total # of Births	% Change From Previous Year		
1970	269	–	↑1,729	–	15.6	
1980	181	-13.0	1,465	-2.1	12.4	
1981	188	3.9	1,507	2.9	12.5	
1982	175	-6.9	1,559	3.5	11.2	
1983	186	6.3	1,413	-9.4	13.2	
1984	213	14.5	1,443	2.1	14.8	
1985	200	-6.1	1,427	-1.1	14.0	
1986	207	3.5	↓1,377	-3.5	15.0	
1987	201	-2.9	1,525	10.7	13.2	
1988	206	2.5	1,481	-2.9	13.9	
1989	207	0.5	1,584	7.0	13.1	
1990	205	-1.0	1,524	-3.8	13.5	
1991	174	-15.1	1,513	-0.7	11.5	
1992	207	19.0	1,480	-2.2	14.0	
1993	189	-8.7	1,504	1.6	12.6	
1994	188	-0.5	1,449	-3.7	13.0	
1995	189	0.5	1,454	0.3	13.0	
1996	197	4.2	1,387	-4.6	14.2	
1997	208	5.6	1,447	4.3	14.4	
1998	220	5.8	1,443	-0.3	15.2	
1999	↑270	22.7	1,426	-1.2	18.9	
2000	200	-25.9	1,444	1.3	13.9	
2001	233	16.5	1,378	-4.6	16.9	
2002	249	6.9	1,533	11.2	16.2	
2003	206	-17.3	1,401	-8.6	14.7	
2004	217	5.3	1,538	9.8	14.1	
2005	214	-1.4	1,581	2.8	13.5	
2006	226	5.6	1,604	1.5	14.1	
2007	253	11.9	1,709	6.5	14.8	
2008	229	-9.5	1,651	-3.4	13.9	
2009	221	-3.5	1,645	-0.4	13.4	
2010	231	4.5	1,626	-1.2	14.2	
2011	240	3.9	1,670	2.7	14.4	
2012	214	-10.8	1,651	-1.1	13.0	
2013	229	7.0	1,582	-4.2	14.5	
2014 <sup>1</sup>	243	6.1	1,629	3.0	14.9	
2015 <sup>1</sup>	236	-2.9	1,588	-2.5	14.9	
<b>Change 1970</b>	<b>#</b>	<b>-33</b>	<b>-</b>	<b>-141</b>	<b>-</b>	<b>-</b>
<b>to 2015<sup>1</sup></b>	<b>%</b>	<b>-12.3</b>	<b>-</b>	<b>-8.2</b>	<b>-</b>	<b>-</b>
<b>Change 1980</b>	<b>#</b>	<b>55</b>	<b>-</b>	<b>123</b>	<b>-</b>	<b>-</b>
<b>to 2015<sup>1</sup></b>	<b>%</b>	<b>30.4</b>	<b>-</b>	<b>8.4</b>	<b>-</b>	<b>-</b>
<b>Change 1990</b>	<b>#</b>	<b>31</b>	<b>-</b>	<b>64</b>	<b>-</b>	<b>-</b>
<b>to 2015<sup>1</sup></b>	<b>%</b>	<b>15.1</b>	<b>-</b>	<b>4.2</b>	<b>-</b>	<b>-</b>
<b>Change 2000</b>	<b>#</b>	<b>36</b>	<b>-</b>	<b>144</b>	<b>-</b>	<b>-</b>
<b>to 2015<sup>1</sup></b>	<b>%</b>	<b>18.0</b>	<b>-</b>	<b>10.0</b>	<b>-</b>	<b>-</b>
<b>Change 2010</b>	<b>#</b>	<b>5</b>	<b>-</b>	<b>-38</b>	<b>-</b>	<b>-</b>
<b>to 2015<sup>1</sup></b>	<b>%</b>	<b>2.2</b>	<b>-</b>	<b>-2.3</b>	<b>-</b>	<b>-</b>

<sup>1</sup> Preliminary figures.

NOTE: Highest point marked by ↑; lowest point marked with ↓. In cases where no high or low point is cited, it occurred between 1971 and 1979.

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  
 PALMYRA AREA SCHOOL DISTRICT  
Annual Births  
 1970 to 2015



As a point of reference, annual births in Lebanon County were at their peak during the 46 years reviewed in 1970; the county's low point was recorded in 1986. Preliminary figures reveal that the county as a whole (like Palmyra Area) recorded more births in 2015 than in 2000 (up by 10.0 percent), more than in 1990 (up by 4.2 percent), and more than in 1980 (up by 8.4 percent), but fewer than in 1970 (down by 8.2 percent). However (unlike the district), countywide births in 2015 were lower than in 2010 (by 2.3 percent). Births in Palmyra Area averaged 14.3 percent of the total number of births in Lebanon County during the current decade (based on the preliminary 2014 and 2015 numbers). This figure was down from 14.6 percent in the 2000s, but up from 14.0 percent in the 1990s, 13.3 percent in the 1980s, and 14.0 percent in the 1970s. Preliminary figures indicate that in 2015 Palmyra Area represented 14.9 percent of the countywide number.

Statewide, annual resident births increased fairly consistently from the mid-1970s until 1990, and they then declined in seven consecutive years. While births in Pennsylvania were up in 1998, they fell in four of the subsequent six years. Births then rose in 2005, 2006, and 2007, before dropping in each of the seven years from 2008 through 2014 (preliminary figure), when they hit their lowest level during the reporting period which began in 1915. The preliminary

2015 count of annual births in Pennsylvania is up by 329 or 0.2 percent from the preliminary 2014 figure making it the second lowest figure since the start of the reporting period in 2015.

Nationally, births decreased annually from 1991 through 1997 (when they reached their lowest level since 1987) and then increased in all but two of the years between 1997 and 2007. Like in Pennsylvania, the total number of births for the U.S. fell in all years from 2008 through 2013, but, unlike in Pennsylvania, births in the U.S. as a whole were up noticeably in 2014 (by 1.4 percent) and down in 2015 (by 0.3 percent—based on preliminary figures).

The highest number of annual births recorded in the U.S. was in 2007, and, by 2015 the count was down by a net of by 7.8 percent from the high point—again, based on the preliminary 2015 figure and despite the increase in 2014. Pennsylvania's figure for 2007—the highest since 1995—was more than 100,000 births (about 41 percent) below its historical peak in 1957. The Commonwealth's preliminary 2015 figure was 10,735 or 7.1 percent lower than in 2007.

Births in North Londonderry Township averaged 42 yearly or 20.0 percent of all district births during the 1970s. In the 1980s the average was up to 53 or 26.7 percent of the district total, and the average rose again in the 1990s to 61 or 30.2 percent of the total. However, the township's average for the 2000s was down to 59 or 26.5 percent of all district births. (Between 2000 and 2004 the average was 63 or 28.3 percent of the total; for the period 2005 through 2009 it was down to 56 or 24.6 percent.) The township's average for the current decade is up to 72 or 31.1 percent of the district total. The preliminary figure for 2015 indicates that North Londonderry Township accounted for 75 or 31.8 percent of all district births.

During the decade of the 1970s, annual births in Palmyra Borough averaged 117 or 54.4 percent of all district births; in the 1980s the average fell to 89 or 45.6 percent of the district total, and it was down again in the 1990s to 82 or 40.1 percent of the total. The average for the 2000s, however, was up to 104 or 46.2 percent. (Between 2000 and 2004 the borough's average was 94 or 42.6 percent of total births in the district; for the final five years of the decade the average was up to 114 or 49.8 percent of total.) The average for the current decade fell to 97 or 41.7 percent of all district births. The preliminary 2015 figure reveals that Palmyra Borough generated 106 births or 44.9 percent of the district total.

Annual births in South Londonderry Township during the 1970s averaged 54 or 25.6 percent of total births in Palmyra Area. In the 1980s the absolute average was unchanged, but the township's proportionate share of the district total was up to 27.7 percent. South

Londonderry's average grew to 61 or 29.6 percent of all district births during the 1990s, and in the 2000s the absolute average remained the same as in the prior decade, but the township's proportionate share fell to 27.4 percent. (Between 2000 and 2004 the average was 64 or 29.2 percent of the district total; for the period 2005 through 2009 the average was down to 58 or 25.6 percent of the total.) The average number of births that occurred in South Londonderry during the first six years of the current decade was 63 or 27.2 percent of the district total. Based on preliminary 2015 figures, the township produced 55 births or 23.3 percent of all district births. (See Table 3-2.)

A comparison of average absolute numbers of annual births and proportionate shares of total district births in each of Palmyra Area's three municipalities reveals that in North Londonderry Township the average number of births per year and share of total district births were higher in the 1980s than the 1970s. In Palmyra Borough the average number of births and proportionate share fell from the 1970s to the 1980s. In South Londonderry Township the average number of births remained unchanged from the 1970s to the 1980s, but its proportionate share of the total rose. In both North Londonderry and South Londonderry the average numbers of births per year and shares of total district births were higher in the 1990s than the 1980s. In Palmyra, however, the average number of births and proportionate share were down during this period.

In the decade of the 2000s, the average number of births per year and proportionate share of total district births in Palmyra Borough were up from the 1990s. In North Londonderry Township both the average number of births and the proportionate share of the total were lower than in the prior decade, and in South Londonderry Township the average number of births was unchanged from the 1990s, but its proportionate share dropped. In the first six years of the current decade, the absolute number of annual births in North Londonderry and its proportionate share of the district total were up from their averages for the prior decade. In Palmyra, the absolute number of births and the proportionate share of the district total both declined, and in South Londonderry Township the average number of births rose modestly while its proportionate share decreased slightly.



Table 3-2  
 PALMYRA AREA SCHOOL DISTRICT  
 District Birth Trends, by Municipality  
 1970 to 2015<sup>1</sup>

	North Londonderry Township		Palmyra Borough		South Londonderry Township		District Total		
	#	% of Total	#	% of Total	#	% of Total	#	% of Total	
1970	43	16.0	↑155	57.6	71	26.4	269	100.0	
1980	42	23.2	89	49.2	50	27.6	181	100.0	
1981	50	26.6	97	51.6	↓41	21.8	188	100.0	
1982	↓35	20.0	91	52.0	49	28.0	175	100.0	
1983	44	23.7	86	46.2	56	30.1	186	100.0	
1984	56	26.3	104	48.8	53	24.9	213	100.0	
1985	58	29.0	92	46.0	50	25.0	200	100.0	
1986	52	25.1	89	43.0	66	31.9	207	100.0	
1987	61	30.3	85	42.3	55	27.4	201	100.0	
1988	66	32.0	77	37.4	63	30.6	206	100.0	
1989	64	30.9	82	39.6	61	29.5	207	100.0	
1990	60	29.3	84	41.0	61	29.8	205	100.0	
1991	43	24.7	74	42.5	57	32.8	174	100.0	
1992	68	32.9	80	38.6	59	28.5	207	100.0	
1993	64	33.9	77	40.7	48	25.4	189	100.0	
1994	70	37.2	↓69	36.7	49	26.1	188	100.0	
1995	67	35.4	70	37.0	52	27.5	189	100.0	
1996	58	29.4	80	40.6	59	29.9	197	100.0	
1997	58	27.9	91	43.8	59	28.4	208	100.0	
1998	56	25.5	89	40.5	75	34.1	220	100.0	
1999	70	25.9	108	40.0	↑92	34.1	↑270	100.0	
2000	45	22.5	86	43.0	69	34.5	200	100.0	
2001	↑72	30.9	92	39.5	69	29.6	233	100.0	
2002	68	27.3	105	42.2	76	30.5	249	100.0	
2003	67	32.5	84	40.8	55	26.7	206	100.0	
2004	61	28.1	103	47.5	53	24.4	217	100.0	
2005	56	26.2	97	45.3	61	28.5	214	100.0	
2006	60	26.5	103	45.6	63	27.9	226	100.0	
2007	58	22.9	134	53.0	61	24.1	253	100.0	
2008	53	23.1	117	51.1	59	25.8	229	100.0	
2009	54	24.4	119	53.8	48	21.7	221	100.0	
2010	66	28.6	98	42.4	67	29.0	231	100.0	
2011	70	29.2	100	41.7	70	29.2	240	100.0	
2012	68	31.8	94	43.9	52	24.3	214	100.0	
2013	70	30.6	97	42.4	62	27.1	229	100.0	
2014 <sup>1</sup>	84	34.6	85	35.0	74	30.5	243	100.0	
2015 <sup>1</sup>	75	31.8	106	44.9	55	23.3	236	100.0	
<b>Change</b>									
<b>1970</b>	<b>#</b>	<b>32</b>	<b>-</b>	<b>-49</b>	<b>-</b>	<b>-16</b>	<b>-</b>	<b>-33</b>	<b>-</b>
<b>to 2015<sup>1</sup></b>	<b>%</b>	<b>74.4</b>	<b>-</b>	<b>-31.6</b>	<b>-</b>	<b>-22.5</b>	<b>-</b>	<b>-12.3</b>	<b>-</b>

<sup>1</sup> Preliminary figures.

NOTE: Highest point marked by ↑; lowest point marked with ↓. In cases where no high or low point is cited, it occurred between 1971 and 1979.

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

Births per 1,000 residents in the Palmyra Area School District averaged 14.4 per year during the 1970s. In the 1980s the average fell to 12.0, and it also dropped in the 1990s to 11.3. In the decade of the 2000 the average yearly number of births per 1,000 residents was down again to 11.1, and in the first six years of the current decade, the average decreased further to 10.0 (based on preliminary birth figures for 2014 and 2015 and the most recent population estimates). The highest number of births per 1,000 district residents (19.0) was recorded in 1970; the lowest number of births per 1,000 residents (9.3) occurred in 2015. (See Table 3-3 and Graph 3-2.)

The annual number of births per 1,000 housing units in the district averaged 43.9 during the decade of the 1970s. In the 1980s the average was down to 31.3, and in the 1990s it dropped further to 27.0. Between 2000 and 2009 the average decreased again to 24.6, and in the first six years of the current decade (based on preliminary birth figures for 2014 and 2015 and new residential units authorized by permit through 2015) the number was lower still—23.3. The highest number of births per 1,000 housing units in Palmyra Area during the review period (62.8) was recorded in 1970; the lowest figure (21.6) occurred in 2012. (See Table 3-3 and Graph 3-3.)

Analyzing the Palmyra Area School District's enrollments in relation to its total number of housing units produces a more complete picture of the district's demographics. In 1970, the number of public school pupils per housing unit in the district was 0.819. Between 1970 and 1980, the number of housing units increased by 33.6 percent, while public school enrollments decreased by 17.3 percent, causing the ratio of public school pupils to housing units to fall to 0.507. By 1990-91, given a 21.8 percent rise in housing units and a drop in enrollments of 9.3 percent, the number of public school pupils per housing unit had fallen further to 0.378. During the decade of the 1990s, the number of housing units rose by 18.8 percent, and public school enrollments grew by 3.2 percent; as a result, the number of public school pupils per housing unit was down again to 0.328 in 2000-01—just two-fifths of the 1970-71 figure. During the decade of the 2000s, the number of housing units increased by 16.7 percent, and public school enrollments were up by 19.5 percent. This caused number of public school pupils per housing unit in the 2010-11 school year to rise modestly to 0.335.

