

2019-2020 Student Enrollment Projection Materials

Included Items

- Student Enrollment Projection Memo
- K-12 Forecast
- Consultant Student Enrollment Forecast Report

Student Enrollment Projection Memo



Memorandum

TO: Cathy Moore, Superintendent
David Ellis, County Manager

FROM: Christina Lighthall, Senior Director for WCPSS Long-Range Planning
Michelle Venditto, Wake County Director, Budget and Management Services

DATE: January 4, 2019

SUBJECT: Enrollment Projections for WCPSS Operating and Capital Planning

Staffs of WCPSS, Wake County Budget and Management Services and Wake County Planning have completed an update of WCPSS student enrollment projections. The student enrollment projections are used in the development of the WCPSS operating budget, subsequent school allotments for the 2019-2020 school year, and the update of the seven-year capital program.

Report on Prior Year Projection

The 2018-19 membership of 160,471 represents a net gain of 42 students, the smallest single growth over the past 30 years, and the second time the annual growth rate was less than 1%.

Comparison with 2017-18 K-12 Forecast

Membership by Grade Group

	2017-18 (actual)	2018-19 (forecast)	2018-19 (actual)	Net Gain (2018-19 – 2017-18 actual)	Variance (2018-19 actual – forecast)
K-5	73,953	73,920	72,760	(1,193)	(1,160)
6-8	36,616	38,415	37,732	1,116	(683)
9-12 +	49,860	49,992	49,979	119	(13)
Total	160,429	162,327	160,471	42	(1,856)

Overview

The student enrollment projections developed by the work team reflect a one-year estimate to assist with planning and developing the WCPSS operating budget for the 2019-2020 school year. Student enrollment projections for capital purposes have a multi-year impact; thus, a long-term projection takes into consideration varying rates of growth over time.

Methodology

Staff and the consultant from Numerix LLC have reviewed demographic, membership and economic trends to refine enrollment projections. For the current enrollment projection update, staff has paid particular attention to past and future resident live birth rates (RLB) and an aging population. Changing market shares, as well as the continued impact of recent trends in Kindergarten through 2nd grade enrollment sizes have adjusted student enrollment projections accordingly.

Population Changes

One indicator factored into the student enrollment model is “Resident Live Births”, which declined between 2009 and 2012, then saw an upward trend, and is trending down again (Exhibit 1). Staff is using a conservative approach to project future births through 2023 based on this recent data (Exhibit 2). The decreased number of births from 2009 to 2012, and now in 2017 and 2018, is impacting Kindergarten enrollments and corresponding survival ratios used to predict future grade level enrollment.

Exhibit 1: Resident Live Birth by Year

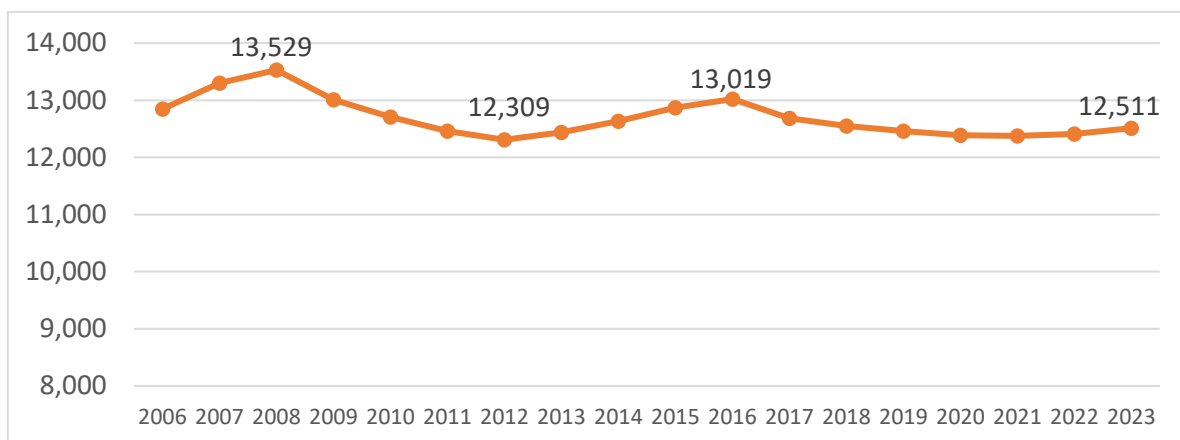
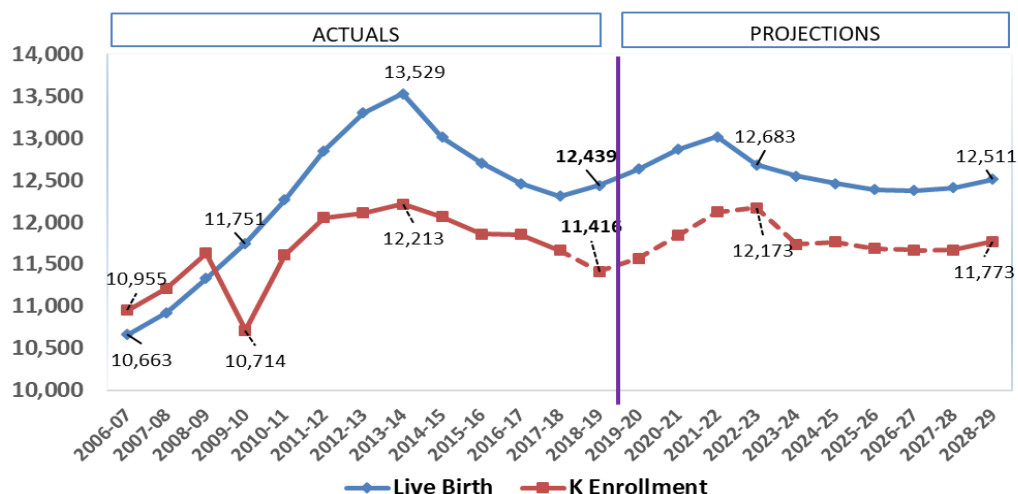
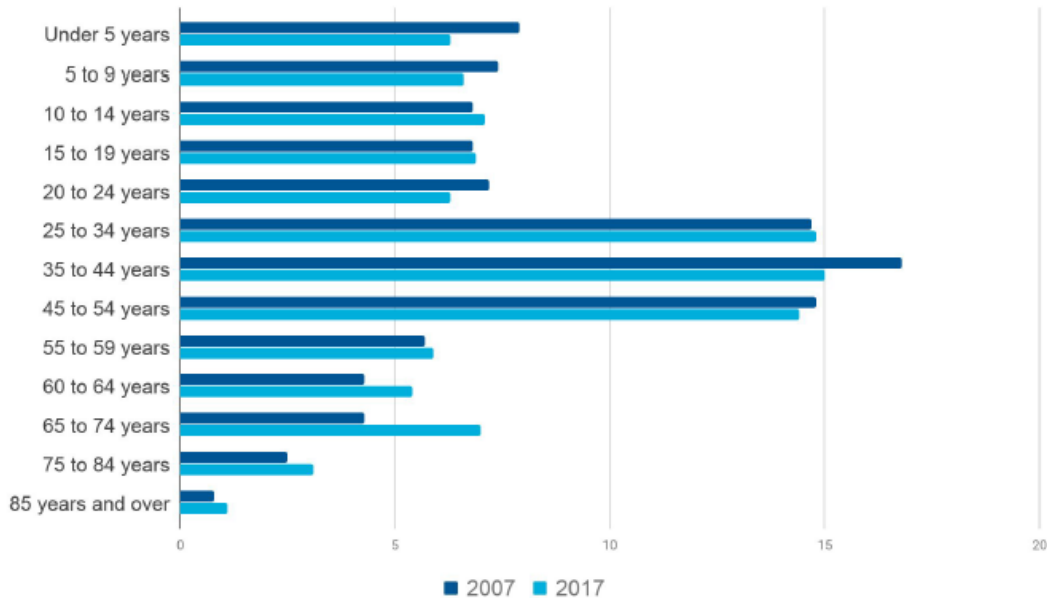


Exhibit 2: Kindergarten Compared to Live Births Five Years Prior



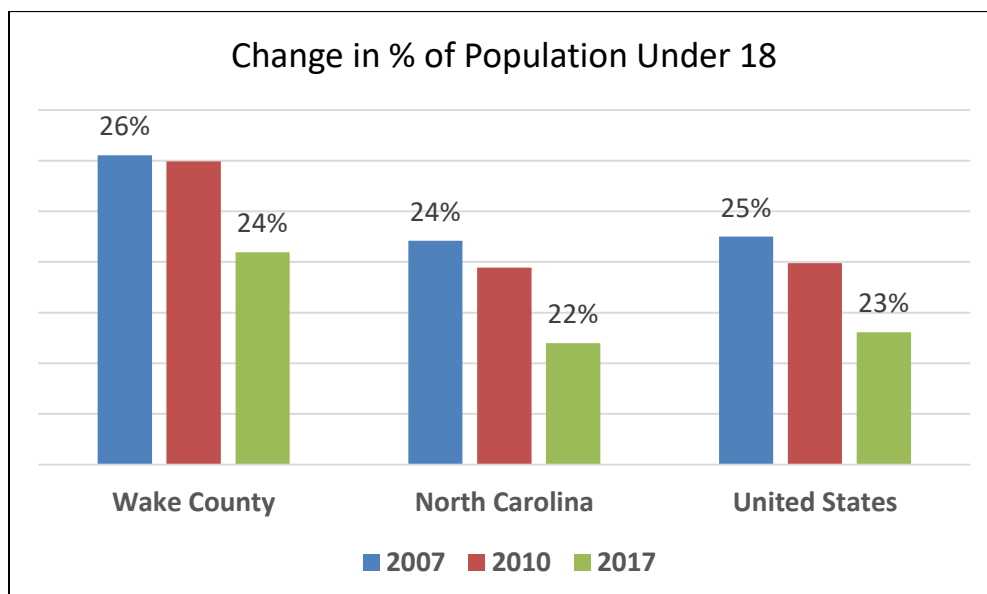
U.S. Census data indicates the general population of Wake County is aging. Examining the change in distribution of select age cohorts shows an increase in share of total population for ages 55 and over measured between 2007 and 2017. For instance, the population between the ages of 65 and 74 accounted for about 4.3% of the population in 2007. By 2017, this age group accounted for about 7.0% of the total population. For comparison, the share of population for under 5 years decreased from 7.9% in 2007 to 6.3% in 2017 (Exhibit 3).

