

Operations Research and Education Laboratory

2022 IPSAC Membership Forecast Report

Onslow County Schools



OREd, ITRE @ NCSU Centennial Campus
www.itre.ncsu.edu
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Overview

This document serves as a summary of findings from the 2021-22 Integrated Planning for School and Community (IPSAC) Update conducted by the Operations Research and Education Laboratory (OREd) for Onslow County Schools (OCS). Please refer to the accompanying Out-of-Capacity table [see page 7, OOC final draft date: May 13th, 2022].

Data Summary:

2021-22 OCS Month-2 Membership (NC-DPI)

2010 – 2020 Resident Live Births (Onslow County)

Building Capacities: supplied by OCS and Smith-Sinnett Architects, updated March 2022

Membership History

The 2021-22 Month-2 K-12 Average Daily Membership (ADM) for OCS is 27,017, representing an increase of 875 students over 2020-21. In the last five years OCS has seen significant growth – paralleling the growth experienced in the pre-recession years. Since 2016-17, Month-2 K-12 ADM has increased by 883 students, representing an average annual growth rate of about 0.95% or about 175 students per year. (See Figure 1.)

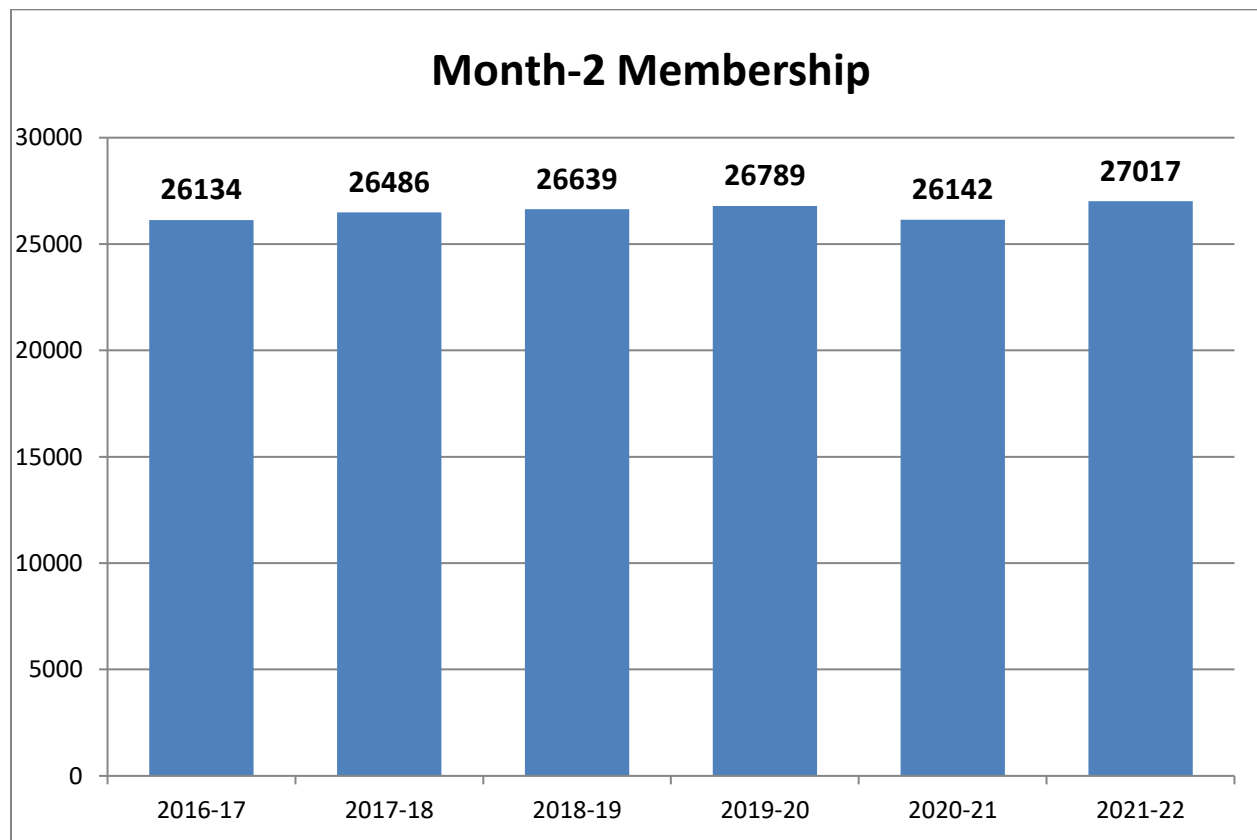


Figure 1 – Onslow County Schools Month-2 Membership

County resident live births (RLB) reported for 2020 were 3,731 – a decrease of 90 from 2019. (See Figure 2.) In the last five years (2016-2020) the average number of RLB is 3,899 live births per year. Many counties in NC experienced a decline in RLB between these years. Onslow County has experienced stable RLB since 2010 with moderate declines starting in 2015. The enrollment forecast presented in this report projects RLB to increase gradually. Figure 2 shows historical county resident live births over the 12-year period 2009 – 2020.

