

City of Nashua School Enrollment Projections 2017-2027

Assumptions

Historic Enrollment Trends:

- Over the last decade school enrollments have declined an average of 188 students per year; a total of 2,065 between 2005 and 2016.
- Highest frequency of children enrolled outside of the Nashua Public Schools is Kindergarten (126 students/year) and Middle School with near equal enrollments outside the public schools for grades 6, 7, and 8 (average of 169 students/grade/year). Averages include home school, non-public and charter school enrollments.
- Lowest enrollment outside public school is for Elementary and High School with an average of 102 and 100 students/grade/year respectively. Averages include home school, non-public and charter school enrollments.
- Enrollments in Non-Public schools tend to be constant from year to year while enrollments in Charter schools and Home Schooling are steadily growing, question remains will this trend continue or level off. The Academy of Science and Design is now at capacity and out placement from the public school system should begin to stabilize.
- Pre-K enrollment is capped and at capacity. An additional classroom in 2016 increased total enrollment capacity to 350 students.

Births:

- Births have been projected for the years 2017 to 2022.
- Fertility rates were computed for Decennial Census years (2000 and 2010) using the 5-year average of births (to alleviate data volatility) divided by the female population age 15-44. These fertility rate and female population data points were the basis of a forecast trend line.
- The overall birth rate has been declining steadily. However, the number of minority births in Nashua is increasing – in 1998 there were 151 minority births representing 14% of all births and in 2016 there were 350 minority births equating to 33% of all births.
- Because birth rates are rising within minority populations and the impacts of over estimating births are less significant than underestimating births when planning for school facilities, the projected births are shown to be slightly higher than they have been in the last 4 years.

Assumptions (continued)

Net Migration:

- The City of Nashua has seen a negative net migration over the last decade – meaning more people have moved out of the City than have moved into the City (loss of nearly 550 persons from 2000 to 2010). This trend has been constant with all age cohorts, except those aged 25-34 where there were modest population gains that could result in additional births and a limited number of new students in coming years.
- Building permit data shows a steady increase in the number of permitted multifamily dwelling units along with a steady decline in single family homes (0.48 students estimated per single family home and 0.25 students per multi-family unit).
- It is safe to assume that at some point the single family building permit trend will either level off or improve, but will not dip into negative numbers where demolitions exceed new building. Preliminary forecasts for the state show migration levels gradually increasing.
- Given current building trends, multi-family residential growth is likely to continue, however, not likely at levels associated with a linear trend that would lead to a significant increase in the number of new units.
- Net migration is projected using a gradual increase in new building permits forecast for 2017-2027 resulting in 13 to 62 new students per year.

The Projections

- Three different projection alternatives were prepared given the shifting demographic trends in the City yet all yield fairly similar results.
- Each of the methodologies is better suited to capturing different aspects of demographic change and trends.
- Overall, given the shifting trend toward re-enrolling in public schools for grade 9, the grade progression ratio methods are better suited to capturing this changing condition.
- Eventually, it is anticipated that net migration will increase in the future, thus the second most probably scenario factors in additional students moving into the district.
- The final scenario, the cohort component method, while better able to fine tune the individual variables that affect population change, is not adequately capturing the current spikes in 9th grade enrollment levels.

Alternative 1: Grade Progression Ratio

Birth Year	Births	School Year	Projected Enrollment by Grade - Progression Ratio Method												Subtotal		Ann. Change			
			PK	K	1	2	3	4	5	6	7	8	9	10	11	12	PK-12	K-12	K-12 #	% K-12
2011	1,086	2016-17	343	643	819	838	900	878	879	777	817	755	1,037	908	803	781	11,178	10,835		
2012	980	2017-18	350	619	840	808	816	895	859	785	771	817	895	1,002	802	762	11,021	10,671	(164)	-1.5%
2013	997	2018-19	350	630	758	829	787	812	876	767	779	771	969	864	885	761	10,838	10,488	(183)	-1.7%
2014	980	2019-20	350	619	771	748	807	783	795	783	761	779	914	936	763	840	10,649	10,299	(189)	-1.7%
2015	976	2020-21	350	617	758	761	729	803	766	710	777	761	923	883	827	724	10,389	10,039	(260)	-2.4%
2016	1,054	2021-22	350	666	755	748	741	725	786	684	705	777	902	891	780	785	10,295	9,945	(94)	-0.9%
2017	1,046	2022-23	350	661	815	745	729	737	710	702	679	705	921	871	787	740	10,152	9,802	(143)	-1.4%
2018	1,041	2023-24	350	658	809	804	726	725	721	634	697	679	836	890	769	747	10,045	9,695	(107)	-1.1%
2019	1,036	2024-25	350	655	805	799	783	722	710	644	629	697	805	807	786	730	9,922	9,572	(123)	-1.2%
2020	1,031	2025-26	350	651	801	795	778	779	707	634	639	629	826	777	713	746	9,825	9,475	(97)	-1.0%
2021	1,025	2026-27	350	648	797	791	774	774	762	632	629	639	746	798	686	676	9,702	9,352	(123)	-1.3%

Based on current enrollment

Based on existing births

Based on projected births

Assumptions:

- The grade progression ratio projects future enrollment based upon trends established as each birth year cohort of students progresses from one grade to the next over the past 3 years.
- The ratio captures all variables that impacted enrollment levels for the past 3-years including historic migration; home, charter, private schooling; mortality rates; etc.
- The grade progression ratio is used to forecast grades 2 through 12 while the 3-year average percent of births enrolling in kindergarten and 1st grade was used to project those grades.
- The 3-year average was used to capture more recent trends such as a higher rate of enrollment in 9th grade and lower kindergarten and 1st grade participation.
- Projection is purely based on the grade progression ratio with no new development or residential growth forecast.