Exhibit 3: General Population Changes



The trend is occurring in the state and the country, as well. The percentage of the population under 18 years of age declined by two percentage points in Wake, North Carolina and the US from 2007 to 2017 and one percentage point in the population under 6 years old over the same timeframe. Wake is younger than the state and the country, however there is a shift to an older population.

Exhibit 4: Under Age 18 Population Changes



Market Share

The group collects and analyzes prior year enrollment data for charter, private and home schools, as reported by the State. A review of the market share indicates that WCPSS' market share continues to decrease (Exhibits 5 & 6). These changes in market share percentages reflect a 12,365-student increase in charter, private and home schooling as compared to WCPSS's increase of 10,921 between 2012-13 and 2017-18. Prior to 2012, the WCPSS market share had held at approximately 83 percent since 2005.

Exhibit 5: WCPSS Market Share

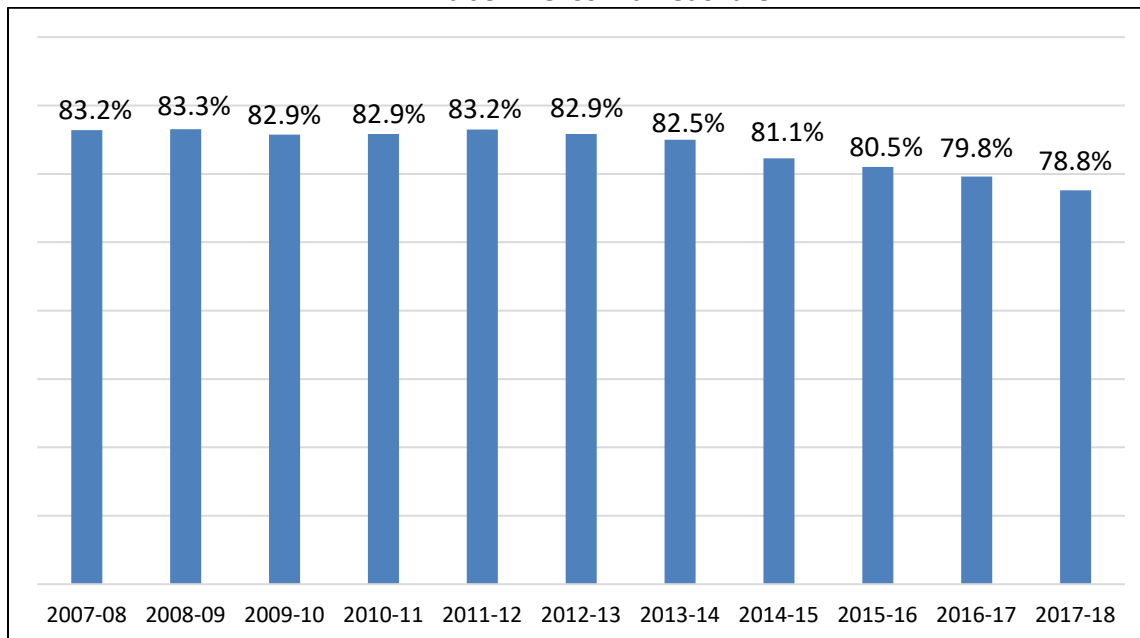
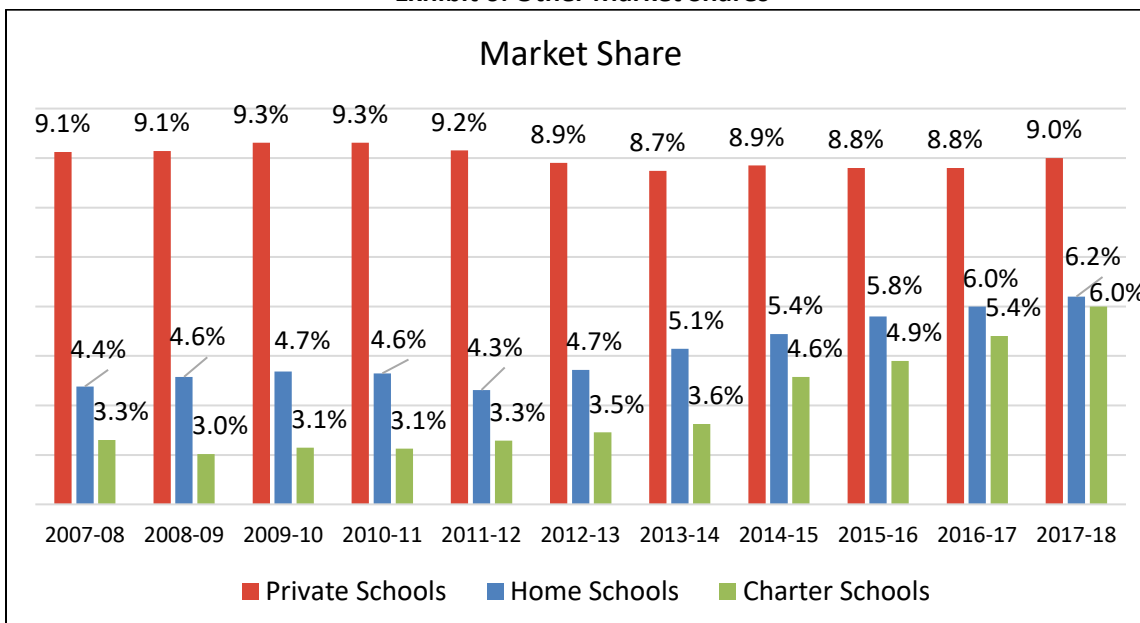


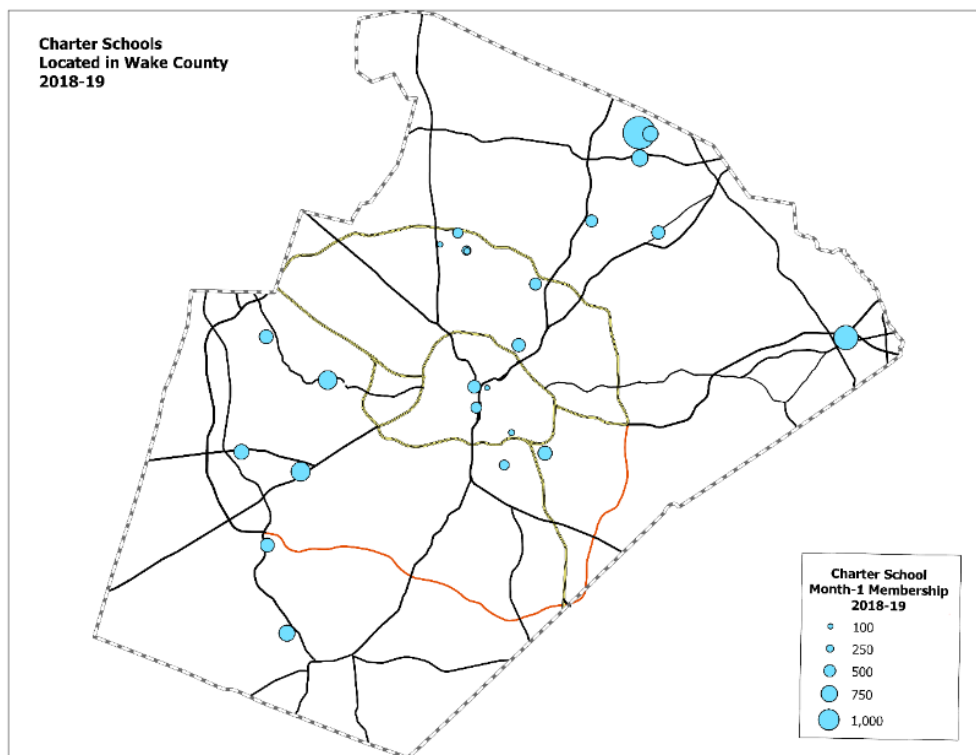
Exhibit 6: Other Market Shares



Note: 2013-14 - 2017-18 data is based on WCPSS Month-2 ADM; years prior are 20th day membership
Private and Home school data compiled from the North Carolina Division of Non-Public Education website. Data released Spring of current year. Charter school data from WCPSS Fall billing of charter school students.

For school year 2011-12, the cap for charter schools was lifted and new charters were available to the Wake community (Exhibit 7). In 2017-18, total membership for the 22 charter schools located in Wake County was 12,986. 2018-19 saw the addition of two new charter schools in the county for a total membership of 14,336 in 24 charter schools. The net gain for all charter schools located in the county was 1,350 in 2018-19.

