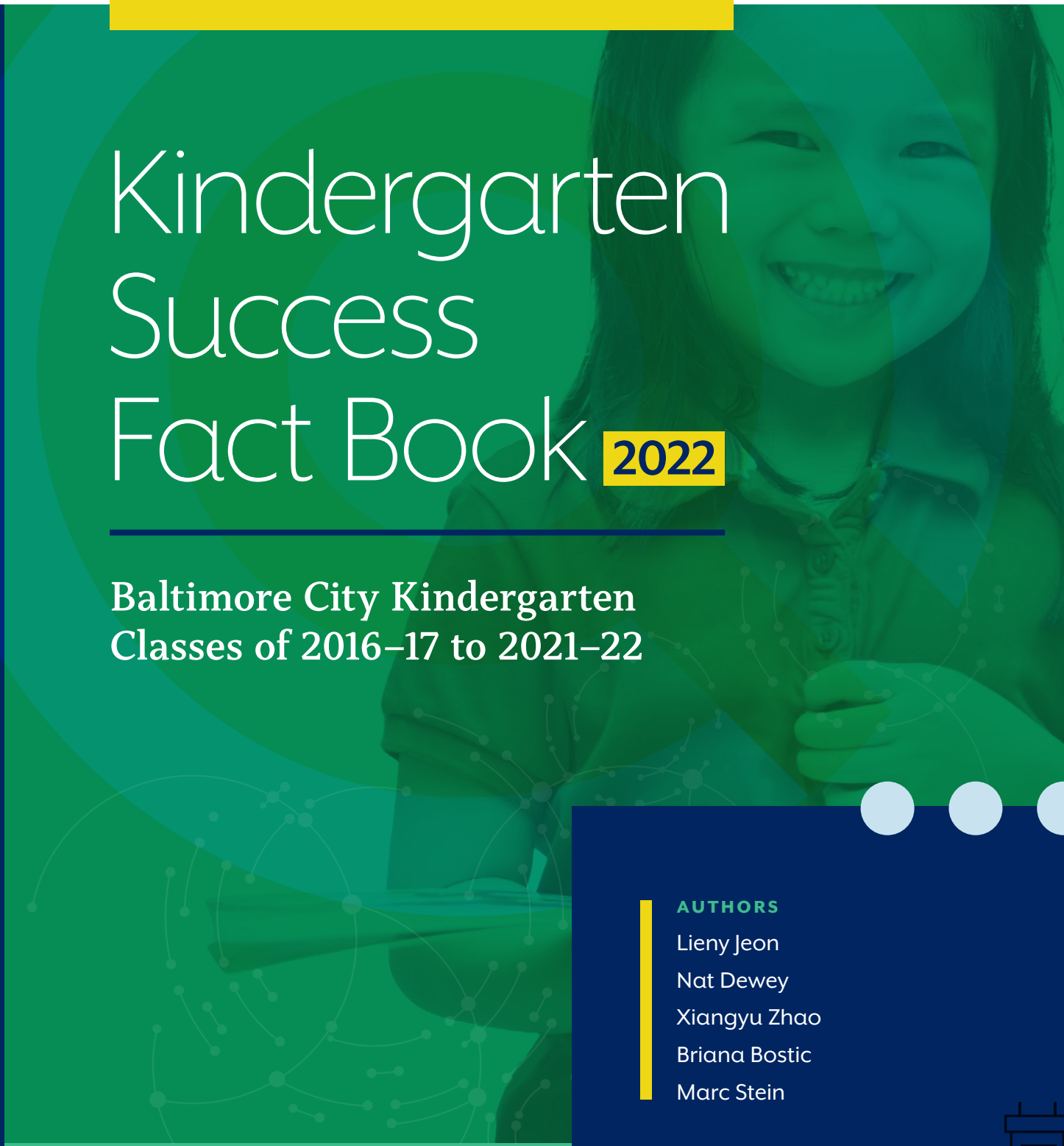
Kindergarten Success Fact Book 2022

Baltimore City Kindergarten Classes of 2016–17 to 2021–22



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B·E·R·C

OUR MISSION

BERC'S mission is to develop and support long- and short-term research-practice partnership projects that address questions of critical importance through the conduct and dissemination of rigorous strategic data analysis and research for the benefit of the children and families of Baltimore City. Findings from our projects help educational leaders, partners, and other stakeholders position themselves to move conversations forward, design strategic and practical responses to challenges, advocate for resources, capitalize upon promising practices, and identify levers for positive change.

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CONTENTS

EXECUTIVE SUMMARY

This report provides an overview of kindergarten readiness of six Baltimore City Public Schools (City Schools) kindergarten cohorts from the 2016–17 to the 2021–22 school year. This report is accompanied by the *Annual Digest of City Schools Kindergarten Statistics, 2022 Edition* (Baltimore Education Research Consortium [BERC], 2022), which provides detailed summary tables and descriptive statistics on kindergarten readiness and outcomes over time and is the source data for the visualization and interpretation found in this report. By understanding children's kindergarten experiences, we hope that the stakeholders can collectively identify needs and opportunities for early childhood services and programming for our youngest children and their families.