The number of RLB is a primary indicator of the number of kindergarten students five years later. The historical RLB to kindergarten cohort survival ratio was basically flat, averaging about 0.64 for the 2007-08 to 2014-15 period (excluding school year 2009-10). However, the ratio dropped to around 0.51 to 0.55 for 2015-16 forward; meaning that only 51.0% to 55.0% of the 3,959 RLBs in 2016 appeared in kindergarten in 2021-22¹. OREd considered this decrease in the RLB-K cohort a trend and modified the projection model appropriately. The 2020-21 school year proved to be an outlier compared to the standard range of RLB to kindergarten cohort survival ratios. Given the significantly lower kindergarten cohort size due to COVID-19, the ratio fell to 47%, but has since recovered to within the expected range in 2021-22.

Historically, in Onslow County, these ratios are low compared to other districts of similar size and is likely due to military-related births; many babies born in the county have parents in the military and thus are likely more transient. It also suggests that student in-migration has remained fairly constant over recent years. These unique factors are not the case for many other school districts in North Carolina.

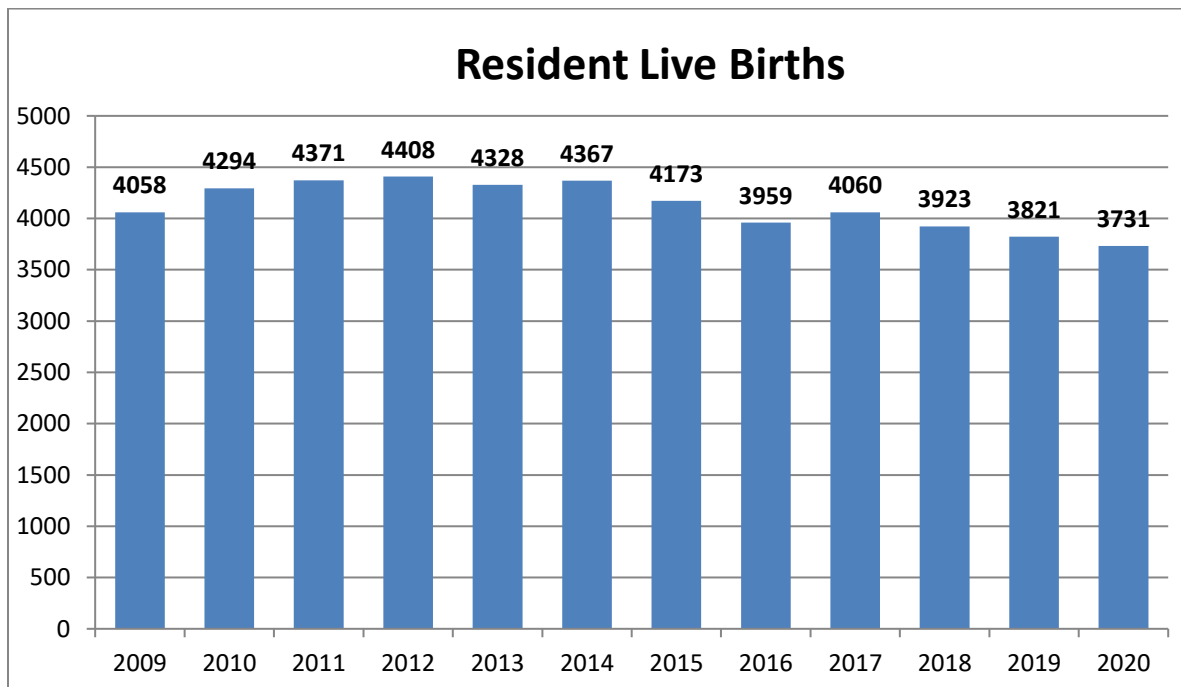


Figure 2 – Onslow County Resident Live Births (actual)

¹ We do not mean to imply that the 51%-55% of K-students were the same persons who were born five years earlier. Many born five years ago left the county and others moved in; however, the ratio is meaningful because it is used to predict future kindergarten populations.