Exhibit 7: Charter School Locations & Enrollment Size



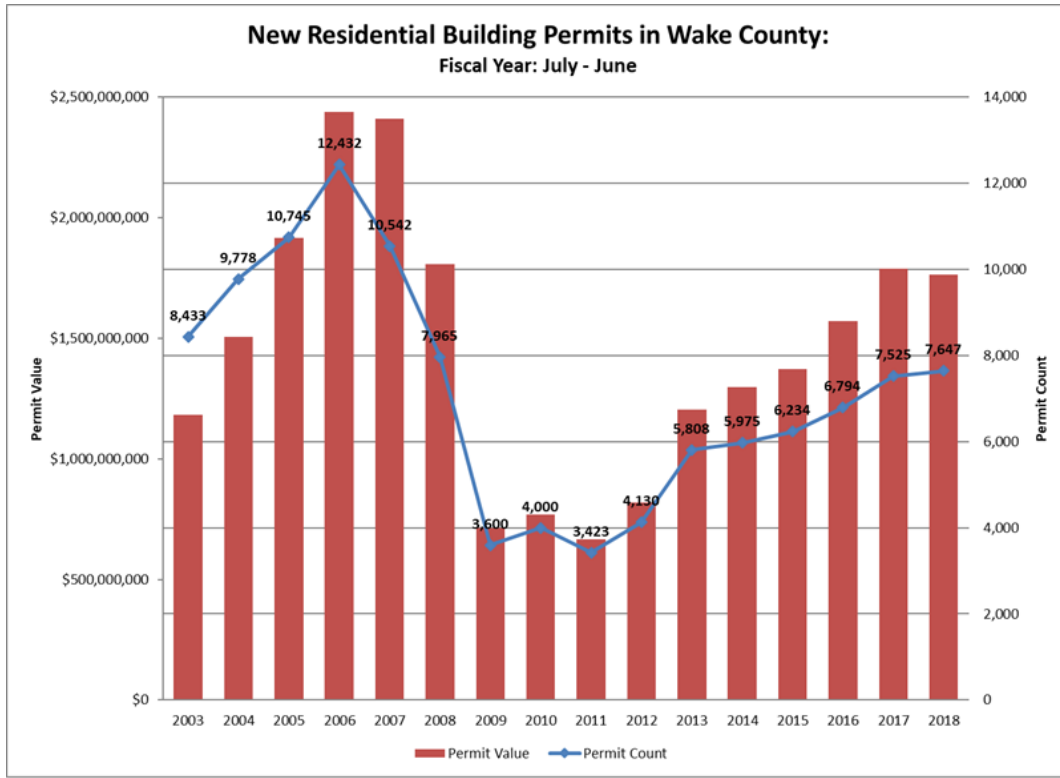
As of November 2018, there are three charter schools located in Wake County slated to open in the fall of 2019: Carolina Charter Academy – A CFA (opening K-6), Cardinal Charter West Academy (opening K-9) and Kaleidoscope Charter High School (opening 9-10). Estimated impact to WCPSS in 2018-19 is 1,347 for these three schools. For this forecast, the estimate of total charter school impact on WCPSS membership for 2019-20 is 1,892.

Current data indicates eight new charter schools are potentially opening in Wake County in the fall of 2020. These schools are not yet approved. The forecast team will continue to track the impact of charter schools on WCPSS membership as they are approved.

Economic Climate

The economy in Wake is healthy as indicated by low unemployment rates, lower than the state and country, and the number of residential building permits issued. New residential building permit data (Exhibit 8) in Wake County for Fiscal Year 2018 reflects a 1.6 percent increase over FY 2017. The value of the new residential permits in FY 2018 was 1.3 percent lower than FY 2017. These factors are not translating into number of school aged children.

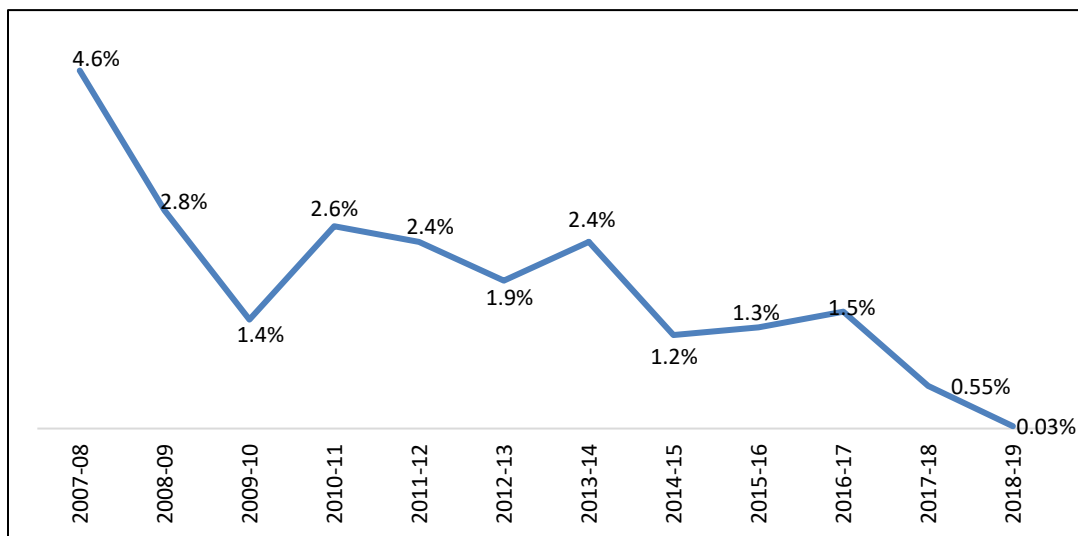
Exhibit 8: New Residential Building Permits



Projections

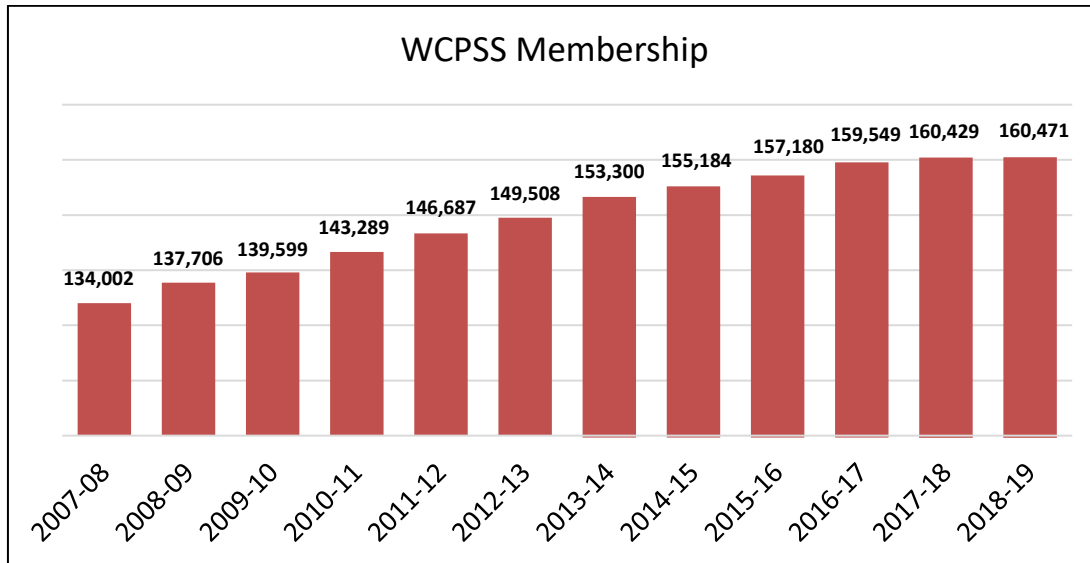
Yearly student enrollment growth, on a percentage basis, was less than prior years (Exhibit 9). At the same time, enrollment is about the same with 160,471 students (Exhibit 10), WCPSS remains the largest school district in the state, however dropped to 16th as the largest school district nationwide.

Exhibit 9: Student Enrollment Percentage Growth



Note: In 2013, reported student enrollment changed from 20th day to month 2 ADM (40th day), aligning with the base number that the State uses for LEA allotments.

Exhibit 10: Historical Student Enrollment



The 2018 student enrollment percentage growth led staff to reexamine the projected percentage growth for future enrollment. Staff reviewed the change in resident live births from 2009 to 2018 and the lack of growth in actual Kindergarten through 2nd grade enrollment from 2012 to 2018. Staff has concluded the impact of decline in resident live births and actual K-2 enrollment will have a major impact on projected student enrollment.

The forecast team annually reviews new data, conducts error analysis, analyzes trends and adjusts the forecast accordingly. These adjustments are data-based and made in response to existing and new trends.

Projections no longer reflect an increase in resident live births with a subsequent increase in Kindergarten and elementary enrollment to follow. Though the increase in resident live births corresponds to an increase in Kindergartener numbers five years later, this connection is now being impacted by increasing enrollment in non-WCPSS school systems. Staff has revised earlier projections to account for a more realistic annual growth percentage-based shifts in County demographics, how population groups have reacted to the economic recovery, and lower than anticipated enrollment growth.

Enrollment growth is still projected but is more moderate than previous forecasts. The enrollment projection for next school year is 161,030 students, which is growth of 559 students (.35%) over the 2018-19 student enrollment (Exhibit 11).

Neighboring LEAs experienced little to negative growth based on NC DPI Month-1 membership. Overall net loss for all eight districts in this list is 1,306.

