



THE SCHOOL DISTRICT OF
PHILADELPHIA

Longitudinal analysis of 2015-16 Kindergarteners' reading performance from 2015-16 to 2018-19 using aimswEBPlus and PSSA performance

Key Findings

- Between 19%-33% of students who scored in the two lower aimswEBPlus performance groups in kindergarten went on to perform in the Proficient or Advanced categories on the ELA PSSA three years later, experiencing an increase in average National Percentile Rank.
- Between 35%-56% of students who scored in the two higher aimswEBPlus groups in kindergarten scored in the Basic or Below Basic categories on the ELA PSSA three years later, experiencing a decrease in average National Percentile Rank.
- Black/African American students, economically disadvantaged students, and students with an IEP who scored in the two lower aimswEBPlus performance groups in kindergarten were underrepresented in the population of students who later performed in the Proficient or Advanced categories on the ELA PSSA in third grade.
- White students, Asian students, Hispanic/Latinx students, and students with an IEP who scored in the two higher aimswEBPlus performance groups in kindergarten were underrepresented in the population of students who later performed in the Below Basic category on the ELA PSSA in third grade.

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Background

This report is a follow up to our October 2021 research report that focused on 2015-16 kindergarteners' aimswebPlus performance from 2015-16 to 2018-19.¹ The initial report revealed that overall, students who scored in the Advanced category on the third grade ELA PSSA had higher aimswebPlus performance in third grade than in kindergarten, while students who scored in the Below Basic and Basic categories on the ELA PSSA had lower aimswebPlus performance in third grade than in kindergarten.

The current report is an expansion of the prior report's discussion of PSSA and aimswebPlus data, in which aimswebPlus performance over four years was examined by average third-grade student ELA PSSA performance. The analysis in this report looks more deeply at the differing trajectories of aimswebPlus performance by fall of kindergarten aimswebPlus performance group, with comparisons between students who performed in the different spring 2018-19 third grade ELA PSSA performance groups.

Research Questions

1. How did students in the K-Below Average aimswebPlus performance group, K-Low Average aimswebPlus performance group, K-High Average aimswebPlus performance group, and K-Above Average aimswebPlus performance group score on the third grade ELA PSSA?
2. How did students in the K-Below Average aimswebPlus performance group in each third grade ELA PSSA performance group score on the aimswebPlus between kindergarten and third grade? What are the demographic characteristics of students in each ELA PSSA performance group?
3. How did students in the K-Low Average aimswebPlus performance group in each third grade ELA PSSA performance group score on the aimswebPlus between kindergarten and third grade? What are the demographic characteristics of students in each ELA PSSA performance group?
4. How did students in the K-High Average aimswebPlus performance group in each third grade ELA PSSA performance group score on the aimswebPlus between kindergarten and third grade? What are the demographic characteristics of students in each ELA PSSA performance group?
5. How did students in the K-Above Average aimswebPlus performance group in each third grade ELA PSSA performance group score on the aimswebPlus between kindergarten and third grade? What are the demographic characteristics of students in each ELA PSSA performance group?

¹ Four-year analysis of 2015-16 kindergarteners' aimswebPlus reading and PSSA performance from 2015-16 to 2018-19: <https://www.philasd.org/research/2021/10/06/four-year-analysis-of-2015-16-kindergarteners-aimswebplus-reading-and-pssa-performance-from-2015-16-to-2018-19/>

Assessment Data Used for this Analysis

AimswEBPlus

SDP used aimswEBPlus, a universal early literacy screening, benchmarking, and progress-monitoring tool from Pearson, to assess literacy proficiency in SDP for all K-5 students from 2014-15 to the 2020-21 school year.² Teachers administered aimswEBPlus subtests to students in each grade level three times a year. Scores from these required or “core” assessments were used as a general outcome measure for assessments prior to 2018-19 which provided teachers with a holistic measure of student literacy performance.³

Core Assessments

At each grade level, one subtest was designated as the core assessment – one required subtest that was taken each fall, winter, and spring. Core assessments allow teachers, school leaders, and District staff to track student performance and growth over time. However, because each grade level has its own core assessment that measures different literacy skills, comparisons across grade levels should be interpreted with caution. The core assessments were:

- The kindergarten **Letter Naming Fluency (LNF) assessment**
- The first-grade **Nonsense Word Fluency (NWF) assessment**
- The second- and third-grade **Oral Reading Fluency (ORF) assessment**

Key Data Points

For each of these three assessments, we looked closely at two key data points related to performance.

1. **National Percentile Rank (NPR):** A student’s national percentile rank is a norm-referenced performance measure that compares a student’s score with a national reference of scores of students in the same grade who were tested on the same content during the same timeframe. NPR is useful for understanding a student’s reading performance compared to other students nationally. Based on the number of correct responses, each student is assigned a percentile rank in the fall and in the spring. For example, a fall NPR of the 23rd percentile indicates that the student performed better than 23% of the nationally-normed sample for fall.⁴

² For more information on aimswEBPlus, see: <https://www.philasd.org/era/2021/05/07/unpacking-assessments-part-1-aimswEBplus/#1619449360736-353ee0b5-9080>

³ In the 2018-19 school year SDP switched from aimswEB to aimswEBPlus. AimswEBPlus introduced slightly updated assessments, re-normed national percentiles, and composite scores. This report uses data from aimswEB and aimswEBPlus. For consistency, aimswEB will be referred to as aimswEBPlus in this report.

⁴ See Appendix C for more information on National Percentile Rank, and its relationship with Normal Curve Equivalent.

2. **AimswEBPlus Performance Groups:** Performance groups are based on percentages calculated using National Percentile Ranks (See Table 1). While core NPR scores are useful for tracking progress toward the District’s goals, they are not sufficient for making instructional decisions. To better determine what steps should be taken to support student performance, we must also closely examine student performance on the core assessments in a comparable way. While there are other ways of grouping students (e.g., by Tier level), aimswEBPlus performance groups are useful for analyzing how students at various levels of proficiency are performing and improving over time. Student performance on subtests determines Tier placement. For example, students who fall into the “Below Average” progress monitoring group are likely to be placed in Tier 3 (or requiring intensive intervention), and students who fall into the “Low Average” progress monitoring group are likely to be placed in Tier 2 (or needing strategic intervention).

Table 1. aimswEBPlus core assessment Kindergarten group names and National Percentile ranges associate with each group

Group Name	Description	NPR Range for This Group
K-Above Average	Kindergarten students scoring in the fall above average group	75-99
K-High Average	Kindergarten students scoring in the fall high average group	51-74
K-Low Average	Kindergarten students scoring in the fall low average group	26-50
K-Below Average	Kindergarten students scoring in the fall below average group	1-25

PSSA

The Pennsylvania System of School Assessment (PSSA) is a standards-based, criterion-referenced test administered to all Pennsylvania students in grades 3-8 during spring of each year. The intended purpose of the PSSA is to measure how well students acquire the knowledge and skills described in the Pennsylvania Assessment Anchor Content Standards as defined by the Eligible Content for Mathematics, English and Language Arts (ELA), and Science.⁵

Students receive a scale score for each assessment based on the number and difficulty of the questions they answer correctly. The PSSA is based on an item response theory model, which means that its scale scores adjust for the item difficulties. Using cut-points on the score range, which can vary across grade and academic year, scale scores correspond to one of four performance tiers: Below Basic, Basic, Proficient, and Advanced.⁶

For this study, we combined the PSSA categories of Proficient and Advanced when conducting analyses due to the small sample sizes in both the Proficient and Advanced performance level categories (see Appendix A, Table A2 for counts in each ELA PSSA performance group).

Sample

The sample for this study consists of 4,194 students (for details of how this analytic sample was constructed, see our previous report⁷). Critically, this sample only includes students who had aimswebPlus core assessment results in both fall and spring of kindergarten through third grade, as well as ELA PSSA results in third grade; that is, in order to qualify for the analytic sample, students needed nine data points. The constraints of the analytic sample may limit the generalizability to the overall SDP population, but tell a full story about performance over time.

Overall, the sample is evenly split by gender, over 40% Black/African American, about a quarter Hispanic/Latinx, and over 75% economically disadvantaged (Table 2). Fewer than 10% of sampled students have Special Education Individual Education Plans (IEPs), and fewer than 15% are English Learners (ELs).

⁵ For more information see <https://www.education.pa.gov/K-12/Assessment%20and%20Accountability/PSSA/Pages/PSSA-Technical-Reports.aspx>

⁶ For links to more information about cut scores and a description of performance levels at each grade level see <https://www.education.pa.gov/K-12/Assessment%20and%20Accountability/PSSA/Pages/DescriptorsCutScores.aspx>.

⁷ Four-year analysis of 2015-16 kindergarteners' aimswebPlus reading and PSSA performance from 2015-16 to 2018-19: <https://www.philasd.org/research/2021/10/06/four-year-analysis-of-2015-16-kindergarteners-aimswebplus-reading-and-pssa-performance-from-2015-16-to-2018-19/>

Table 2. Demographic characteristics of 2015-16 kindergarten student sample

Student Characteristic	Analytic Sample of students with aimswebPlus and PSSA data (n = 4,194)
Gender	
Female	49%
Male	51%
Race/Ethnicity	
Asian/Pacific Islander	9%
Black/African American	43%
Hispanic/Latinx	24%
Multi-racial/Other	10%
White	14%
Socio-Economic Status	
Economically Disadvantaged	76%
Not Economically Disadvantaged	24%
English Learner Status	
English Learner	13%
Not an English Learner	88%
Special Education Status	
Students with an IEP	8%
Students without an IEP	92%

Source: Data from Qlik RL-Total Student Enrollment Yearly [v1.0.0], data pulled on January 15, 2021

Note: English Learner (EL) status was determined by whether a student had an LEP indicator in kindergarten (2015-16). Most often, students who may qualify as ELs are tested for EL status when they first enter the school district, therefore, we selected EL status in kindergarten. EL students can test out and may no longer be ELs by third grade – this only impacted 9 students out of the sample. Special Education status was determined by whether students had an IEP at any point during the four years of interest. Students can be recommended for evaluation to receive an IEP at any point; receiving an IEP can retroactively explain low performance prior to having the IEP. Not all students with an IEP are eligible to take the aimswebPlus or the PSSA, which may explain a smaller sample of students with IEPs who took the aimswebPlus assessment in the years of interest.⁸ Students who are gifted, but do not have a disability are not considered “Students with IEPs” for the purposes of this analysis, and are included in the “Students without an IEP” group. Students who are gifted and also have a disability are included in the “Students with an IEP” group.

⁸ For more information on the analytic sample and inclusion decisions see: four-year analysis of 2015-16 kindergarteners’ aimswebPlus reading and PSSA performance from 2015-16 to 2018-19, <https://www.philasd.org/research/2021/10/06/four-year-analysis-of-2015-16-kindergarteners-aimswebplus-reading-and-pssa-performance-from-2015-16-to-2018-19/>

Overview

This analysis begins by examining the percentage of students in each kindergarten aimswebPlus performance group (K-Below Average, K-Low Average, K-High Average, K-Above Average) in 2015-16 who scored in each third grade ELA PSSA performance group four years later.

The analyses that follow systematically examine the longitudinal performance of students in specific kindergarten aimswebPlus performance groups. Each analysis in this series presents the trajectory of aimswebPlus National Percentile Ranks (NPR), across the four years, for students who eventually scored Below Basic, Basic, or Proficient/Advanced on their third grade ELA PSSA.

This approach allows us to produce insights that would not be possible with a coarser analysis. First, examining trajectories of NPR provides a more nuanced presentation of student performance than performance groupings, as NPR can demonstrate student growth (or lack of growth) over time even if students stay in the same aimswebPlus performance group. Second, this type of analysis surfaces similarities and differences in average NPR patterns across groups of students with different start- and end-performance. For example, students who had the lowest aimswebPlus performance in the fall of kindergarten (K-Below Average, K-Low Average) and the highest performance on the third grade ELA PSSA (Proficient/Advanced) would likely demonstrate substantial increases in NPR over time.

Finally, we present student group analyses, in which the percentage of students in each intersection of kindergarten aimswebPlus performance group and third grade ELA PSSA performance group are disaggregated by race/ethnicity student group, economic disadvantaged status, English Learner status, and Special Education status. Although we hypothesize that all students could experience movement in their aimswebPlus performance across the four years, students in different demographic groups may disproportionately experience changes from kindergarten aimswebPlus performance groups to third grade ELA PSSA performance group. For example, English Learners (ELs) who performed in the lowest aimswebPlus performance groups (K-Below Average, K-Low Average) in fall of kindergarten may be disproportionately likely to perform in the highest performance group on the third grade ELA PSSA (Proficient/Advanced), especially if their lower performance in kindergarten was due to lack of English fluency that they may have mastered by third grade. This explanation might account for the growth demonstrated by ELs in the current report. These student group analyses highlight disproportionality in the percentage of students who tend to start out in the lower or higher kindergarten aimswebPlus performance group and end up in the lower third grade ELA PSSA performance groups or grow into the higher third grade ELA PSSA performance groups.

Results

RQ1: How did students in the K-Below Average aimswebPlus performance group, K-Low Average aimswebPlus performance group, K-High Average aimswebPlus performance group, and K-Above Average aimswebPlus performance group score on the third grade ELA PSSA?

About 25% of students who performed in the K-Below Average or the K-Low Average groups scored in the Proficient/Advanced categories on the third grade ELA PSSA. In comparison, under 50% of students who performed in the K-High Average or the K-Above Average groups scored in the Basic or Below Basic categories on the third grade ELA PSSA.