The number of kindergarten students who will enroll in the 2022-23 school year is, in part, a factor of the number of RLB in 2017. That year saw an increase of almost 100 RLB over the previous year. Regardless of this factor; however, the predicted number of kindergarten students in 2022-23 is lower than in 2021-22 due to the unusually large kindergarten cohort in 2021-22 which is largely attributed to COVID-19. Kindergarten cohort size projections remain fairly stable over the next 10 years with small decreases in the short term due to declining RLBs.

Forecasted 2031-32 K-12 totals are 29,249 students and represent an average gain of about 220 students per year over the next ten years.

The 2019-20 IPSAC forecast (version: September 18, 2020) predicted a 2021-22 Day-40 K-12 total of 27,433, an over-projection of 416 students (two percent relative error). In grades K-5, the projection exceeded the actual by 849. Homeschooling, especially at the younger grades during the COVID-19 pandemic is the likely cause for this forecast error. The projection for the middle grades was under by 41, and the projection for high school was under by 392. (See Table 1) This information was used to modify the assumptions relied on as part of the current forecast. In contrast to previous projection reports, the comparison here corresponds to a 2-year gap between the forecast and observed student counts and increasing the time between the projection and actuals increases model uncertainty and, all else equal, typically increases forecast error.

Contrary to declining growth trends in many other North Carolina districts, overall growth in Onslow County Schools has remained fairly strong since the losses in 2012-13 and 2020-21. Models indicate a modest increase in K-12 students in the near-term. OCS should expect annual increases in the near future similar to what has occurred the past five years. Those increases are mitigated to some extent by several negative cohorts that are now moving through the system.

Level	2021 Prediction	2021 Actual	Error
Elem	13,851	13,002	849
Mid	6,394	6,435	-41
High	7,188	7,580	-392

Table 1: 2019-20 Forecast Predictions for 2021-22

System Forecast

Several factors can influence the membership forecast for OCS; most notably, military-related decisions about base population as well as school assignments (on-base or off-base) and, of course, the economy will also impact actual student numbers in the future.

This forecast includes only a moderate increase in RLB for 2021 and years after. All six forecast models produce fairly similar trajectories. (See Figure 3.) The ten-year average growth for the six models investigated ranged from **0.54% to 1.20%**.

It should be noted that the elementary share, as compared to the total K-12 population, remains high. For the past several years, the average percent of all K-12 OCS students who are in grades K-5 is 48.5%. For most North Carolina districts, K-5 represents about 46% of the total K-12 population. The growth seen by OCS over the past 5-7 years has been dominated by elementary and middle school students. Clearly, the connection to younger military families can account for some of this but that is likely not the complete story.

The proportion of elementary students in the system in Onslow County (48.5%) is high, compared to other counties: Craven is 48.0%, Chatham is 45%, Harnett is 47%, Pender is 44%, and Wake is 46%.