	2017-18	2018-19	Net Gain/(Loss)
Chatham County Schools	8,746	8,802	56
Durham Public Schools	32,706	32,029	(677)
Franklin County Schools	8,134	8,110	(24)
Granville County Schools	7,454	7,321	(133)
Harnett County Schools	20,390	20,216	(174)
Johnston County Public Schools	35,711	35,561	(150)
Nash-Rocky Mount Schools	14,911	14,684	(227)

Exhibit 11: Student Enrollment Projections

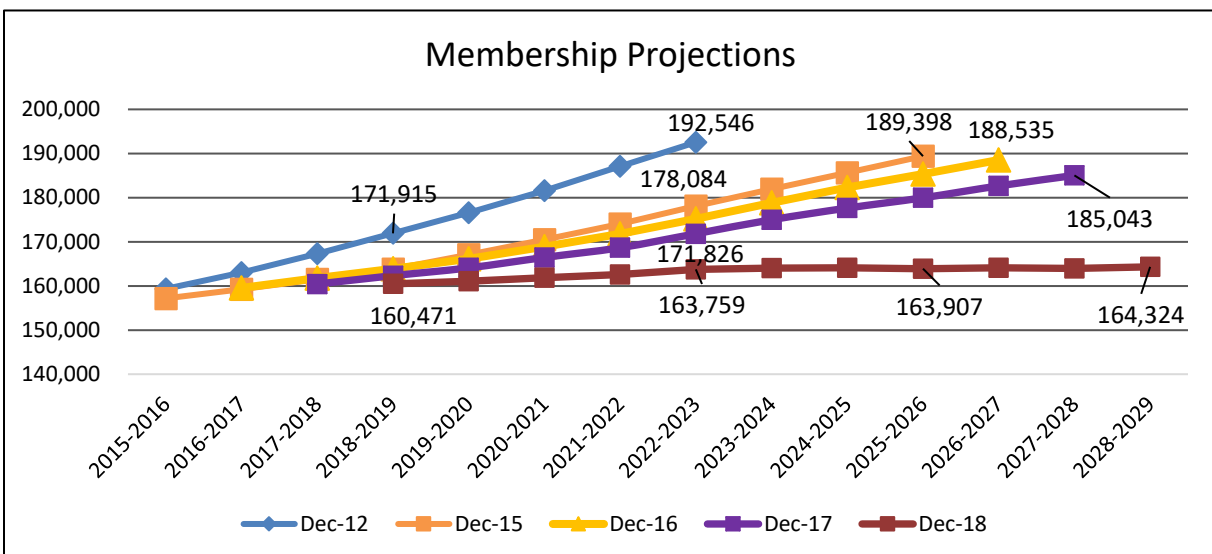
School Year Starting	-1%	Mid-Point	1%	# of Additional Students	% Growth
2012	148,013	149,730	151,003	2,851	1.96%
2013	151,767	153,300	154,833	3,570	2.38%
2014	153,632	155,184	156,736	1,884	1.23%
2015	155,608	157,180	158,752	1,996	1.29%
2016	157,954	159,549	161,144	2,369	1.51%
2017	158,825	160,429	162,033	880	0.55%
2018	158,866	160,471	162,076	42	0.03%
2019	159,420	161,030	162,640	559	0.35%
2020	160,239	161,858	163,477	828	0.51%
2021	160,992	162,618	164,244	760	0.47%
2022	162,121	163,759	165,397	1,141	0.70%
2023	162,394	164,034	165,674	275	0.17%
2024	162,448	164,089	165,730	55	0.03%
2025	162,268	163,907	165,546	(182)	(0.11%)
2026	162,435	164,076	165,717	169	0.10%
2027	162,357	163,997	165,637	(79)	(0.05%)
2028	162,681	164,324	165,967	327	0.20%

Membership since 2013 is based on Month 2 enrollment

Comparison of Projections

The updated enrollment projections are significantly lower than those developed before. These projections have been updated to account for changes in demographic trends to include population shifts, the impact of increasing school choices, and modest economic recovery. Exhibit 12 reflects the revisions made to the projection trajectory in recent years.

Exhibit 12: Comparison of Projections



Conclusion

Student enrollment projections for the 2019-20 school year reflect the slow overall enrollment growth experienced in past years and particularly, the lack of growth in younger populations in Wake County over the last five years.

Lower membership trends, in turn, affect the WCPSS K-12 membership forecast. The current forecast predicts a 2019-20 Month-2 K-12 Average Daily Membership of 161,030, an increase of 559 (.35%) over 2018-19. The forecasted ten-year annual growth average of 385 will result in a total K-12 membership of 164,324 in 2028-29; however, most of this growth is expected in the next five years.

Highlights of assumptions used in generating the membership forecast:

- 12,550 Resident Live Births (RLB) in Wake County for 2018
- Based on recent data trends, RLB are expected to show little or no growth over the next few years. The RLB projection is a blend of projected 3-year and 5-year linear regressions; the average annual RLB projected growth rate for the 2018 to 2023 period is -0.23%.
- 2019-20 charter school impact of 1,892 K-12 students. Approved charter school impacts calculated over the ten-year forecast window

If you have any questions or would like additional information on the projections, we welcome an opportunity to review the attached materials in greater detail.

Attachments:

K-12 Forecast Report

Consultant Student Enrollment Forecast Report

K-12 Forecast

2019-2020 WCPSS Enrollment Projections by Grade

Wake Co Resident Live Births (2018 est.)

2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
13,299	13,529	13,010	12,705	12,458	12,309	12,439	12,635	12,867	13,019	12,683	12,550	12,463	12,386	12,376	12,408	12,511
% Change	1.7%	-3.8%	-2.3%	-1.9%	-1.2%	1.1%	1.6%	1.8%	1.2%	-2.6%	-1.0%	-0.7%	-0.6%	-0.1%	0.3%	0.8%

20181229 - WCPSS Month-2 ADM Forecast - Final

Adjusted (1,1,1,1) CSR Projection and LinReg (3-yr/5-yr) RLB

Month-2 ADM

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	GAIN
K	12,108	12,213	12,065	11,860	11,855	11,664	11,416	11,571	11,842	12,123	12,173	11,738	11,766	11,688	11,670	11,672	11,773	357
1	12,278	12,592	12,388	12,372	12,173	11,982	11,790	11,668	11,790	12,005	12,314	12,381	11,953	11,994	11,941	11,927	11,920	130
2	11,986	12,417	12,646	12,498	12,625	12,323	12,040	11,981	11,847	11,927	12,127	12,453	12,551	12,126	12,221	12,166	12,153	113
3	11,301	12,016	12,286	12,591	12,509	12,642	12,218	12,058	11,970	11,818	11,884	12,100	12,464	12,560	12,158	12,276	12,221	3
4	12,042	11,449	11,929	12,429	12,728	12,529	12,674	12,311	12,160	12,033	11,888	11,950	12,207	12,575	12,695	12,292	12,412	-262
5	11,739	12,196	11,428	12,052	12,682	12,813	12,622	12,865	12,464	12,284	12,145	12,028	12,119	12,384	12,782	12,911	12,502	-120
6	11,864	11,814	12,086	11,423	12,065	12,625	12,696	12,591	12,842	12,446	12,254	12,099	12,023	12,108	12,403	12,806	12,935	239
7	11,565	12,133	11,981	12,212	11,611	12,209	12,733	12,856	12,801	13,017	12,631	12,416	12,301	12,202	12,328	12,642	13,054	321
8	11,310	11,766	12,252	12,102	12,246	11,782	12,303	12,863	13,008	12,944	13,168	12,786	12,598	12,474	12,399	12,536	12,856	553
9	12,851	12,854	13,278	13,663	13,366	13,751	13,263	13,758	14,432	14,614	14,546	14,746	14,374	14,171	14,038	13,969	14,116	853
10	11,173	11,619	11,865	12,385	12,994	12,717	12,899	12,528	13,024	13,638	13,788	13,772	14,014	13,661	13,464	13,327	13,263	364
11	10,067	10,539	10,919	11,056	11,764	12,246	12,217	12,221	11,922	12,377	12,994	13,103	13,123	13,361	13,095	12,862	12,732	515
12	9,446	9,692	10,061	10,537	10,931	11,146	11,600	11,759	11,756	11,392	11,847	12,462	12,596	12,603	12,882	12,611	12,387	787
Total	149,730	153,300	155,184	157,180	159,549	160,429	160,471	161,030	161,858	162,618	163,759	164,034	164,089	163,907	164,076	163,997	164,324	3,853
	% Change	2.38%	1.23%	1.29%	1.51%	0.55%	0.03%	0.35%	0.51%	0.47%	0.70%	0.17%	0.03%	-0.11%	0.10%	-0.05%	0.20%	
	GAIN >	3570	1884	1996	2369	880	42	559	828	760	1141	275	55	-182	169	-79	327	

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	GAIN
K-5	71,454	72,883	72,742	73,802	74,572	73,953	72,760	72,454	72,073	72,190	72,531	72,650	73,060	73,327	73,467	73,244	72,981	221
6-8	34,739	35,713	36,319	35,737	35,922	36,616	37,732	38,310	38,651	38,407	38,053	37,301	36,922	36,784	37,130	37,984	38,845	1,113
9-12	43,537	44,704	46,123	47,641	49,055	49,860	49,979	50,266	51,134	52,021	53,175	54,083	54,107	53,796	53,479	52,769	52,498	2,519
K-5	47.7%	47.5%	46.9%	47.0%	46.7%	46.1%	45.3%	45.0%	44.5%	44.4%	44.3%	44.3%	44.5%	44.7%	44.8%	44.7%	44.4%	
6-8	23.2%	23.3%	23.4%	22.7%	22.5%	22.8%	23.5%	23.8%	23.9%	23.6%	23.2%	22.7%	22.5%	22.4%	22.6%	23.2%	23.6%	
9-12	29.1%	29.2%	29.7%	30.3%	30.7%	31.1%	31.1%	31.2%	31.6%	32.0%	32.5%	33.0%	33.0%	32.8%	32.6%	32.2%	31.9%	

Consultant Student Enrollment Forecast Report

2018-19 WCPSS District-Wide K-12 Forecast Report

Final Draft: December 29, 2018

Executive Summary

WCPSS Average Daily Membership grew by 42 students (0.03%) in 2018-19 for a Month-2 total of 160,471. This represents the smallest single-year growth for WCPSS over the past 30 years and the second (consecutive) year the annual growth rate was less than 1%.

Estimates of Wake County general population indicate resident growth is driven by older population cohorts with a lack of growth in younger school-age cohorts. This lack of growth in school-age populations is apparent in WCPSS membership, which saw a one-year net loss of 1,193 K-5 students from 2017-18.

Non-WCPSS school systems, including charter schools, continue to grow and capture a larger share of the K-12 population in Wake County. Forecast modeling will continue to account for these increasing shares in non-WCPSS systems.

Analysis of neighboring public school districts shows an overall net loss in membership this year. According to NC DPI Month-1 ADM data, Wake County and the seven adjacent districts lost 1,306 K-12 students over 2017-18.