Of the 4,194 students in the sample, in kindergarten 1,493 students performed in the K-Below Average aimswebPlus performance group, 1,026 performed in the K-Low Average aimswebPlus group, 815 performed in the K-High Average aimswebPlus group, and 860 performed in the K-Above Average aimswebPlus group in kindergarten (Table 3).

19% of students who performed in the K-Below Average and 33% of students who performed in the K-Low Average groups scored in the Proficient/Advanced categories on the third grade ELA PSSA.

In total, 25% of all students who scored in the K-Below Average and K-Low Average groups moved to the higher-performing Proficient/Advanced category by third grade. In terms of students who scored in the K-Below Average aimswebPlus group in kindergarten, 19% performed in the Proficient/Advanced category on the third grade ELA PSSA, and additionally, 33% of students who scored in the K-Low Average group performed in the Proficient/Advanced category on the third grade ELA PSSA.

35% of students who performed in the K-High Average and 56% of students who performed in the K-Above Average groups scored in the Basic or Below Basic categories on the third grade ELA PSSA

In comparison, 56% of students who scored in the K-High Average group performed in the Below Basic (17%) or Basic (39%) categories on the third grade ELA PSSA, and 35% of students who scored in the K-Above Average group performed in the Below Basic (7%) or Basic (28%) categories on the third grade ELA PSSA. Thus in total, 45% of all students who scored in the K-High Average and K-Above Average groups moved to the lower-performing Below Basic or Basic categories by third grade.

Table 3. Summary of student performance on third grade ELA PSSA using kindergarten performance as the initial grouping

Kindergarten aimswebPlus in fall 2015-16		3 rd Grade ELA PSSA group in Spring 2018-19		
Kindergarten (LNF) 2015-16 performance group	Number of students	Below Basic	Basic	Proficient/Advanced
K-Below Average	1493	42%	39%	19%
K-Low Average	1026	25%	42%	33%
K-High Average	815	17%	39%	44%
K-Above Average	860	7%	28%	65%
Total Average	4194	26%	38%	37%

Source: Data from Qlik RL-Total Student Enrollment Yearly [v1.0.0], data pulled on January 15, 2021

How to read this table: This table presents the percentage of students in each 3rd grade ELA PSSA group based on students' kindergarten aimswebPlus performance group. To determine the number of students in each 3rd grade ELA PSSA group, multiply the percentage in the cell by the number in the second column. For example, to determine the number of students in the K-Above Average aimswebPlus performance group who scored in the 3rd grade Proficient/Advanced ELA PSSA group, multiple 860 by 65% to equal 559.

RQ2: How did students in the K-Below Average aimswebPlus performance group in each third grade ELA PSSA performance group score on the aimswebPlus between kindergarten and third grade? What are the demographic characteristics of students in each ELA PSSA performance group?

Students in the K-Below Average performance group who performed in the Proficient/Advanced or Basic categories on the ELA PSSA experienced an increase in average NPR from kindergarten to third grade.

In contrast to students who performed in the Proficient/Advanced or Basic categories on the ELA PSSA, students who performed in the Below Basic category on the ELA PSSA had lower average NPR in third grade than in kindergarten (Figure 1, Appendix B Table B1).

Proficient/Advanced on the ELA PSSA

Students in the K-Below Average aimswebPlus group (the lowest kindergarten performance group) who performed in the Proficient/Advanced category on the ELA PSSA experienced an increase in their average NPR from the 15th percentile in fall of kindergarten to the 40th percentile in the spring of kindergarten, to the 49th percentile in the spring of third grade (Figure 1). Although there was a substantial increase of 25 percentiles between fall and spring of kindergarten, there was only an increase of nine percentiles between spring of kindergarten and spring of third grade.

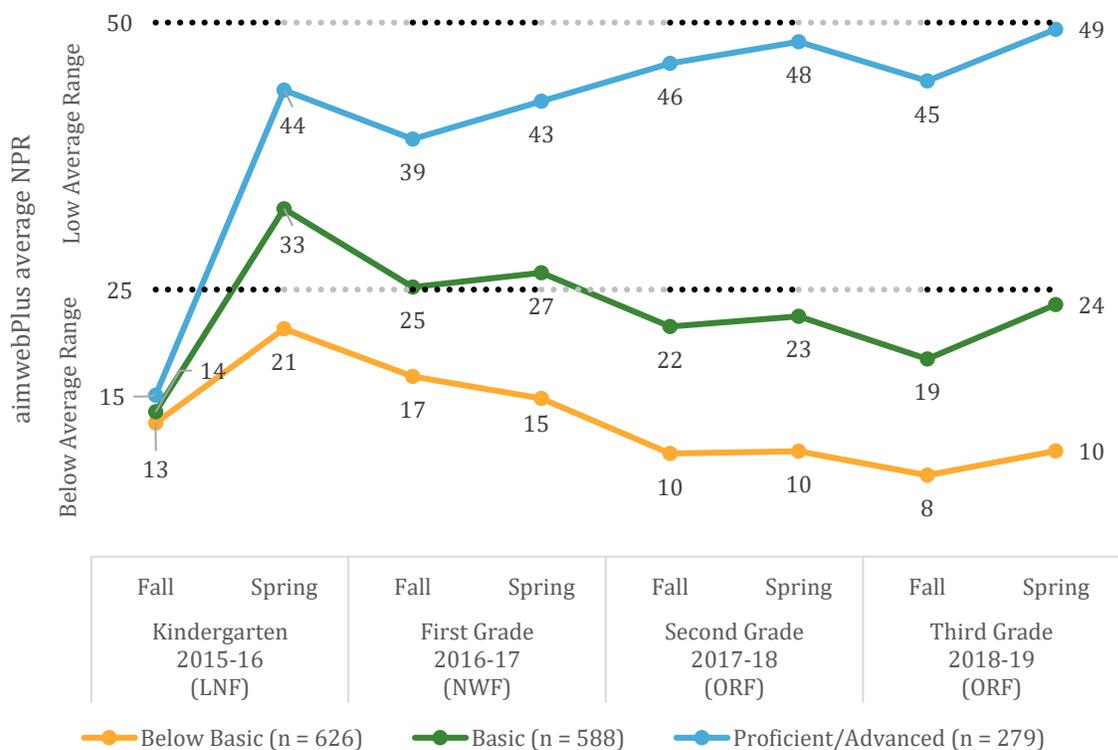
Basic on the ELA PSSA

Students in the K-Below Average aimswebPlus group who performed in the Basic category on the ELA PSSA experienced an increase on their average NPR from the 14th percentile in fall of kindergarten to the 33rd percentile in the spring of kindergarten, to the 24th percentile in spring of third grade (Figure 1).

Below Basic on the ELA PSSA

Students in the K-Below Average aimswebPlus group who performed in the Below Basic category on the ELA PSSA in third grade experienced a change in their NPR from the 13th percentile in the fall of their kindergarten year to the 21st percentile in the spring of kindergarten, to the 10th percentile in the spring of third grade (Figure 1). Although there was an increase in average NPR from fall and spring of kindergarten, the difference in average NPR from fall of kindergarten to spring of third grade is only different by three percentiles, indicating relatively stable average NPR between the four years.

Figure 1. Average NPR on the core aimswEBPlus assessment for students in the K-Below Average performance group over four years disaggregated by spring third grade ELA PSSA performance



Source: Data from Qlik L3_AIMSWEBSTAR [v1.0.0], data pulled on January 15, 2021

How to read this figure: This figure presents the average NPR of the third grade PSSA performance groups in fall and spring windows, kindergarten through third grade, in the markers on the solid lines. The dotted lines represent the aimswEBPlus performance group cut points for the aimswEBPlus performance group ranges (Table 1) – for example, any marker above the 25th percentile cut point performed at 26th percentile or higher. The blue line represents the 279 students who scored in the *Proficient/Advanced* ELA PSSA categories in third grade, and shows their average aimswEBPlus performance from fall of kindergarten to spring of third grade. The green line represents the 588 students who scored in the *Basic* ELA PSSA category in third grade and shows their average aimswEBPlus performance from fall of kindergarten to spring of third grade. The yellow line represents the 626 students who scored in the *Below Basic* ELA PSSA category in third grade and shows their average aimswEBPlus performance from fall of kindergarten to spring of third grade.

Note: The black dotted lines represent fall to spring timepoints, when students stay in the same grade and typically the same classroom throughout the year, and the grey dotted lines represent spring to fall timepoints when students are promoted from one grade to the next, and for the first two years the grey dotted lines also represent a switch to a new core aimswEBPlus assessment. For a figure with all performance groups see Appendix D, Figure D1.

Black/African American students, economically disadvantaged students, and students with an IEP in the K-Below Average performance group were underrepresented and English Learners were overrepresented in the population of students who later performed in the Proficient/Advanced ELA PSSA performance group.

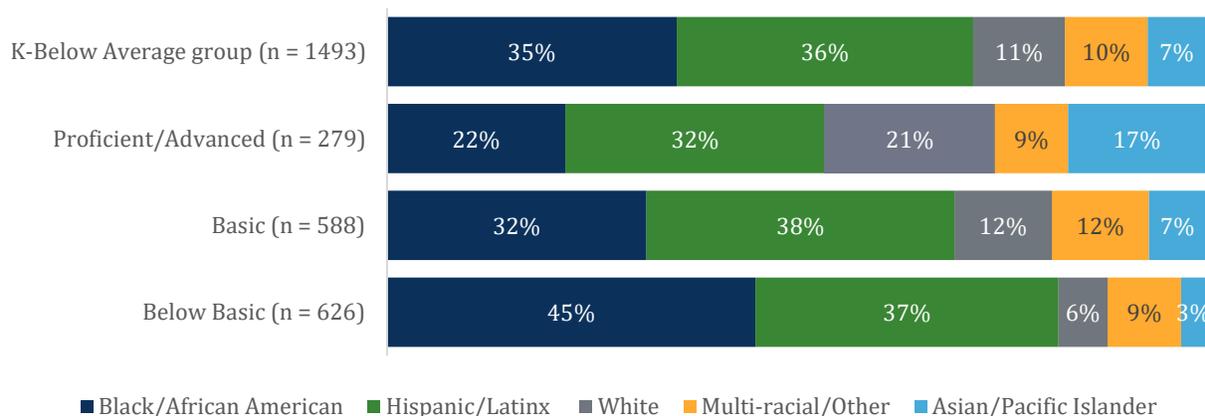
For students who performed in the K-Below Average (2015-16) aimswebPlus performance group, there were different demographic distributions of those who later performed in the Below Basic, Basic, or Proficient/Advanced categories on the third grade ELA PSSA.

Race/Ethnicity

Only 22% of students in the analytic sample who performed at Proficient/Advanced on the ELA PSSA in third grade were Black/African American, whereas 32% of students who performed at Basic and 45% of students who performed at Below Basic were Black/African American (Figure 2).

Because the student population in the K-Below Average aimswebPlus group is 35% Black/African American, this indicates Black/African American students were underrepresented in the population of students who performed in the K-Below Average aimswebPlus group and went on to perform in the Proficient/Advanced (22%) category on the third grade ELA PSSA, and overrepresented in the population of students who performed in the K-Below Average aimswebPlus group and went on to perform in the Below Basic (45%) category on the third grade ELA PSSA.

Figure 2. Percentage of students in the K-Below Average performance group, by race/ethnicity student group, and by their third grade ELA PSSA performance



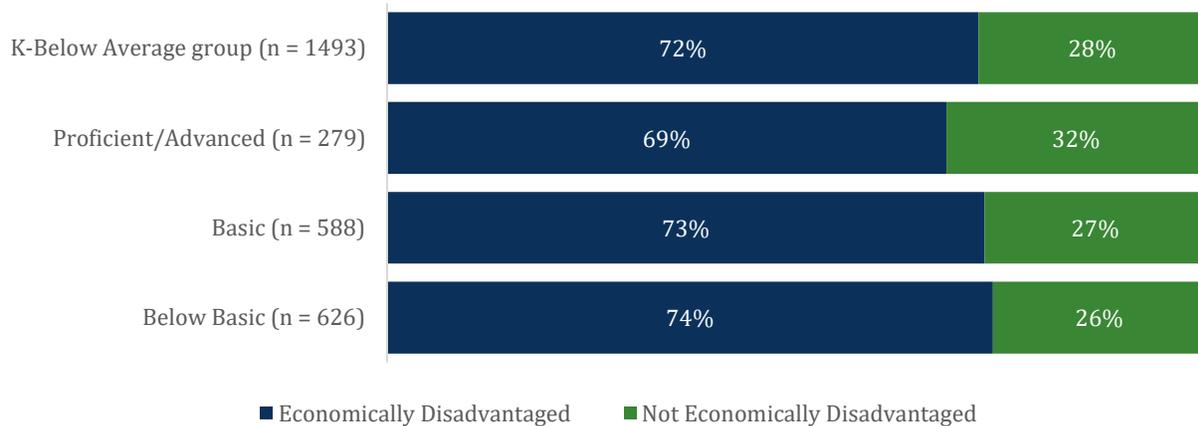
Source: Data from Qlik RL-Total Student Enrollment Yearly [v1.0.0], data pulled on January 15, 2021

Note: The top bar is the total responses of the overall kindergarten performance group in the figure header. The n-count in the top bar is the sum of the n-counts in the bottom three bars (Proficient/Advanced, Basic, and Below Basic). The percentages in the top bar are the weighted averages of the percentages in the bottom three bars (Proficient/Advanced, Basic, and Below Basic).

Economic disadvantage status

Among the students who scored in the K-Below Average group in kindergarten, 69% who performed at Proficient/Advanced on the ELA PSSA were economically disadvantaged (Figure 3). In comparison, 73%-74% of these students who eventually performed at Basic or Below Basic on the ELA PSSA were economically disadvantaged.