Caveats:

- Grade progression ratios can vary significantly from one year to the next.
- Best suited to areas with stable or consistent demographic change where no variations are anticipated in birth rates or families moving in or out of the district.
- Does not factor in any potential demographic or policy shifts that may impact enrollment.

Alternative 2: Grade Progression Ratio with Increasing Net Migration

Birth Year	Births	School Year	Projected Enrollment by Grade - Progression Ratio Method												Subtotal		Ann. Change #	% K-12	
			PK	K	1	2	3	4	5	6	7	8	9	10	11	12			PK-12
2011	1,086	2016-17	343	643	819	838	900	878	879	777	817	755	1,037	908	803	781	11,178	10,835	
2012	980	2017-18	350	619	840	808	816	895	861	787	773	819	897	1,003	803	763	11,034	10,684	(151)
2013	997	2018-19	350	630	758	829	787	812	878	771	783	775	973	867	887	763	10,863	10,513	(171)
2014	980	2019-20	350	619	771	748	807	783	799	788	769	787	923	941	767	843	10,695	10,345	(168)
2015	976	2020-21	350	617	758	761	729	803	770	718	786	773	937	892	832	729	10,455	10,105	(240)
2016	1,054	2021-22	350	666	756	749	742	726	792	693	719	791	923	907	790	791	10,395	10,045	(60)
2017	1,046	2022-23	350	661	816	747	731	739	717	713	694	724	945	893	803	752	10,285	9,935	(110)
2018	1,041	2023-24	350	658	810	806	729	728	731	648	716	701	867	916	791	764	10,215	9,865	(70)
2019	1,036	2024-25	350	655	806	801	786	726	721	660	651	723	840	840	811	752	10,122	9,772	(93)
2020	1,031	2025-26	350	652	802	797	781	783	721	653	664	660	868	814	745	772	10,062	9,712	(60)
2021	1,025	2026-27	350	649	798	793	777	778	776	653	657	673	793	841	722	710	9,970	9,620	(92)

Based on current enrollment

Based on existing births

Based on projected births

Assumptions:

- The grade progression ratio projects future enrollment based upon trends established as each birth year cohort of students progresses from one grade to the next over the past 3 years.
- The ratio captures all variables that impacted enrollment levels for the past 3-years including historic migration; home, charter, private schooling; mortality rates; etc.
- The grade progression ratio is used to forecast grades 2 through 12 while the 3-year average percent of births enrolling in kindergarten and 1st grade was used to project those grades.
- The 3-year average was used to capture more recent trends such as a higher rate of enrollment in 9th grade and lower kindergarten and 1st grade participation.
- The City has seen declining net migration for more than a decade. The grade progression ratio does not account for the potential addition of new families and students. Additional net migration is incorporated and off-sets historic trends allowing for a gradual increase of new families moving to the City.

Caveats:

- Grade progression ratios can vary significantly from one year to the next.
- The grade progression ratio assumes that past enrollment trends in private, charter and homeschooling will continue into the future.

Alternative 3: Cohort Component Method

Birth Year	Births	School Year	PK	Projected Enrollment by Grade - Progression Ratio Method												Subtotal		Ann. Change		
				K	1	2	3	4	5	6	7	8	9	10	11	12	PK-12	K-12	K-12	%
2011	1,086	2016-17	343	643	819	838	900	878	879	777	817	755	1,037	908	803	781	11,178	10,835		
2012	980	2017-18	350	619	834	814	822	895	867	811	766	818	795	1,030	907	807	11,135	10,785	(50)	-0.4%
2013	997	2018-19	350	629	753	829	798	817	884	800	799	767	861	790	1,028	912	11,017	10,667	(118)	-1.1%
2014	980	2019-20	350	619	766	749	813	793	809	818	791	802	810	855	789	1,033	10,797	10,447	(220)	-2.0%
2015	976	2020-21	350	616	753	761	735	808	785	749	808	794	847	805	854	793	10,458	10,108	(339)	-3.1%
2016	1,054	2021-22	350	665	751	750	747	732	802	728	742	812	841	843	805	860	10,428	10,078	(30)	-0.3%
2017	1,046	2022-23	350	660	810	748	737	744	727	743	722	746	860	837	843	810	10,337	9,987	(91)	-0.9%
2018	1,041	2023-24	350	657	804	806	735	734	741	676	739	728	793	837	849	849	10,305	9,955	(32)	-0.3%
2019	1,036	2024-25	350	654	800	800	791	732	731	689	673	745	774	790	856	843	10,228	9,878	(77)	-0.7%
2020	1,031	2025-26	350	652	797	796	786	787	731	682	686	681	794	771	791	863	10,167	9,817	(61)	-0.6%
2021	1,025	2026-27	350	648	793	793	782	782	785	682	680	694	726	791	772	797	10,075	9,725	(92)	-0.9%

Based on current enrollment

Based on existing births

Based on projected births

Assumptions:

- This method is based upon a mathematical formula that allows for separate and customizable variables to account for new births; net migration and new residential construction or demolitions; transitions between home-schooling, private, charter, and public schools; and statistical survival or mortality rates.
- Net migration is shown to increase beyond levels seen in the last decade, adding new enrollments and accounting for new families and children.
- The rate at which students opt in or out of public school is based upon an average of 4 years of private and charter school enrollment data.
- The rate at which students opt out of public school to be homeschooled is based upon homeschooling enrollment data from 2013-2017.

Caveats:

- The Cohort Component method is best suited for short term projections.
- As in all methods, changing residential construction is difficult to accurately capture. While a building permit may be issued, that does not necessitate that a unit will be built or that it will be occupied by a family with children.
- This method does not capture larger grade progression shifts such as the large increase in the number of students that are added to the 9th grade enrollment totals.