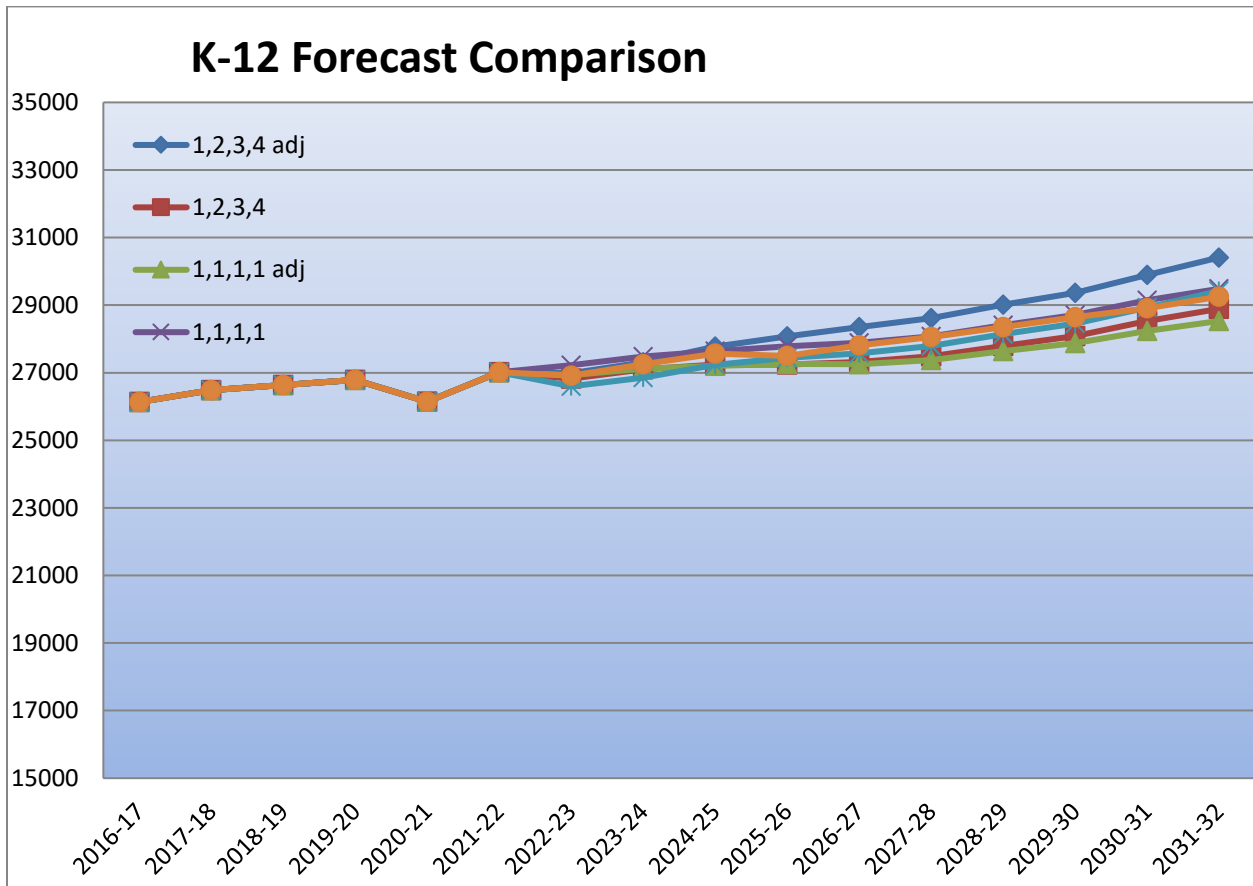


Figure 3 – Comparison of Ten-Year K-12 Forecast Models

The 2021-22 IPSAC forecast for OCS uses a weighted cohort-feeder model that has slight adjustments to the CSRs for middle grades (less) and for high school grades (more) in some years. It also includes an adjustment to the RLB to K CSR (higher). The forecast predicts a growth of around 2,200 K-12 students over the next ten years, an average annual growth rate of 0.85% over the next ten years – compared to a historical growth rate of 0.680%. Figure 3 shows a comparison of forecast models.

Figure 4 shows the current ten-year K-12 forecast split into K-5, 6-8, and 9-12 cohorts.