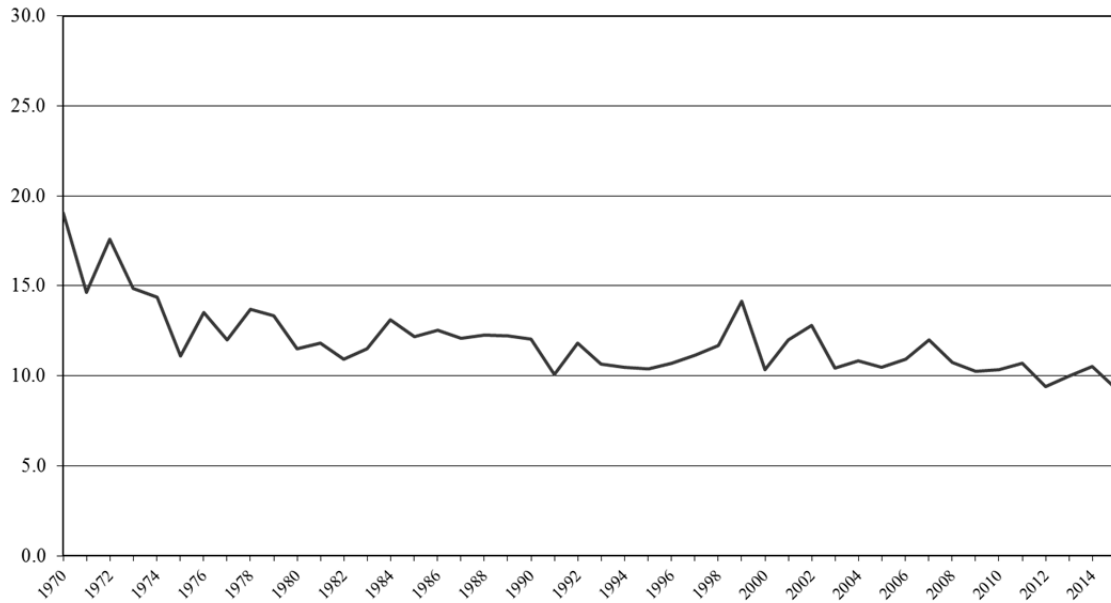
Table 3-3  
 PALMYRA AREA SCHOOL DISTRICT  
Births Per 1,000 Residents and Per 1,000 Housing Units  
 1970 to 2015<sup>1</sup>

<u>Year</u>	<u>Births Per 1,000</u>	
	<u>Residents</u>	<u>Housing Units</u>
1970	↑19.0	↑62.8
1980	11.5	31.6
1981	11.8	32.1
1982	10.9	29.3
1983	11.5	30.5
1984	13.1	34.2
1985	12.2	31.5
1986	12.5	32.0
1987	12.1	30.5
1988	12.3	30.6
1989	12.2	30.2
1990	12.0	29.4
1991	10.1	24.5
1992	11.8	28.6
1993	10.7	25.7
1994	10.5	25.1
1995	10.4	24.8
1996	10.7	25.4
1997	11.2	26.4
1998	11.7	27.4
1999	14.1	33.1
2000	10.3	24.1
2001	12.0	27.3
2002	12.8	28.5
2003	10.4	23.0
2004	10.8	23.7
2005	10.5	23.0
2006	10.9	23.9
2007	12.0	26.5
2008	10.7	23.8
2009	10.3	22.7
2010	10.3	23.9
2011	10.7	24.5
2012	9.4	↓21.6
2013	10.0	22.9
2014 <sup>1</sup>	10.5	23.9
2015 <sup>1</sup>	↓9.3	22.8

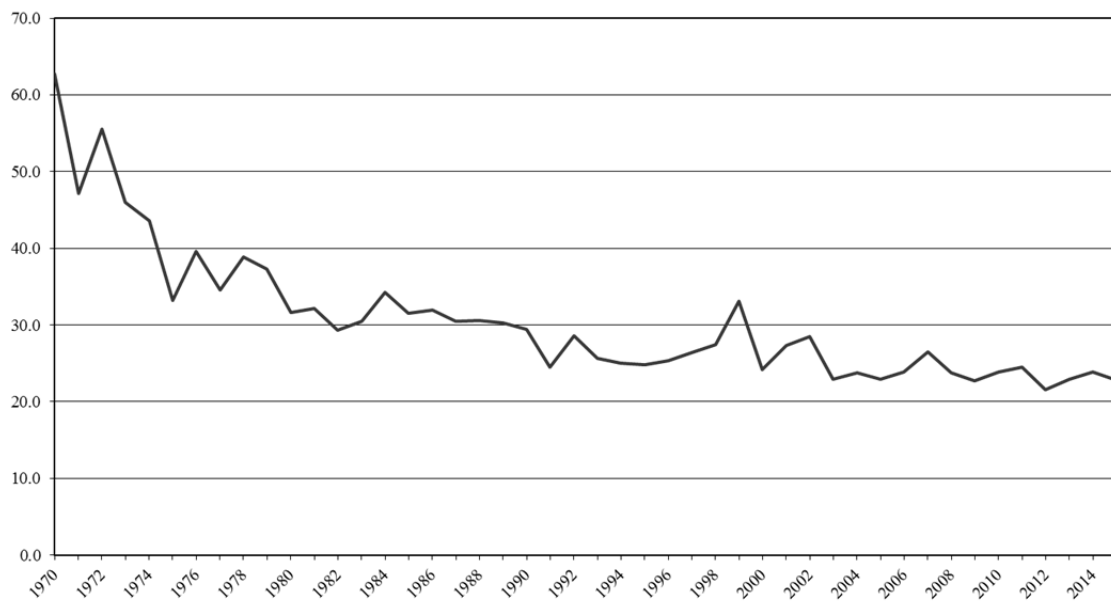
<sup>1</sup> Based on preliminary birth figures.

NOTE: Highest point marked by ↑; lowest point marked with ↓. In cases where no high or low point is cited, it occurred between 1971 and 1979.

Graph 3-2  
PALMYRA AREA SCHOOL DISTRICT  
Births Per 1,000 Residents  
1970 to 2015



Graph 3-3  
PALMYRA AREA SCHOOL DISTRICT  
Births Per 1,000 Housing Units  
1970 to 2015



Using a housing count based on the 2010 Census figures and the number of units authorized by permit thus far in this decade (that is, through the end of June 2016—up by 7.0 percent) and the district's October 2016 enrollment figure (up by 10.6 percent from 2010-11), the number of public school pupils per housing unit in the 2016-17 school year rose again to 0.347—but the figure remains at barely two-fifths of the 1970-71 figure. Increases were experienced in two of the district's three grade groupings. In the middle school (grades 6-8) the figure increased slightly from 0.080 in 2010-11 to 0.084 in 2016-17. (Figures for these grades had dropped from 0.199 in 1970-71, to 0.111 in 1980-81, to 0.089 in 1990-91, and to 0.079 in 2000-01 before increasing slightly to 0.080 in 2010-11.) Similarly, the ratio of public school pupils to housing units in grades 9-12 was up from 0.096 in 2010-11 to 0.109 in 2016-17. (Figures for this grade grouping had fallen from 0.236 in 1970-71, to 0.174 in 1980-81, to 0.112 in 1990-91, to 0.099 in 2000-01, and to 0.096 in 2010-11.) Conversely, grades K-5 recorded a very slight decline from 0.159 in 2010-11 to 0.154 in 2016-17. (Figures for these grades had decreased from 0.384 in 1970-71 to 0.222 in 1980-81, to 0.177 in 1990-91, and to 0.150 in 2000-01, before increasing to 0.159 in 2010-11.) (See Table 3-4 and Graph 3-4.)

Table 3-4  
Palmyra Area School District  
Relationship of Public School Enrollments to Housing Units  
1970-71 to 2016-17

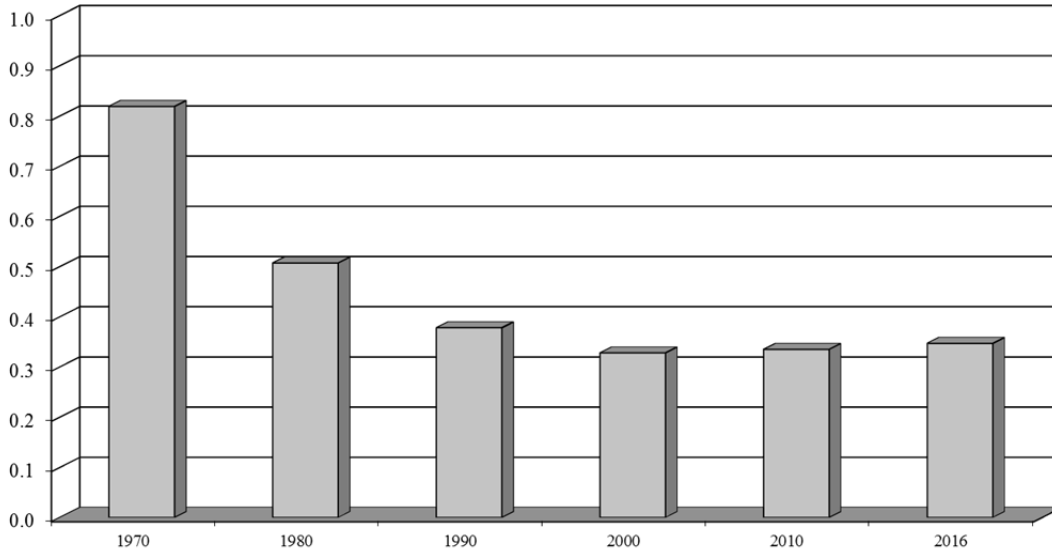
	<u>1970-71</u>	<u>1980-81</u>	<u>1990-91</u>	<u>2000-01</u>	<u>2010-11</u>	<u>2016-17</u>
Number of Housing Units	4,283	5,723	6,972	8,283	9,670	10,348 <sup>2</sup>
<u>District Enrollments</u>						
Grades K-5	1,645	1,272	1,235	1,239	1,539	1,598
Grades 6-8	852	637	620	657	777	868
Grades 9-12	<u>1,012</u>	<u>994</u>	<u>778</u>	<u>821</u>	<u>932</u>	<u>1,127</u>
Total Grades K-12	3,509 <sup>1</sup>	2,903	2,633	2,717	3,248	3,593
<u>Pupils Per Unit</u>						
Grades K-5	0.384	0.222	0.177	0.150	0.159	0.154
Grades 6-8	0.199	0.111	0.089	0.079	0.080	0.084
Grades 9-12	<u>0.236</u>	<u>0.174</u>	<u>0.112</u>	<u>0.099</u>	<u>0.096</u>	<u>0.109</u>
<b>Total Grades K-12</b>	<b>0.819</b>	<b>0.507</b>	<b>0.378</b>	<b>0.328</b>	<b>0.335</b>	<b>0.347</b>

<sup>1</sup> 1971-72 figure used due to unavailability of 1970-71 data.

<sup>2</sup> Housing units are as of the end of June of 2016.

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

Graph 3-4  
 PALMYRA AREA SCHOOL DISTRICT  
 Relationship of Public School Enrollments to Housing Units  
 1970 to 2016



PEL's analysis of annual births in the Palmyra Area School District reveals that after experiencing a noticeable decline during the first half of the decade of the 1970s to the lowest level during the 46 years reviewed, a pattern of fairly steady growth (on average) ensued. Births rose in most of the years between 1976 in 1999 when the district recorded its highest number of annual births during the review period. In the 2000s, annual births experienced a mix of increases and decreases and, on average, were higher than in any of the prior decades—and births in the second half of that decade were higher than in the first half. The overall upward pattern continued into the current decade, and the preliminary figures for 2014 and 2015 were the fourth and sixth highest, respectively, since the early years of the 1970s. Further, five of the district's 10 highest annual birth figures since the 1970s were recorded in the past six years—and many of these children have not yet entered the school system! The average number of births per 1,000 district residents and average number of births per 1,000 housing units fell from the 1970s to the 1980s, from the 1980s to the 1990s, and from the 1990s to the 2000s. The averages for the first six years of the current decade are down further. Births per 1,000 residents hit their lowest level

during the 46-year period reviewed in 2015; the lowest level for births per 1,000 housing units was in 2012, and the subsequent figures were only marginally higher. (The highest numbers of births per 1,000 residents and per 1,000 housing units were recorded in 1970.) 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 1970-71 and 1980-81, between 1980-81 and 1990-91, and between 1990-91 and 2000-01—dropping to about two-fifths of the 1970-71 figure. Between 2000-01 and 2010-11 a modest increase was recorded, and the figure for the 2016-17 school year indicates that the number of public school pupils generated by each housing unit rose again, but the number produced by each unit remains at barely two-fifths of the 1970-71 level. The differences between the figure for the current school year and the others presented are somewhat less dramatic. The 2016-17 figure is about 32 percent lower than in the 1980-81 school year and about 8.2 percent lower than in 1990-91; however, the current figure is about 6 percent higher than in 2000-01, and it is up by about 4 percent from 2010-11.

## CHAPTER 4 MIGRATION PATTERNS

During the 1970s resident births in the Palmyra Area School District totaled 2,133; deaths of district residents during this period totaled 1,176. This produced a natural increase in population of 957. The actual change in the number of residents between 1970 and 1980, however, was a rise of 1,633, indicating that a net in-migration of 676 people had occurred (that is, the difference between the total population gain and the natural growth). Between 1980 and 1990, there were 1,964 births in the district and 1,522 deaths. This resulted in a natural increase in population of 442, but the district's overall population count grew by 1,288 during the 1980s, signifying a net in-migration of 846.

In the 1990s, births totaled 2,047 and deaths totaled 1,812 producing another natural increase of 235. The district's total population rose by 2,283 during the 1990s meaning that net in-migration was up very noticeably to 2,048. Between 2000 and 2010, there were 2,248 births and 2,225 deaths, resulting in still another natural increase in population—but it was just 23 people. Palmyra Area's total population grew by 3,054 in the 2000s indicating that net in-migration was up to 3,031. From 2010 through 2015, 1,393 births and 1,478 deaths were recorded. This produced a natural loss of 85 residents. Nonetheless, the district's population was estimated to have risen by 1,123 during this period suggesting that net in-migration of 1,208 had occurred during the first half of this decade. (See Table 4-1.)

Overall, between 1970 and 2015, resident births in Palmyra Area totaled 9,785; deaths during these years totaled 8,213. This generated a natural increase in population of 1,572. The actual population change during this period was a growth of 9,381, signifying a net in-migration of 7,809. Net in-migration was recorded in each of the four full decades reviewed—it was very modest in the 1970s and 1980s, up noticeably in the 1990s, and most pronounced in the decade of the 2000s. In the current decade (through 2015), net in-migration continued, and it appears to be on a pace to produce a level that will perhaps be near the midpoint between the figures for the 1990s and the 2000s—but this is based on limited experience.



Table 4-1  
 PALMYRA AREA SCHOOL DISTRICT  
Resident Births, Deaths, and Population Change  
 1970 to 2015

	1970 to 1979	1980 to 1989	1990 to 1999	2000 to 2009	2010 to 2015	1970 to 2015
Births	2,133	1,964	2,047	2,248	1,393	9,785
Deaths	<u>1,176</u>	<u>1,522</u>	<u>1,812</u>	<u>2,225</u>	<u>1,478</u>	<u>8,213</u>
<b>Natural Pop. Change</b>	+957	+442	+235	+23	-85	+1,572
Total Population (start)	14,121	15,754	17,042	19,325	22,379	14,121
Total Population (end)	<u>15,754</u>	<u>17,042</u>	<u>19,325</u>	<u>22,379</u>	<u>23,502</u>	<u>23,502</u>
<b>Total Population Change</b>	+1,633	+1,288	+2,283	+3,054	+1,123	+9,381
Less Natural Change	957	442	235	23	-85	1,572
<b>Net Migration</b>	<b>+<u>676</u></b>	<b>+<u>846</u></b>	<b>+<u>2,048</u></b>	<b>+<u>3,031</u></b>	<b>+<u>1,208</u></b>	<b>+<u>7,809</u></b>

SOURCE: U.S. Bureau of the Census and State Health Data Center, Pennsylvania Department of Health, Harrisburg Pennsylvania. The Department specifically disclaims responsibility for any analyses, interpretations, or conclusions.

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 the Palmyra Area'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 full-time Career and Technical Center programs; full-time Intermediate Unit and other special programs and classes; other out-of-district placements; etc.).

The cumulative number of births recorded in Palmyra Area during calendar years 1999 through 2011 (which roughly corresponds to children in grades K-12 in the current school year) was 2,687; the number of children enrolled in the district in this school year is 3,593 or 120.2

percent of the corresponding births—noticeably above the “neutral” migration figure of 100 percent. It should be noted that Palmyra Area’s pupil counts are based on October 1 figures as provided by the district for each year and reflect all regular classroom pupils as well as district children enrolled in the half-day program offered by the Lebanon County Career and Technology Center, the small number of seniors participating in the full-time CTC program, those who participate in the district’s cyber/charter program (known as the Cougar Academy), and those in the district’s alternative education program. Excluded from the district counts are children residing in the Palmyra Area who were reported to be in home schools, cyber schools, and charter schools (other than those participating in the district’s cyber/charter program), those enrolled in private/parochial schools who are transported by the district, district children in full-time Intermediate Unit programs (even if conducted in the district’s classrooms), and resident children in juvenile correction facilities, other institutions, other out-of-district placements, etc.

In 2006-07, the relationship of district pupils to the sum of the births in the years corresponding to the ages of children in school totaled 116.9 percent—somewhat above the neutral point. The figure rose to 117.8 percent in the 2007-08 school year, but it then recorded a mix of decreases and increases during the next six years, and the net effect was a drop to 115.2 percent in 2013-14—the lowest relationship of any of the years reviewed. In each of the three most recent school years, the relationship was up, and it reached its highest point during the review period (120.2 percent) in the current school year. The overall relationship of district enrollments to the sum of the births in the corresponding years during the review period averaged 117.0 percent. The average was 116.8 percent for the years 2006-07 to 2011-12, and it grew slightly to 117.3 percent in the five most recent years. (See Table 4-2.)

The number of children residing in Palmyra Area who were reported to be enrolled in schools and educational programs other than those operated directly by the district in 2015-16 (the most recent year for which consistent and compatible nonpublic figures were readily available from the district) was 311 or 10.5 percent of the corresponding births. These figures include children who are in home schools, cyber schools, and charter schools (except those participating in the district’s cyber/charter program) and district children enrolled in private/parochial schools who are transported by the district (and perhaps some who are not transported by the district). In 2006-07 there were 330 district children reported to be enrolled in schools and programs other than those provided directly by Palmyra Area (as defined above)—

Table 4-2  
 PALMYRA AREA SCHOOL DISTRICT  
 Relationship of Reported Palmyra Area Enrollments and District Children Enrolled in Other Schools and Educational Programs to the Cumulative Number of Births in the Corresponding Years  
 2006-07 to 2016-17

	Cumulative Births <sup>1/</sup>	PASD Enrollments <sup>2/</sup>		Other Enrollments <sup>3/</sup>		Total Enrollments <sup>4/</sup>	
		#	as a % of Cumulative Births	#	as a % of Cumulative Births	#	as a % of Cumulative Births
2006-07	2,687	3,142	116.9	330	12.3	3,472	129.2
2007-08	2,729	3,214	117.8	365	↑13.4	3,579	↑131.1
2008-09	2,730	3,173	116.2	355	13.0	3,528	129.2
2009-10	2,773	3,245	117.0	359	12.9	3,604	130.0
2010-11	2,780	3,248	116.8	362	13.0	3,610	129.9
2011-12	2,817	3,263	115.8	375	13.3	3,638	129.1
2012-13	2,882	3,344	116.0	327	11.3	3,671	127.4
2013-14	2,922	3,367	↓115.2	323	11.1	3,690	↓126.3
2014-15	2,946	3,437	116.7	332	11.3	3,769	127.9
2015-16	2,969	3,515	118.4	311	↓10.5	3,826	128.9
2016-17	2,989	3,593	↑120.2	NA	NA	NA	NA

<sup>1/</sup> Cumulative births represents the sum of births for the 13-year period corresponding to the school year. For example, pupils in school year 2016-17 reflect births during the years 1999 through 2011.