Figure 3. Percentage of students in the K-Below Average performance group, by economic disadvantage status, and by their third grade ELA PSSA performance



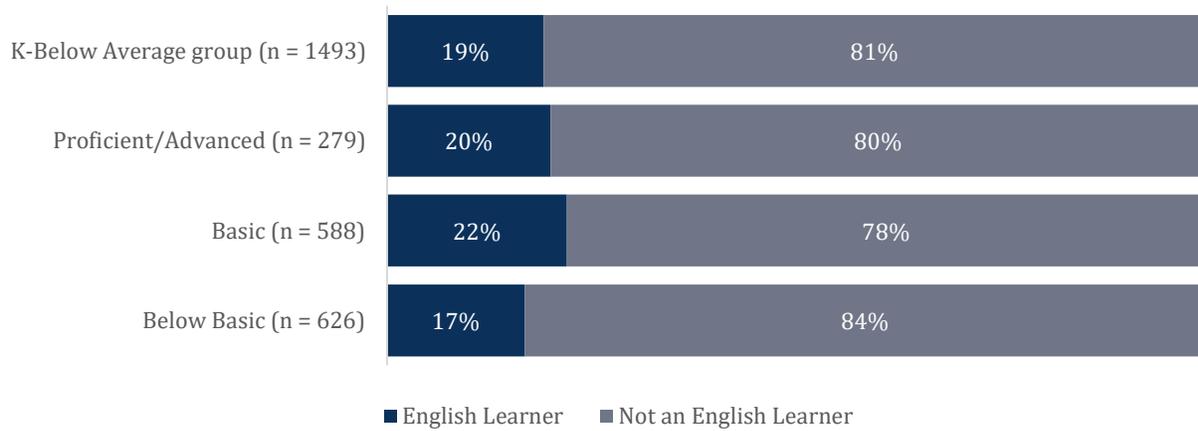
Source: Data from Qlik RL-Total Student Enrollment Yearly [v1.0.0], data pulled on January 15, 2021

Note: The top bar is the total responses of the overall kindergarten performance group in the figure header. The n-count in the top bar is the sum of the n-counts in the bottom three bars (Proficient/Advanced, Basic, and Below Basic). The percentages in the top bar are the weighted averages of the percentages in the bottom three bars (Proficient/Advanced, Basic, and Below Basic).

English Learner status

For students in the K-Below Average group, 17% who later performed at Below Basic were on the ELA PSSA were English Learners (ELs) (Figure 4). In comparison 20%-22% of these students who performed at Basic or Proficient/Advanced were ELs.

Figure 4. Percentage of students in the K-Below Average performance group, by English Learner status, and by their third grade ELA PSSA performance



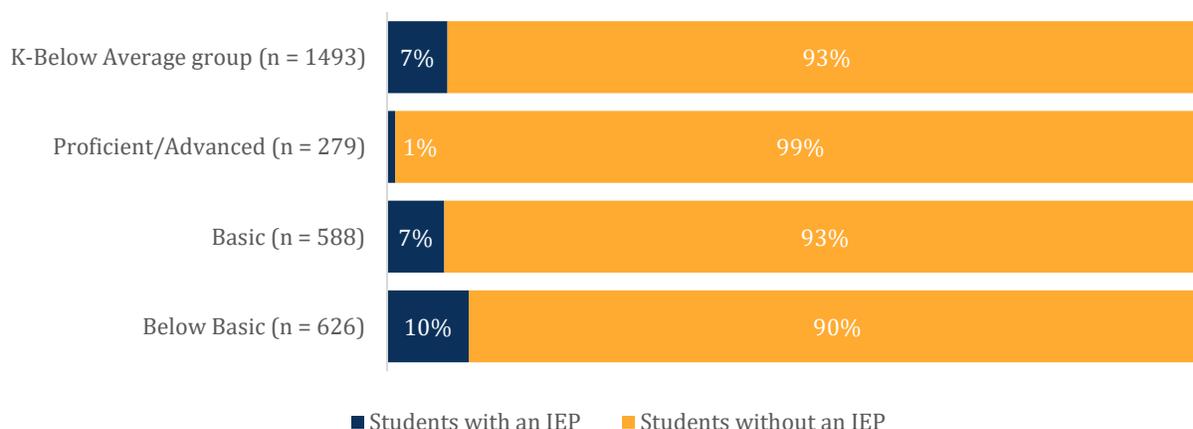
Source: Data from Qlik RL-Total Student Enrollment Yearly [v1.0.0], data pulled on January 15, 2021

Note: The top bar is the total responses of the overall kindergarten performance group in the figure header. The n-count in the top bar is the sum of the n-counts in the bottom three bars (Proficient/Advanced, Basic, and Below Basic). The percentages in the top bar are the weighted averages of the percentages in the bottom three bars (Proficient/Advanced, Basic, and Below Basic).

Special Education status

Only 1% of the students in the K-Below Average group who performed at Proficient/Advanced on the ELA PSSA had an IEP or were Special Education students (Figure 5).⁹ In comparison, 7%-10% of these students who performed at Basic or Below Basic had an IEP. Because 7% of the student population in the K-Below Average performance group had an IEP, this indicates that this group was underrepresented in the population of students who performed in the K-Below Average aimswebPlus group and went on to perform in the Proficient/Advanced category (1%) on the third grade ELA PSSA.

Figure 5. Percentage of students in the K-Below Average performance group, by Special Education status, and by their third grade ELA PSSA performance



Source: Data from Qlik RL-Total Student Enrollment Yearly [v1.0.0], data pulled on January 15, 2021

Note: The top bar is the total responses of the overall kindergarten performance group in the figure header. The n-count in the top bar is the sum of the n-counts in the bottom three bars (Proficient/Advanced, Basic, and Below Basic). The percentages in the top bar are the weighted averages of the percentages in the bottom three bars (Proficient/Advanced, Basic, and Below Basic).

⁹ Not all students with an IEP are eligible to take aimswebPlus and PSSA because IEP teams determine whether individual students are eligible to take progress monitoring and state assessment. Some students with an IEP are eligible to take the Pennsylvania Alternate System of Assessment (PASA) rather than the PSSA. For more information on the PASA, see: [https://www.education.pa.gov/K-12/Special%20Education/Assessments/Pages/Pennsylvania-Alternate-System-of-Assessment-\(PASA\).aspx](https://www.education.pa.gov/K-12/Special%20Education/Assessments/Pages/Pennsylvania-Alternate-System-of-Assessment-(PASA).aspx)

RQ3: How did students in the K-Low Average aimswebPlus performance group in each third grade ELA PSSA performance group score on the aimswebPlus between kindergarten and third grade? What are the demographic characteristics of students in each ELA PSSA performance group?

Students in the K-Low Average performance group who later performed in the Proficient/Advanced category on the ELA PSSA had higher average NPRs in third grade than in kindergarten.

Students who performed in the K-Low Average aimswebPlus group and who later performed in the Below Basic and Basic categories on the ELA PSSA experienced a decrease in average NPR over time (Figure 6, Appendix B Table B2). This decrease indicates that students who performed in the Below Basic and Basic categories on the ELA PSSA did not improve their performance relative to the national sample over time, whereas, students who performed in the Proficient/Advanced group improved their performance relative to the national sample over time.

Proficient/Advanced on the ELA PSSA

Students who scored in the K-Low Average group (second lowest kindergarten performance group) who performed in the Proficient/Advanced on the third grade ELA PSSA experienced an increase in their NPR from the 38th percentile in the fall of kindergarten to the 56th percentile in the spring of kindergarten to the 55th percentile in the spring of third grade (Figure 6). Although there was a substantial increase of 18 percentiles between fall and spring of kindergarten, there was not a notable change between spring of kindergarten and spring of third grade.

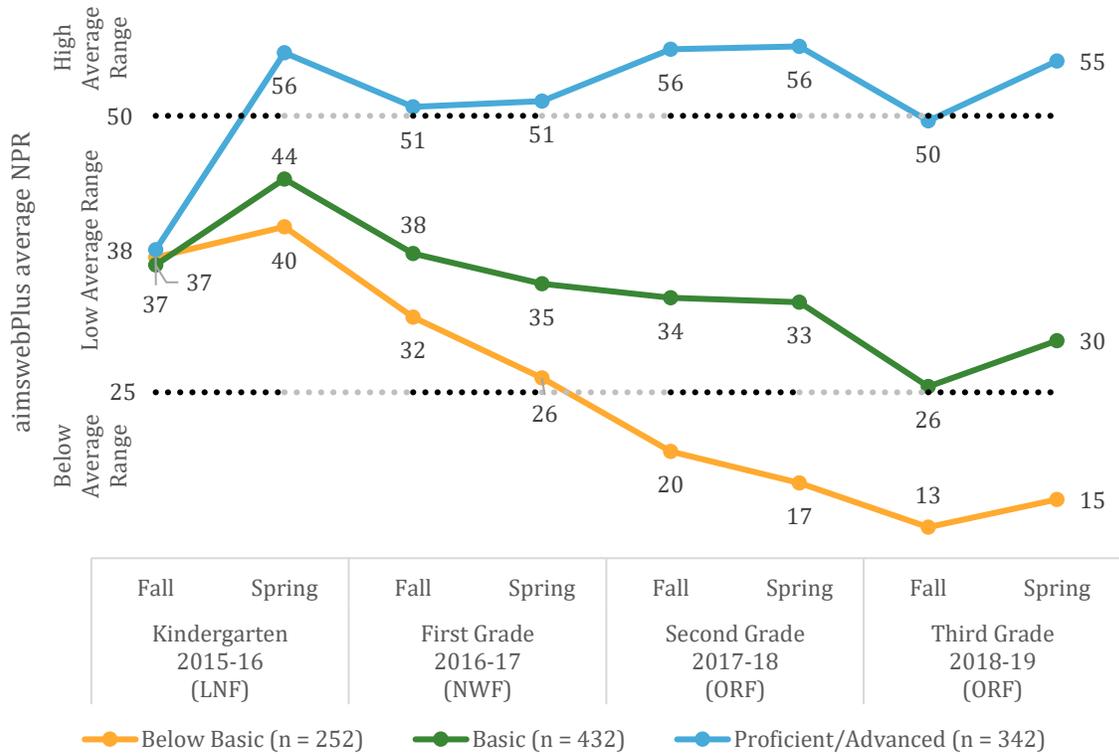
Basic on the ELA PSSA

Students who scored in the K-Low Average aimswebPlus group, and performed in the Basic category on the ELA PSSA in third grade, experienced a change in average NPR from the 37th percentile in the fall of kindergarten to the 44th percentile in the spring of kindergarten to the 30th percentile in the spring of third grade (Figure 6).

Below Basic on the ELA PSSA

Students who scored in the K-Low Average group and later performed in the Below Basic category on the ELA PSSA in third grade experienced a change in average NPR from the 37th percentile in the fall of kindergarten to the 40th percentile in the spring of kindergarten to the 15th percentile in the spring of third grade (Figure 6). Although there was a small increase in average NPR of three percentiles from fall to spring of kindergarten, there was a much more substantial drop of 35 percentiles from spring of kindergarten to spring of third grade.

Figure 6. Average NPR on the core aimswebPlus reading assessment for students in the K-Low Average performance group over four years disaggregated by spring third grade ELA PSSA



Source: Data from Qlik L3_AIMSWEBSTAR [v1.0.0], data pulled on January 15, 2021

How to read this figure: This figure presents the average NPR of the PSSA performance groups in fall and spring of the kindergarten through third grade years in the markers on each of the solid lines. The dotted lines represent the aimswebPlus performance group cut points (Table 1). The blue line represents the 342 students who scored in the *Proficient/Advanced* ELA PSSA categories in third grade, and shows their average aimswebPlus performance from fall of kindergarten to spring of third grade. The green line represents the 432 students who scored in the *Basic* ELA PSSA category in third grade and shows their average aimswebPlus performance from fall of kindergarten to spring of third grade. The yellow line represents the 252 students who scored in the *Below Basic* ELA PSSA category in third grade and shows their average aimswebPlus performance from fall of kindergarten to spring of third grade. For a figure with all performance groups see Appendix D, Figure D1.

Black/African American students, economically disadvantaged students, and students with an IEP in the K-Low Average performance group were underrepresented in the population of students who later performed in the Proficient/Advanced ELA PSSA performance group.

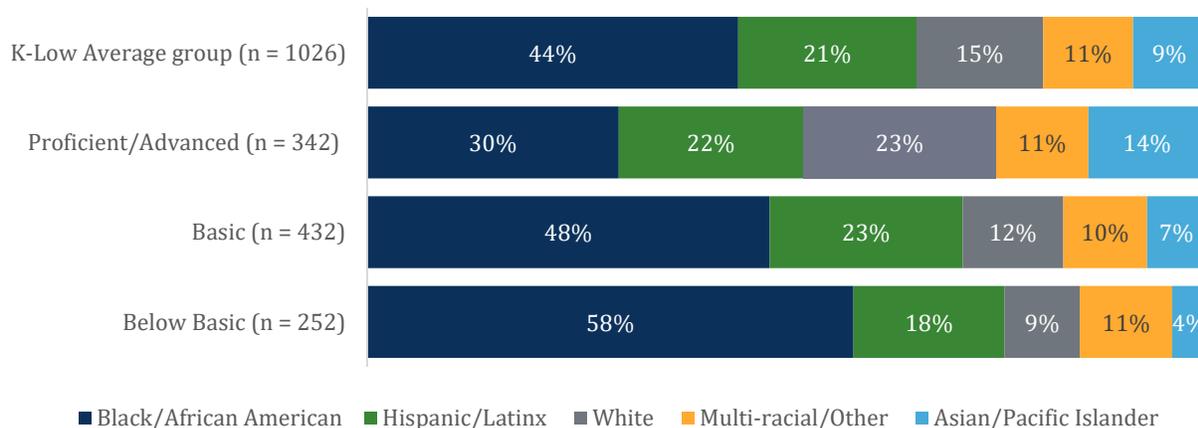
The percentage of students who performed in the K-Low Average aimswebPlus performance group had different demographics depending on if they performed in the Below Basic, Basic, or Proficient/Advanced categories on the third grade ELA PSSA.