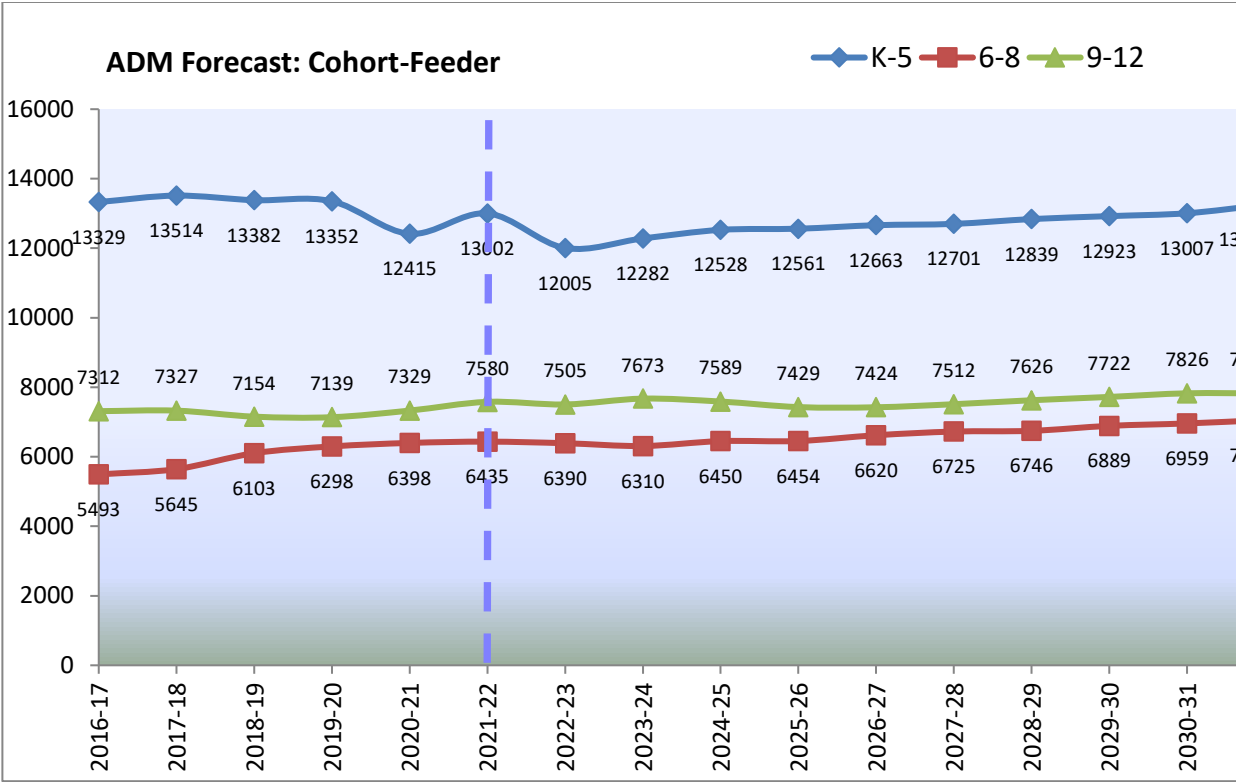


Figure 4 - Ten-Year Forecast by Level (Cohort-Feeder Forecast Model)

System Forecast - Qualifications

The military bases in and around Onslow County have a significant impact on the number of students in OCS. The number and percentage of students whose parents are either in the military or who work on-base has grown slightly over the past five years and is expected to continue. Recent statistics show that 2 out of 5 K-12 students are Federally Connected. However, the impact at the three grade levels is significantly different.

Table 2 shows the percentage of students at each level whose parents either are military living off-base or civilians who work on-base. Obviously, the high percentages support the first sentence in this section. However, it is also obvious that the impact is felt more in grades K-5 than in high school.

School Data	Military Dependent Living On or Off Base
Elementary	38.1%
Middle	32.6%
High	30.4%

Table 2: Federally Connected Students

The longer-term impacts of COVID-19 on Onslow County Schools' enrollment are still largely unknown at this time given the limited modern precedent for a public health crisis of its magnitude. The most significant question remaining is to what extent current homeschool students will choose to return to the system at higher grade levels.

2021-22 Out-of-Capacity Table

See Tables 4 and 5 for the 2021-22 OOCs [final draft date: May 13th, 2022]. Note that this Out-of-Capacity Table (OOC) is generated using the weighted cohort-feeder forecast model and does not include Pre-Kindergarten children that may impact a school's K-12 capacity. This table is color-coded by building utilization, allowing easy identification of disparities in utilization between schools. The capacity of each school, updated in spring 2022, is used to calculate percent utilization. For the 2021-22 IPSAC Update, all included building capacities reflect K-3 class size reductions implemented by the adoption of North Carolina HB90.

Month-2 data from NC-DPI indicates that ten of the elementary schools, three middle schools, and one high school are over capacity (>100% utilization). The short-term forecast indicates this situation will continue. In fact, two elementary schools have a 2021-22 month-2 ADM that is more than 30% above their capacity: Heritage ES and Southwest ES.

The County has projects planned that will impact the capacities of several schools. Tables 4 and 5 are OOCs showing the color-coded utilization projections based on current and planned capacity changes through the 2030-31 school year. OCS is working in conjunction with Onslow County to continue the joint education funding agreement to build additional schools over the foreseeable future.

At the elementary level, one new school is planned to open in the next three years. That new school should decrease the stress in the west central area. An expansion to Northwoods Park Middle School will also be completed in the next two years and its increased capacity will reduce the strain on Jacksonville Commons Middle School.

Note: Table 4 and Table 5 are included herein but have also been provided as separate Excel documents so that they can be shared as well as read more easily.

Respectfully Submitted,

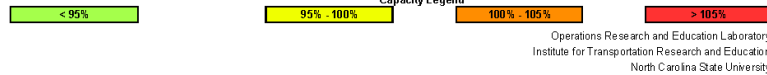
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Onslow County Schools

Out-of-Capacity Table (Operational Capacity with no Mobile Classrooms)

1. 2021-22 Month-2 ADM provided by NC-DPI.
2. CSR projection uses 1-2-3-4 weighting with adjustments. Mean annual growth: 0.972%.
3. 2021-22 Planning Segment level AOG based on 2020 Land Use Study.
4. Elementary School Capacity based on SS classroom projection tables and existing mobile classroom utilization.