The lack of growth in younger school-age populations in Wake County and the continued impact from non-WCPSS systems such as charter schools, are the primary factors behind the lower membership trends seen in WCPSS over the past several years and are responsible for lower forecast numbers this year. The lower forecast numbers are the latest in a series of downward adjustments made by the forecast team over the last decade.

The 2018-19 WCPSS forecast predicts 2019-20 Month-2 K-12 Average Daily Membership of 161,030, an increase of 559 (0.35%) over 2018-19. The forecasted ten-year annual growth average of 385 will result in a total K-12 membership of 164,324 in 2028-29.

2018-19 WCPSS Month-2 Membership: 160,471

The 2018-19 Ten-Year K-12 Forecast is based on Month-2 K-12 Membership (ADM) as reported by WCPSS: 160,471.

The 2018-19 membership represents a net gain of 42 (0.03%) over the 2017-18 Month-2 Average Daily Membership of 160,429.

Comparison with 2017-18 K-12 Forecast (final version, 20171208)

Membership by Grade

	2017-18 (actual)	2018-19 (forecast)	2018-19 (actual)	Net Gain (actual)	Error (actual – forecast)
K	11,664	11,683	11,416	-248	-267
1	11,982	11,989	11,790	-192	-199
2	12,323	12,157	12,040	-283	-117
3	12,642	12,463	12,218	-424	-245
4	12,529	12,876	12,674	145	-202
5	12,813	12,752	12,622	-191	-130
6	12,625	12,918	12,696	71	-222
7	12,209	12,972	12,733	524	-239
8	11,782	12,525	12,303	521	-222
9	13,751	13,072	13,263	-488	191
10	12,717	12,907	12,899	182	-8
11	12,246	12,262	12,217	-29	-45
12 +	11,146	11,751	11,600	454	-151
Total	160,429	162,327	160,471	42	-1,856

Membership by Level

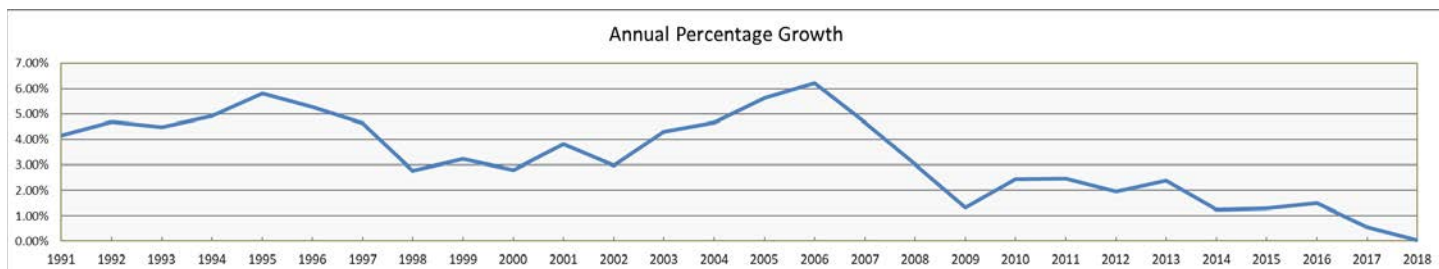
	2017-18 (actual)	2018-19 (forecast)	2018-19 (actual)	Net Gain (actual)	Error (actual – forecast)
K-5	73,953	73,920	72,760	-1,193	-1160
6-8	36,616	38,415	37,732	1,116	-683
9-12 +	49,860	49,992	49,979	119	-13

The 2017-18 K-12 Forecast (absolute) relative error is 1,856 or 1.15%.

Membership Statistics

Grades K-12

WCPSS gained only 42 K-12 students this year over the 2017-18 Month-2 ADM. This gain represents an annual increase of 0.03% and continues the downward trend of annual growth rates in place since 2006.



Though the overall growth has slowed, there are areas in the district that continue to see gains in WCPSS membership due to continued residential development. Preliminary analysis suggests development continues to track a west-to-east arc through the southern part of Wake County. Demographic changes in other areas appear to impact membership growth as well.

Grades K-5

For the past several years, the primary factor in the lower overall growth numbers is the lack of growth in the elementary level. Grade K-5 membership decreased by 619 in 2017-18 and decreased by 1,193 this year. Grade K membership has been decreasing since a high mark in 2013-14 (12,213) and is currently at levels comparable to 2007-08.

Factors contributing to this lack of growth, including a lack of in-migration of younger populations and non-WCPSS system impacts, are described elsewhere in this report.

Resident Live Births, Five-Year-Olds and Kindergarteners

The most recent Resident Live Birth (RLB) data for Wake County from 2017 (12,683) shows a decrease of 336 from 2016, moving against the positive trend in RLB seen since 2013. Indications are that the downward momentum in RLB will continue into 2018.

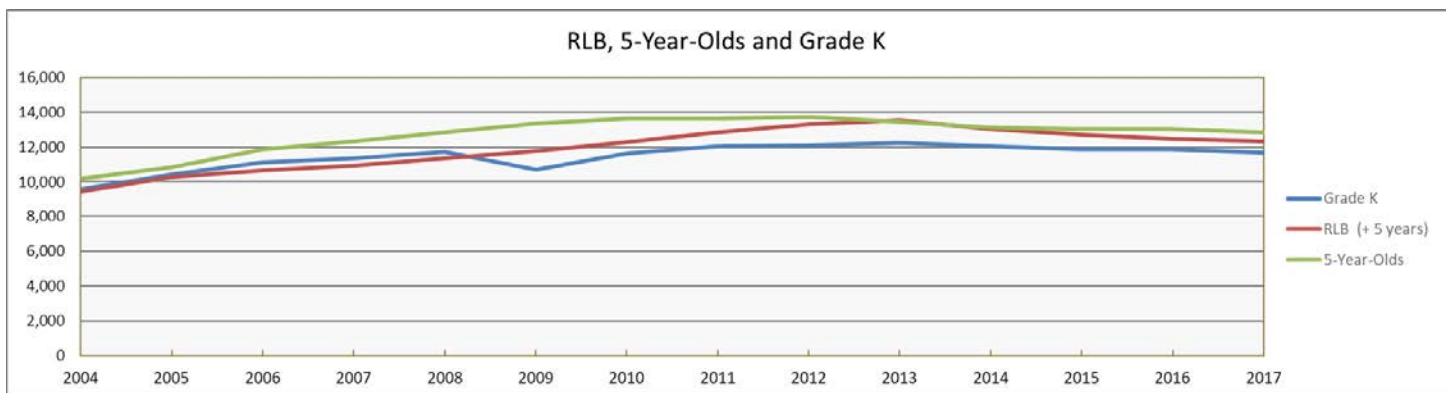
	2011	2012	2013	2014	2015	2016	2017
RLB	12,458	12,309	12,439	12,635	12,867	13,019	12,683

Source: NC State Center for Health Statistics – www.schs.state.nc.us/data/vital.cfm#vitalbaby

As stated in the previous year's report, 2017 county population estimates by age generated by the NC Office of State Budget and Management (OSBM) show a decreasing trend in five-year-old population from 2012 through 2017, in part related to the decrease in RLB that occurred from 2009 to 2012. NC OSBM projections indicate a reversal of this trend beginning in 2018, gaining an average of 143 five-year-olds per year through 2027. The graph below shows RLB, 5-Year-Olds and Kindergartners for 2004 through 2017. RLB data has been advanced by five years in this graph.

	2011	2012	2013	2014	2015	2016	2017
5-YO	13,629	13,723	13,439	13,137	13,048	13,032	12,844

Source: NC Office of State Budget and Management – www.osbm.nc.gov/demog/county-projections



Cohort Analysis

The historic Month-2 ADM data table shown below highlights (in red) “negative growth” cohorts present in WCPSS membership. **Red values indicate a net loss for that grade over the previous year.** (The blue cells indicate a lower cohort due to the change in age for kindergarten eligibility in 2009.) Typically, these negative growth cohorts are stable as they advance through the system unless a significant change in district in-migration causes a reversal. Note the five consecutive years of declining Grade-K membership from 2014 through 2018.

	2012	2013	2014	2015	2016	2017	2018
K	12,108	12,213	12,065	11,860	11,855	11,664	11,416
1	12,278	12,592	12,388	12,372	12,173	11,982	11,790
2	11,986	12,417	12,646	12,498	12,625	12,323	12,040
3	11,301	12,016	12,286	12,591	12,509	12,642	12,218
4	12,042	11,449	11,929	12,429	12,728	12,529	12,674
5	11,739	12,196	11,428	12,052	12,682	12,813	12,622
6	11,864	11,814	12,086	11,423	12,065	12,625	12,696
7	11,565	12,133	11,981	12,212	11,611	12,209	12,733
8	11,310	11,766	12,252	12,102	12,246	11,782	12,303
9	12,851	12,854	13,278	13,663	13,366	13,751	13,263
10	11,173	11,619	11,865	12,385	12,994	12,717	12,899
11	10,067	10,539	10,919	11,056	11,764	12,246	12,217
12	9,446	9,692	10,061	10,537	10,931	11,146	11,600
Total	149,730	153,300	155,184	157,180	159,549	160,429	160,471

It should be noted that although a grade may see a net loss from the previous year, there may still be growth within that cohort as it advances. As seen in the table, the cohort of 11,644 Grade-K students in 2017-18 grew by 126 to 11,790 Grade-1 students in 2018-19. This yearly growth is captured and projected by the cohort forecast model.