Race/ethnicity student group

For example, 30% of the students who performed in the K-Low Average group who went on to perform at Proficient/Advanced on the ELA PSSA were Black/African American, whereas 48% of students who performed at Basic and 58% of students who performed at Below Basic were Black/African American (Figure 7).

Because the student population in the K-Low Average performance group is 44% Black/African American, this indicates that Black/African American students were overrepresented in the population of students who performed in the K-Low Average aimswebPlus group and went on to perform in the Below Basic category (58%) on the third grade ELA PSSA, and underrepresented in the population of students who went on to perform in the Proficient/Advanced category (30%) on the third grade ELA PSSA. Another way to describe this result is that Asian or White students were overrepresented in the population of students who experienced an increase in average NPR of 17 percentiles from fall of kindergarten to spring of third grade.

Figure 7. Percentage of students in the K-Low Average performance group, by race/ethnicity student group, and by their third grade ELA PSSA performance



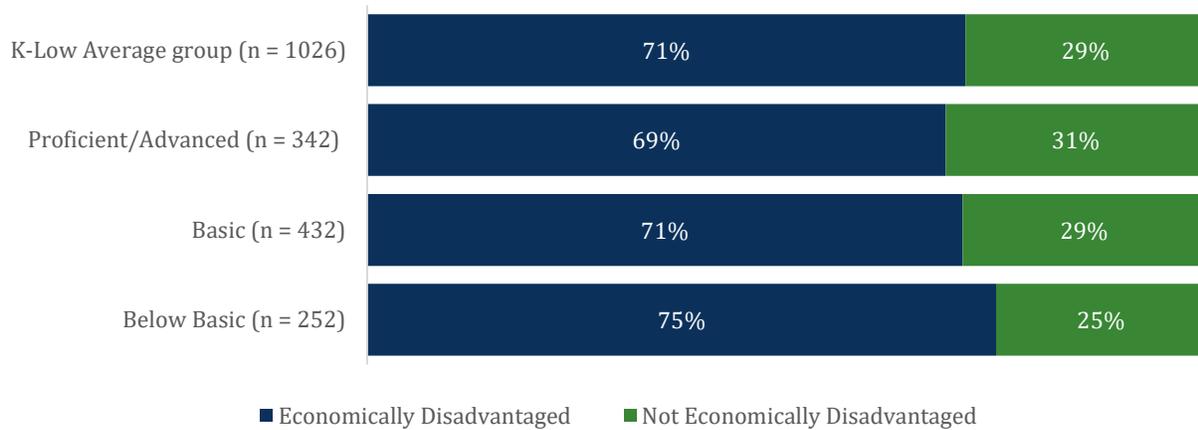
Source: Data from Qlik RL-Total Student Enrollment Yearly [v1.0.0], data pulled on January 15, 2021

Note: The top bar is the total responses of the overall kindergarten performance group in the figure header. The n-count in the top bar is the sum of the n-counts in the bottom three bars (Proficient/Advanced, Basic, and Below Basic). The percentages in the top bar are the weighted averages of the percentages in the bottom three bars (Proficient/Advanced, Basic, and Below Basic).

Economic disadvantage status

Seventy-five percent (75%) of students in the K-Low Average group who went on to perform at Below Basic on the ELA PSSA were economically disadvantaged (Figure 8). In comparison, 69%-71% of K-Low Average students who performed at Basic or Proficient/Advanced on the ELA PSSA were economically disadvantaged.

Figure 8. Percentage of students in the K-Low Average performance group, by economic disadvantage status, and by their third grade ELA PSSA performance



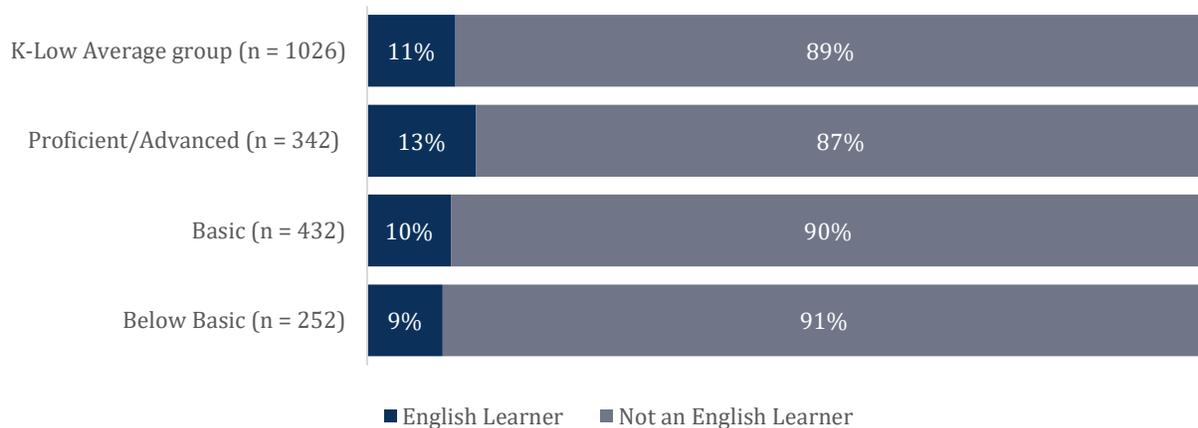
Source: Data from Qlik RL-Total Student Enrollment Yearly [v1.0.0], data pulled on January 15, 2021

Note: The top bar is the total responses of the overall kindergarten performance group in the figure header. The n-count in the top bar is the sum of the n-counts in the bottom three bars (Proficient/Advanced, Basic, and Below Basic). The percentages in the top bar are the weighted averages of the percentages in the bottom three bars (Proficient/Advanced, Basic, and Below Basic).

English Learner status

Thirteen percent (13%) of students in the K-Low Average group who eventually performed at Proficient/Advanced on the ELA PSSA were ELs (Figure 9). In comparison, 9%-10% of students who performed at Basic or Below Basic on the ELA PSSA were ELs.

Figure 9. Percentage of students in the K-Low Average performance group, by English Learner status, and by their third grade ELA PSSA performance



Source: Data from Qlik RL-Total Student Enrollment Yearly [v1.0.0], data pulled on January 15, 2021

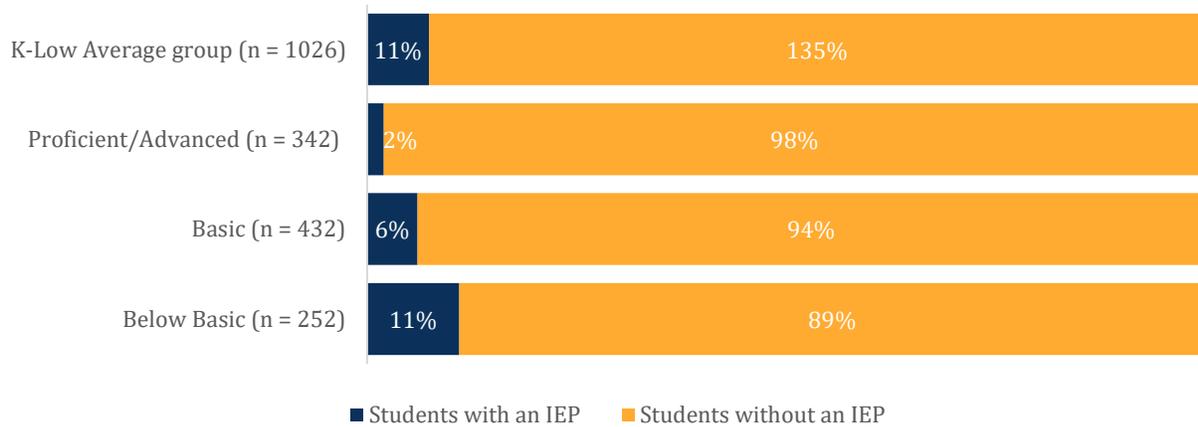
Note: The top bar is the total responses of the overall kindergarten performance group in the figure header. The n-count in the top bar is the sum of the n-counts in the bottom three bars (Proficient/Advanced, Basic, and Below Basic). The percentages in the top bar are the weighted averages of the percentages in the bottom three bars (Proficient/Advanced, Basic, and Below Basic).

Special Education status

Only 2% of students who scored in the K-Low Average who later performed at Proficient/Advanced on the ELA PSSA had an IEP (Figure 10). Whereas, 6% of K-Low Average students who later performed at Basic and 11% of students who went on to perform at Below Basic were on the ELA PSSA had an IEP.

Because 11% of the student population in the K-Low Average performance group had an IEP, this indicates that this group was underrepresented in the population of students who performed in the K-Low Average aimswebPlus group and went on to perform in the Proficient/Advanced category (2%) and the Basic (6%) category on the third grade ELA PSSA.

Figure 10. Percentage of students in the K-Low Average performance group, by Special Education status, and by their third grade ELA PSSA performance



Source: Data from Qlik RL-Total Student Enrollment Yearly [v1.0.0], data pulled on January 15, 2021

Note: The top bar is the total responses of the overall kindergarten performance group in the figure header. The n-count in the top bar is the sum of the n-counts in the bottom three bars (Proficient/Advanced, Basic, and Below Basic). The percentages in the top bar are the weighted averages of the percentages in the bottom three bars (Proficient/Advanced, Basic, and Below Basic).

RQ4: How did students in the K-High Average aimswebPlus performance group in each third grade ELA PSSA performance group score on the aimswebPlus between kindergarten and third grade? What are the demographic characteristics of students in each ELA PSSA performance group?

Students in the K-High Average performance group on average experienced decreases in their NPR over time.

This decrease indicates that students who performed in the K-High Average aimswebPlus performance group did not improve their performance relative to the national sample over time (Figure 11, Appendix B Table B3).

Proficient/Advanced on the ELA PSSA

Students who scored in the K-High Average aimswebPlus group (second highest kindergarten performance group) and performed in the Proficient/Advanced category on the third grade ELA PSSA had relatively stable average NPR across the four years, and experienced a change in average NPR from the 63rd percentile in the fall of kindergarten to the 66th percentile in the spring of kindergarten to the 60th percentile in the spring of third grade.

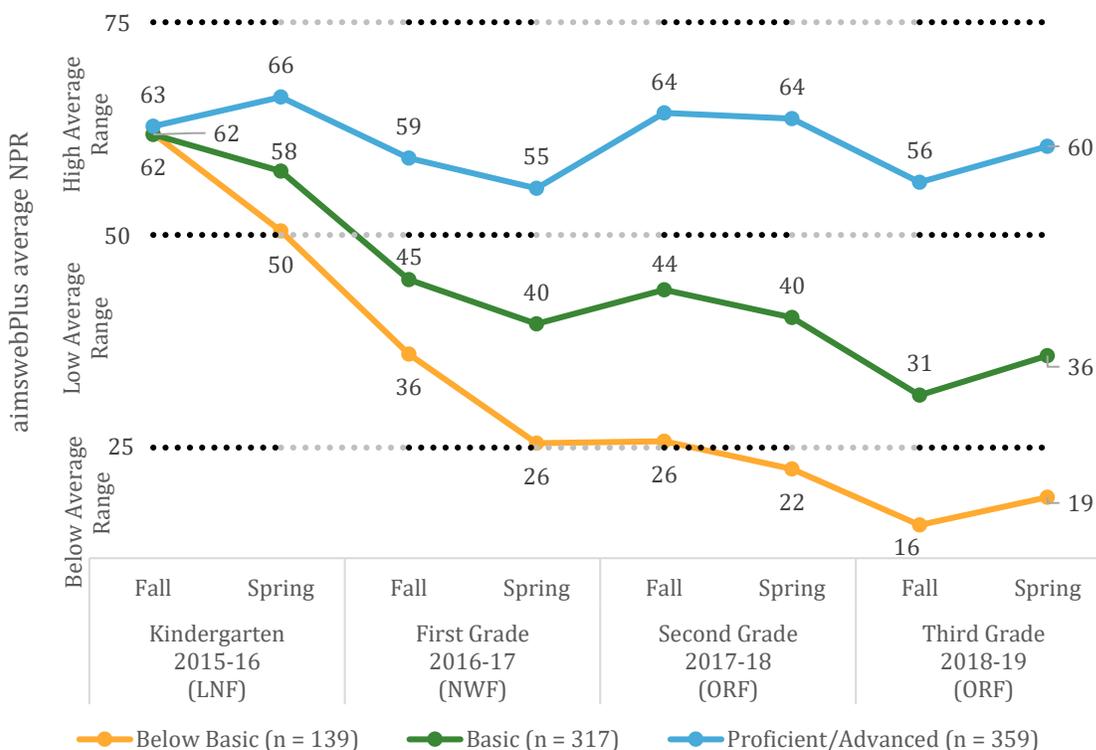
Basic on the ELA PSSA

Students who scored in the K-High Average aimswebPlus group and performed in the Basic category on the ELA PSSA in spring of third grade experienced a change in average NPR from the 62nd percentile in the fall of kindergarten to the 58th percentile in the spring of kindergarten to the 36th percentile in the spring of third grade. Although there is a smaller decrease of four percentiles between fall and spring of kindergarten, there is a more substantial decrease of 22 percentiles between spring of kindergarten and spring of third grade.