	Capacities										Forecasted Month 2 ADM									
	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31	2031-32	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31
Elementary Schools																				
Bell Fork Elementary	544	544	544	544	544	544	544	544	544	513	515	532	537	539	525	535	529	528	530	533
Blue Creek Elementary	521	521	521	521	521	521	521	521	521	455	422	429	495	491	495	477	478	476	485	485
Carolina Forest Elementary	588	588	588	588	588	588	588	588	588	723	655	693	694	677	693	676	744	741	741	645
Clyde Erwin Elementary	376	376	376	376	376	376	376	376	376	288	276	282	284	290	296	304	303	303	304	306
Dixon Elementary	619	619	619	619	619	619	619	619	619	839	805	580	587	583	578	622	656	690	722	751
Hunters Creek Elementary	604	604	604	604	604	604	604	604	604	591	558	570	562	560	546	543	546	545	546	550
Jacksonville Commons Elem	563	563	563	563	563	563	563	563	563	541	531	529	538	540	543	547	542	540	542	546
Meadow View Elementary	652	652	652	652	652	652	652	652	652	644	530	494	488	495	490	484	506	521	527	538
Morton Elementary	588	588	588	588	588	588	588	588	588	675	692	735	788	750	758	729	721	718	720	728
Northwoods Elementary	416	416	416	416	416	416	416	416	416	365	348	341	338	344	358	359	356	356	357	360
Parkwood Elementary	481	481	481	481	481	481	481	481	481	509	508	524	535	537	533	537	532	531	533	537
Queens Creek Elementary	563	563	563	563	563	563	563	563	563	712	682	704	699	708	700	715	716	734	725	751
Heritage Elementary School	588	588	588	588	588	588	588	588	588	767	457	499	508	501	502	510	518	544	534	567
Richlands Elementary	897	897	897	897	897	897	897	897	897	797	608	645	669	680	708	707	726	722	736	736
Sand Ridge Elementary	573	573	573	573	573	573	573	573	573	532	530	540	549	567	583	607	603	603	605	609
Silverdale Elementary	465	465	465	465	465	465	465	465	465	588	620	681	717	751	755	727	718	714	715	721
Southwest Elementary	546	546	546	546	546	546	546	546	546	741	642	640	651	629	647	631	641	660	672	668
Stateside Elementary	636	636	636	636	636	636	636	636	636	597	440	446	476	475	508	526	553	523	528	537
Summersill Elementary	619	619	619	619	619	619	619	619	619	473	476	490	492	503	499	497	492	490	491	495
Swansboro Elementary	537	537	537	537	537	537	537	537	537	695	691	706	708	717	721	733	728	749	760	757
Coastal Elementary (2021-22)	840	840	840	840	840	840	840	840	840	722	745	777	796	823	858	862	877	843	849	851
Clear View Elementary (2022-23)	840	840	840	840	840	840	840	840	840	817	822	808	828	828	837	843	843	848	853	858
Onslow Virtual School (K-5)										384	600	600	600	600	600	600	600	600	600	600
Totals	13056	13056	13056	13056	13056	13056	13056	13056	13056	13002	12948	13250	13497	13576	13723	13772	13925	13980	14076	14322
Middle Schools																				
Dixon Middle	1003	1003	1003	1003	1003	1003	1003	1003	1003	931	941	971	972	995	943	936	952	966	991	1017
Hunters Creek Middle	826	826	826	826	826	826	826	826	826	872	853	851	900	981	1103	1221	1253	1258	1192	1148
Jacksonville Commons Middle	852	852	852	852	852	852	852	852	852	1032	996	1003	1023	1025	1038	1014	1029	1066	1100	1091
New Bridge Middle	504	504	504	504	504	504	504	504	504	463	441	427	446	459	471	483	493	512	540	565
Northwoods Park Middle	720	720	720	720	720	720	720	720	720	665	653	647	634	617	647	636	639	650	668	670
Southwest Middle	518	518	518	518	518	518	518	518	518	500	518	539	567	554	574	597	523	495	502	563
Swansboro Middle	912	912	912	912	912	912	912	912	912	938	860	794	819	825	843	837	871	899	912	915
Trexler Middle	940	940	940	940	940	940	940	940	940	819	872	827	836	757	750	751	739	789	809	832
Onslow Virtual School (6-8)										215	300	300	300	300	300	300	300	300	300	300
Totals	6275	6275	6275	6275	6275	6275	6275	6275	6275	6435	6434	6359	6497	6503	6670	6775	6799	6936	7003	7101
High Schools																				
Dixon High	957	957	957	957	957	957	957	957	957	1020	981	1033	1025	1008	1061	1044	1012	996	966	950
Jacksonville High	1476	1476	1476	1476	1476	1476	1476	1476	1476	1305	1280	1308	1305	1281	1300	1333	1355	1362	1383	1409
Northside High	1177	1177	1177	1177	1177	1177	1177	1177	1177	1082	1037	1020	994	944	955	991	1023	1064	1069	1061
Richlands High	928	928	928	928	928	928	928	928	928	926	899	922	899	933	919	907	916	966	970	933
Southwest High	1016	1016	1016	1016	1016	1016	1016	1016	1016	851	830	597	575	607	604	630	669	653	682	677
Swansboro High	1240	1240	1240	1240	1240	1240	1240	1240	1240	1034	1004	1051	1042	974	948	936	962	975	994	1003
White Oak High	1303	1303	1303	1303	1303	1303	1303	1303	1303	1122	1104	1116	1134	1073	1032	1068	1086	1107	1161	1192
Onslow Early College	200	200	200	200	200	200	200	200	200	189	200	200	200	200	200	200	200	200	200	200
Onslow Virtual School (9-12)										251	400	400	400	400	400	400	400	400	400	400
Totals	8297	8297	8297	8297	8297	8297	8297	8297	8297	7580	7526	7645	7574	7420	7420	7508	7622	7724	7826	7826
System Total	27628	27628	27628	27628	27628	27628	27628	27628	27628	27017	26908	27254	27568	27502	27813	28056	28346	28640	28907	29249