<sup>2/</sup> Pupil counts are based on October 1 figures as provided by the district for each year and reflect all regular classroom pupils as well as district children enrolled in the half-day program offered by the Lebanon County Career and Technology Center, the small number of seniors participating in the full-time CTC program, those who participate in the district's cyber/charter program (known as the Cougar Academy), and those in the district's alternative education program.

<sup>3/</sup> Includes children in Palmyra Area who were reported to be in home schools, cyber schools, and charter schools (except those participating in the district's cyber/charter program) and district children enrolled in private/parochial schools who are transported by the district (and perhaps some who are not transported).

<sup>4/</sup> Includes district children enrolled in Palmyra Area and schools and educational programs not operated directly by the district (as defined above). It should be noted that the overall relationship between cumulative births and total reported enrollments may be influenced not only by migration patterns but also by any changes over time in the way those in schools and educational programs other than Palmyra Area's are recorded and/or in the relative number of private/parochial school children who are transported by the district. Further, if figures for all Palmyra Area children enrolled in private/parochial schools who are not transported by the district (for example, those who walk or are transported by others and are not in the nonpublic counts), those in full-time Intermediate Unit programs (even if conducted in the district's classrooms), resident children in juvenile correction facilities, other institutions, and other out-of-district placements, etc. were readily available and factored in, the relationship between total reported enrollments and cumulative births in the district would be higher.

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

SOURCE: Palmyra Area School District

12.2 percent of the corresponding births. In the following year, the figure was up to 13.4 percent (the highest point during the years reviewed). Like the public school figures, in 2008-09 the relationship between reported non-district enrollments and cumulative births began to record a series of decreases and increases but, unlike the district figures, this overall downward nonpublic pattern continued through 2015-16 when it hit its lowest point during the period reviewed (10.5

percent). The relationship between these enrollments and the sum of the births in the corresponding years averaged 12.3 percent over the entire review period. The average for the years 2006-07 through 2011-12 was 13.0 percent; for the four most recent years for which figures were readily available, it fell to 11.0 percent.

Further insight with respect to migration patterns can often be gained by analyzing the relationship between cumulative births and the combined reported pupil count of district children enrolled in Palmyra Area and schools and educational programs operated by others. In 2015-16 (the most recent year for which consistent and compatible figures were readily available for both district and non-district pupils), 3,826 district children were reported to be in district and non-district schools and programs (as defined above). Based on these figures, the number of district children enrolled in schools and educational programs in 2015-16 was equal to 128.9 percent of the number of births that occurred in the district during the corresponding years—well above the neutral figure of 100. The relationship of these children to the corresponding total of births in the district totaled 129.2 percent in 2006-07. It was up to 131.1 (its highest point during the period reviewed) in 2007-08, and it then fell in all but one of the subsequent six years hitting 126.3 percent in 2013-14 (its lowest level during the years reviewed). The figure rose to 127.9 percent in 2014-15 and to 128.9 percent in 2015-16. Total district children reported to be enrolled in district and non-district schools and programs during the years 2006-07 through 2015-16 averaged 128.9 percent of cumulative births—129.8 percent for the period 2006-07 to 2011-12 and 127.6 percent for the years 2012-13 through 2015-16.

Overall, the combined net in-migration of pupils to the Palmyra Area School District and the non-district schools and educational programs (based on the relationship between pupil counts and the corresponding births in the district) has been very positive and fairly stable during in the past 10 years, but the net in-migration to the public school system has risen (especially in the past several years) while the non-district schools and programs (as defined above) have experienced some net losses.

The relationship between cumulative births and total reported enrollments of district children (as defined above), appears to be strongly influenced by migration patterns, but it may also be affected by any changes over time in the way the number of those in schools and educational programs other than those provided directly by Palmyra Area are recorded and/or in the relative number of children who are transported to private/parochial schools by the district.

However, the figures presented are likely to represent a valid measure of the general relationship between cumulative births and the enrollment of school-age children residing in the district—recognizing that the children in non-district schools and programs include only those who are in home schools, cyber schools, and charter schools (except those participating in the district’s cyber/charter program) and district children enrolled in private/parochial schools who are transported by the district (and perhaps some who are not transported by the district).

If figures for all Palmyra Area children enrolled in private/parochial schools who are not transported by the district (for example, those who walk or are transported by others and are not in the nonpublic counts), those in full-time Intermediate Unit programs (even if conducted in the district’s classrooms), resident children in juvenile correction facilities, other institutions, and other out-of-district placements, etc. were readily available and factored in, the relationship between total reported enrollments and cumulative births in the district would be higher.

Changes in enrollments by grade in the Palmyra Area School District can reflect many factors in addition to migration; for example, shifts to and from private/parochial and other schools, special classes, and other educational programs not provided directly by Palmyra 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 2010-11, there were 763 pupils in grades 1-3 in the district. Three years later (2013-14) when the bulk of this group was in grades 4-6, the number was 802 (39 pupils or 5.1 percent higher than in 2010-11). In the current school year (three years later—when these pupils are in grades 7-9), the number is 855—an increase of 53 pupils (6.6 percent) from 2013-14, and an increase of 92 pupils or 12.1 percent over the 2010-11 school year. In 2016-17, the number of pupils in grades 4-6 totals 875—74 (9.2 percent) more than in grades 1-3 three years earlier.

In 2010-11, the number of pupils in grades 4-6 totaled 794; three years later when these children were in grades 7-9, the total was 837—up by 43 or 5.4 percent. When these children reached grades 10-12 in 2016-17, the number had grown slightly to 842—five pupils or 0.6 percent higher than three years prior and up by 48 or 6.0 percent from 2010-11, when these pupils were in grades 4-6. A loss (20 or 2.8 percent) was recorded in the number of pupils in grades 10-12 in 2013-14 from the levels in the three lower grades three years earlier. (See Table 4-3.)

Table 4-3  
 PALMYRA AREA SCHOOL DISTRICT  
Migration Reflected in Palmyra Area's Enrollments, By Grade  
 2010-11, 2013-14, and 2016-17

2010-11		2013-14		Change 2010-11 to 2013-14		2016-17		Change 2013-14 to 2016-17		Change 2010-11 to 2016-17	
Grade	Number	Grade	Number	#	%	Grade	Number	#	%	#	%
-	-	1	250	-	-	4	268	18	7.2	-	-
-	-	2	275	-	-	5	309	34	12.4	-	-
-	-	3	<u>276</u>	-	-	6	<u>298</u>	<u>22</u>	8.0	-	-
-	-	<b>Total</b>				<b>Total</b>					
-	-	<b>1-3</b>	<b>801</b>	-	-	<b>4-6</b>	<b>875</b>	<b>74</b>	<b>9.2</b>	-	-
1	246	4	265	19	7.7	7	283	18	6.8	37	15.0
2	243	5	251	8	3.3	8	287	36	14.3	44	18.1
3	<u>274</u>	6	<u>286</u>	<u>12</u>	4.4	9	<u>285</u>	<u>-1</u>	-0.3	<u>11</u>	4.0
<b>Total</b>		<b>Total</b>				<b>Total</b>					
<b>1-3</b>	<b>763</b>	<b>4-6</b>	<b>802</b>	<b>39</b>	<b>5.1</b>	<b>7-9</b>	<b>855</b>	<b>53</b>	<b>6.6</b>	<b>92</b>	<b>12.1</b>
4	261	7	276	15	5.7	10	292	16	5.8	31	11.9
5	264	8	271	7	2.7	11	278	7	2.6	14	5.3
6	<u>269</u>	9	<u>290</u>	<u>21</u>	7.8	12	<u>272</u>	<u>-18</u>	-6.2	<u>3</u>	1.1
<b>Total</b>		<b>Total</b>				<b>Total</b>					
<b>4-6</b>	<b>794</b>	<b>7-9</b>	<b>837</b>	<b>43</b>	<b>5.4</b>	<b>10-12</b>	<b>842</b>	<b>5</b>	<b>0.6</b>	<b>48</b>	<b>6.0</b>
7	267	10	258	-9	-3.4	-	-	-	-	-	-
8	241	11	233	-8	-3.3	-	-	-	-	-	-
9	<u>211</u>	12	<u>208</u>	<u>-3</u>	-1.4	-	-	-	-	-	-
<b>Total</b>		<b>Total</b>									
<b>7-9</b>	<b>719</b>	<b>10-12</b>	<b>699</b>	<b>-20</b>	<b>-2.8</b>	-	-	-	-	-	-

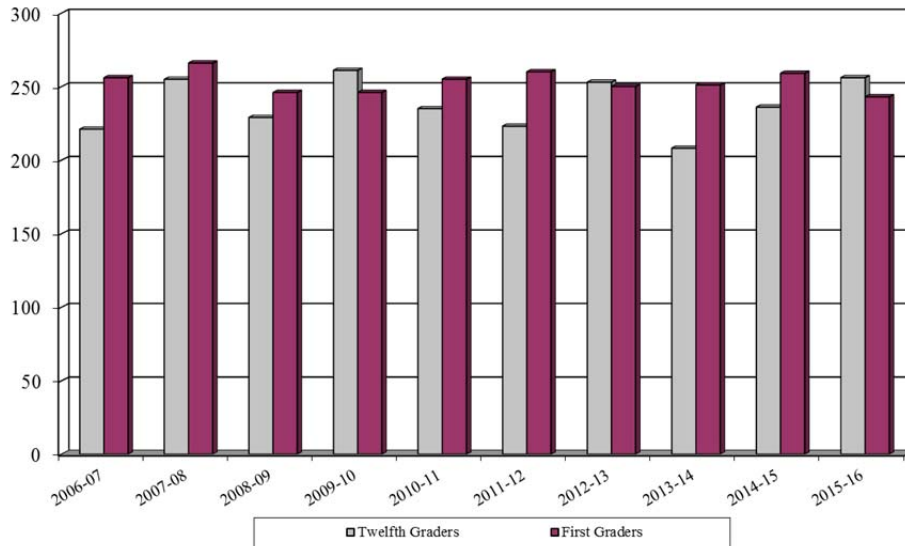
Another factor that can be an indicator of the pattern of future overall enrollments in a school district is the relationship between senior classes and the first grade classes that replace them in the following school year. For example, in the 2007-08 school year 256 first graders replaced 221 twelfth graders in the prior school year, producing a “gain” of 35 pupils or 15.8 percent. In six of the nine subsequent school years the first grade classes were also larger than the senior classes they replaced; the exceptions were 2010-11 (when the number of first grade pupils was down by 15 or 5.7 percent from the number of seniors they replaced), 2013-14 (when the first grade class was three pupils or 1.2 percent smaller than the senior class in the prior year), and the current school year (when first graders were down by 13 or 5.1 percent from the number of seniors they replaced). The largest yearly increase in first graders over twelfth graders in the prior school year (43 or 20.7 percent) occurred in the 2014-15 school year. The smallest year-to-year growth (11 pupils or 4.3 percent) was recorded in 2007-08. Overall, during the 10-

year period there was a net gain of 155 first grade entries versus the preceding year's senior class (or an average net annual gain of about 16 pupils). In the first five years of the review period there was an overall net increase of 68 pupils between the senior classes and the following years' first graders—an annual average net growth of 14 pupils. During the most recent five years, the number of first graders was higher than the number of twelfth graders in the prior year by a net of 87, resulting in an average annual net gain of 17 pupils per year. (See Table 4-4 and Graph 4-1.)

Table 4-4  
PALMYRA AREA SCHOOL DISTRICT  
Relationship Between Senior Classes and  
Entering First Grade Classes in the Following Year  
2006-07 to 2016-17

Senior Class		First Grade Class		Change	
Year	No. of Pupils	Year	No. of Pupils	Pupils	%
2006-07	221	2007-08	256	35	15.8
2007-08	255	2008-09	266	11	4.3
2008-09	229	2009-10	246	17	7.4
2009-10	261	2010-11	246	-15	-5.7
2010-11	235	2011-12	255	20	8.5
2011-12	223	2012-13	260	37	16.6
2012-13	253	2013-14	250	-3	-1.2
2013-14	208	2014-15	251	43	20.7
2014-15	236	2015-16	259	23	9.7
2015-16	256	2016-17	243	-13	-5.1

Graph 4-1  
 PALMYRA AREA SCHOOL DISTRICT  
 Relationship Between Twelfth Graders  
 and Entering First Graders in the Following Year  
 2006-07 to 2015-16



Net in-migration of the total population in the Palmyra Area School District is evident during each of the four full decades reviewed, and it was strongest in the 2000s—up by about 50 percent from the prior decade and about four times larger than in the 1970s and 1980s. Through 2015 of the current decade, net in-migration continued, and it appears to be on a pace to produce a level that will perhaps be near the midpoint between the figures for the 1990s and the 2000s—but this is based on limited experience. The relationship between cumulative births and Palmyra Area’s enrollments during the past 10 years suggests that the number of children enrolled in the district (on average) is almost 20 percent greater than the number of births recorded in the district during the years corresponding to the ages of the children in school—clearly exceeding the neutral migration figure of 100 percent. The relationship rose in six of the 10 years reviewed, including each of the three most recent years, and it is at its highest level in the current school year. When figures on district children enrolled in schools and educational programs other than those provided directly by Palmyra Area are factored in (based on all



those in home, charter, and cyber schools, plus private/parochial school pupils who are transported by the district—and perhaps some who are not transported by the district), the relationship between the number of children residing in the district who are reported to be enrolled in all district and non-district schools and educational programs (theoretically, all school-age children) and births in the district in the corresponding years is somewhat higher, reinforcing the noticeable and fairly stable net in-migration of school-age children that is occurring. Analysis of the movement of children through the public school system during the recent past reveals evidence of net in-migration in almost every grade in all years. At the elementary level, the net-in migration during the past several years has been strongest, and it is growing (on average), while in the middle school grades net in-migration—on balance—has been much more modest and fairly stable. At the high school, migration of pupils has been essentially neutral (on average), but it has strengthened a bit in the past two years. Also, as a result of migration, birth patterns, and other factors, first grade classes were modestly larger than the senior classes they replaced in all but three of the past 10 school years, and the average annual difference between incoming first graders and the twelfth graders they replaced has been slightly larger (on average) during the five most recent years—but the figure for the current school year is down somewhat. These relationships and indicators as a variety of others will be further explored in Chapter 5.

## CHAPTER 5 ENROLLMENT TRENDS AND PROJECTIONS

### Past Enrollment Trends

Enrollments in the Palmyra Area School District total 3,593 in the 2016-17 school year and are 451 (14.4 percent) higher than in 2006-07. It should be noted that pupil counts are based on October 1 figures as provided by the district for each year and reflect all regular classroom pupils as well as district children enrolled in the half-day program offered by the Lebanon County Career and Technology Center, the small number of seniors participating in the full-time CTC program, those who participate in the district's cyber/charter program (known as the Cougar Academy), and those in the district's alternative education program. Excluded from the district counts are children residing in the Palmyra Area who were reported to be in home schools, cyber schools, and charter schools (other than those participating in the district's cyber/charter program), those enrolled in private/parochial schools, district children in full-time Intermediate Unit programs (even if conducted in the district's classrooms), and resident children in juvenile correction facilities, other institutions, and other out-of-district placements, etc.

Annual increases in the district's pupil population were recorded in all years during the period reviewed, except 2008-09, when a decrease of 41 (or 5 percent) was recorded. The largest yearly growth in the pupil count (81 or 2.5 percent) occurred in the 2012-13 school year, while the smallest rise (three or 0.1 percent) was in 2010-11. In the current school year, the district's total enrollments were up by 78 or 2.2 percent—equal to the second largest absolute yearly gain (the same as the rise in 2015-16). Enrollments rose by a net of 121 or 3.9 percent between 2006-07 and 2011-12 (an annual net increase of 24 or 0.8 percent, on average); in the five most recent years a growth of 330 pupils or 10.1 percent was recorded—an annual rise of 66 pupils or 2.0 percent, on average. (See Tables 5-1 and 5-2 and Graph 5-1.)