Below Basic on the ELA PSSA

Students who scored in the K-High Average aimswebPlus group in fall of kindergarten and performed in the Below Basic category on the ELA PSSA in spring of third grade experienced a decrease in average NPR from the 62nd percentile in the fall of kindergarten to the 50th percentile in the spring of kindergarten to the 19th percentile in the spring of third grade. The decrease of 12 percentiles in average NPR from fall to spring of kindergarten was then followed by a more substantial decrease of 31 percentiles between spring of kindergarten and spring of third grade.

Figure 11. Average NPR on the core aimswebPlus reading assessment for students in the K-High Average performance group over four years disaggregated by spring third grade ELA PSSA performance



Source: Data from Qlik L3_AIMSWEBCSTAR [v1.0.0], data pulled on January 15, 2021

How to read this figure: This figure presents the average NPR of the three PSSA performance groups in fall and spring of the kindergarten through third grade years in the markers on each of the solid lines. The dotted lines represent the aimswebPlus performance group cut points for the aimswebPlus performance group ranges (Table 1). The blue line represents the 359 students who scored in the *Proficient/Advanced* ELA PSSA categories in third grade, and shows their average aimswebPlus performance from fall of kindergarten to spring of third grade. The green line represents the 317 students who scored in the *Basic* ELA PSSA category in third grade and shows their average aimswebPlus performance from fall of kindergarten to spring of third grade. The yellow line represents the 139 students who scored in the *Below Basic* ELA PSSA category in third grade and shows their average aimswebPlus performance from fall of kindergarten to spring of third grade. For a figure with all performance groups see Appendix D, Figure D1.

Of students in the K-High Average performance group, White students were overrepresented, economically disadvantaged students were underrepresented, and all other demographic student groups were well represented in the population of students who later performed in the Proficient/Advanced ELA PSSA performance group.

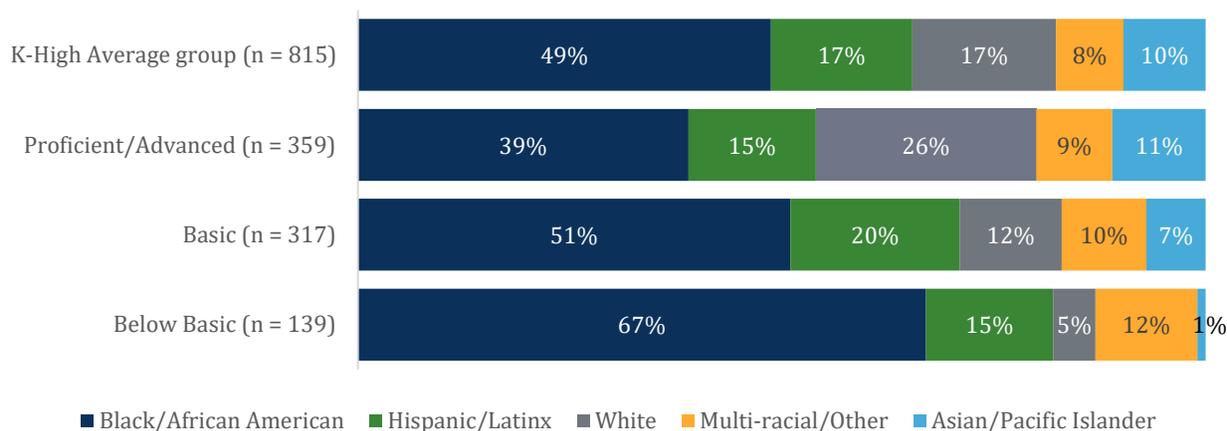
The percentage of students who performed in the K-High Average aimswebPlus performance group had different demographics depending on if they performed in the Below Basic, Basic, or Proficient/Advanced categories on the third grade ELA PSSA.

Race/ethnicity student group

For example, 39% of students in the K-High Average group who performed in the Proficient/Advanced categories on the ELA PSSA were Black/African American, whereas 51% of students who performed at Basic and 67% of students who performed at Below Basic were Black/African American (Figure 12).

Because the student population in the K-High Average group is 49% Black/African American, this indicates that Black/African American students were overrepresented in the population of students who performed in the K-High Average aimswebPlus group and went on to perform in the Below Basic category (67%) on the third grade ELA PSSA. Another way to describe the result is that Asian, White, or Hispanic/Latinx students were underrepresented in the population of students who experienced a decrease in average NPR of 43 percentiles from fall of kindergarten to spring of third grade. In comparison, White students were overrepresented and Hispanic/Latinx students were underrepresented in the population of students who went onto score in the Proficient/Advanced performance group on the ELA PSSA and experienced stable average NPR across the four years.

Figure 12. Percentage of students in the K-High Average performance group, by race/ethnicity student group, and by their third grade ELA PSSA performance



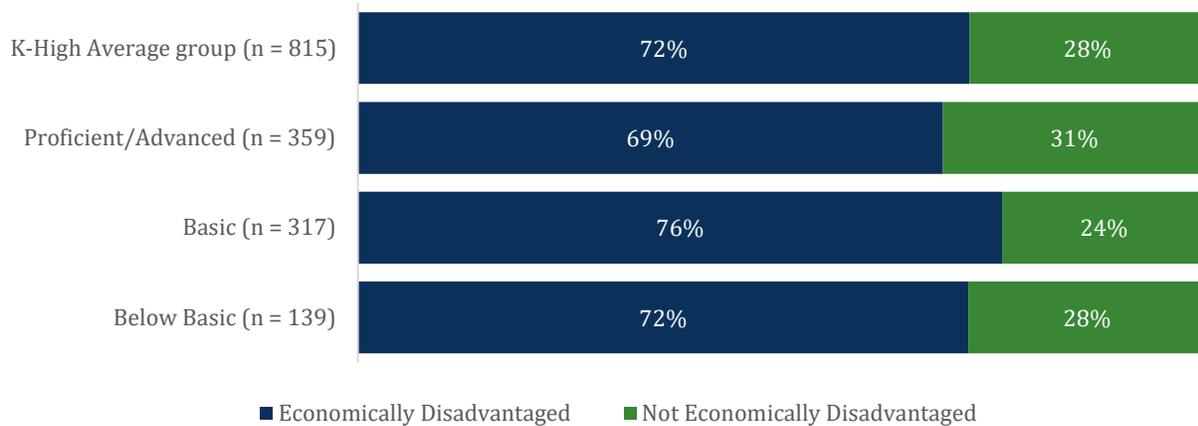
Source: Data from Qlik RL-Total Student Enrollment Yearly [v1.0.0], data pulled on January 15, 2021

Note: The top bar is the total responses of the overall kindergarten performance group in the figure header. The n-count in the top bar is the sum of the n-counts in the bottom three bars (Proficient/Advanced, Basic, and Below Basic). The percentages in the top bar are the weighted averages of the percentages in the bottom three bars (Proficient/Advanced, Basic, and Below Basic).

Economic disadvantage status

Sixty-nine percent (69%) of students who scored in the K-High Average group who performed at Proficient/Advanced on the ELA PSSA were economically disadvantaged (Figure 13). In comparison, 76% who performed at Basic and 72% who performed at Below Basic on the ELA PSSA were economically disadvantaged.

Figure 13. Percentage of students in the K-High Average performance group, by economic disadvantaged status, and by their third grade ELA PSSA performance



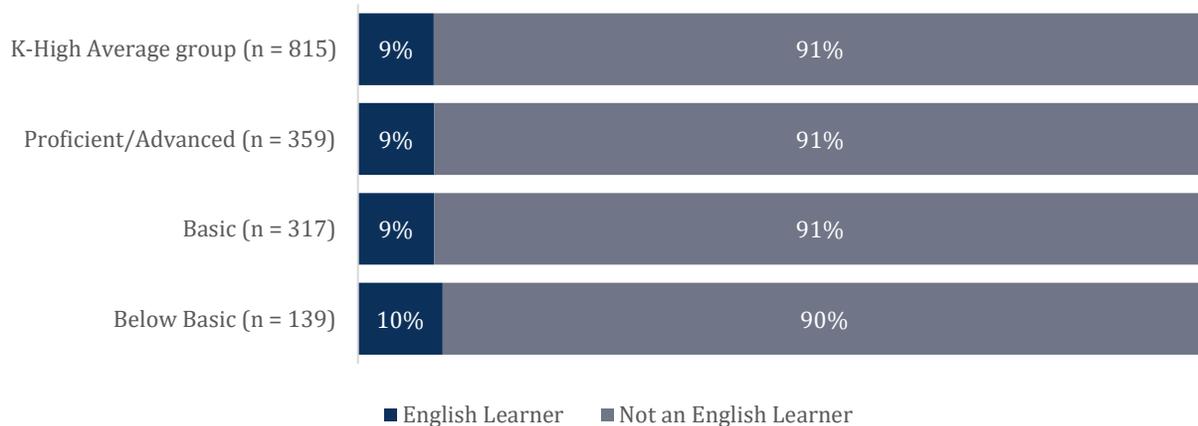
Source: Data from Qlik RL-Total Student Enrollment Yearly [v1.0.0], data pulled on January 15, 2021

Note: The top bar is the total responses of the overall kindergarten performance group in the figure header. The n-count in the top bar is the sum of the n-counts in the bottom three bars (Proficient/Advanced, Basic, and Below Basic). The percentages in the top bar are the weighted averages of the percentages in the bottom three bars (Proficient/Advanced, Basic, and Below Basic).

English Learner status

Ten percent (10%) of students in the K-High Average group who later performed at Below Basic on the ELA PSSA were ELs (Figure 14). In comparison, 9% of K-High Average students who performed at Basic or Proficient/Advanced on the ELA PSSA were ELs.

Figure 14. Percentage of students in the K-High Average performance group, by English Learner status, and by their third grade ELA PSSA performance



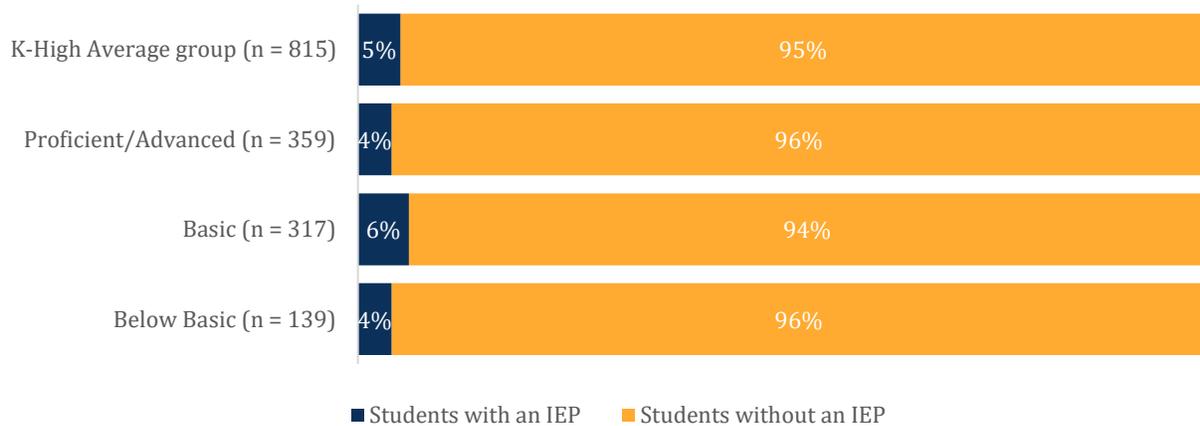
Source: Data from Qlik RL-Total Student Enrollment Yearly [v1.0.0], data pulled on January 15, 2021

Note: The top bar is the total responses of the overall kindergarten performance group in the figure header. The n-count in the top bar is the sum of the n-counts in the bottom three bars (Proficient/Advanced, Basic, and Below Basic). The percentages in the top bar are the weighted averages of the percentages in the bottom three bars (Proficient/Advanced, Basic, and Below Basic).

Special Education status

Four percent (4%) of students who scored in the K-High Average group who performed at Below Basic or Proficient/Advanced on the ELA PSSA had an IEP or were Special Education students (Figure 15). In comparison, 6% who performed at Basic on the ELA PSSA had an IEP.

Figure 15. Percentage of students in the K-High Average performance group, by Special Education status, and by their third grade ELA PSSA performance



Source: Data from Qlik RL-Total Student Enrollment Yearly [v1.0.0], data pulled on January 15, 2021

Note: The top bar is the total responses of the overall kindergarten performance group in the figure header. The n-count in the top bar is the sum of the n-counts in the bottom three bars (Proficient/Advanced, Basic, and Below Basic). The percentages in the top bar are the weighted averages of the percentages in the bottom three bars (Proficient/Advanced, Basic, and Below Basic).

RQ5: How did students in the K-Above Average aimswebPlus performance group in each third grade ELA PSSA performance group score on the aimswebPlus between kindergarten and third grade? What are the demographic characteristics of students in each ELA PSSA performance group?

Students in the K-Above Average performance group on average experienced decreases in average NPR over time.

Students in the K-Above Average aimswebPlus performance group in fall of kindergarten did not improve their performance relative to the national sample over time (Figure 4, Appendix B Table B4).