Cohort analysis plays a central role in forecasting populations over time. Examining past cohort phenomena can often help us better understand how to model future population dynamics. The table below is a “heat map” of past Cohort Survival Ratios (CSR) in the WCPSS system. **Red indicates historically high CSR values for that grade and green indicates historically low CSRs for that grade.**

From To	2006 2007	2007 2008	2008 2009	2009 2010	2010 2011	2011 2012	2012 2013	2013 2014	2014 2015	2015 2016	2016 2017	2017 2018
RLB>K	1.0382	1.0336	0.9118	0.9465	0.9384	0.9104	0.9027	0.9274	0.9335	0.9516	0.9476	0.9178
K>1	1.0547	1.0360	1.0173	1.0280	1.0302	1.0183	1.0400	1.0143	1.0254	1.0264	1.0107	1.0108
1>2	1.0068	0.9934	0.9922	1.0032	1.0190	1.0023	1.0113	1.0043	1.0089	1.0204	1.0123	1.0048
2>3	1.0221	1.0029	0.9987	1.0014	1.0043	1.0070	1.0025	0.9894	0.9957	1.0009	1.0013	0.9915
3>4	1.0277	1.0194	0.9968	1.0055	1.0007	1.0022	1.0131	0.9928	1.0116	1.0109	1.0016	1.0025
4>5	1.0347	1.0145	1.0085	1.0174	1.0136	1.0050	1.0128	0.9982	1.0103	1.0204	1.0067	1.0074
5>6	1.0409	1.0169	1.0051	1.0057	1.0056	0.9992	1.0064	0.9910	0.9996	1.0011	0.9955	0.9909
6>7	1.0410	1.0266	1.0093	1.0168	1.0170	1.0133	1.0227	1.0141	1.0104	1.0165	1.0119	1.0086
7>8	1.0315	1.0188	1.0041	1.0101	1.0228	1.0069	1.0174	1.0098	1.0101	1.0028	1.0147	1.0077
8>9	1.2350	1.2212	1.1952	1.1925	1.1709	1.1500	1.1365	1.1285	1.1152	1.1044	1.1229	1.1257
9>10	0.8422	0.8271	0.8390	0.8477	0.8662	0.8866	0.9041	0.9231	0.9327	0.9510	0.9514	0.9380
10>11	0.9316	0.9180	0.9289	0.9358	0.9379	0.9469	0.9433	0.9398	0.9318	0.9499	0.9424	0.9607
11>12	0.9671	0.9608	0.9791	0.9805	0.9680	0.9721	0.9627	0.9546	0.9650	0.9887	0.9475	0.9472
	1.0210	1.0069	0.9912	0.9993	0.9996	0.9939	0.9981	0.9913	0.9962	1.0035	0.9974	0.9934

Note the following:

- The red/orange area in the first column represents part of the in-migration to WCPSS that occurred during the high-growth period before 2008.
- The darker green patch in the 2013 > 2014 column signifies the impact of several charter schools opening in the fall of 2014.
- The impact of returning students from non-WCPSS systems and increased retention of higher grades produces the higher CSR values in grades 10-12 over the past few years.
- The Resident Live Birth to Kindergarten (row 1) and other elementary-level CSRs values abruptly shift to green beginning in the 2008 > 2009 column and have not yet recovered to pre-Recession levels.

Charter School Impact

Two new charter schools in Wake County opened in the fall of 2018: Rolesville Charter Academy serving grades K-4 and Raleigh Oak Charter serving grades K-6. Both schools will eventually serve grades K-8. NC DPI reports the combined 2018-19 Month-1 ADM for these two schools to be 790.

Charter schools currently being tracked for impact on WCPSS are listed below with Average Daily Membership (ADM) as reported by NC DPI for Month-1 2018-19. The total 2018-19 Month-1 ADM for these 26 charter schools is 18,868, including students not residing in Wake County.

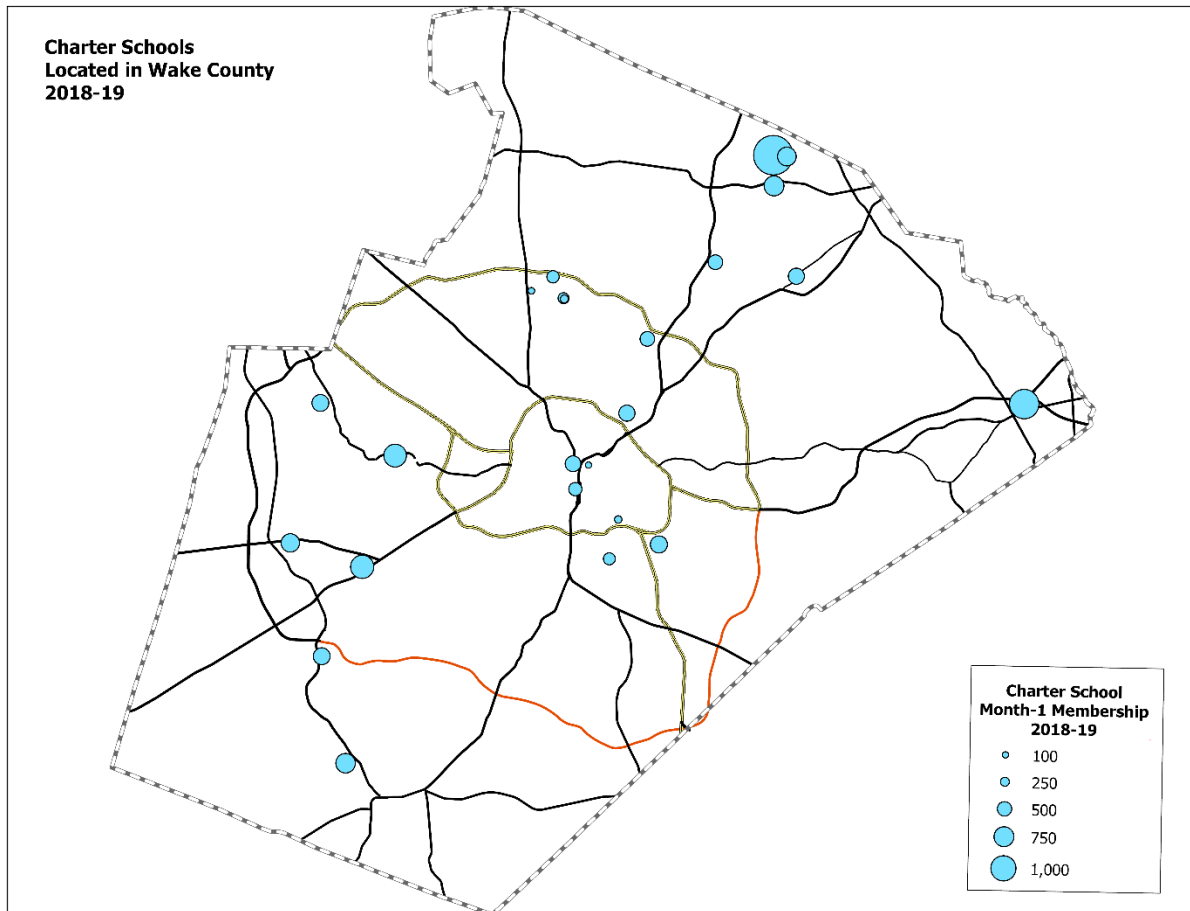
Charter Schools (Open as of 2018-19)				Total ADM		
LEA	Name	Opened	Grades ¹	2016-17	2017-18	2018-19 ²
92B	The Exploris School	30-Jun-97	K-8	423	421	452
92D	Magellan Charter	30-Jun-97	3-8	406	407	406
92E	Sterling Montessori Academy	28-Jun-97	K-8	602	606	614
92F	Franklin Academy	30-Jun-98	K-12	1,639	1,631	1,649
92G	East Wake Academy	30-Jun-98	K-12	1,152	1,172	1,187
92K	Raleigh Charter High School	30-Jun-99	9-12	562	564	563
92L	Torchlight Academy	30-Jun-99	K-6	531	520	579
92M	PreEminent Charter School	30-Jun-00	K-8	609	592	625
92N	Quest Academy	30-Jun-99	K-8	143	141	143
92P	Southern Wake Academy	28-Jun-00	6-12	477	607	734
92Q	Hope Charter Leadership Academy	30-Jun-01	K-5	128	122	128
92R	Casa Esperanza Montessori	30-Jun-03	K-8	497	494	512
92S	Endeavor Charter	01-Jul-08	K-8	514	511	512
92T	Triangle Math and Science Academy	01-Jul-12	K-12	808	867	905
92U	Longleaf School of the Arts	01-Jul-13	9-12	329	328	347
92V	Wake Forest Charter Academy	01-Jul-14	K-6	677	759	753
92W	Cardinal Charter (North Raleigh)	01-Jul-14	K-8	1,062	975	883
92Y	Envision Science Academy	01-Jul-14	K-8	601	666	703
93J	PAVE Southeast Raleigh Charter School	01-Jul-15	K-8	224	314	383
93L	Central Wake Charter High School	01-Jul-16	9-12	72	188	179
93M	Peak Charter Academy	Fall 2017	K-8	n/a	595	680
93N	Pine Springs Preparatory Academy	Fall 2017	K-8	n/a	506	609
93P	Rolesville Charter Academy	Fall 2018	K-8	n/a	n/a	581
93R	Raleigh Oak Charter	Fall 2018	K-8	n/a	n/a	209
Charter Schools Located Outside of Wake County						
00A	NC Connections Academy ³	Fall 2015	K-12	1,758	2,061	2,170
00B	NC Virtual Academy ³	Fall 2015	K-12	1,714	2,018	2,362

¹ Approved Grades

² 2018-19 data is Month-1 ADM

³ Virtual Charter School

In 2017-18, total Month-2 ADM for the 22 charters schools located in Wake County was 12,986. 2018-19 saw the addition of two new charter schools in the county for a total (Month-1) ADM of 14,336 in 24 charter schools. The net gain for all charter schools located in the county was 1,350 in 2018-19.



Two virtual charter schools serving the entire state grew by a total of 453 students for a combined Month-1 ADM of 4,532 in 2018-19.

As of November 2018, there are three charter schools located in Wake County slated to open in the fall of 2019: Carolina Charter Academy – A CFA (opening K-6), Cardinal Charter West Academy (opening K-9) and Kaleidoscope Charter High School (opening 9-10). Estimated impact to WCPSS in 2018-19 is 1,347 for these three schools. For this forecast, the estimate of **total** charter school impact on WCPSS membership for 2019-20 is 1,892.