May 13th, 2022

Table 4 – 2021-22 OOC

Onslow County Schools

Out-of-Capacity Table (Campus Capacity with Mobile Classrooms)

1. 2021-22 Month-2 ADM provided by NC-DPI.
2. CSR projection uses 1-2-3-4 weighting with adjustments. Mean annual growth: 0.972%.
3. 2021-22 Planning Segment level AOG based on 2020 Land Use Study.
4. Elementary School Capacity based on SS classroom projection tables and existing mobile classroom utilization.

	Capacities										Forecasted Month-2 ADM										
	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31	2031-32	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31	2031-32	
Elementary Schools																					
Bell Fork Elementary	864	864	864	864	864	864	864	864	864	864	513	515	532	537	539	525	535	528	528	530	533
Blue Creek Elementary	621	621	621	621	621	621	621	621	621	621	455	422	429	495	481	485	477	478	476	485	485
Carolina Forest Elementary	768	768	768	768	768	768	768	768	768	768	723	655	693	694	677	693	678	744	741	741	845
Clyde Erwin Elementary	436	436	436	436	436	436	436	436	436	436	289	276	282	284	290	296	304	303	303	304	306
Dixon Elementary	959	959	959	959	959	959	959	959	959	959	639	605	580	587	583	578	622	656	690	722	751
Hunters Creek Elementary	684	684	684	684	684	684	684	684	684	684	591	558	570	562	560	546	543	546	545	546	550
Jacksonville Commons Elem	743	743	743	743	743	743	743	743	743	743	541	531	529	538	540	543	547	542	540	542	546
Meadow View Elementary	672	672	672	672	672	672	672	672	672	672	694	530	494	488	495	490	484	506	521	527	536
Morton Elementary	748	748	748	748	748	748	748	748	748	748	675	692	735	768	750	758	729	721	718	720	726
Northwoods Elementary	516	516	516	516	516	516	516	516	516	516	365	348	341	338	344	358	359	356	356	357	360
Parkwood Elementary	581	581	581	581	581	581	581	581	581	581	509	508	524	535	537	533	537	532	531	533	537
Queens Creek Elementary	683	683	683	683	683	683	683	683	683	683	712	682	704	689	708	700	715	716	734	725	751
Heritage Elementary School	868	868	868	868	868	868	868	868	868	868	767	457	489	508	501	502	510	518	544	534	567
Richlands Elementary	897	897	897	897	897	897	897	897	897	897	797	608	645	669	680	708	707	726	722	736	736
Sand Ridge Elementary	593	593	593	593	593	593	593	593	593	593	532	530	540	549	567	583	607	603	603	605	609
Silverdale Elementary	545	545	545	545	545	545	545	545	545	545	588	620	681	717	751	755	727	718	714	715	721
Southwest Elementary	766	766	766	766	766	766	766	766	766	766	741	642	640	651	628	647	631	641	660	672	666
Stateside Elementary	676	676	676	676	676	676	676	676	676	676	597	440	446	476	508	526	553	523	528	537	537
Summersill Elementary	779	779	779	779	779	779	779	779	779	779	473	476	490	492	503	499	497	492	490	481	495
Swansboro Elementary	677	677	677	677	677	677	677	677	677	677	695	691	706	708	717	721	733	728	749	760	757
Coastal Elementary (2021-22)	840	840	840	840	840	840	840	840	840	840	722	745	777	786	823	858	862	877	843	849	851