Proficient/Advanced on the ELA PSSA

Students who scored in the K-Above Average group (the highest kindergarten performance group) and performed in the Proficient/Advanced category on the ELA PSSA experienced a decrease in average NPR from the 88th percentile in the fall of kindergarten to the 77th percentile in spring of kindergarten, to the 67th percentile in the spring of third grade. Although students went on to perform in the Proficient/Advanced category on the ELA PSSA, they experienced an average decrease in NPR of 11 percentiles from fall to spring of kindergarten and an average decrease of another 10 percentiles from spring of kindergarten to spring of third grade.

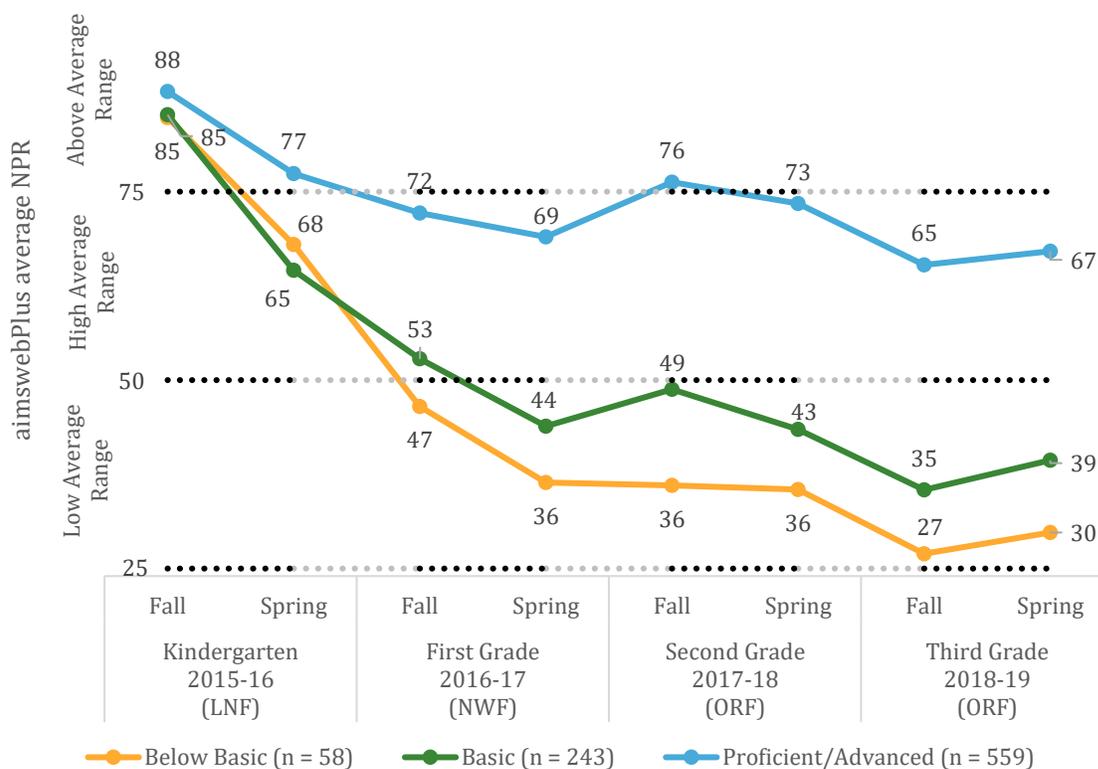
Basic on the ELA PSSA

Students who scored in the K-Above Average group on the aimswebPlus assessment and then performed in the Basic category on the ELA PSSA in third grade experienced a decrease in average NPR from the 85th percentile in the fall of kindergarten, to the 65th percentile in the spring of kindergarten, to the 39th percentile in the spring of third grade. The decrease of 20 percentiles in average NPR from fall to spring of kindergarten was then followed by a larger decrease of 26 percentiles between spring of kindergarten and spring of third grade.

Below Basic on the ELA PSSA

Students who scored in the K-Above Average group and then performed in the Below Basic on the ELA PSSA in third grade experienced a decrease in average NPR from the 85th percentile in the fall of kindergarten, to the 68th percentile in the spring of kindergarten, to the 30th percentile in the spring of third grade. The decrease of 17 percentiles in average NPR from fall to spring of kindergarten was then followed by an even more substantial decrease of 38 percentiles between spring of kindergarten and spring of third grade.

Figure 16. Average NPR on the core aimswebPlus reading assessment for students in the K-Above Average performance group over four years disaggregated by spring third grade ELA PSSA performance



Source: Data from Qlik L3_AIMSWEBSTAR [v1.0.0], data pulled on January 15, 2021

How to read this figure: This figure presents the average NPR of the three PSSA performance groups in fall and spring of the kindergarten through third grade years in the markers on each of the solid lines. The dotted lines represent the aimswebPlus performance group cut points for the aimswebPlus performance group ranges (Table 1). The blue line represents the 559 students who scored in the *Proficient/Advanced* ELA PSSA categories in third grade, and shows their average aimswebPlus performance from fall of kindergarten to spring of third grade. The green line represents the 243 students who scored in the *Basic* ELA PSSA category in third grade and shows their average aimswebPlus performance from fall of kindergarten to spring of third grade. The yellow line represents the 58 students who scored in the *Below Basic* ELA PSSA category in third grade and shows their average aimswebPlus performance from fall of kindergarten to spring of third grade. For a figure with all performance groups see Appendix D, Figure D1.

Of students in the K-Above Average performance group, White students and Asian students were overrepresented, economically disadvantaged students and students with IEPs were underrepresented, and all other demographic student groups were well represented in the population of students who later performed in the Proficient/Advanced ELA PSSA performance group.

The percentage of students who performed in the K-Above Average group had different demographics depending on whether they performed in the Below Basic, Basic, or Proficient/Advanced categories on the third grade ELA PSSA.

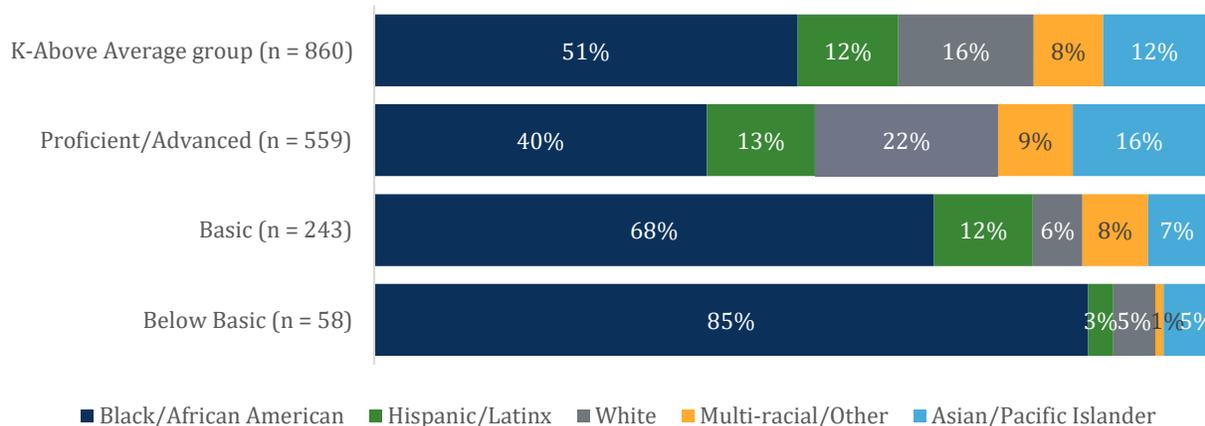
Race/ethnicity student group

Forty percent (40%) of students who scored in the K-Above Average group who would eventually perform at Proficient/Advanced on the ELA PSSA were Black/African American, whereas 68% who later performed at Basic and 85% who later performed at Below Basic were Black/African American (Figure 17).

Because the student population in the K-Above Average performance group was 51% Black/African American, this indicates that Black/African American students were overrepresented among students who performed in the K-Above Average group and went on to perform in the Below Basic category (85%) and the Basic category (68%) on the third grade ELA PSSA.

Another way to describe the result is that Asian, White, Multi-Racial/Other, or Hispanic/Latinx students were underrepresented in the population of students who experienced a decrease in average NPR of 55 percentiles from fall of kindergarten to spring of third grade (Below Basic). Similarly, White and Hispanic/Latinx students were underrepresented in the population of students who experienced a decrease in average NPR of 46 percentiles from fall of kindergarten to spring of third grade (Basic), whereas White and Asian students were overrepresented and Hispanic/Latinx students were underrepresented in the population of students who experienced a decrease in average NPR of 21 percentiles from fall of kindergarten to spring of third grade (Proficient/Advanced).

Figure 17. Percentage of students in the K-Above Average performance group, by race/ethnicity student group, and by their third grade ELA PSSA performance



Source: Data from Qlik RL-Total Student Enrollment Yearly [v1.0.0], data pulled on January 15, 2021

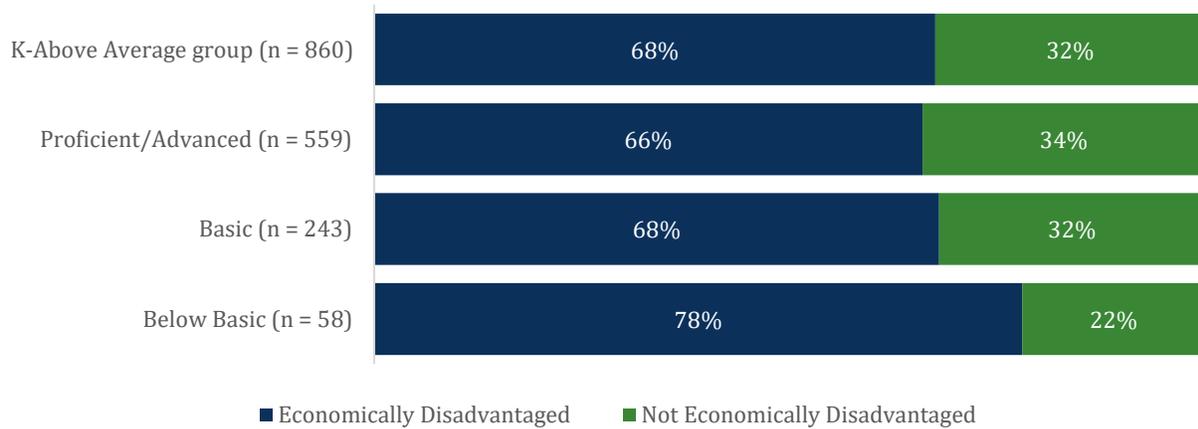
Note: The top bar is the total responses of the overall kindergarten performance group in the figure header. The n-count in the top bar is the sum of the n-counts in the bottom three bars (Proficient/Advanced, Basic, and Below Basic). The percentages in the top bar are the weighted averages of the percentages in the bottom three bars (Proficient/Advanced, Basic, and Below Basic).

Economic disadvantage status

Seventy-eight percent (78%) of students in the K-Above Average group who would go on to perform at Below Basic on the ELA PSSA were economically disadvantaged (Figure 18). In contrast, 66% of students who later performed at Proficient/Advanced and 68% who later scored at Basic were economically disadvantaged.

Because 68% of the student population in the K-Above Average performance group were economically disadvantaged, this indicates that this group was overrepresented in the population of students who performed in the K-Above Average group and went on to perform in the Below Basic (78%) category on the third grade ELA PSSA.

Figure 18. Percentage of students in the K-Above Average performance group, by economic disadvantage status, and by their third grade ELA PSSA performance



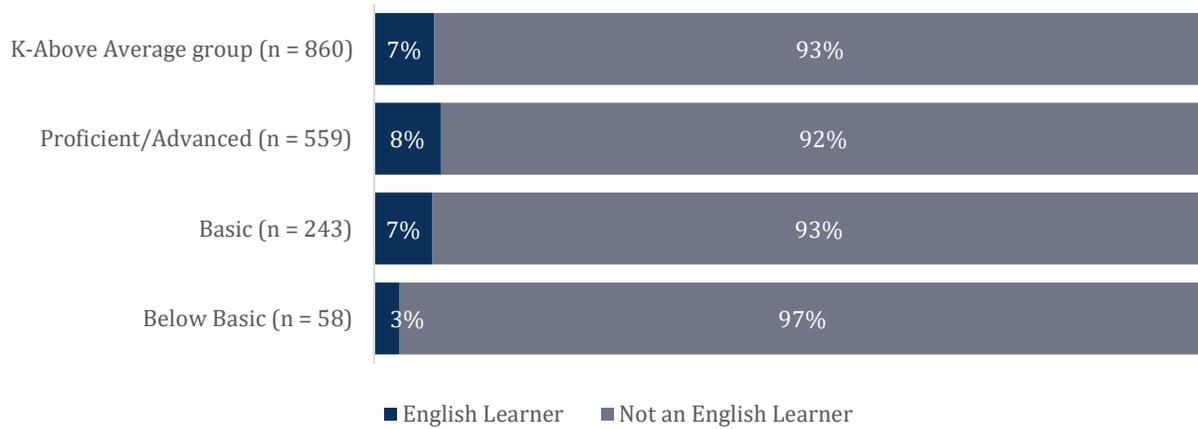
Source: Data from Qlik RL-Total Student Enrollment Yearly [v1.0.0], data pulled on January 15, 2021

Note: The top bar is the total responses of the overall kindergarten performance group in the figure header. The n-count in the top bar is the sum of the n-counts in the bottom three bars (Proficient/Advanced, Basic, and Below Basic). The percentages in the top bar are the weighted averages of the percentages in the bottom three bars (Proficient/Advanced, Basic, and Below Basic).

English Learner status

Three percent (3%) of students in the K-Above Average group who would eventually perform at Below Basic on the ELA PSSA were ELs (Figure 19). In comparison, 7%-8% who later performed at Basic or Proficient/Advanced on the ELA PSSA were ELs.