Table 5-1  
 PALMYRA AREA SCHOOL DISTRICT  
Total Enrollments (Grades K-12) <sup>1/</sup>  
 2006-07 to 2016-17

<u>School Year</u>	<u>Enrollment K-12</u>	<u>Change From Previous Year</u>	
		<u>#</u>	<u>%</u>
2006-07	3,142	-	-
2007-08	3,214	72	2.3
2008-09	3,173	-41	-1.3
2009-10	3,245	72	2.3
2010-11	3,248	3	0.1
2011-12	3,263	15	0.5
2012-13	3,344	81	2.5
2013-14	3,367	23	0.7
2014-15	3,437	70	2.1
2015-16	3,515	78	2.3
2016-17	3,593	78	2.2
Change 2006-07 to 2016-17		451	14.4

<sup>1/</sup> Based on October 1 figures for all years as provided by the district.

Graph 5-1  
 PALMYRA AREA SCHOOL DISTRICT  
Total Enrollment Trends  
 2006-07 to 2016-17

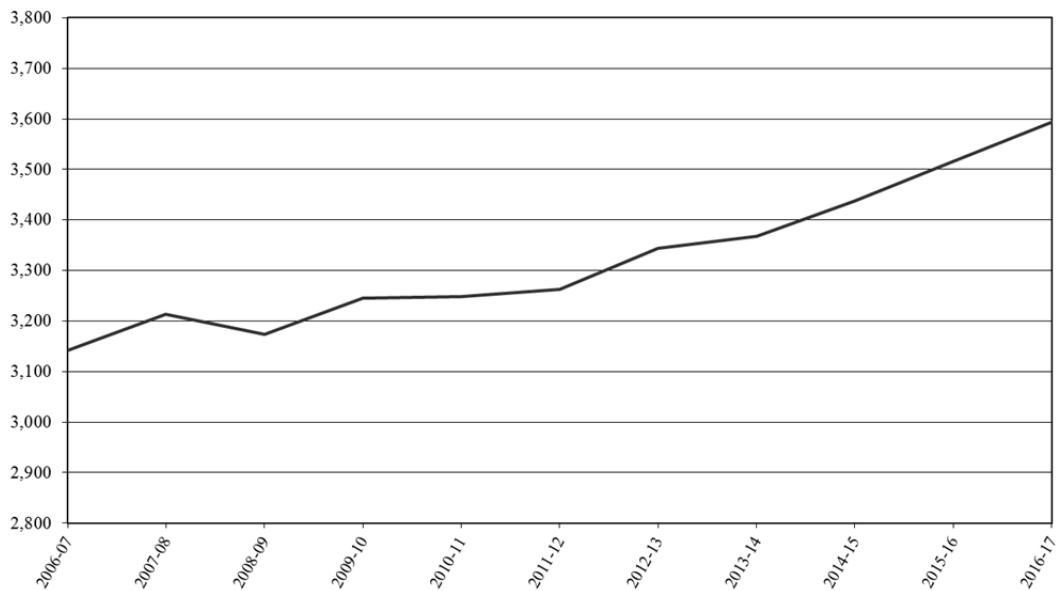


Table 5-2  
PALMYRA AREA SCHOOL DISTRICT  
Total Enrollments by Grade <sup>1/</sup>  
2006-07 to 2016-17

<u>Year</u>	<u>K</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<b>Total <u>K-5</u></b>	<u>6</u>	<u>7</u>	<u>8</u>	<b>Total <u>6-8</u></b>	<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>	<b>Total <u>9-12</u></b>	<b>Total <u>K-12</u></b>
2006-07	230	245	253	245	219	218	<b>1,410</b>	264	230	233	<b>727</b>	268	252	264	221	<b>1,005</b>	<b>3,142</b>
2007-08	244	256	247	259	250	223	<b>1,479</b>	211	263	234	<b>708</b>	265	266	241	255	<b>1,027</b>	<b>3,214</b>
2008-09	226	266	260	250	249	251	<b>1,502</b>	226	205	255	<b>686</b>	253	250	253	229	<b>985</b>	<b>3,173</b>
2009-10	245	246	265	257	254	258	<b>1,525</b>	261	240	206	<b>707</b>	282	243	227	261	<b>1,013</b>	<b>3,245</b>
2010-11	251	246	243	274	261	264	<b>1,539</b>	269	267	241	<b>777</b>	211	266	220	235	<b>932</b>	<b>3,248</b>
2011-12	248	255	257	239	268	264	<b>1,531</b>	262	274	267	<b>803</b>	260	194	252	223	<b>929</b>	<b>3,263</b>
2012-13	243	260	273	258	245	277	<b>1,556</b>	266	271	278	<b>815</b>	277	242	201	253	<b>973</b>	<b>3,344</b>
2013-14	228	250	275	276	265	251	<b>1,545</b>	286	276	271	<b>833</b>	290	258	233	208	<b>989</b>	<b>3,367</b>
2014-15	239	251	251	289	280	277	<b>1,587</b>	259	282	276	<b>817</b>	275	272	250	236	<b>1,033</b>	<b>3,437</b>
2015-16	220	259	252	256	298	300	<b>1,585</b>	280	276	288	<b>844</b>	292	276	262	256	<b>1,086</b>	<b>3,515</b>
2016-17	250	243	266	262	268	309	<b>1,598</b>	298	283	287	<b>868</b>	285	292	278	272	<b>1,127</b>	<b>3,593</b>
Pupil Change																	
2006-07 to																	
2016-17	20	-2	13	17	49	91	<b>188</b>	34	53	54	<b>141</b>	17	40	14	51	<b>122</b>	<b>451</b>
Percent Change																	
2006-07 to																	
2016-17	8.7	-0.8	5.1	6.9	22.4	41.7	<b>13.3</b>	12.9	23.0	23.2	<b>19.4</b>	6.3	15.9	5.3	23.1	<b>12.1</b>	<b>14.4</b>

<sup>1/</sup> Pupil counts are based on October 1 figures as provided by the district for each year and reflect all regular classroom pupils as well as district children enrolled in the half-day program offered by the Lebanon County Career and Technology Center, the small number of seniors participating in the full-time CTC program, those who participate in the district's cyber/charter program (known as the Cougar Academy), and those in the district's alternative education program. Excluded from the district counts are children residing in the Palmyra Area who were reported to be in home schools, cyber schools, and charter schools (other than those participating in the district's cyber/charter program), those enrolled in private/parochial schools, district children in full-time Intermediate Unit programs (even if conducted in the district's classrooms), and resident children in juvenile correction facilities, other institutions, and other out-of-district placements, etc.

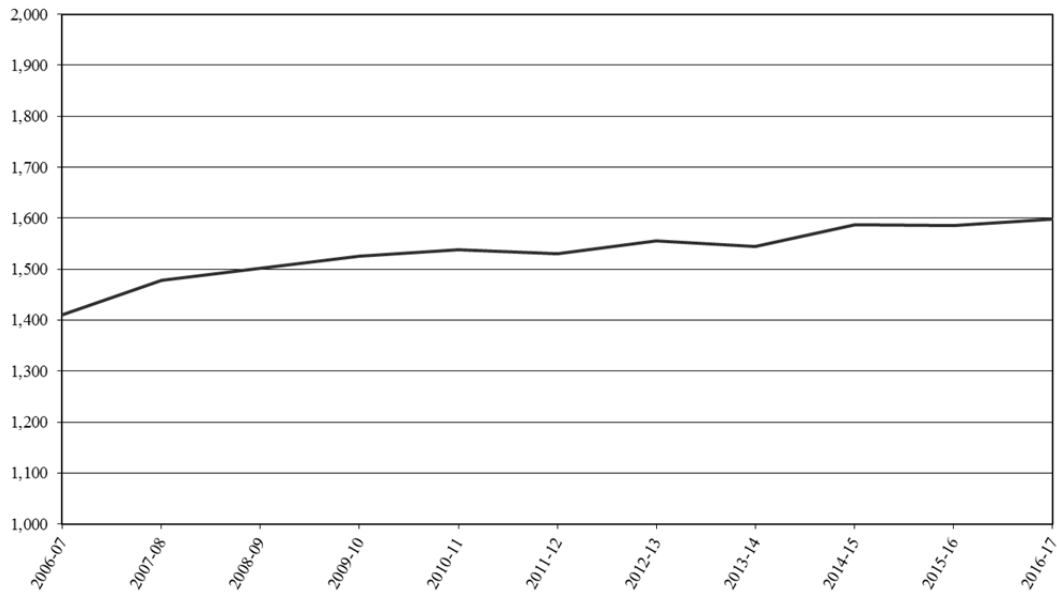
Elementary pupil counts (grades K-5) in Palmyra Area in 2016-17 are 188 pupils or 13.3 percent above the 2006-07 level. The pupil population rose in seven years during this period and decreases were recorded in three (including two of the four most recent years). The largest annual increase in the elementary grades (69 pupils or 4.9 percent) occurred in 2007-08, and the smallest rise (13 pupils or 0.8 percent) was in the current school year. The largest annual drop (11 pupils or 0.7 percent) occurred in the 2013-14 school year; the smallest decline (two pupils or 0.1 percent) was in 2015-16. The pupil population in the district's elementary grades grew by a net of 121 or 8.6 percent during the period 2006-07 to 2011-12 (a net increase of 24 or 1.7 percent yearly, on average); between the 2011-12 and 2016-17 school years the pupil count in grades K-5 was up by a net of 67 or 4.4 percent (or an average annual net growth of 13 pupils or 0.9 percent). (See Tables 5-2 and 5-3 and Graph 5-2.)

Table 5-3  
PALMYRA AREA SCHOOL DISTRICT  
Elementary Enrollments (Grades K-5)<sup>1/</sup>  
2006-07 to 2016-17

<u>School Year</u>	<u>Enrollment K-5</u>	<u>Change From Previous Year</u>	
		<u>#</u>	<u>%</u>
2006-07	1,410	—	—
2007-08	1,479	69	4.9
2008-09	1,502	23	1.6
2009-10	1,525	23	1.5
2010-11	1,539	14	0.9
2011-12	1,531	-8	-0.5
2012-13	1,556	25	1.6
2013-14	1,545	-11	-0.7
2014-15	1,587	42	2.7
2015-16	1,585	-2	-0.1
2016-17	1,598	13	0.8
Change 2006-07 to 2016-17		188	13.3

<sup>1/</sup> Based on October 1 figures for all years as provided by the district.

Graph 5-2  
 PALMYRA AREA SCHOOL DISTRICT  
Elementary Enrollment Trends  
 2006-07 to 2016-17



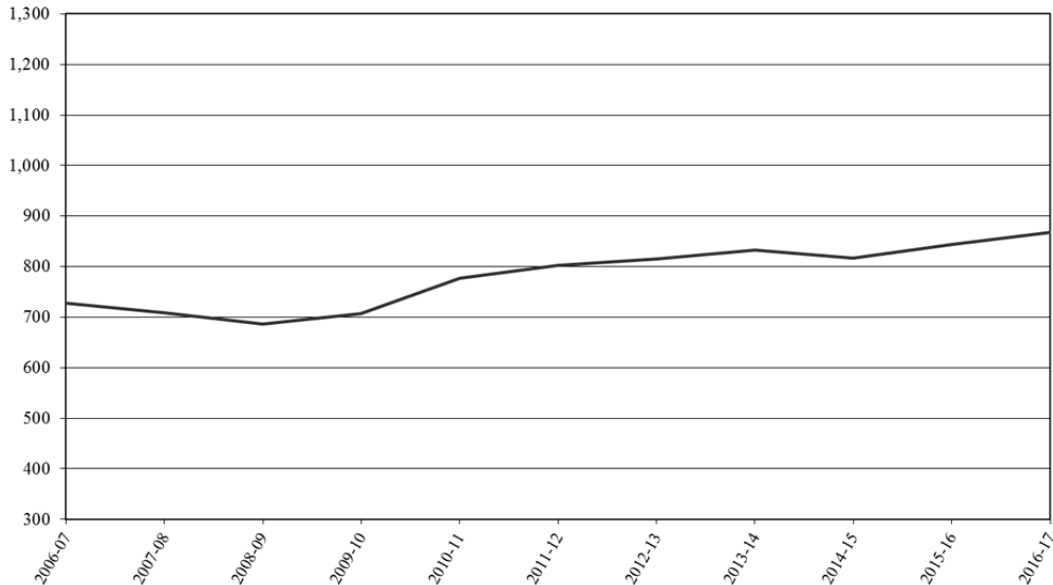
The pupil population in the district’s middle school (grades 6-8) was up by a net of 141 or 19.4 percent between the 2006-07 and 2016-17 school years. Increases in the pupil count were recorded in seven of the years during this period. The largest annual growth in the number of pupils in the middle school grades occurred in 2010-11—70 or 9.9 percent. The smallest yearly gain (12 pupils or 1.5 percent) was in 2012-13. Three decreases occurred during this period, and two of these were experienced during the first two years of the review period. The annual losses in pupils ranged from 16 (1.9 percent) in the 2014-15 school year to 22 (3.1 percent) in 2008-09. In the current school year, the pupil population in grades 6-8 was up by 24 or 2.8 percent. Between school years 2006-07 and 2011-12, enrollments in these grades grew by a net of 76 or 10.5 percent (a net increase of 15 pupils or 2.1 percent yearly, on average); in the five most recent years the number of middle school pupils rose by a net 65 or 8.1 percent (an annual average net growth of 13 pupils or 1.6 percent). (See Tables 5-2 and 5-4 and Graph 5-3.)

Table 5-4  
 PALMYRA AREA SCHOOL DISTRICT  
Middle School Enrollments (Grades 6-8)<sup>1/</sup>  
 2006-07 to 2016-17

<u>School Year</u>	<u>Enrollment 6-8</u>	<u>Change From Previous Year</u>	
		<u>#</u>	<u>%</u>
2006-07	727	-	-
2007-08	708	-19	-2.6
2008-09	686	-22	-3.1
2009-10	707	21	3.1
2010-11	777	70	9.9
2011-12	803	26	3.3
2012-13	815	12	1.5
2013-14	833	18	2.2
2014-15	817	-16	-1.9
2015-16	844	27	3.3
2016-17	868	24	2.8
Change 2006-07 to 2016-17		141	19.4

<sup>1/</sup> Based on October 1 figures for all years as provided by the district.

Graph 5-3  
 PALMYRA AREA SCHOOL DISTRICT  
Middle School Enrollment Trends  
 2006-07 to 2016-17



In the 2016-17 school year, high school enrollments (grades 9-12) are up by 122 pupils (12.1 percent) from the 2006-07 level. Annual increases were recorded in seven of the years during this period, and decreases occurred in three. The largest yearly rise in the pupil count at the high school (53 or 5.1 percent) was in 2015-16; the smallest growth (16 or 1.6 percent) was in 2013-14. The annual decreases in enrollments in grades 9-12 ranged from a high of 81 (8.0 percent) in 2010-11 to a low of three (0.3 percent) in 2011-12. In the current school year the pupil population at the district's high school rose by 41 or 3.8 percent. Enrollments in grades 9-12 fell by a net of 76 or 7.6 percent between 2006-07 and 2011-12 (a net decline of 15 or 1.5 percent yearly, on average); in the most recent five years the count grew by 198 or 21.3 percent (an average increase of 40 or 4.3 percent) yearly. (See Tables 5-2 and 5-5 and Graph 5-4.)

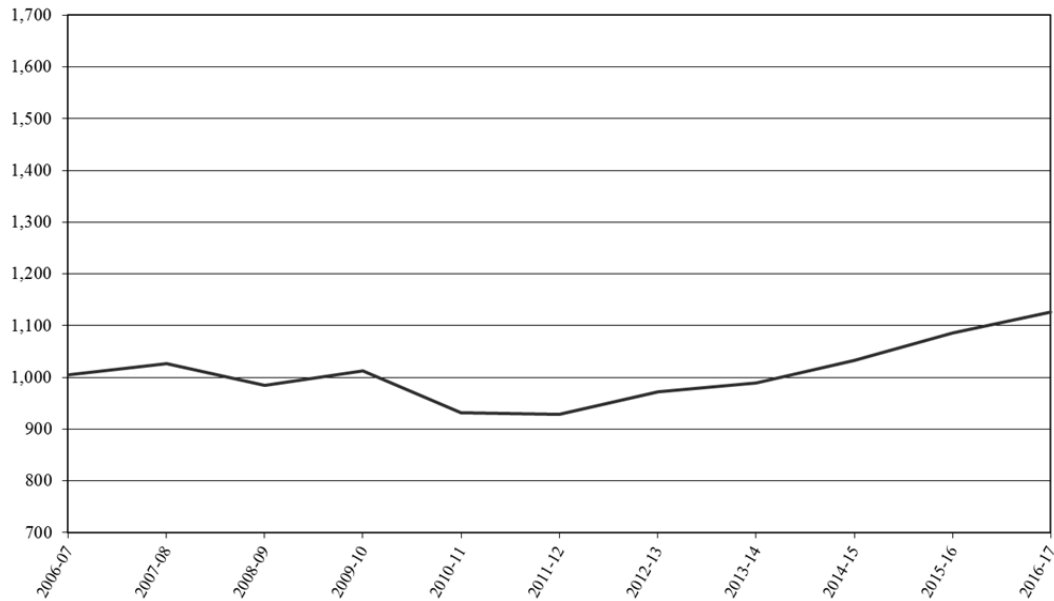
Table 5-5  
PALMYRA AREA SCHOOL DISTRICT  
High School Enrollments (Grades 9-12)<sup>1/</sup>  
2006-07 to 2016-17

<u>School Year</u>	<u>Enrollment 9-12</u>	<u>Change From Previous Year</u>	
		<u>#</u>	<u>%</u>
2006-07	1,005	—	—
2007-08	1,027	22	2.2
2008-09	985	-42	-4.1
2009-10	1,013	28	2.8
2010-11	932	-81	-8.0
2011-12	929	-3	-0.3
2012-13	973	44	4.7
2013-14	989	16	1.6
2014-15	1,033	44	4.4
2015-16	1,086	53	5.1
2016-17	1,127	41	3.8
Change 2006-07 to 2016-17		122	12.1

<sup>1/</sup> Based on October 1 figures for all years as provided by the district.