Current data indicates eight new charter schools are potentially opening in Wake County in the fall of 2020. These schools are not yet approved. The forecast team will continue to track the impact of charter schools on WCPSS membership as they are approved.

Other School Systems

Membership in Neighboring LEAs

NC DPI Month-1* membership data for WCPSS and seven neighboring school systems is shown in the table below. Overall net loss for all eight districts in this list is 1,306.

LEA	Month- 1 2017-18	Month-1 2018-19	Net Gain/Loss
Chatham County Schools	8,746	8,802	56
Durham Public Schools	32,706	32,029	-677
Franklin County Schools	8,134	8,110	-24
Granville County Schools	7,454	7,321	-133
Harnett County Schools	20,390	20,216	-174
Johnston County Public Schools	35,711	35,561	-150
Nash-Rocky Mount Schools	14,911	14,684	-227
Wake County Public School System	158,710	158,733	23

* NC DPI Month-2 membership data was not available at the time of this report.

Private and Home Schools

Private and home schools continue to have an impact on WCPSS membership. The market share of private schools has increased slightly to 9.0% in 2017-18. The market share of home schools has increased to a 2017-18 share of 6.2%.

Distribution of Wake County Student Population in Public and Non-Public Systems: Market Share

November 2018

Academic Year	Private Schools	Home Schools	Charter Schools	WCPSS 20th Day	K-12 Totals	Private Schools	Home Schools	Charter Schools	WCPSS	Total
2000-2001	12,006	3,131	2,334	97,691	115,162	10.4%	2.7%	2.0%	84.8%	100%
2001-2002	12,615	4,490	2,964	101,432	121,501	10.4%	3.7%	2.4%	83.5%	100%
2002-2003	13,267	5,042	3,471	104,461	126,241	10.5%	4.0%	2.7%	82.7%	100%
2003-2004	12,951	5,374	3,962	108,969	131,256	9.9%	4.1%	3.0%	83.0%	100%
2004-2005	13,375	5,801	4,531	114,068	137,775	9.7%	4.2%	3.3%	82.8%	100%
2005-2006	13,525	6,361	4,997	120,504	145,387	9.3%	4.4%	3.4%	82.9%	100%
2006-2007	14,021	6,516	4,985	128,072	153,594	9.1%	4.2%	3.2%	83.4%	100%
2007-2008	14,696	7,059	5,319	134,002	161,076	9.1%	4.4%	3.3%	83.2%	100%
2008-2009	15,123	7,571	4,990	137,706	165,390	9.1%	4.6%	3.0%	83.3%	100%
2009-2010	15,689	7,890	5,299	139,599	168,477	9.3%	4.7%	3.1%	82.9%	100%
2010-2011	16,084	8,033	5,398	143,289	172,804	9.3%	4.6%	3.1%	82.9%	100%
2011-2012	16,135	7,600	5,798	146,687	176,220	9.2%	4.3%	3.3%	83.2%	100%
2012-2013	16,048	8,507	6,229	149,508	180,292	8.9%	4.7%	3.5%	82.9%	100%
2013-2014*	16,249	9,559	6,733	153,300	185,841	8.7%	5.1%	3.6%	82.5%	100%
2014-2015*	16,932	10,407	8,755	155,184	191,278	8.9%	5.4%	4.6%	81.1%	100%
2015-2016*	17,240	11,356	9,577	157,180	195,353	8.8%	5.8%	4.9%	80.5%	100%
2016-2017*	17,557	11,972	10,739	159,549	199,817	8.8%	6.0%	5.4%	79.8%	100%
2017-2018*	18,258	12,616	12,275	160,429	203,578	9.0%	6.2%	6.0%	78.8%	100%
2018-2019	Not yet released		13,599							

*WCPSS PowerSchool 2nd Month ADM

Private and Home schools data compiled from the North Carolina Division of Non-Public Education website. Data released Spring of current school year. Home and Private Schools data collection may not reflect 20th day enrollment. Charter schools data from WCPSS September billing of charter school students.

Analysis of the growth of non-WCPSS schools through 2017-18 shows average growth in enrollment in private schools at 442 students per year and 822 students per year in home schools since 2012. Evidence suggests that many students may return to WCPSS in later grades, but currently there is a lack of data to quantify with precision the movement between WCPSS and non-WCPSS systems.

Market Share Descriptive Statistics

November 2018

Academic Year	Private Schools			Home Schools			Charter Schools			WCPSS		
	Enrollment	Growth	% Growth	Enrollment	Growth	% Growth	Enrollment	Growth	% Growth	Enrollment	Growth	% Growth
2001-2002	12,615	609	5.1%	4,490	1,359	43.4%	2,964	630	27.0%	101,432	3,741	3.8%
2002-2003	13,267	652	5.2%	5,042	552	12.3%	3,471	507	17.1%	104,461	3,029	3.0%
2003-2004	12,951	(316)	-2.4%	5,374	332	6.6%	3,962	491	14.1%	108,969	4,508	4.3%
2004-2005	13,375	424	3.3%	5,801	427	7.9%	4,531	569	14.4%	114,068	5,099	4.7%
2005-2006	13,525	150	1.1%	6,361	560	9.7%	4,997	466	10.3%	120,504	6,436	5.6%
2006-2007	14,021	496	3.7%	6,516	155	2.4%	4,985	(12)	-0.2%	128,072	7,568	6.3%
2007-2008	14,696	675	4.8%	7,059	543	8.3%	5,319	334	6.7%	134,002	5,930	4.6%
2008-2009	15,123	427	2.9%	7,571	512	7.3%	4,990	(329)	-6.2%	137,706	3,704	2.8%
2009-2010	15,689	566	3.7%	7,890	319	4.2%	5,299	309	6.2%	139,599	1,893	1.4%
2010-2011	16,084	395	2.5%	8,033	143	1.8%	5,398	99	1.9%	143,289	3,690	2.6%
2011-2012	16,135	51	0.3%	7,600	(433)	-5.4%	5,798	400	7.4%	146,687	3,398	2.4%
2012-2013	16,048	(87)	-0.5%	8,507	907	11.9%	6,229	431	7.4%	149,508	2,821	1.9%
2013-2014*	16,249	201	1.3%	9,559	1,052	12.4%	6,733	504	8.1%	153,300	3,792	2.5%
2014-2015*	16,932	683	4.2%	10,407	848	8.9%	8,755	2,022	30.0%	155,184	1,884	1.2%
2015-2016*	17,240	308	1.8%	11,356	949	9.1%	9,577	822	9.4%	157,180	1,996	1.3%
2016-17*	17,557	317	1.8%	11,972	616	5.4%	10,739	1,162	12.1%	159,549	2,369	1.5%
2017-18*	18,258	701	4.0%	12,616	644	5.4%	12,275	1,536	14.3%	160,429	880	0.6%
2018-19*							13,599	1,324	10.8%	160,471	42	0.0%

*WCPSS PowerSchool 2nd Month ADM

Private and Home schools data compiled from the North Carolina Division of Non-Public Education website. Data released Spring of current school year. Home and Private Schools data collection may not reflect 20th day enrollment. Charter schools data from WCPSS September billing of charter school students.

2018-19 WCPSS District-Wide K-12 Forecast – Final

The accompanying Final Draft of the 2018-19 WCPSS district-wide K-12 forecast is based on the following:

Assumptions:

- 12,550 Resident Live Births (RLB) in Wake County for 2018
- Based in recent data trends, RLB are expected to show little or no growth over the next few years. The RLB projection is a blend of projected 3-year and 5-year linear regressions; the average annual RLB projected growth rate for the 2018 to 2023 period is -0.23%.
- CSR target values: Projected (1,1,1,1) weighting
- 2019-20 charter school impact of 1,892 K-12 students. Approved charter school impacts calculated over the ten-year forecast window.

Some Results

- The forecast for 2019-20 Month-2 ADM predicts a gain of 559 K-12 students for a total of 161,030. The corresponding annual growth rate is 0.35%.
- The predicted gain over the next ten years is 3,853 K-12 students with an average annual growth rate of 0.24%.

The complete ten-year forecast by grade accompanies this report.

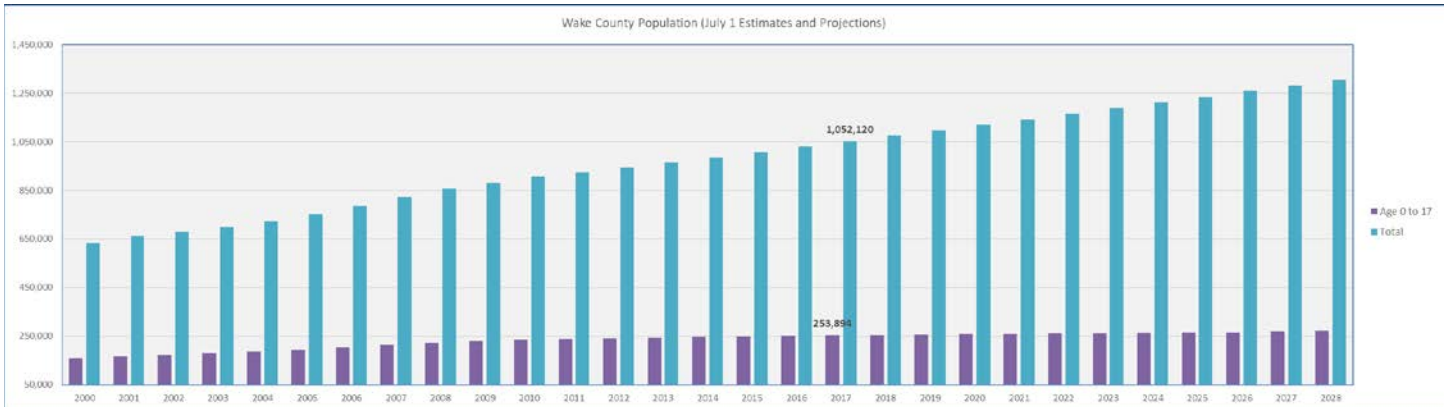
2019-20 WCPSS Month-2 ADM – Final

Grade	2018-19 (actual)	2019-20 (forecast)
K	11,416	11,571
1	11,790	11,668
2	12,040	11,981
3	12,218	12,058
4	12,674	12,311
5	12,622	12,865
6	12,696	12,591
7	12,733	12,856
8	12,303	12,863
9	13,263	13,758
10	12,899	12,528
11	12,217	12,221
12	11,600	11,759
Total	160,471	161,030