Figure 19. Percentage of students in the K-Above Average performance group, by English Learner status, and by their third grade ELA PSSA performance



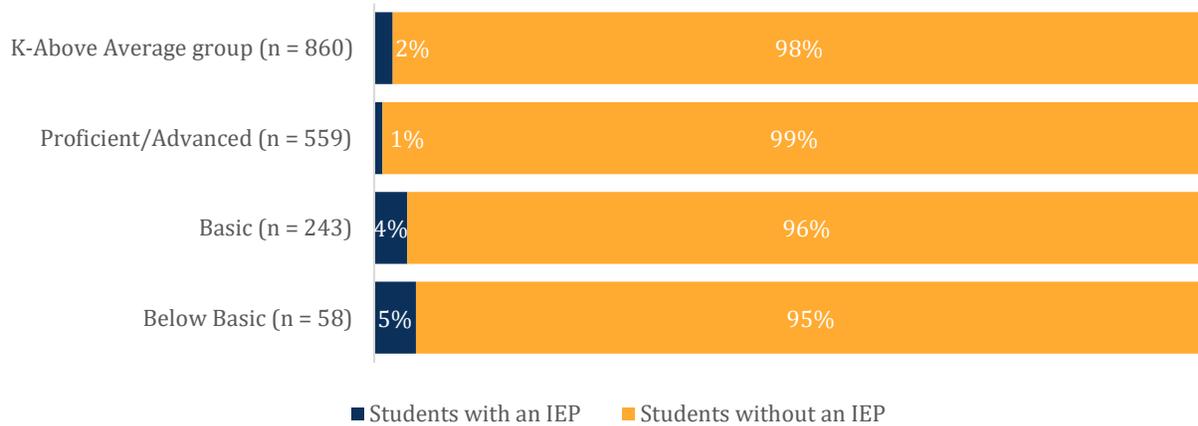
Source: Data from Qlik RL-Total Student Enrollment Yearly [v1.0.0], data pulled on January 15, 2021

Note: The top bar is the total responses of the overall kindergarten performance group in the figure header. The n-count in the top bar is the sum of the n-counts in the bottom three bars (Proficient/Advanced, Basic, and Below Basic). The percentages in the top bar are the weighted averages of the percentages in the bottom three bars (Proficient/Advanced, Basic, and Below Basic).

Special Education status

Only 1% of students who scored in the K-Above Average group who performed at Proficient/Advanced on the ELA PSSA had an IEP or were Special Education students (Figure 20). In comparison, 4%-5% of students who performed at Below Basic or Basic on the ELA PSSA had an IEP.

Figure 20. Percentage of students in the K-Above Average performance group, by Special Education status, and by their third grade ELA PSSA performance



Source: Data from Qlik RL-Total Student Enrollment Yearly [v1.0.0], data pulled on January 15, 2021

Note: The top bar is the total responses of the overall kindergarten performance group in the figure header. The n-count in the top bar is the sum of the n-counts in the bottom three bars (Proficient/Advanced, Basic, and Below Basic). The percentages in the top bar are the weighted averages of the percentages in the bottom three bars (Proficient/Advanced, Basic, and Below Basic).

Summary of Results

The intersection of kindergarten and third grade performance on average NPR over time

This report examined the average change of 2015-16 kindergarten students on their aimswebPlus performance between 2015-16 and 2018-19 based on their aimswebPlus performance group in fall of kindergarten (2015-16) and their ELA PSSA performance group in the spring of third grade (2018-19). Overall, there were different patterns in performance over time based on students' kindergarten aimswebPlus performance and their third grade ELA PSSA performance.

Students who were in the K-Low Average and K-Below Average aimswebPlus performance group experienced an increase in average NPR if they later performed in the Proficient/Advanced group on the ELA PSSA in third grade.

Students who were in the K-Low Average and K-Below Average aimswebPlus performance groups demonstrated increases in average NPR if they later performed in the Proficient/Advanced on the ELA PSSA in third grade.

Although students who scored in the Proficient/Advanced group on the ELA PSSA in third grade were most likely to demonstrate growth, other populations of students grew in their average reading NPR as well. For example, students who performed in the K-Below Average aimswebPlus group also displayed an increase in average NPR if they performed in the Basic category on the ELA PSSA in third grade.

Students who were in the K-High Average and K-Above Average aimswebPlus group experienced a decrease in average NPR if they later performed in the Basic or Below Basic groups on the ELA PSSA in third grade.

Students who scored in the K-High Average or K-Above Average aimswebPlus performance group displayed decreases in their average NPR regardless of their spring third grade ELA PSSA performance. These declines were most pronounced for students who later performed in the Basic or Below Basic groups on the ELA PSSA – declining in average NPR by between 28 and 55 percentiles. Even students in the K-Above Average group who later performed in the Proficient/Advanced group on the ELA PSSA experienced an NPR decline of 21 percentiles from kindergarten to third grade.

Disproportionality in performance by student demographic groups

There were patterns of disproportionality among students who first scored in the lower aimswebPlus performance groups (K-Low Average or K-Below Average) during kindergarten and later scored in the Proficient/Advanced ELA PSSA performance groups in third grade. Black/African American students and students with IEPs in the analytic sample were underrepresented in the group of students who demonstrated this pattern of growth between

kindergarten and third grade. In comparison White students and Asian students in the analytic sample were overrepresented in the population of students who experienced this type of growth.

There were additional patterns of disproportionality among students who scored in the higher performing aimswebPlus performance groups in kindergarten (K-High Average and K-Above Average) and later performed in the lower ELA PSSA performance groups in third grade. Black/African American students were overrepresented (67%-85%) and White students were underrepresented (5%) in the population of students who experienced these declines in growth.

Similarly, of students who performed in both the higher performing aimswebPlus performance groups in kindergarten (K-High Average and K-Above Average) and the Proficient/Advanced category on the ELA PSSA in third grade, Black/African American students were underrepresented (39%-40%) and White students were overrepresented (22%-26%).

Average aimswebPlus NPR in fall and spring of kindergarten

For the K-Below Average and K-Above Average aimswebPlus performance groups, there were fairly large changes in average NPR from fall of kindergarten to spring of kindergarten. For example, for the K-Below Average aimswebPlus group, students who would later performed in the Proficient/Advanced group on the ELA PSSA experienced an average NPR increase of 29 percentiles from fall of kindergarten to spring of kindergarten. If this analysis instead grouped students by their spring kindergarten aimswebPlus performance, this population of students would not have been considered part of the K-Below Average Group, but as part of the K-Low Average group.

Critically, this group only showed an increase of five percentiles from spring of kindergarten to spring of third grade, meaning that if we had selected their spring of kindergarten performance as the baseline (instead of fall) we would have observed consistent performance over time with this group, or very little change across the four years. Similarly, for the K-Above Average aimswebPlus group, students who would later perform in the Basic group on the ELA PSSA demonstrated an average NPR decrease of 20 percentiles from fall of kindergarten to spring of kindergarten.

It is worth considering that perhaps fall of kindergarten aimswebPlus performance is not an extremely reliable indicator or predictor of students' performance, as students are just entering school during the fall testing window and are still learning – in the most basic sense – how to take a test. Performance during the spring of kindergarten may provide a more reliable or stable indicator of student performance, as during the spring testing window students have had nearly a year to adjust to their classroom and to taking assessments.

SDP population and the analytic sample

It is critical to acknowledge that the analytic sample in the current report is a subset of the overall SDP population. Although we strive to conduct analyses based on populations that are as representative as possible of the overall SDP population, that is not always possible. In the case of this report, the initial population of interest was all kindergarteners in SDP in 2015-16. However, in order to be included in the analyses, students needed to have been enrolled in SDP schools continuously from 2015-16 through 2018-19, had fall and spring aimswebPlus scores in all four

years, and taken the third grade ELA PSSA in 2018-19. As described in the first report, that decreased the initial population of interest by about 75%.¹⁰

Although the representation of demographic student groups was relatively consistent between the initial 2015-16 kindergarten population and the eventual analytic sample, there were a few notable exceptions. Specifically, there was a decline in the percentage of Black/African American students from nearly 50% in the original kindergarten sample to 43% in the analytic sample, and an increase in economically disadvantaged students from 69% in the original kindergarten sample to 76% in the analytic sample. In both cases, these percentages changed due to a combination of factors including that students who were enrolled in SDP schools in kindergarten were no longer enrolled in third grade, and did not have the required assessments to be included in the analytic sample.¹¹

The largest difference was in the percentage of students with an IEP: 17% of the sample of 2015-16 kindergarteners still enrolled in SDP in third grade in 2018-19 had an IEP, whereas only 8% of the analytic sample had an IEP, indicating that this decline in students with an IEP in the analytic sample was primarily due to students not having the required assessments.¹² IEP teams individually determine whether each student with an IEP is required to take these assessments each year using state provided recommendations.¹³ This can result in cases in which students with an IEP are waived from taking aimswebPlus and PSSA assessments, and therefore, would not be included in the analytic sample of this report even if they were continuously enrolled in SDP schools from kindergarten to third grade.¹⁴

Overall, these differences in the proportions of different demographic student groups between the initial population of the 2015-16 kindergarten cohort and the analytic sample do limit the generalizability of the results, particularly for students with an IEP.

¹⁰ Four-year analysis of 2015-16 kindergarteners' aimswebPlus reading and PSSA performance from 2015-16 to 2018-19: <https://www.philasd.org/research/2021/10/06/four-year-analysis-of-2015-16-kindergarteners-aimswebplus-reading-and-pssa-performance-from-2015-16-to-2018-19/>

¹¹ It is not possible to determine on a case by case basis why a student might have missing data. Critically, the patterns in the current report likely reflect larger systems. For example, these differences could be reflecting higher mobility rates for Black/African American students and non-economically disadvantaged students, who left SDP schools for either Charter or private schools, or left Philadelphia altogether. These differences could also be reflecting that Black/African American students and non-economically disadvantaged students were less likely to take the required aimswebPlus and PSSA assessments, perhaps because they were not enrolled in SDP schools or in attendance during the assessment testing windows.

¹² This could have also been due to student with an IEP not enrolled in SDP schools in first or second grade, and therefore did not have aimswebPlus assessment data because they were not enrolled in SDP schools during aimswebPlus assessment windows.

¹³ For more information about determining edibility of students with an IEP to take state assessments, see: <https://www.education.pa.gov/Documents/K-12/Special%20Education/Assessment/PASA%20Eligibility%20Criteria.pdf>

¹⁴ This can lead to situations in which a student with an IEP was waived from taking the aimswebPlus core assessment in fall of kindergarten, but took all other assessments required to be included in the report; but because they were missing one assessment, they were excluded from the analytic sample.

Conclusions

Overall, examining the performance trajectories of students on within-year District-wide and annual state assessments can help identify the students in need of additional support throughout the early elementary years as well as critical times in which high student performance may begin to decline. This identification can inform the implementation of interventions to ensure that high performers in kindergarten maintain their high performance through third grade.

It is noteworthy that overall, students performing in the higher aimswebPlus performance groups (K-High Average and K-Above Average) experienced decreases in average NPR. This could be an artifact of comparing the results of different aimswebPlus assessment in this analysis, or a regression to the mean in which the extremes in performance in the fall of kindergarten are less extreme and tend to smooth out by the spring of kindergarten. The decline could also point to the importance of providing continued support to high performing kindergarten students throughout their academic trajectory. Looking at the results in this analysis, we see on average our students who are performing in the higher aimswebPlus performance groups do not keep up that momentum on the aimswebPlus between kindergarten and third grade. Even if those students end up performing in the Proficient/Advanced category on the ELA PSSA in third grade, they tend to decline in average NPR between kindergarten and third grade.

These declines were not all equivalent by student demographic group. Smaller proportions of Black/African American students and students with an IEP who started out in the lower kindergarten aimswebPlus performance groups experienced average NPR growth from kindergarten to third grade. Additionally, for students who started out in the higher kindergarten performance groups, Black/African American students were underrepresented and White students were overrepresented in the populations of students who later scored in the Proficient/Advanced category on the ELA PSSA in third grade.

It is important to pay critical attention to students performing in the K-Low Average and K-Below Average aimswebPlus groups in kindergarten in order to provide support that may increase their performance. Additionally, it is important to pay close attention to students who start kindergarten as high performers and decline in performance over time.