Early childhood is a complex developmental period, and descriptions of children's kindergarten readiness through the use of only one measure can be difficult. While the core of this report provides descriptive aggregate statistics on children's measured performance on the Maryland State Department of Education's Kindergarten Readiness Assessment (KRA), we also provide a *multi-dimensional* understanding of kindergarten readiness and outcomes by including an examination of kindergarten attendance and early literacy skill development as measured by the Dynamic Indicators of Basic Early Literacy Skills (DIBELS). To better understand differences across students, we also examine these kindergarten indicators by gender, race and ethnicity, English language learner (ELL) status, special education status, and prior care. We acknowledge that these are not the only ways to measure or represent successful kindergarten experiences. However, we hope that the analyses in this report help researchers, practitioners, and policymakers use various indicators in exploring children's kindergarten success.

Young children, their families, and educators experienced unprecedented challenges during the COVID-19 pandemic. In this report, we highlight children's kindergarten experiences during the pandemic and the recovery period. We compare the most recent year data with the pre-COVID data to analyze what has changed after the pandemic.

Finally, we maintain the results on the relationships between kindergarten indicators and 3rd grade outcomes for the two earliest cohorts of kindergartners in this report (2014–15 and 2015–16). These outcomes include performance on the Partnership for Assessment of Readiness for College and Careers (PARCC) English Language Arts and Mathematics tests, which was the Maryland state accountability test for these students. Examining these relationships is important as the early elementary experiences of students form the academic foundation for their trajectories through schools and schooling. Further, these early elementary experiences are conditioned on being kindergarten-ready to benefit from the opportunities that schools provide.

The highlights from this report include:

- **The proportion of children entering City Schools demonstrating kindergarten readiness has significantly dropped since the COVID-19 pandemic to 23% (2021–22 school year).** Before the pandemic (2016–17 to 2019–20 school years), on average, about 37–41% of children assessed on the KRA were categorized as demonstrating readiness. The proportion of children entering City Schools at the emerging, or lowest, level on the KRA, was 45% in the 2021–22 school year.
- **During the pandemic, about half of kindergarteners (48% in the 2020–21 school year and 56% in the 2021–22 school year) were chronically absent from school.** Chronic absenteeism is defined as being absent for 10% or more of the total days the student is enrolled in school.
- **Students began to make significant progress towards catching up in DIBELS at the end of the kindergarten year (EOY) in the 2021–22 school year, following their return to school after the COVID-19 pandemic.** The percentage of students scoring above the benchmark increased to 55% at EOY, which is a marked improvement compared to the 25% observed at the beginning of the kindergarten year (BOY). This upward trend suggests that the resumption of in-person learning at school likely played a role in helping students achieve their early literacy skills that they potentially missed during the school closure.
- **Kindergarten success indicators (i.e., KRA, kindergarten attendance, and DIBEL) were strongly interrelated.** Throughout the six years (2016–2022), students who began kindergarten demonstrating readiness were consistently much less likely to be chronically absent at the end of the year compared to their peers who were not demonstrating readiness at the beginning of kindergarten. Students who were not chronically absent in kindergarten met or exceeded DIBELS early literacy benchmarks at the beginning, middle, and end of the kindergarten year at higher proportions compared to their peers who are chronically absent from school. In addition, students who demonstrated readiness on the KRA were more likely to meet or exceed DIBELS early literacy benchmarks throughout the kindergarten year compared to those who had approaching or emerging on the KRA.
- **There were consistent subgroup disparities across all kindergarten success indicators we examined before and after COVID-19 pandemic.** In the subgroup analyses of the KRA, kindergarten attendance, and DIBELS, we found consistent disparities across different groups of children by gender, race and ethnicity, ELL status, and special education status. More targeted supports are needed for children and families to ensure that every child is successful in this important period of development.
- **Students who utilized formal early care and education programs prior to entering kindergarten performed better on all kindergarten indicators compared to their peers who used informal care.** The trends were consistent during the pre-and post-pandemic periods. This finding potentially has significant implications for families in Baltimore

City regarding their awareness and utilization of benefits offered by childcare service providers. It underscores the need for further efforts to educate families about available services and financial assistance related to early care and educational programs. Taking proactive steps to inform families about these resources is crucial to ensure they can fully access and benefit from them.

- **Demonstrating readiness on the KRA and high kindergarten attendance were related to better 3rd grade PARCC literacy and mathematics outcomes.** Post-COVID data were not available yet for this question, however, our findings using the pre-COVID data highlight the importance of preparing children early in their lives.

INTRODUCTION

The Baltimore Education Research Consortium (BERC) conducts data analysis and research to address questions of critical importance to research and practice for the benefit of the children and families of Baltimore City. To this end, our work is engaged in the long-term understanding of students' success and life-time developmental trajectories. Young children's early childhood experiences set their future developmental trajectories (Center on the Developing Child at Harvard University, 2019). Recognizing that when students start well, they are more likely to be set up for a successful future, BERC is committed to providing research and analytics that enable stakeholders to better understand kindergarten readiness and success. As part of annual BERC reports, this report replicates last year's BERC Kindergarten Success Report (Jeon et al., 2021) that examines kindergarten experiences in Baltimore City Public Schools (City Schools) using data from more recent cohorts.