Supplemental Materials

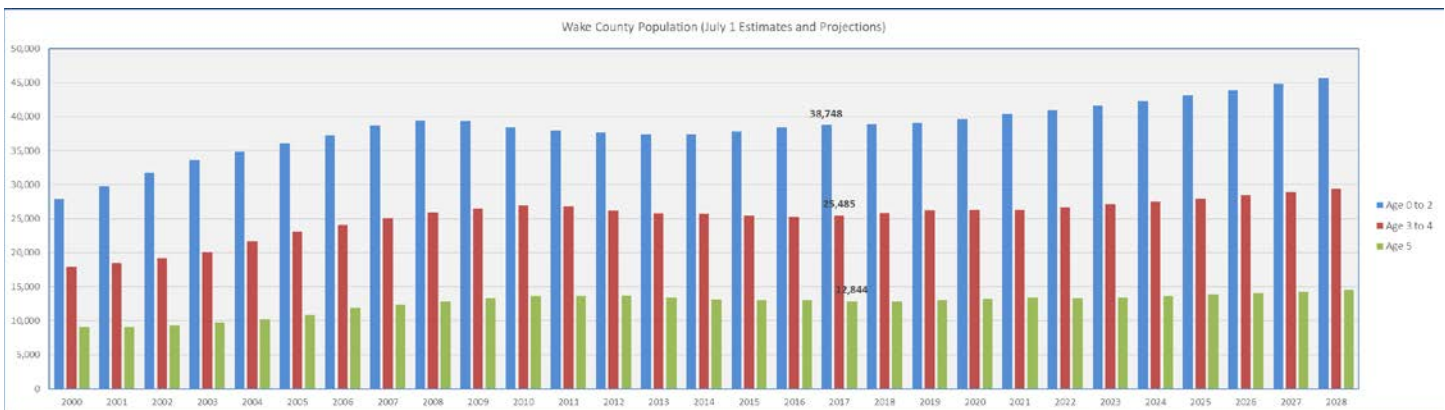
General Population Projections

County-wide population estimates and projections by age group are supplied by the North Carolina Office of State Budget and Management (OSBM). Graphs of estimated and projection populations for several age groups are shown for the 2000-2028 period. The most recent population estimates available are for 2017.



While the total general population is expected to continue the upward trend established after the Great Recession, younger age groups are not expected to see the same rates of growth.

The Age 5 group has seen little to no growth over the period 2008 – 2017, a trend which is projected to move to conservative growth rates (about 150 per year) over the 2017 – 2028 period. The lack of growth for the Age 5 group (and other younger cohorts) in Wake County is a direct and significant factor in the lack of growth of WCPSS membership.



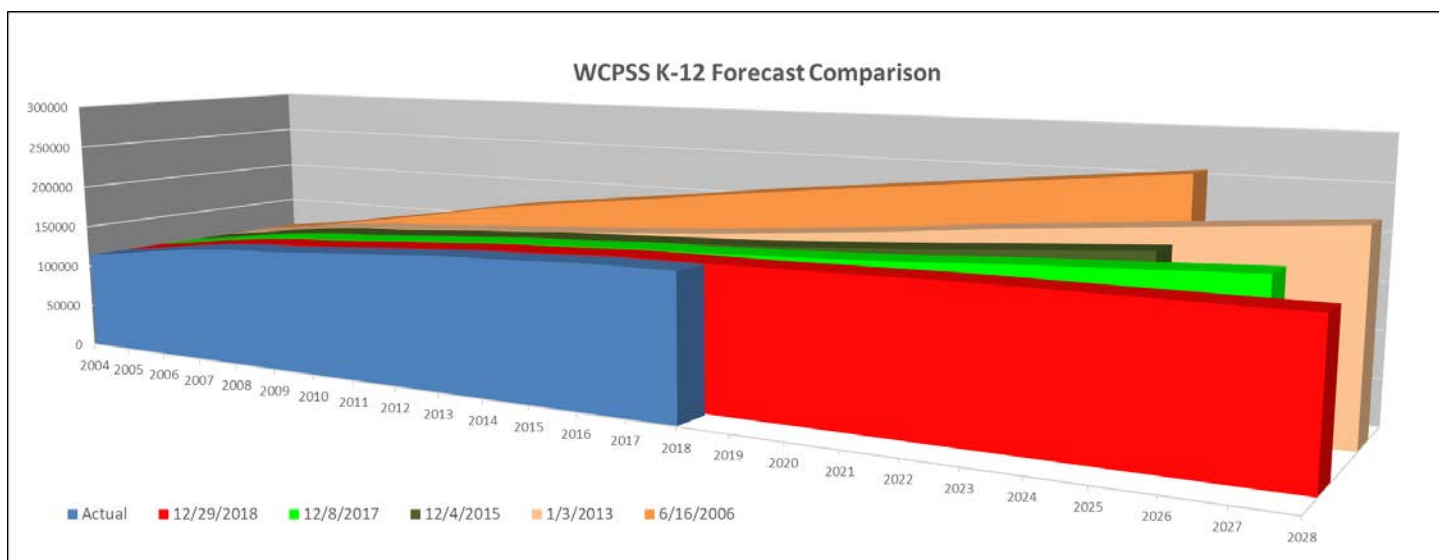
Data Source: <https://www.osbm.nc.gov/demog/county-projections>

Previous K-12 Forecasts

Since 2005, the WCPSS K-12 forecast has been determined by a collaborative effort involving WCPSS, Wake County government, the Operations Research and Education Laboratory (OREd) at ITRE/NCSU. Since 2016 the team also includes the consultant Numerix LLC. The forecasting team has generated annual forecast updates for WCPSS, with major updates occurring in 2008 and 2012 when new land use data was collected by OREd. Seeing signs of recovery in residential development after the recession, the land use data collection effort was ramped up to an annual cycle beginning with the 2015-16 update. Annual land use data collection continues to this day.

During each annual update, the forecast team reviews current membership data as well as demographic and economic data. Forecast parameters are adjusted to account for emerging trends in membership, general population dynamics and residential development activity. Reductions in long-range forecast numbers (as evident in the table and graph below) reflect the continuing analysis of this data each year and the resulting adjustment of the membership forecast. Comparing the 2006-07 forecast to the 2018-19 forecast, predicted total membership for 2025-06 has dropped by 90,000 students. (We acknowledge that the 2006-07 forecast was aggressive due to unprecedented pre-recession growth in WCPSS.) Comparing the 2012-13 forecast to the 2018-19 forecast, predicted membership for 2025-26 has dropped by 42,759 students.

	Target Year		
Forecast Date	2018-19	2021-22	2025-26
6/16/06	214,985	232,007	254,665
1/3/13	171,915	187,096	206,666
12/4/15	163,856	174,026	189,398
12/8/17	162,327	168,658	179,966
12/29/18	n/a	162,618	163,907
Actual	160,471	n/a	n/a



Forecast Methodology

WCPSS membership gains in 2017-18 and 2018-19 are at the lowest levels since at least 1990. Two factors appear to be behind the current lack of growth:

1. Lack of growth in younger cohorts of the general Wake County population, and
2. The continued impact of non-WCPSS school systems.

As the economic recovery gained strength in Wake County, residential development data tracked annually by OREd/ITRE showed a resurgence of residential building activity, especially in the west to south areas of the county. The forecast team began using OREd development data combined with WCPSS student data (geocoded by residence) to model student growth characteristics resulting from the building resurgence. This development-driven forecast model proved to be effective for predicting membership gains in high growth areas: new development was attracting families with school-age children.

However, by 2014-15 / 2015-16 it seemed that system-wide WCPSS growth trends were not aligning with the development-driven forecast model. General population estimates for younger cohorts in Wake County were not showing signs of post-recession recovery. In fact, the Age 5 group population in Wake County decreased over the period 2012 to 2017. The lack of growth of younger cohorts contrasted with overall population growth in Wake County; the county was growing and getting older.

WCPSS K-12 membership was further impacted by the increase of charter school options starting in 2014-15. The forecast team tracked charter applications, openings and enrollment and incorporated the impacts from new charter schools into the K-12 forecast model. To this point, the predicted impact of charters has been on-target: the estimated impact from charters in 2018-19 was 1,535. The actual impact (as reported by WCPSS, 11/7/18) was 1,525.

Incorporating charter impacts into the WCPSS K-12 forecast was a step in the right direction but did not address the issues of the aging demographics of Wake County. To that end the forecast team has adapted a forecast model that is aligned with more traditional cohort survival ratio (CSR) projection models and also includes anticipated charter school impacts.

A greater reliance on historic CSR data allows straight-forward calculation of a forecast “envelope” derived from previous CSR values. The table and graph below show the K-12 forecast +/- one standard deviation of the previous three years of CSR values by grade.

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
K-12	149,730	153,300	155,184	157,180	159,549	160,429	160,471	161,030	161,858	162,618	163,759	164,034	164,089	163,907	164,076	163,997	164,324
K-12 + 1 s.d.	149,730	153,300	155,184	157,180	159,549	160,429	160,471	162,254	164,087	165,767	167,780	168,830	169,586	170,060	170,850	171,301	172,140
K-12 - 1 s.d.	149,730	153,300	155,184	157,180	159,549	160,429	160,471	159,804	159,638	159,501	159,803	159,335	158,728	157,933	157,524	156,962	156,825