Appendix A: Number of Students in Each Group

Table A1. The demographic characteristics of the four kindergarten aimswebPlus performance groups

Student Characteristic	K-Below Average	K-Low Average	K-High Average	K-Above Average
Gender				
Female	704	502	421	422
Male	789	524	394	438
Race/Ethnicity				
Asian/Pacific Islander	106	89	65	106
Black/African American	528	454	397	438
Hispanic/Latinx	541	218	136	104
Multi-racial/Other	151	110	79	72
White	167	155	138	140
Socio-Economic Status				
Economically Disadvantaged	1,079	732	588	581
Not Economically Disadvantaged	414	294	227	279
English Learner Status				
English Learner	286	108	73	62
Not an English Learner	1,207	918	742	798
Special Education Status				
Students with an IEP	110	57	41	19
Students without an IEP	1,383	969	774	841

Source: Data from Qlik RL-Total Student Enrollment Yearly [v1.0.0], data pulled on January 15, 2021

Table A2. The number and percentage of students in the kindergarten aimswebPlus performance group by their third grade ELA PSSA performance

Kindergarten aimswebPlus performance group in fall 2015-16		Third Grade ELA PSSA performance group in Spring 2018-19		
Kindergarten (LNF) 2015-16 performance group	Number of students	Below Basic	Basic	Proficient/Advanced
K-Below Average	1,493	626	588	279
K-Low Average	1,026	252	432	342
K-High Average	815	139	317	359
K-Above Average	860	58	243	559

Source: Data from Qlik RL-Total Student Enrollment Yearly [v1.0.0], data pulled on January 15, 2021

Table A3. Demographic characteristics of students in the K-Below Average aimswebPlus performance group by their third grade ELA PSSA performance

Student Characteristic	Below Basic	Basic	Proficient/Advanced
Gender			
Female	261	294	149
Male	365	294	130
Race/Ethnicity			
Asian/Pacific Islander	19	41	46
Black/African American	280	186	62
Hispanic/Latinx	229	224	88
Multi-racial/Other	58	69	24
White	40	68	59
Socio-Economic Status			
Economically Disadvantaged	461	427	191
Not Economically Disadvantaged	165	161	88
English Learner Status			
English Learner	103	128	55
Not an English Learner	523	460	224
Special Education Status			
Students with an IEP	65	41	4
Students without an IEP	561	547	275

Source: Data from Qlik RL-Total Student Enrollment Yearly [v1.0.0], data pulled on January 15, 2021

Table A4. Demographic characteristics of students in the K-Low Average aimswebPlus performance group by their third grade ELA PSSA performance

Student Characteristic	Below Basic	Basic	Proficient/Advanced
Gender			
Female	100	212	190
Male	152	220	152
Race/Ethnicity			
Asian/Pacific Islander	9	31	49
Black/African American	146	206	102
Hispanic/Latinx	46	98	74
Multi-racial/Other	28	45	37
White	23	52	80
Socio-Economic Status			
Economically Disadvantaged	189	307	236
Not Economically Disadvantaged	63	125	106
English Learner Status			
English Learner	22	43	43
Not an English Learner	230	389	299
Special Education Status			
Students with an IEP	27	24	6
Students without an IEP	225	408	336

Source: Data from Qlik RL-Total Student Enrollment Yearly [v1.0.0], data pulled on January 15, 2021

Table A5. Demographic characteristics of students in the K-High Average aimswebPlus performance group by their third grade ELA PSSA performance

Student Characteristic	Below Basic	Basic	Proficient/Advanced
Gender			
Female	65	159	197
Male	74	158	162
Race/Ethnicity			
Asian/Pacific Islander	2	23	40
Black/African American	93	163	141
Hispanic/Latinx	21	63	52
Multi-racial/Other	16	31	32
White	7	37	94
Socio-Economic Status			
Economically Disadvantaged	100	240	248
Not Economically Disadvantaged	39	77	111
English Learner Status			
English Learner	14	27	32
Not an English Learner	125	290	327
Special Education Status			
Students with an IEP	6	19	16
Students without an IEP	133	298	343

Source: Data from Qlik RL-Total Student Enrollment Yearly [v1.0.0], data pulled on January 15, 2021

Table A6. Demographic characteristics of students in the K-Above Average aimswebPlus performance group by their third grade ELA PSSA performance

Student Characteristic	Below Basic	Basic	Proficient/Advanced
Gender			
Female	23	113	286
Male	35	130	273
Race/Ethnicity			
Asian/Pacific Islander	3	16	87
Black/African American	49	164	225
Hispanic/Latinx	2	29	73
Multi-racial/Other	1	19	52
White	3	15	122
Socio-Economic Status			
Economically Disadvantaged	45	165	371
Not Economically Disadvantaged	13	78	188
English Learner Status			
English Learner	2	17	43
Not an English Learner	56	226	516
Special Education Status			
Students with an IEP	3	9	7
Students without an IEP	55	234	552

Source: Data from Qlik RL-Total Student Enrollment Yearly [v1.0.0], data pulled on January 15, 2021

Appendix B: Average National Percentile Rank (NPR) by Performance Group Over Time

Table B1. Average NPR and change in average NPR from fall of kindergarten to spring of third grade for students in the K-Below Average aimswebPlus group by PSSA performance

ELA PSSA performance from Spring 2018-19	Kindergarten (LNF) 2015-16		Third Grade (ORF) 2018-19	
	aimswebPlus performance group	Average NPR	aimswebPlus performance group	Average NPR
Prof/Advanced	K-Below Average	15	K-Low Average	49
Basic	K-Below Average	14	K-Below Average	24
Below Basic	K-Below Average	13	K-Below Average	10

Source: Data from Qlik L3_AIMSWEBSTAR [v1.0.0], data pulled on January 15, 2021

How to read this table: This table presents average NPR scores and the change in average NPR scores by student ELA PSSA performance in fall of kindergarten and in spring of third grade. The average NPR scores correspond to the data labels in Figure 1. For example, students who performed at Proficient/Advanced on the ELA PSSA had an average increase of 34 on the NPR from kindergarten to third grade, and moved from the K-Below Average aimswebPlus group to K-Low Average aimswebPlus group.

Table B2 Average NPR and change in average NPR from fall of kindergarten to spring of third grade for students in the K-Low Average aimswebPlus group by PSSA performance

ELA PSSA performance from Spring 2018-19	Kindergarten (LNF) 2015-16		Third Grade (ORF) 2018-19	
	aimswebPlus performance group	Average NPR	aimswebPlus performance group	Average NPR
Prof/Advanced	K-Low Average	38	K-High Average	55
Basic	K-Low Average	37	K-Low Average	30
Below Basic	K-Low Average	37	K-Below Average	15

Source: Data from Qlik L3_AIMSWEBSTAR [v1.0.0], data pulled on January 15, 2021

How to read this table: This table presents average NPR scores and the change in average NPR scores by student ELA PSSA performance in fall of kindergarten and in spring of third grade. The average NPR scores correspond to the data labels in Figure 6. For example, students who performed at Proficient/Advanced on the ELA PSSA had an average increase of 17 on the NPR from kindergarten to third grade, and moved from the K-Low Average aimswebPlus group to K-High Average aimswebPlus group.

Table B3. Average NPR and change in average NPR from fall of kindergarten to spring of third grade for students in the K-High Average aimswebPlus group by PSSA performance

ELA PSSA performance from Spring 2018-19	Kindergarten (LNF) 2015-16		Third Grade (ORF) 2018-19	
	aimswebPlus performance group	Average NPR	aimswebPlus performance group	Average NPR
Prof/Advanced	K-High Average	63	K-High Average	60
Basic	K-High Average	62	K-Low Average	36
Below Basic	K-High Average	62	K-Below Average	19

Source: Data from Qlik L3_AIMSWEBSTAR [v1.0.0], data pulled on January 15, 2021

How to read this table: This table presents average NPR scores and the change in average NPR scores by student ELA PSSA performance in fall of kindergarten and in spring of third grade. The average NPR scores correspond to the data labels in Figure 11. For example, students who performed at Below Basic on the ELA PSSA had an average decrease of 43 on the NPR from kindergarten to third grade, and moved from the K-High Average aimswebPlus group to K-Below Average aimswebPlus group.

Table B4. Average NPR and change in average NPR from fall of kindergarten to spring of third grade for students in the K-Above Average aimswebPlus group by PSSA performance

ELA PSSA performance from Spring 2018-19	Kindergarten (LNF) 2015-16		Third Grade (ORF) 2018-19	
	aimswebPlus performance group	Average NPR	aimswebPlus performance group	Average NPR
Prof/Advanced	K-Above Average	88	K-High Average	67
Basic	K-Above Average	85	K-Low Average	39
Below Basic	K-Above Average	85	K-Low Average	30

Source: Data from Qlik L3_AIMSWEBSTAR [v1.0.0], data pulled on January 15, 2021

How to read this table: This table presents average NPR scores and the change in average NPR scores by student ELA PSSA performance in fall of kindergarten and in spring of third grade. The average NPR scores correspond to the data labels in Figure 16. For example, students who performed at Below Basic on the ELA PSSA had an average decrease of 55 on the NPR from kindergarten to third grade, and moved from the K-Above Average aimswebPlus group to K-Low Average aimswebPlus group.

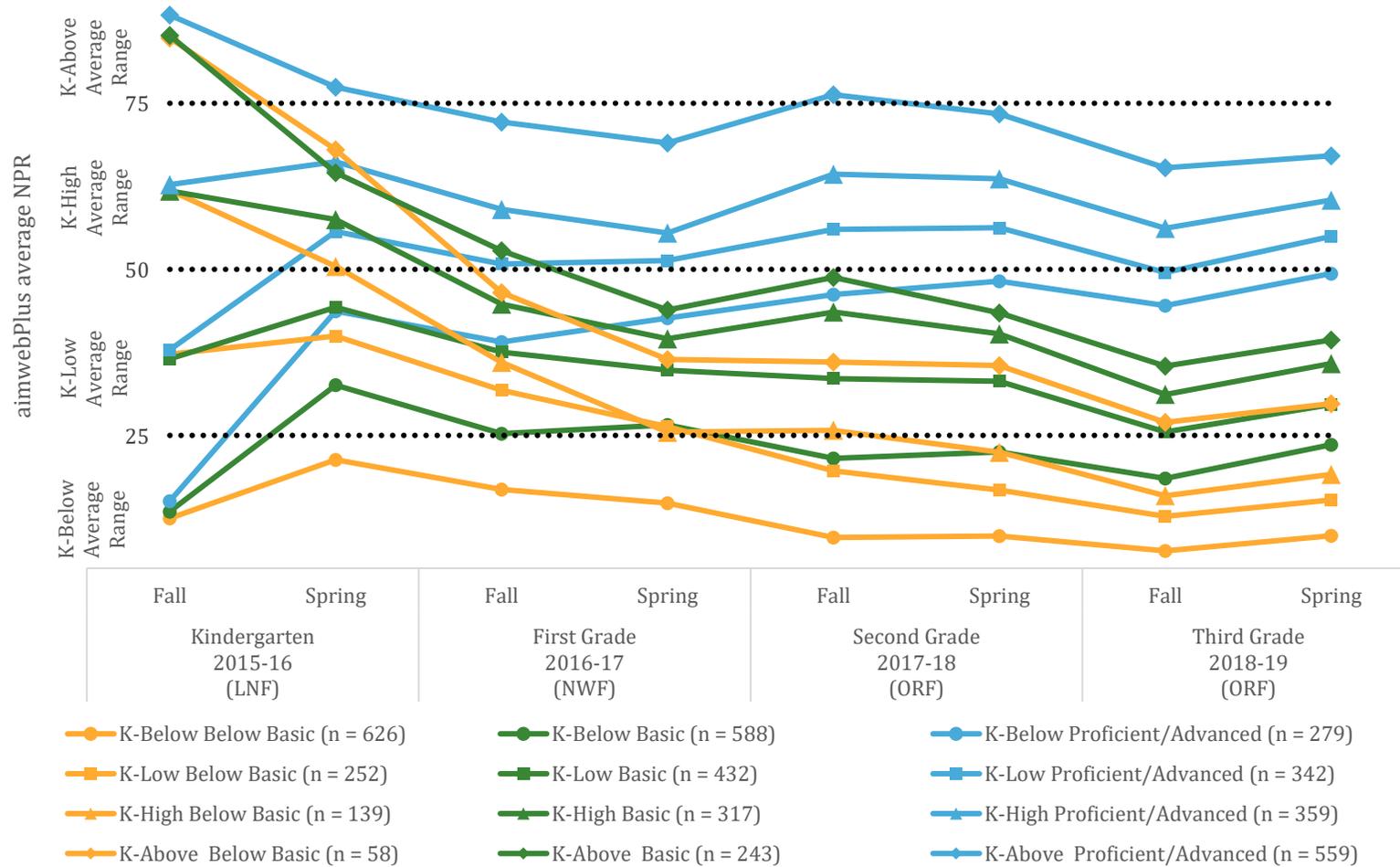
Appendix C: National Percentile Rank and Normal Curve Equivalent

National Percentile Rank was used as the measure for student performance in this report. However, when students' assessment scores are normally distributed, which is often the case, NPR is not an interval measure. That is, the range of scores that students receive in the lower and upper ends of the NPR spectrum (around the 1st and the 99th percentiles) will be much larger than the range of scores that students receive around 50th percentile. NPR is an easily accessible measure and therefore we used average NPR for different student groups' performance in this report without any conversions. The usual practice is converting NPR into a "Normal Curve Equivalent (NCE),"¹⁵ averaging over the NCE scores and then converting those averages back to the percentile equivalents rather than averaging over an ordinal scale such as NPR. There were no changes in performance when we converted NPR to NCE, averaged the NCE and converted the average NCE back to NPR.

¹⁵ For a more detailed explanation see: "Making Sense of NCEs and Standard Errors" by Pennsylvania Department of Education available at: <https://www.education.pa.gov/Documents/K-12/Assessment%20and%20Accountability/PVAAS/Methodology/MakingSenseOfNCEsAndStandardErrors.pdf>

Appendix D

Figure D1. Average NPR on the core aimswebPlus reading assessment for students in all aimswebPlus performance group over four years disaggregated by spring third grade ELA PSSA



Source: Data from Qlik L3_AIMSWEBSTAR [v1.0.0], data pulled on January 15, 2021

Note: This figure is the combination of the data in Figures 1, 6, 11, and 16. The yellow lines represent students who performed in the Below Basic category on the ELA PSSA in third grade, the green lines represent students who performed in the Basic category on the ELA PSSA in third grade, and the blue lines represent students who performed in the Proficient/Advanced categories on the ELA PSSA in third grade. Bars with circular markers represent students in the K-Below Average group, bars with square markers represent students in the K-Low Average group, bars with triangle markers represent students in the K-High Average group, and bars with diamond markers represent students in the K-Above Average group.