Graph 5-4  
 PALMYRA AREA SCHOOL DISTRICT  
High School Enrollment Trends  
 2006-07 to 2016-17



Based on figures provided by the Palmyra Area School District, the number of children residing in Palmyra Area who were reported to be enrolled in schools and educational programs other than those operated directly by the district—specifically, those in home schools, cyber schools, and charter schools (except those participating in the district’s cyber/charter program—the Cougar Academy) and district children enrolled in private/parochial schools who are transported by the district (and perhaps some who are not transported by the district)—decreased from 330 in 2006-07 to 311 in 2015-16 (the most recent year for which consistent and compatible non-public figures were readily available from the district). This reflected a drop of 19 pupils or 5.8 percent. During this same period, public school enrollments rose by a net of 373 or 11.9 percent.

The reported number of Palmyra Area residents transported by the district to private/parochial schools (and perhaps some who are not transported by the district—for example, those who walk or are transported by others), totaled 140 in 2015-16— 65 or 31.7 percent lower than in 2006-07. The number of district children reported to be in home schools, cyber schools, and charter schools (except those participating in the district’s cyber/charter program) was 125 in 2006-07; it totaled 171 in 2015-16—up by 46 or 36.8 percent.

In 2006-07, 9.5 percent of district children reported to be in schools and educational programs were enrolled in schools and educational programs other than those provided directly by Palmyra Area (as defined above). The figure was higher during the next several years and reached its highest level during the years reviewed (10.3 percent) in 2011-12. The relative number of pupils in non-district schools and programs declined in three of the subsequent four years hitting its lowest point during the review period (8.1 percent) in 2015-16—the most recent year for which consistent and compatible non-public figures were readily available). The relationship of these children to the total number enrolled in the district and non-district schools and programs averaged 9.5 percent during the review period—10.0 percent between 2006-07 and 2010-11 and 9.0 percent for the years 2011-12 through 2015-16.

Conversely, the Palmyra Area School District's share of the combined number of resident children reported to be in district and non-district schools and programs (as defined above) totaled 90.5 percent in 2006-07. The district's share of the total number of district residents reported to be in schools and other educational programs increased and decreased within a very narrow range during the next several years and hit its low point (89.7 percent) was recorded in 2011-12. The figure then rose in three of the next four years and reached its high point during the review period (91.9 percent) in 2015-16. The relationship between the number of children enrolled in Palmyra Area and all reported children in schools averaged 90.5 percent during the period reviewed—90.0 percent for the years 2006-07 through 2010-11 and 91.0 percent in the five most recent years.

The overall relationship between enrollments in Palmyra Area and district children in other schools and educational programs (as defined above) may be affected by any changes over time in the way those in schools and educational programs other than Palmyra Area's are recorded and/or in the relative number of private/parochial school pupils transported by the district. However, the figures presented are believed to represent a valid measure of the general relationship between resident children reported to be enrolled in district and non-district schools and programs during the period reviewed—acknowledging that children in non-district schools and programs include only those reported to be enrolled in home schools, cyber schools, and charter schools (except those participating in the district's cyber/charter program), and just private/parochial pupils who are transported by the district (and perhaps some who are not transported by the district). If figures on all district children participating in schools and

programs other than those operated directly by Palmyra Area were readily available and factored in (for example, Palmyra Area children enrolled in private/parochial schools who are not transported by the district (for example, those who walk or are transported by others and are not in the nonpublic counts); those full-time Intermediate Unit programs (even if conducted in the district’s classrooms), resident children in juvenile correction facilities, other institutions, and other out-of-district placements, etc., Palmyra Area’s “market share” would be lower.

The methodology employed to generate the enrollment projections recognizes the impact of district children involved in schools and educational programs other than those operated directly by Palmyra Area and factors in the patterns and events of the past several years and expectations for the next several years. (See Table 5-6.)

Table 5-6  
 PALMYRA AREA SCHOOL DISTRICT  
 Number and Proportion of District Children Attending Public and Nonpublic Schools  
 2006-07 to 2015-16

	PASD Enroll- Ments <sup>1/</sup>	Non-district Enrollments			Grand Total Enroll- ments <sup>4/</sup>	PASD as a % of Grand Total <sup>5/</sup>	Non-district Enrollments as a % of Grand Total <sup>5/</sup>
		Parochial/ Private <sup>2/</sup>	Home School <sup>3/</sup>	Total			
2006-07	3,142	205	125	330	3,472	90.5	9.5
2007-08	3,214	220	145	365	3,579	89.8	10.2
2008-09	3,173	216	139	355	3,528	89.9	10.1
2009-10	3,245	205	154	359	3,604	90.0	10.0
2010-11	3,248	190	172	362	3,610	90.0	10.0
2011-12	3,263	181	194	375	3,638	↓89.7	↑10.3
2012-13	3,344	159	168	327	3,671	91.1	8.9
2013-14	3,367	141	182	323	3,690	91.2	8.8
2014-15	3,437	150	182	332	3,769	91.2	8.8
2015-16	3,515	140	171	311	3,826	↑91.9	↓8.1
2016-17	3,593	NA	NA	NA	NA	NA	NA
<b>Change 2006-07 to most recent</b>	<b># 451 % 14.4</b>	<b>-65 -31.7</b>	<b>46 36.8</b>	<b>-19 -5.8</b>	<b>354 10.2</b>	<b>-- --</b>	<b>-- --</b>

1/ Pupil counts are based on October 1 figures as provided by the district for each year and reflect all regular classroom pupils as well as district children enrolled in the half-day program offered by the Lebanon County Career and Technology Center, the small number of seniors participating in the full-time CTC program, those who participate in the district’s cyber/charter program (known as the Cougar Academy), and those in the district’s alternative education program.

2/ Includes just district children enrolled in private/parochial schools who are transported by the district and perhaps some who are not transported by the district (for example, those who walk or are transported by others).

3/ Includes district children who were reported to be in home schools, cyber schools, and charter schools (except those participating in the district’s joint cyber/charter program).

4/ Includes district children enrolled in Palmyra Area and reported to be enrolled schools and educational programs not operated directly by the district (as defined above).

5/ It should be noted that the overall relationship between enrollments in Palmyra Area and district children in other schools and educational programs may be influenced by any changes over time in the way those in schools and educational programs other than those provided directly by Palmyra Area are recorded and/or in the relative number of district children who are transported by the district to private/parochial schools. Further, if figures for Palmyra Area children enrolled in private/parochial schools who are not transported by the district (for example, those who walk or are transported by others and are not in the nonpublic counts); full-time Intermediate Unit programs (even if conducted in the district’s classrooms), resident children in juvenile correction facilities, other institutions, and other out-of-district placements, etc. were readily available and factored in, Palmyra’s market share would be lower.

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

SOURCE: Palmyra Area School District

### Mechanics of Enrollment Projections

Enrollment projections for the Palmyra 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 of schools and educational programs other than those operated directly by the Palmyra Area School District. This approach is generally designed to detect such factors as in- or out-migration of pupils; transfers of pupils into and out of any special classes and programs, private/parochial and other schools, perhaps full-time CTC program, and/or any other educational programs not directly operated 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 2016-17 school year and grade 1 had 100 pupils in the prior school year (2015-16), 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 Palmyra Area during the current school year the progression ratios for grades 1, 2, 3, 4, 5, 7, 8, and 10, 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 (6 and 9) 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 decreased in three years and decreased in one, and they exceeded the “neutral” migration figure of 12.0 in all years. In 2012-13, the sum of the 12 individual progression ratios was 12.2466. The figure fell to 12.1914 in 2013-14 and to 12.1681 (its lowest

point during the review period) in 2014-15, but it grew to 12.3566 (the highest point during the review period) in 2015-16 and then declined to 12.3339 in the current school year.

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 2012-13 and 2015-16, 11 of the district's 12 grade ratios equaled or exceeded 1.0; in 2013-14 and 2016-17, 10 of the ratios equaled or exceeded 1.0, and in 2014-15 nine of the ratios equaled or exceeded 1.0.

The sum of the progression ratios in grades 1 to 5 exceeded the "neutral" migration figure of 5.0 in each of the five years reviewed. There were two annual decreases and two increases during this period. The sum of the ratios fell from 5.1816 in 2012-13 to 5.1491 (its lowest point during the review period) in 2013-14, rose to 5.2156 in 2014-15, dropped to 5.2101 in 2015-16, and was up to 5.2550 (its highest point during the review period) in the current school year. All of the elementary ratios equaled or exceeded 1.0 in each of the years reviewed.

The sum of the progression ratios for grades 6 to 8 exceeded the "neutral" point of 3.0 in each of the past five years; two annual increases and two decreases were recorded during this period. In 2012-13 the sum of the ratios was 3.0566. It was up to 3.0701 in 2013-14, down to 3.0179 (the lowest point during the review period) in 2014-15. In 2015-16, the sum of the ratios grew to 3.0977 (its highest point during the review period), but it fell to 3.0439 in the current school year. Each of the three of the middle school grades had ratios that equaled or exceeded 1.0 in 2012-13, 2013-14, and 2015-16. In 2014-15 and 2016-17, just two of these three grades had ratios that equaled or exceeded 1.0.

The sum of the progression ratios for grades 9 to 12 exceed the "neutral" point of 4.0 in three of the five years reviewed; three annual decreases and one increase were recorded during the period. The sum of the ratios in 2012-13 was 4.0084. It fell to 3.9722 in 2013-14 and to 3.9346 (its lowest point during the review period) in 2014-15, but it was up to 4.0488 (its highest point during the review period) in 2015-16, and in 2016-17 it was down to 4.0350. In 2012-13, 2015-16, and 2016-17 three of the four high school grades had ratios that equaled or exceeded 1.0; in 2013-14 and 2014-15, just two 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. (See Table 5-7.)

Table 5-7  
 PALMYRA AREA SCHOOL DISTRICT  
Grade Progression Ratios by Grade Groupings  
 2012-13 to 2015-16

<u>Grades</u>	<u>2016-17 Progression Ratios</u>	<u>2015-16 Progression Ratios</u>	<u>2014-15 Progression Ratios</u>	<u>2013-14 Progression Ratios</u>	<u>2012-13 Progression Ratios</u>
1/K	↑1.1045	1.0837	1.1009	↓1.0288	1.0484
2/1	1.0270	1.0040	↓1.0040	1.0577	↑1.0706
3/2	1.0397	1.0199	↑1.0509	1.0110	↓1.0039
4/3	↑1.0469	1.0311	↓1.0145	1.0271	1.0251
5/4	<u>1.0369</u>	<u>↑1.0714</u>	<u>1.0453</u>	<u>↓1.0245</u>	<u>1.0336</u>
<b>Total 1-5</b>	<b>↑5.2550</b>	<b>5.2101</b>	<b>5.2156</b>	<b>↓5.1491</b>	<b>5.1816</b>
6/5	↓0.9933	1.0108	1.0319	↑1.0325	1.0076
7/6	1.0107	↑1.0656	↓0.9860	1.0376	1.0344
8/7	<u>↑1.0399</u>	<u>1.0213</u>	<u>↓1.0000</u>	<u>↓1.0000</u>	<u>1.0146</u>
<b>Total 6-8</b>	<b>3.0439</b>	<b>↑3.0977</b>	<b>↓3.0179</b>	<b>3.0701</b>	<b>3.0566</b>
9/8	↓0.9896	↑1.0580	1.0148	1.0432	1.0375
10/9	1.0000	↑1.0036	0.9379	0.9314	↓0.9308
11/10	1.0072	0.9632	0.9690	↓0.9628	↑1.0361
12/11	<u>↑1.0382</u>	<u>1.0240</u>	<u>1.0129</u>	<u>1.0348</u>	<u>↓1.0040</u>
<b>Total 9-12</b>	<b>4.0350</b>	<b>↑4.0488</b>	<b>↓3.9346</b>	<b>3.9722</b>	<b>4.0084</b>
<b>Total 1-12</b>	<b><u>12.3339</u></b>	<b>↑<u>12.3566</u></b>	<b>↓<u>12.1681</u></b>	<b><u>12.1914</u></b>	<b><u>12.2466</u></b>

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

The impact of the Palmyra 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 second highest aggregate figure during the five years reviewed), 100 children entering kindergarten this year would in theory increase to 127 pupils in the fifth grade, rise to 132 eighth-graders, fall slightly to 131 in grades 9 and 10, and ultimately reach 137 in the 12<sup>th</sup> grade. These outcomes contrast just slightly with those that would result from using the ratios from the 2015-16 school year—the highest of the five most recent years. Based on these figures, 100 kindergarten pupils would grow to 121 in grade 5, 133 in grade 8, and peak at 142 in grade 10 before falling to 140 12<sup>th</sup> graders. A more noticeably different pattern results from applying the 2014-15 ratios—the lowest aggregate figure of the past five years. Using these figures, 100 kindergarten entries would rise to 123 in the fifth grade, but grow to only 125 in both grades 7 and 8, peak at 127 ninth graders, drop to 115 in grade 11, and then increase slightly to 116 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, 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 Palmyra Area five years prior was much higher in the current school year (1.1062) than in 2012-13 (0.9643) or in any of the other years reviewed. The ratio of kindergarten entries to births in the district five years prior grew slightly to 0.9661 in 2013-14 and then to 0.9958 in 2014-15, but it fell to 0.9322 (its lowest point during the review period) in 2015-16 before rising very noticeably to 1.1062 in the current school year (its highest point during the years reviewed). (See Table 5-8.)

The best available source of data on births in the district is the annual compilations by the Pennsylvania Department of Health. 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. Starting in the 2015-16 school year, Palmyra Area requires that children be five years of age by September 1 in order to enter kindergarten that year; in prior years, the cutoff was September 15.

Table 5-8  
 PALMYRA AREA SCHOOL DISTRICT  
Ratios of Kindergarten Entries to Births  
 2012-13 to 2016-17

<u>School Year</u>	<u>Kindergarten Enrollment</u>	<u>School Year Births Five Years Earlier</u>		<u>Ratio of K Entries to Births</u>
		<u>School Year</u>	<u>Births</u>	
2012-13	243	2006-07	252	0.9643
2013-14	228	2007-08	236	0.9661
2014-15	239	2008-09	240	0.9958
2015-16	220	2009-10	236	0.9322
2016-17	250	2010-11	226	1.1062

There were 214 births in calendar year 2012; for the school year (that is, births from September 2011 through August 2012—those who will enter kindergarten in 2017-18) the figure was 232. Birth figures in calendar year 2013 were 229, and for school year 2012-13 births totaled 233. Preliminary calendar year births for 2014 were 243, and for school year 2013-14 the figure was 237. The preliminary birth figure for calendar 2015 was 236, and for school year 2014-15 (the primary source of kindergarten entries in 2020-21) births totaled 227. (See Table 5-9.)

Table 5-9  
 PALMYRA AREA SCHOOL DISTRICT  
Relationship Between Calendar Year and School Year Births  
 2012 to 2015<sup>1/</sup>

<u>Age Five Kindergarten Year</u>	<u>Calendar Year Birth</u>		<u>School Year Births</u>	
	<u>CY</u>	<u>#</u>	<u>SY</u>	<u>#</u>
2017-18	2012	214	2011-12	232
2018-19	2013	229	2012-13	233
2019-20	2014 <sup>1/</sup>	243	2013-14 <sup>1/</sup>	237
2020-21	2015 <sup>1/</sup>	236	2014-15 <sup>1/</sup>	227

<sup>1/</sup> Preliminary figures.



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. Preliminary data on resident births for Palmyra Area are currently available through calendar years 2014 and 2015. In view of this, projections of kindergarten enrollments can be made through 2020-21 (the fourth projected year) based on the cohort survival rate and birth figures covering September 2014 through August 2015 (which represents the main source of kindergarten entries in the 2020-21 school year). Because PEL’s primary projections extend one year beyond the birth data available to determine kindergarten entries (to school year 2021-22), an estimate must be used to fill this gap. As a result, the average birth figure for the two most recent years was used to calculate kindergarten entries in 2021-22.

For years 2022-23 through 2026-27, 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 and grade 1 in 2022-23; in 2023-24, only kindergarten and grades 1 and 2 are affected; in 2024-25, only kindergarten and grades 1 through 3; in 2025-26, only kindergarten and grades 1 through 4; and in the final projected year, only kindergarten and grades 1 through 5. The use of estimated birth figures has no effect on projections beyond grade 5 during the next 10 years.