Clear View Elementary (2022-23)	840	840	840	840	840	840	840	840	840	840	817	822	808	826	837	843	843	848	853	858	858
Onslow Virtual School (K-5)											384	600	600	600	600	600	600	600	600	600	600
Totals	15536	15536	15536	15536	15536	15536	15536	15536	15536	15536	13002	12948	13250	13497	13578	13723	13772	13925	13980	14078	14322
Middle Schools																					
Dixon Middle	1003	1003	1003	1003	1003	1003	1003	1003	1003	1003	931	941	971	972	985	943	936	952	966	991	1017
Hunters Creek Middle	926	926	926	926	926	926	926	926	926	926	872	853	851	900	981	1103	1221	1253	1258	1182	1148
Jacksonville Commons Middle	972	972	972	972	972	972	972	972	972	972	1032	996	1003	1023	1025	1039	1014	1029	1066	1100	1091
New Bridge Middle	504	504	504	504	504	504	504	504	504	504	463	441	427	446	459	471	483	493	512	540	565
Northwoods Park Middle	720	720	720	720	720	720	720	720	720	720	665	653	647	634	617	647	636	639	650	668	670
Southwest Middle	558	558	558	558	558	558	558	558	558	558	500	518	539	567	554	574	587	523	495	502	583
Swansboro Middle	912	912	912	912	912	912	912	912	912	912	938	860	794	819	825	843	837	871	899	912	915
Trexler Middle	980	980	980	980	980	980	980	980	980	980	819	872	827	836	757	750	751	739	789	809	832
Onslow Virtual School (6-8)											215	300	300	300	300	300	300	300	300	300	300
Totals	6575	6575	6575	6575	6575	6575	6575	6575	6575	6575	6435	6434	6359	6497	6503	6670	6775	6799	6936	7003	7101
High Schools																					
Dixon High	977	977	977	977	977	977	977	977	977	977	1020	981	1033	1025	1008	1061	1044	1012	996	966	950
Jacksonville High	1496	1496	1496	1496	1496	1496	1496	1496	1496	1496	1305	1260	1306	1305	1281	1300	1333	1355	1362	1383	1409
Northside High	1177	1177	1177	1177	1177	1177	1177	1177	1177	1177	1082	1037	1020	994	944	955	991	1023	1064	1069	1061
Richlands High	1048	1048	1048	1048	1048	1048	1048	1048	1048	1048	926	889	922	899	933	919	907	916	966	970	933
Southwest High	1016	1016	1016	1016	1016	1016	1016	1016	1016	1016	651	630	597	575	607	604	630	669	653	662	677
Swansboro High	1300	1300	1300	1300	1300	1300	1300	1300	1300	1300	1034	1004	1051	1042	974	948	936	962	975	994	1003
White Oak High	1383	1383	1383	1383	1383	1383	1383	1383	1383	1383	1122	1104	1116	1134	1073	1032	1068	1086	1107	1161	1192
Onslow Early College	200	200	200	200	200	200	200	200	200	200	189	200	200	200	200	200	200	200	200	200	200
Onslow Virtual School (9-12)											251	400	400	400	400	400	400	400	400	400	400
Totals	8597	8597	8597	8597	8597	8597	8597	8597	8597	8597	7580	7526	7645	7574	7420	7420	7508	7622	7724	7826	7826
System Total	30708	30708	30708	30708	30708	30708	30708	30708	30708	30708	27017	26908	27254	27568	27502	27813	28056	28346	28640	28907	29249



May 13th, 2022

Operations Research and Education Laboratory
Institute for Transportation Research and Education
North Carolina State University

Table 5 – 2021-22 OOC