Because all projections for grades 6 and higher for all years are based primarily on births that have already occurred and pupils currently in school, high confidence projections for the secondary grades can be carried five years further. Projections of enrollments for these grades 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 15th year after births began to decrease—equivalent to PEL’s 10th projected year—and total enrollments in that year would be 1,025, down by 21.2 percent from the base year.

The theoretical impact of the changes in birth patterns based on these points of reference would likely not occur precisely as outlined in these examples because of year-to-year variations in birth patterns and the effect of in- and out-migration during the pre-school years and as

children move through the grades. But, the impact that changing births patterns can have on enrollments is apparent: births 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, annual births in Palmyra Area during the past 10 years—on average—were more than double the figure used in this example, and during this period school year births were up by an average of just over two per year, or less than one-half the figure used in the model outlined above.

### Enrollment Projections—Primary Period

The projections that follow are based on the numbers and type of new housing expected to be built in the various subdivisions in the Palmyra Area School District during the years ahead, as well as the infill, minor subdivision activity, and miscellaneous housing construction that can reasonably be assumed to occur during this period (all as outlined in Chapter 2). The methodology also recognizes any anticipated of age-qualified or 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 current expectations, that the role of schools and educational programs other than those operated directly by Palmyra Area will be compatible with expected patterns, 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.

Given these assumptions and conditions, PEL projects that the overall pattern of enrollment increase that Palmyra Area has been experiencing will continue during the primary projection period (the next five years)—albeit at a slightly slower annual average pace than in the past five years. The district’s enrollments will rise to 3,801 in 2021-22 and be up by 208 or 5.8 percent from the 2016-17 school year. Increases in the pupil population will occur in all years during this period. The largest growth (44 pupils or 1.2 percent) will be in 2018-19. The smallest increase (30 pupils or 0.8 percent) will be recorded in 2021-22. The projected rise in the pupil count during the primary projection period averages 42 pupils yearly compared with an annual average growth of 66 pupils during the most recent five years.

Projected pupil counts are based on October 1 for each school year and reflect all regular classroom pupils as well as district children enrolled in the half-day program offered by the Lebanon County Career and Technology Center, the small number of seniors participating in the full-time CTC program, those who participate in the district’s cyber/charter program (known as the Cougar Academy), and those in the district’s alternative education program. Excluded from the district counts are children residing in the Palmyra Area who were reported to be in home schools, cyber schools, and charter schools (other than those participating in the district’s cyber/charter program), those enrolled in private/parochial schools, district children in full-time Intermediate Unit programs (even if conducted in the district’s classrooms), and resident children

in juvenile correction facilities, other institutions, and other out-of-district placements, etc. (See Tables 5-10 and 5-11 and Graph 5-5.)

Table 5-10  
 PALMYRA AREA SCHOOL DISTRICT  
Total Enrollment Projections (Grades K-12)  
 2016-17 to 2021-22

<u>School Year</u>	<u>Enrollment K-12</u>	<u>Change From Previous Year</u>	
		<u>#</u>	<u>%</u>
2016-17 (actual)	3,593	78	2.2
2017-18	3,652	59	1.6
2018-19	3,696	44	1.2
2019-20	3,736	40	1.1
2020-21	3,771	35	0.9
2021-22	3,801	30	0.8
Change 2016-17 to 2021-22		208	5.8

Graph 5-5  
 PALMYRA AREA SCHOOL DISTRICT  
Total Enrollment Trends/Primary Projections  
 2011-12 to 2021-22

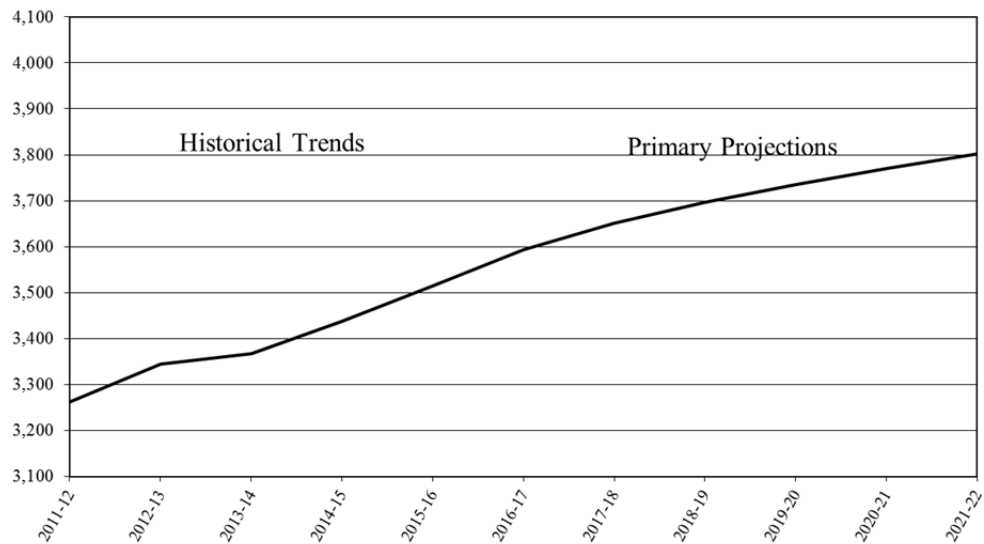


Table 5-11  
 PALMYRA AREA SCHOOL DISTRICT  
Projected Total Enrollments by Grade<sup>1/</sup>  
 2016-17 to 2021-22

School Year	<u>K</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<b>Total <u>K-5</u></b>	<u>6</u>	<u>7</u>	<u>8</u>	<b>Total <u>6-8</u></b>	<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>	<b>Total <u>9-12</u></b>	<b>Total <u>K-12</u></b>
2016-17 (actual)	250	243	266	262	268	309	<b>1,598</b>	298	283	287	<b>868</b>	285	292	278	272	<b>1,127</b>	<b>3,593</b>
2017-18	236	274	247	274	272	283	<b>1,586</b>	310	309	292	<b>911</b>	294	286	288	287	<b>1,155</b>	<b>3,652</b>
2018-19	237	258	278	254	285	287	<b>1,599</b>	284	322	318	<b>924</b>	299	295	282	297	<b>1,173</b>	<b>3,696</b>
2019-20	242	259	262	286	264	300	<b>1,613</b>	288	295	332	<b>915</b>	326	300	291	291	<b>1,208</b>	<b>3,736</b>
2020-21	231	265	263	270	297	278	<b>1,604</b>	301	299	304	<b>904</b>	340	327	296	300	<b>1,263</b>	<b>3,771</b>
2021-22	236	253	269	271	281	313	<b>1,623</b>	279	312	308	<b>899</b>	311	341	322	305	<b>1,279</b>	<b>3,801</b>
Pupil Change																	
2016-17 to																	
2021-22	-14	10	3	9	13	4	<b>25</b>	-19	29	21	<b>31</b>	26	49	44	33	<b>152</b>	<b>208</b>
Percent Change																	
2016-17 to																	
2021-22	-5.6	4.1	1.1	3.4	4.9	1.3	<b>1.6</b>	-6.4	10.2	7.3	<b>3.6</b>	9.1	16.8	15.8	12.1	<b>13.5</b>	<b>5.8</b>

<sup>1/</sup> Pupil counts are based on October 1 for each year and reflect all regular classroom pupils as well as district children enrolled in the half-day program offered by the Lebanon County Career and Technology Center, the small number of seniors participating in the full-time CTC program, those who participate in the district's cyber/charter program (known as the Cougar Academy), and those in the district's alternative education program. Excluded from the district counts are children residing in the Palmyra Area who were reported to be in home schools, cyber schools, and charter schools (other than those participating in the district's cyber/charter program), those enrolled in private/parochial schools, district children in full-time Intermediate Unit programs (even if conducted in the district's classrooms), and resident children in juvenile correction facilities, other institutions, and other out-of-district placements, etc.

Projections of elementary enrollments (grades K-5) suggest they will be up by 25 (1.6 percent) to 1,623 in 2021-22. Increases are projected to occur in three years during this period. The largest growth (19 pupils or 1.2 percent) is expected in 2021-22; the smallest gain (13 pupils or 0.8 percent) will be in 2018-19. Decreases will be recorded in 2017-18 and 2020-21—12 pupils (0.8 percent) and nine pupils (0.6 percent), respectively. The projected overall net rise in enrollments in grades K-5 during the next five years averages five pupils yearly compared with a net annual growth of 13 pupils (on average) during the past five years.

The slight slowing in the pace of the increase in the pupil count in grades K-5 during the primary projection period is influenced mainly by a very small decrease in school year births. The average number of births that will drive kindergarten entries during the next five years is 232—down from the average of 237 births that drove entries during the past five years, which, in turn, was up from an average of 221 in the five preceding years.

The impact of the slightly lower number of annual births is offset by the modestly positive and strengthening (on average) recent cohort survival rates (the relationship between kindergarten entries and births in the district five years earlier) and progression ratios at the elementary level that are strongly positive (on average), and, like the cohort survival rates, have—on average—risen in the past several years. Grade 1 ratios have been particularly strong, and they, too, are up in recent years.

The cohort survival rate rose very slightly in 2013-14 and somewhat more so in 2014-15 (to near the 100 percent figure), but it dropped noticeably in 2015-16—likely due to the change in the cutoff date for eligibility for entry into kindergarten in that school year. The cohort survival rate for the current school year (reflecting a full 52 weeks of births) would be expected to be higher than last year's artificially low figure resulting from the policy change, but this year's figure is up dramatically to well over 100 percent—a level not experienced since the 2011-12 school year.

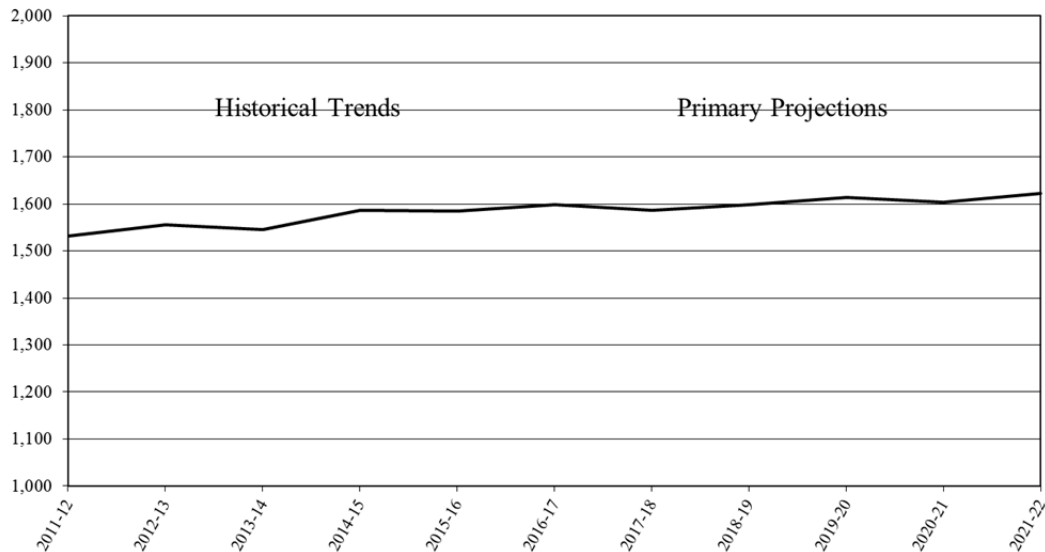
Given that no reasonable explanation for this year's unusually large increase in the cohort survival rate has surfaced, the question remains as to whether this level can be expected to be sustained in future years. Nonetheless, the higher rate has been factored into the projection model, and it is important for all parties to recognize that if this year's level is not sustained (and future cohort survival rates fall more in line with the prior years), the size of future kindergarten classes may prove to be slightly lower than those projected in this report, and the same would

hold true for pupil counts in the higher grades and the district’s overall enrollments figures as these children move through the system. (See Tables 5-11 and 5-12 and Graph 5-6.)

Table 5-12  
 PALMYRA AREA SCHOOL DISTRICT  
Elementary Enrollment Projections (Grades K-6)  
 2016-17 to 2021-22

<u>School Year</u>	<u>Enrollment</u> <u>K-5</u>	<u>Change From</u> <u>Previous Year</u>	
		<u>#</u>	<u>%</u>
2016-17 (actual)	1,598	13	0.8
2017-18	1,586	-12	-0.8
2018-19	1,599	13	0.8
2019-20	1,613	14	0.9
2020-21	1,604	-9	-0.6
2021-22	1,623	19	1.2
Change 2016-17 to 2021-22		25	1.6

Graph 5-6  
 PALMYRA AREA SCHOOL DISTRICT  
Elementary Enrollment Trends/Primary Projections  
 2011-12 to 2021-22





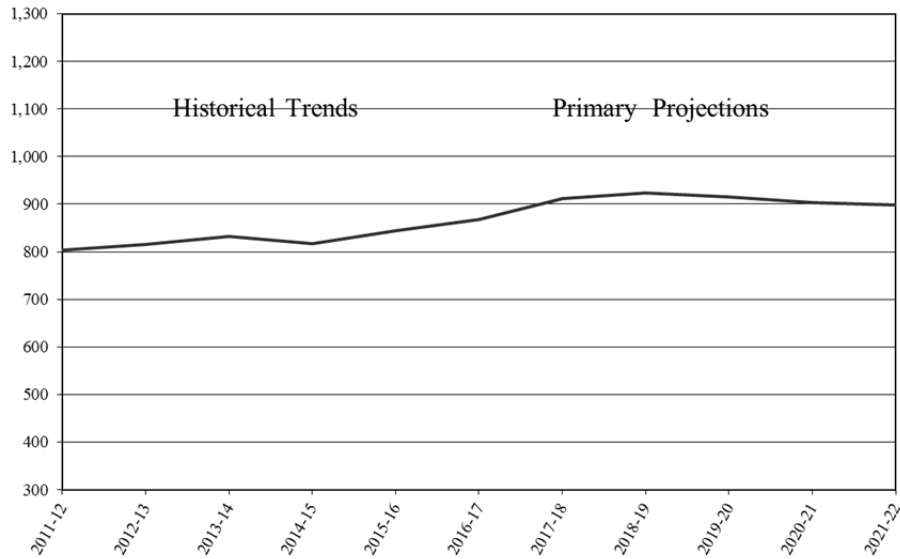
Middle school enrollments (grades 6-8) are projected to be 899 in 2021-22—31 pupils (3.6 percent) higher than in 2016-17. While increases will be experienced in the first two years of the primary projection period—43 pupils (5.0 percent) in 2017-18 and 13 pupils (1.4 percent) in 2018-19, and three decreases will follow. The annual losses in pupils will range from five (0.6 percent) in 2021-22 to 11 (1.2 percent) in 2020-21. The projected net growth in the number of pupils in grades 6-8 during the primary projection period will average six annually compared with an average yearly net rise of 13 pupils during the most recent five years.

The slowed rate of the net gain in the pupil population at the middle school during the next five years from that of the last five years is consistent with the pattern of enrollments in the elementary grades during the recent past and the movement through grades 6-8 of some smaller actual and projected elementary classes from the preceding years. It is also influenced somewhat by the just modestly positive (but fairly stable—on average) progression ratios in these grades. (See Tables 5-11 and 5-13 and Graph 5-7.)

Table 5-13  
PALMYRA AREA SCHOOL DISTRICT  
Middle School Enrollment Projections (Grades 6-8)  
2016-17 to 2021-22

<u>School Year</u>	<u>Enrollment</u> <u>6-8</u>	<u>Change From</u> <u>Previous Year</u>	
		<u>#</u>	<u>%</u>
2016-17 (actual)	868	24	2.8
2017-18	911	43	5.0
2018-19	924	13	1.4
2019-20	915	-9	-1.0
2020-21	904	-11	-1.2
2021-22	899	-5	-0.6
Change 2016-17 to 2021-22		31	3.6

Graph 5-7  
 PALMYRA AREA SCHOOL DISTRICT  
Middle School Enrollment Trends/Primary Projections  
 2011-12 to 2021-22



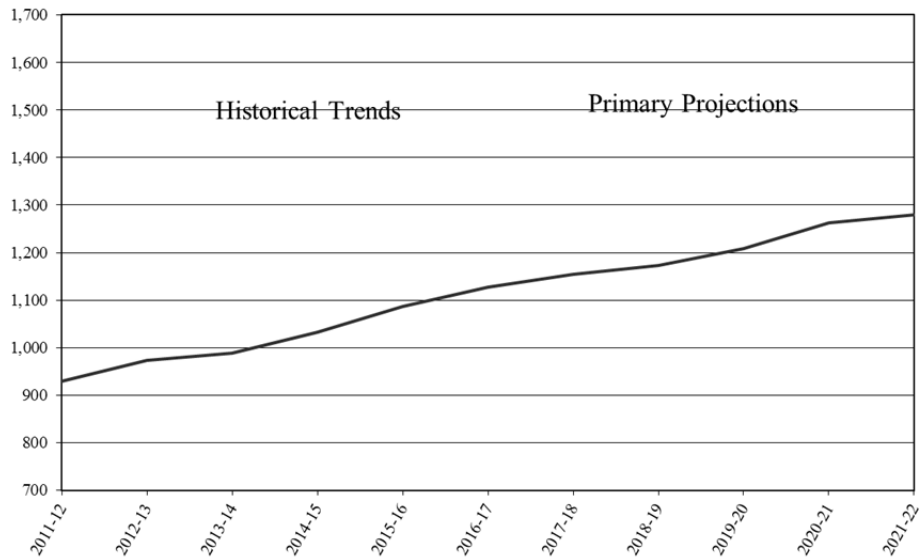
Projections for the high school level (grades 9-12) indicate that enrollments will be up to 1,279 in 2021-22—a rise of 152 or 13.5 percent. The pupil population will increase in all the years of the primary projection period, and the annual gains will range from 16 pupils (1.3 percent) in 2021-22 to 55 pupils (4.6 percent) in 2020-21. The projected average annual rise in enrollments in the grades 9-12 is 30 pupils compared with a growth of 40 during the most recent five years.

As in the case of elementary and middle school enrollments, during the next five years there will be a slower rate of growth in high school enrollments than in the past five years. This is caused by some slightly smaller classes from the lower grades in the preceding years reaching grades 9-12 and by the essentially neutral (but fairly stable) average progression ratios in these grades. (See Tables 5-11 and 5-14 and Graph 5-8.)

Table 5-14  
 PALMYRA AREA SCHOOL DISTRICT  
High School Enrollment Projections (Grades 9-12)  
 2016-17 to 2021-22

<u>School Year</u>	<u>Enrollment</u> <u>9-12</u>	<u>Change From</u> <u>Previous Year</u>	
		<u>#</u>	<u>%</u>
2016-17 (actual)	1,127	41	3.8
2017-18	1,155	28	2.5
2018-19	1,173	18	1.6
2019-20	1,208	35	3.0
2020-21	1,263	55	4.6
2021-22	1,279	16	1.3
Change 2016-17 to 2021-22		152	13.5

Graph 5-8  
 PALMYRA AREA SCHOOL DISTRICT  
High School Enrollment Trends/Primary Projections  
 2011-12 to 2021-22



### 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 secondary enrollments because they rely largely on children already born and/or 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 2022-23 through the 2026-27.

If births hold steady at the average level of the two most recent years for which data are available (232), the total number and type of housing units in the district rise at the expected rate (as outlined in Chapter 2), overall migration and related patterns, including the role of schools and educational programs other than those operated directly by Palmyra Area remain in keeping with current expectations, and the district continues its current practices relative to kindergarten, CTC, and special education programs and maintains other key programs, practices, and policies, total enrollments in the district will continue to grow during the extended projection period (the second five years), but at a much slower rate than during the first five projected years and the past five years. The pupil count will rise from 3,801 in 2021-22 to 3,837 in 2026-27 and be up by just 36 pupils or 0.9 percent. The figure projected for 2026-27 will be 244 pupils or 6.8 percent higher than the actual figure for the current school year given the increase of 208 pupils expected to occur in the primary projection period.

Increases in total enrollments will be recorded in three years during the extended projection period; the exceptions are 2024-25 (when a drop of 15 pupils or 0.4 percent is expected) and 2023-24 (when enrollments will be unchanged from the previous year). The largest annual growth (26 pupils or 0.7 percent) will be in 2022-23; the smallest gain (11 pupils or 0.3 percent) will be in 2026-27. The net annual increase in the pupil population during the extended period will average seven compared with an average increase of 42 per year during the first five projected years and an average annual increase of 66 pupils during the past five years.

Based on the assumptions used, beyond school year 2026-27 total enrollments in Palmyra Area are likely to experience several annual decreases and two increases before stabilizing at a

level just slightly below the figure projected for the final year covered in the study but substantially higher than in the current school year. (See Tables 5-15 and 5-16 and Graph 5-9.)

Table 5-15  
 PALMYRA AREA SCHOOL DISTRICT  
Extended Total Enrollment Projections (Grades K-12) <sup>1/</sup>  
 2021-22 to 2026-27

<u>School Year</u>	<u>Enrollment K-12</u>	<u>Change From Previous Year</u>	
		<u>#</u>	<u>%</u>
2021-22	3,801	30	0.8
2022-23	3,827	26	0.7
2023-24	3,827	NC	NC
2024-25	3,812	-15	-0.4
2025-26	3,826	14	0.4
2026-27	3,837	11	0.3
Change 2021-22 to 2026-27		36	0.9
Change 2016-17 to 2026-27		244	6.8

<sup>1/</sup> Based on births fixed a 232.

Graph 5-9  
 PALMYRA AREA SCHOOL DISTRICT  
Total Primary/Extended Enrollment Projections  
 2016-17 to 2026-27

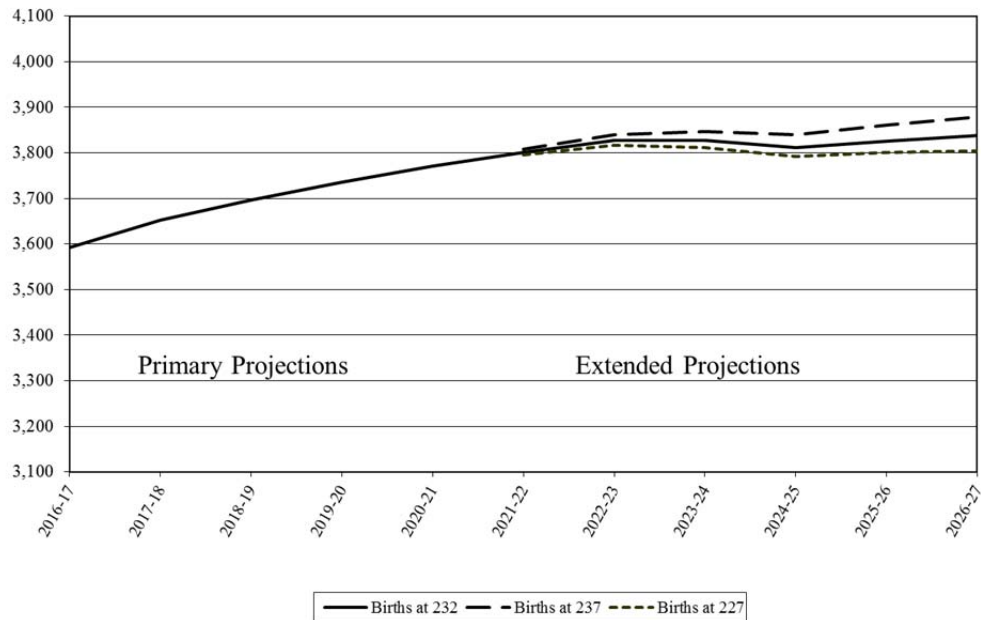


Table 5-16  
 PALMYRA AREA SCHOOL DISTRICT  
Extended Total Enrollment Projections by Grade Based on Births Fixed 232  
 2021-22 to 2026-27

<u>School Year</u>	<u>K</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<b>Total</b> <b><u>K-6</u></b>	<u>6</u>	<u>7</u>	<u>8</u>	<b>Total</b> <b><u>6-8</u></b>	<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>	<b>Total</b> <b><u>9-12</u></b>	<b>Total</b> <b><u>K-12</u></b>
2021-22	236	253	269	271	281	313	<b>1,623</b>	279	312	308	<b>899</b>	311	341	322	305	<b>1,279</b>	<b>3,801</b>
2022-23	236	258	257	277	282	296	<b>1,606</b>	314	290	322	<b>926</b>	315	312	336	332	<b>1,295</b>	<b>3,827</b>
2023-24	236	258	262	265	288	297	<b>1,606</b>	297	326	299	<b>922</b>	330	316	307	346	<b>1,299</b>	<b>3,827</b>
2024-25	236	258	262	270	275	304	<b>1,605</b>	298	308	336	<b>942</b>	306	331	311	317	<b>1,265</b>	<b>3,812</b>
2025-26	236	258	262	270	281	290	<b>1,597</b>	305	309	317	<b>931</b>	344	307	326	321	<b>1,298</b>	<b>3,826</b>
2026-27	236	258	262	270	281	296	<b>1,603</b>	291	317	318	<b>926</b>	325	345	302	336	<b>1,308</b>	<b>3,837</b>
Pupil Change 2021-22 to 2026-27	-	5	-7	-1	-	-17	<b>-20</b>	12	5	10	<b>27</b>	14	4	-20	31	<b>29</b>	<b>36</b>
Percent Change 2021-22 to 2026-27	-	2.0	-2.6	-0.4	-	-5.4	<b>-1.2</b>	4.3	1.6	3.2	<b>3.0</b>	4.5	1.2	-6.2	10.2	<b>2.3</b>	<b>0.9</b>
Pupil Change 2016-17 to 2026-27	-14	15	-4	8	13	-13	<b>5</b>	-7	34	31	<b>58</b>	40	53	24	64	<b>181</b>	<b>244</b>
Percent Change 2016-17 to 2026-27	-5.6	6.2	-1.5	3.1	4.9	-4.2	<b>0.3</b>	-2.3	12.0	10.8	<b>6.7</b>	14.0	18.2	8.6	23.5	<b>16.1</b>	<b>6.8</b>

Enrollments at the elementary level (grades K-5) are expected to total to 1,603 in 2026-27 and reflect a net loss of 20 pupils (1.2 percent) from 2021-22. The 2026-27 figure will still be five pupils (0.3 percent) higher than in 2016-17 in view of the increase of 25 (1.6 percent) projected for the years 2016-17 through 2021-22. Decreases in the pupil count in the elementary grades will occur in three years during the extended period; an increase will be experienced in 2026-27 (six pupils or 0.4 percent), and in 2023-24, enrollments will be unchanged from the previous year. The largest yearly drop in pupils in grades K-5 during these years (17 or 1.0 percent) will be in 2022-23; the smallest loss (one pupil or 0.1 percent) will be in 2024-25. The net decline in the pupil population in grades K-5 during the extended period will average four yearly compared with an average annual net increase of five in the first five projected years and an average annual net growth of 13 during the most recent five years.

The swing from a very slight net average annual gain in elementary enrollments during the first five projected years to a modest net average loss in K-5 pupils during 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 unchanged from the average number of births that will drive kindergarten entries during the first five projected years and slightly lower than the figure that drove births kindergarten entries in the five most recent school years. The projections for the elementary grades are also influenced by the modestly positive (on average) recent cohort survival rates (the relationship between kindergarten entries and births in the district five years earlier) and progression ratios level that are strongly positive.

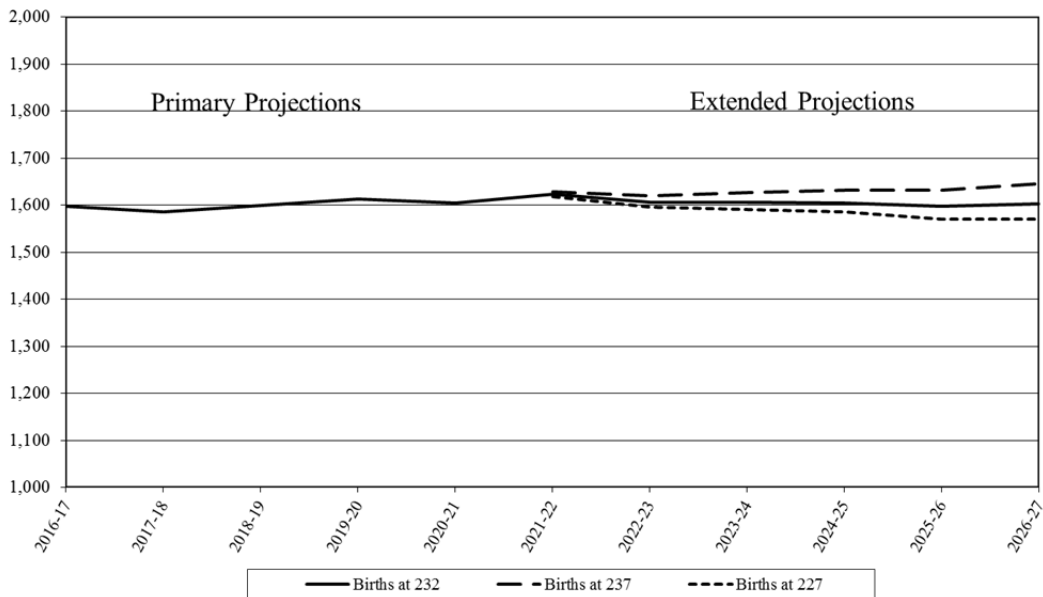
After 2026-27—given the assumptions used—the pupil count in grades K-5 is expected to remain unchanged at a level equal to the projection for 2026-27 and just slightly higher than the figure for the current school year. (See Tables 5-16 and 5-17 and Graph 5-10.)

Table 5-17  
 PALMYRA AREA SCHOOL DISTRICT  
Extended Elementary Enrollment Projections (Grades K-5) <sup>1/</sup>  
 2021-22 to 2026-27

<u>School Year</u>	<u>Enrollment K-5</u>	<u>Change From Previous Year</u>	
		<u>#</u>	<u>%</u>
2021-22	1,623	19	1.2
2022-23	1,606	-17	-1.0
2023-24	1,606	NC	NC
2024-25	1,605	-1	-0.1
2025-26	1,597	-8	-0.5
2026-27	1,603	6	0.4
Change 2021-22 to 2026-27		-20	-1.2
Change 2016-17 to 2026-27		5	0.3

<sup>1/</sup> Based on births fixed at 232.

Graph 5-10  
 PALMYRA AREA SCHOOL DISTRICT  
Elementary Primary/Extended Enrollment Projections  
 2016-17 to 2026-27





Middle School enrollments (grades 6-8) will total 926 in 2026-27 and be up by 27 or 3.0 percent from 2021-22. The pupil population in these grades in 2026-27 will be 58 or 6.7 percent higher than in the current school year due to the increase of 31 pupils projected for the period 2016-17 through 2021-22. Losses in the number of pupils in grades 6-8 will occur in three years during the extended projection period, but these decreases will be more than counterbalanced by the two increases—27 pupils (or 3.0 percent) in 2022-23 and 20 pupils (or 2.2 percent) in 2024-25. The decreases will range from four pupils (0.4 percent) in 2023-24 to 11 pupils (1.2 percent) in 2025-26. The net annual growth in the pupil count projected for the middle school grades during for the extended period will average five compared with an average net increase of six pupils per year during the first five projected years and an average annual net gain of 13 pupils during the most recent five-year period.

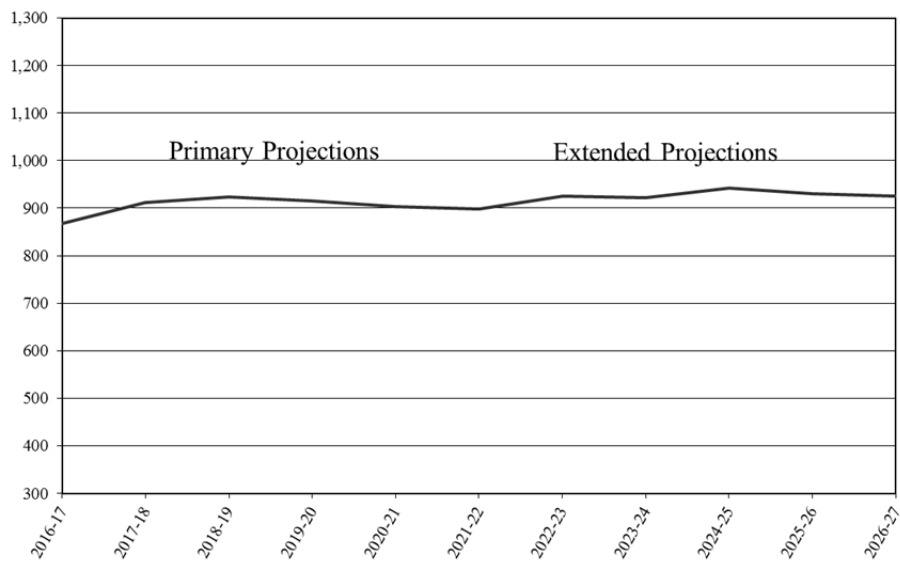
The stable overall pace of enrollment growth in grades 6-8 during the primary and extended projection periods results from the movement through these grades of a fairly consistent pattern of actual and projected elementary enrollments from the preceding years that can be traced to the steady number of annual births (on average) during most of the years of the current decade and the latter years of immediate past decade. It is also influenced somewhat by the modestly positive progression ratios in the middle school grades.

In view of the assumptions used, subsequent to 2026-27 enrollments in grades 6-8 can be expected to experience an annual increase, a decrease, and a year without a change before becoming constant at a level slightly lower than the figure projected for 2026-27 but somewhat higher than the pupil count in the 2016-17 school year. (See Table 5-16 and 5-18 and Graph 5-11.)

Table 5-18  
 PALMYRA AREA SCHOOL DISTRICT  
Extended Middle School Enrollment Projections (Grades 6-8)  
 2021-22 to 2026-27

<u>School Year</u>	<u>Enrollment</u> <u>6-8</u>	<u>Change From</u> <u>Previous Year</u>	
		<u>#</u>	<u>%</u>
2021-22	899	-5	-0.6
2022-23	926	27	3.0
2023-24	922	-4	-0.4
2024-25	942	20	2.2
2025-26	931	-11	-1.2
2026-27	926	-5	-0.5
Change 2021-22 to 2026-27		27	3.0
Change 2016-17 to 2026-27		58	6.7

Graph 5-11  
 PALMYRA AREA SCHOOL DISTRICT  
Middle School Primary/Extended Enrollment Projections  
 2016-17 to 2026-27



High school enrollments (grades 9-12) will 1,308 in 2026-27—29 pupils or 2.3 percent higher than in 2021-22. Increases in the pupil population in these grades will be recorded in all years during this period except 2024-25, when there will be a decrease by 34 pupils (2.6 percent). The largest annual growth (33 pupils or 2.6 percent) will occur in 2025-26; the smallest gain (four pupils or 0.3 percent) will be experienced in 2023-24. Enrollments in grades 9-12 in 2026-27 will be 181 or 16.1 percent above the 2016-17 level given the increase of 152 pupils expected during the primary projection period. The net growth in enrollments in the high school grades during the extended period will average six pupils yearly compared with an average annual gain of 30 pupils during the first five projected years and a net average increase of 13 pupils during the most recent five years.

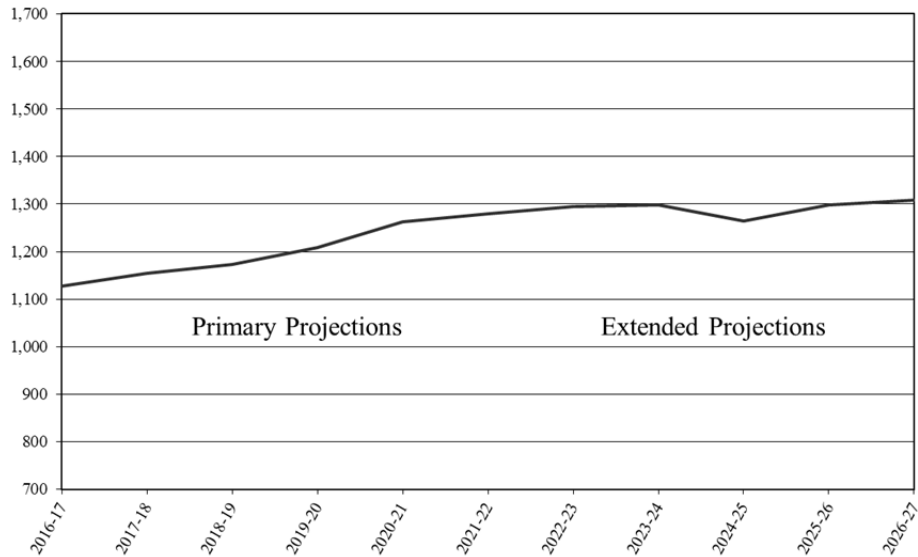
The very noticeable slowing in the rate of growth in enrollments at the high school level from the primary projection period to the extended projection period is in keeping with the pattern of enrollments in the middle school and lower grades in the preceding school years and the recent grade progression experience in the high school.

After 2026-27, based on the assumptions used, enrollments in grades 9-12 will likely experience a mix of increases and decreases and a year without a change years before stabilizing at a level just slightly below the figure projected for 2026-27, but considerably higher than the pupil count in the current school year. (See Table 5-16 and 5-19 and Graph 5-12.)

Table 5-19  
 PALMYRA AREA SCHOOL DISTRICT  
Extended High School Enrollment Projections (Grades 9-12)  
 2021-22 to 2026-27

<u>School Year</u>	<u>Enrollment</u> <u>9-12</u>	<u>Change From</u> <u>Previous Year</u>	
		<u>#</u>	<u>%</u>
2021-22	1,279	16	1.3
2022-23	1,295	16	1.3
2023-24	1,299	4	0.3
2024-25	1,265	-34	-2.6
2025-26	1,298	33	2.6
2026-27	1,308	10	0.8
Change 2021-22 to 2026-27		29	2.3
Change 2016-17 to 2026-27		181	16.1

Graph 5-12  
 PALMYRA AREA SCHOOL DISTRICT  
High School Primary/Extended Enrollment Projections  
 2016-17 to 2026-27



### Alternative Extended Enrollment Projections

In contrast with the extended projections based on the average number of school year births of the most recent two years for which data are available (the “preferred” projections), alternative extended projections based on the births fixed at the highest school year figure during the past several years (237—in 2013-14) suggest that total enrollments in 2026-27 would be 3,879—42 pupils (1.1 percent) higher than the preferred extended projection resulting from using the average school year birth figure of the past two years. The resulting count (3,879) is 72 pupils or 1.9 percent above the projected number for 2021-22 and 286 or 8.0 percent higher than the actual 2016-17 level.

Enrollments in grades K-5 using this alternative approach would be 1,645 in 2026-27 compared with the preferred extended projection of 1,603. This figure (1,645) is 16 or 1.0 percent higher than the projection for 2021-22 and 47 or 2.9 percent higher than the actual figure in 2016-17. Middle and high school enrollments would be unchanged from the preferred extended projections because the use of different birth figures has no effect on these projections beyond grade 5 during the next 10 years, and, therefore, any impact would not be reflected in these grades until after the final year projected in this study. (See Table 5-20.)

A somewhat different picture develops if projections are based on the assumption that school year births will remain constant at the lowest level of the past several years (227—in 2014-15). Enrollments using this approach would total 3,805 in 2026-27—nine pupils (0.2 percent) above the projection for 2021-22, and 212 pupils (5.9 percent) higher than in 2016-17 count. The resulting 2026-27 figure would be 32 pupils (0.8 percent) lower than the preferred extended projection and 74 pupils (1.9 percent) lower than the projection based on the highest recent school year birth figure.

Enrollments in grades K-5 resulting from this alternative scenario would be 1,571 in 2026-27 compared with the preferred extended projection of 1,603. This figure (1,571) is 47 pupils or 2.9 percent lower than the projected level for 2021-22, and 27 pupils or 1.7 percent lower than the actual figure for 2016-17. Middle and high school enrollments would be unchanged from the preferred extended projections. (See Table 5-21.)

Table 5-20  
 PALMYRA AREA SCHOOL DISTRICT  
Alternative Extended Total Enrollment Projections by Grade Based on Births Fixed at 237  
 2021-22 to 2026-27

<u>School Year</u>	<u>K</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<b>Total</b> <b><u>K-5</u></b>	<u>6</u>	<u>7</u>	<u>8</u>	<b>Total</b> <b><u>7-8</u></b>	<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>	<b>Total</b> <b><u>9-12</u></b>	<b>Total</b> <b><u>K-12</u></b>
2021-22	242	253	269	271	281	313	<b>1,629</b>	279	312	308	<b>899</b>	311	341	322	305	<b>1,279</b>	<b>3,807</b>
2022-23	242	265	257	277	282	296	<b>1,619</b>	314	290	322	<b>926</b>	315	312	336	332	<b>1,295</b>	<b>3,840</b>
2023-24	242	265	269	265	288	297	<b>1,626</b>	297	326	299	<b>922</b>	330	316	307	346	<b>1,299</b>	<b>3,847</b>
2024-25	242	265	269	277	275	304	<b>1,632</b>	298	308	336	<b>942</b>	306	331	311	317	<b>1,265</b>	<b>3,839</b>
2025-26	242	265	269	277	288	290	<b>1,631</b>	305	309	317	<b>931</b>	344	307	326	321	<b>1,298</b>	<b>3,860</b>
2026-27	242	265	269	277	288	304	<b>1,645</b>	291	317	318	<b>926</b>	325	345	302	336	<b>1,308</b>	<b>3,879</b>
Pupil Change																	
2021-22 to																	
2026-27	-	12	-	6	7	-9	<b>16</b>	12	5	10	<b>27</b>	14	4	-20	31	<b>29</b>	<b>72</b>
Percent Change																	
2021-22 to																	
2026-27	-	4.7	-	2.2	2.5	-2.9	<b>1.0</b>	4.3	1.6	3.2	<b>3.0</b>	4.5	1.2	-6.2	10.2	<b>2.3</b>	<b>1.9</b>
Pupil Change																	
2016-17 to																	
2026-27	-8	22	3	15	20	-5	<b>47</b>	-7	34	31	<b>58</b>	40	53	24	64	<b>181</b>	<b>286</b>
Percent Change																	
2016-17 to																	
2026-27	-3.2	9.1	1.1	5.7	7.5	-1.6	<b>2.9</b>	-2.3	12.0	10.8	<b>6.7</b>	14.0	18.2	8.6	23.5	<b>16.1</b>	<b>8.0</b>

Table 5-21  
 PALMYRA AREA SCHOOL DISTRICT  
Alternative Extended Total Enrollment Projections by Grade Based on Births Fixed at 227  
 2021-22 to 2026-27

School Year	<u>K</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<b>Total</b> <b><u>K-5</u></b>	<u>6</u>	<u>7</u>	<u>8</u>	<b>Total</b> <b><u>7-8</u></b>	<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>	<b>Total</b> <b><u>9-12</u></b>	<b>Total</b> <b><u>K-12</u></b>
2021-22	231	253	269	271	281	313	<b>1,618</b>	279	312	308	<b>899</b>	311	341	322	305	<b>1,279</b>	<b>3,796</b>
2022-23	231	253	257	277	282	296	<b>1,596</b>	314	290	322	<b>926</b>	315	312	336	332	<b>1,295</b>	<b>3,817</b>
2023-24	231	253	257	265	288	297	<b>1,591</b>	297	326	299	<b>922</b>	330	316	307	346	<b>1,299</b>	<b>3,812</b>
2024-25	231	253	257	265	275	304	<b>1,585</b>	298	308	336	<b>942</b>	306	331	311	317	<b>1,265</b>	<b>3,792</b>
2025-26	231	253	257	265	275	290	<b>1,571</b>	305	309	317	<b>931</b>	344	307	326	321	<b>1,298</b>	<b>3,800</b>
2026-27	231	253	257	265	275	290	<b>1,571</b>	291	317	318	<b>926</b>	325	345	302	336	<b>1,308</b>	<b>3,805</b>
Pupil Change																	
2021-22 to																	
2026-27	-	-	-12	-6	-6	-23	<b>-47</b>	12	5	10	<b>27</b>	14	4	-20	31	<b>29</b>	<b>9</b>
Percent Change																	
2021-22 to																	
2026-27	-	-	-4.5	-2.2	-2.1	-7.3	<b>-2.9</b>	4.3	1.6	3.2	<b>3.0</b>	4.5	1.2	-6.2	10.2	<b>2.3</b>	<b>0.2</b>
Pupil Change																	
2016-17 to																	
2026-27	-19	10	-9	3	7	-19	<b>-27</b>	-7	34	31	<b>58</b>	40	53	24	64	<b>181</b>	<b>212</b>
Percent Change																	
2016-17 to																	
2026-27	-7.6	4.1	-3.4	1.1	2.6	-6.1	<b>-1.7</b>	-2.3	12.0	10.8	<b>6.7</b>	14.0	18.2	8.6	23.5	<b>16.1</b>	<b>5.9</b>

The alternative projections for the elementary level (grades K-5) in 2026-27 based on the higher birth figure produce 42 (2.6 percent) more pupils than the preferred extended projections; conversely, alternative projections for these grades in 2026-27 using the lower birth figure would be 32 (2.0 percent) below the preferred extended projection. (See Table 5-22 and Graph 5-10.)

Table 5-22  
 PALMYRA AREA SCHOOL DISTRICT  
 Comparison of Preferred and Alternative Extended  
Elementary Projections (Grades K-5)  
 2021-22 to 2026-27

<u>School Year</u>	<b>Preferred</b> Based on Births <u>Fixed at 232</u>	<b>Alternative B</b> Based on Births <u>Fixed at 237</u>	<b>Alternative C</b> Based on Births <u>Fixed at 227</u>
2021-22	1,623	1,629	1,618
2022-23	1,606	1,619	1,596
2023-24	1,606	1,626	1,591
2024-25	1,605	1,632	1,585
2025-26	1,597	1,631	1,571
2026-27	1,603	1,645	1,571
<b>Change- 2021-22 #</b>	<b>-20</b>	<b>16</b>	<b>-47</b>
<b>to 2026-27 %</b>	<b>-1.2</b>	<b>1.0</b>	<b>-2.9</b>
<b>Change 2016-17 #</b>	<b>5</b>	<b>47</b>	<b>-27</b>
<b>to 2026-27 %</b>	<b>0.3</b>	<b>2.9</b>	<b>-1.7</b>



Middle and 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 elementary level. At their widest point (2026-27), the alternative projection resulting from use of the higher birth figure is 42 pupils or 1.1 percent more than the preferred extended projection; using the smaller birth figure, the alternative is 32 pupils or 0.8 percent lower than the preferred extended projection. (See Table 5-23 and Graph 5-9.)

Table 5-23  
 PALMYRA AREA SCHOOL DISTRICT  
Comparison of Preferred and Alternative Extended Total Projections (Grades K-12)  
 2021-22 to 2026-27

<u>School Year</u>	<b>Preferred</b> Based on Births <u>Fixed at 232</u>	<b>Alternative B</b> Based on Births <u>Fixed at 237</u>	<b>Alternative C</b> Based on Births <u>Fixed at 227</u>
2021-22	3,801	3,807	3,796
2022-23	3,827	3,840	3,817
2023-24	3,827	3,847	3,812
2024-25	3,812	3,839	3,792
2025-26	3,826	3,860	3,800
2026-27	3,837	3,879	3,805
<b>Change- 2021-22 #</b>	<b>36</b>	<b>72</b>	<b>9</b>
<b>to 2026-27 %</b>	<b>0.9</b>	<b>1.9</b>	<b>0.2</b>
<b>Change 2016-17 #</b>	<b>244</b>	<b>286</b>	<b>212</b>
<b>to 2026-27 %</b>	<b>6.8</b>	<b>8.0</b>	<b>5.9</b>

### 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 measurement of average error in quantitative forecast models and indicator 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  $\pm 3.0\%$  (essentially, about  $\pm 1\%$  the first year,  $\pm 2.0\%$  the second year, etc., and by the fifth year, the figure is about  $\pm 5\%$ ). For years six through 10, our calculations are based on 725 data points and the difference between the projected and actual figures averages  $\pm 7.7$  percent. The overall average MAPE reflecting 1,625 data points in all 10 projected years is  $\pm 5.2$  percent. The literature indicates that accuracy of  $\pm 5.0\%$  *after five years* is acceptable.

A more focused and, perhaps, better point of reference is PEL's enrollment projection study for the Palmyra Area School District that was completed during the 2012-13 school year. This study allows for four years of actual enrollment figures to be compared with the projections. The annual differences between PEL's projections and the actual figures for these years rose from  $-0.2$  percent in the first year, to  $-0.4$  percent in the second year, to  $+1.3$  percent in year three, and to  $+3.3$  percent in the current school year, reflecting a slightly stronger than previously projected growth, but a projection that is still within the acceptable range and, in fact, the average for these four years is  $\pm 1.3$  percent.

Another gauge involves projections generated by PEL for Palmyra Area in the 2006-07 school year, which allows for the full 10 years of actual figures to be compared with the projections. The average of the annual differences between these PEL projections for the first five years was  $\pm 3.7$  percent, the average for years six through 10 was  $\pm 5.1$  percent. The overall average for all 10 years was  $\pm 4.4$  percent.

A final indicator is PEL's enrollment projection study that was completed the 2003-04 school year. This project also allows for all 10 years of projections to be compared with actual figures. The average difference between PEL's projections for the first five years in this study

and the actual figures that resulted was +/-1.1 percent. The average difference between the PEL projections and the actual enrollment figures for the final five projected years was up to +/-5.8 percent, and the average difference between the PEL's projections and the actual figures over the full 10 years was +/-3.4 percent.

It should be noted that while the MAPE for the projections generated by 2003-04 and 2006-07 studies remained within tolerance, actual enrollment figures in the latter years of the 2000s and even into the current decade were strongly affected by the dramatic and unforeseen downturn in the national, regional, and local economies and the turmoil in the housing and mortgage industries. These conditions—that no one anticipated or could control—in turn, substantially altered numerous factors critical to public school enrollment patterns.



It must be recognized that projections generated by PEL for the Palmyra 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 expected levels of construction in the various subdivisions as well as additional housing that can reasonably be assumed to be built during the years ahead (all as outlined in Chapter 2). The methodology recognizes the anticipated number of 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 current expectations, that the role of schools and educational programs other than those operated directly by Palmyra Area will be compatible with expected patterns, and the district will continue its current policies relative to its kindergarten, CTC, and special education programs and maintain its other key policies.

Projections represent calculations based on hard data and analysis of relevant events in the Palmyra 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. As such, various influencing factors must be monitored and analyzed every year by district officials. In this way, significant changes in current and projected patterns can be quickly identified and the appropriate adjustments can be made.

**Despite these words of caution, PEL believes the projections offered in this report are as reasonable and as realistic as possible in light of the available facts, and—based on our experience, the indicators we relied on, the techniques we used, and our track record—they should serve the district well in its short- and long-term planning, as they have in the past. However, given the uncharacteristically large rise in the district’s cohort survival rate in the 2016-17 school year (the relationship between kindergarten entries and births in the district five years prior) as described earlier in this chapter and the resulting question as to whether this level can be sustained, PEL—if requested—would revisit its projections in the fall of 2017 at no additional cost to the district in order to make any appropriate adjustments based on information available at that time.**