This report describes the experiences of kindergartners who were enrolled in City Schools from the 2016–17 to 2021–22 school years. We use multiple indicators of kindergarten readiness and outcomes, including the Kindergarten Readiness Assessment (KRA), kindergarten attendance, and the Dynamic Indicators of Basic Early Literacy Skills (DIBELS) assessment. We analyze the data trends over time to understand children's kindergarten experiences in City Schools over the last six years. We highlight children's kindergarten experiences during the COVID-19 pandemic and during the recovery period. We compare the most recent year data with four years of pre-COVID data to analyze what has changed after the pandemic. In addition, we examine to what extent children's kindergarten experiences are related to their 3rd grade outcomes, measured by the Partnership for Assessment of Readiness for College and Careers (PARCC) English Language Arts (ELA) and Mathematics (Math) assessments.

We use data from the *Annual Digest of City Schools Kindergarten Statistics* (BERC 2022), which includes students who were enrolled in kindergarten in City Schools for at least 10 days in a given school year. In accordance with City Schools reporting requirements, table cell values are masked to protect student privacy. For groups and subgroups with 20 or fewer students, the count of students and all outcome percentages are completely suppressed. For groups and subgroups with 200 or fewer students, only the count of students is suppressed and outcome percentages are banded to prevent the recovery of a percentage that is 5% or less.

Finally, we also rounded up all counts to the nearest hundred to prevent the recovery of suppressed counts among subgroups where the group total is reported.

There are two major statistical updates from last year's report (Jeon et al., 2021). First, we accounted for some students who did not take the KRA in the previous report. Those who were present for the KRA but did not take the KRA were marked as "incomplete" and were included in the total count. This year, to be consistent with the methodology that City Schools and the Maryland State Department of Education (MSDE) utilize, we only included students who took the KRA in analyses of KRA. Therefore, the total number of students who were included in KRA analyses and analyses of other indicators may differ.

Second, in calculating the proportion of students who met the DIBELS benchmark, we used the total kindergarten enrollment with the KRA as a single denominator last year (Jeon et al., 2021). However, we acknowledge that this methodology automatically treats students who did not take DIBELS as not meeting the benchmark, which underestimates the proportion of students who are proficient in early literacy. Thus, in this report, we used the number of students who took DIBELS in each time point as a denominator of each test window each year (for reference, 29% of students in kindergarten did not take DIBELS at BOY in 2021–22 and only a third of these students went on to take DIBELS at MOY or EOY). This overestimates proficiency rates, but supplemental analyses showed this was a much closer estimate of the population proficiency rate.

PART 1.

DATA OVERVIEW, KINDERGARTEN CLASSES OF 2016–17 TO 2021–22

Part 1 uses data from Tables 1, 2, 3 and 5 in the BERC's *Annual Digest of City Schools Kindergarten Statistics, 2022 Edition* (Digest).

KINDERGARTEN READINESS ASSESSMENT. The KRA was first administered in Maryland in 2014 (KRA 1.0[1]) and has been further developed and refined over time (KRA 1.5 2015 to 2017;[2] KRA 2.0 2018 to present[3]). Compared to the KRA 1.0, the KRA 1.5 reduced the number of items as well as the number of domains from six to four (Language & Literacy, Mathematics, Physical Well-being & Motor Development, and Social Foundations). In the KRA 2.0., the scoring rules were improved to account for different scenarios such as "Complete," "Complete with NS (Not Scorable)," "Some items were not complete," and "All items were not complete." In addition, field support guidelines are provided for English language learners (ELLs) and children with disabilities in the KRA 2.0. Across all years, using a composite score of the four domains, kindergarten-readiness levels are categorized into: (a) *demonstrating* readiness, indicating that a child demonstrates readiness; (b) *approaching* readiness, indicating that a child exhibits some readiness; and (c) *emerging* readiness, indicating that a child displays minimal readiness.[4]

Due to the evolution of the KRA assessment over time, making direct year-to-year comparisons can be challenging. Thus, it is advised that readers exercise caution. To ensure careful yearly comparisons, we have identified the versions used in the analyses that follow. Furthermore, the KRA assessment was not conducted during the 2020–21 school year, as remote learning was implemented due to the COVID–19 pandemic. Figure 1 illustrates that approximately 37% to 41% of kindergarteners demonstrated readiness between the 2016–17 and 2019–20 school years, while only 23% demonstrated readiness in 2021–22 school year. Additionally, the percentage of children approaching kindergarten readiness slightly decreased over the five-year period from 39% in 2016–17 to 32% in 2021–22 school years. Before the COVID-19 pandemic, about a quarter of children were categorized as emerging; while in 2021–22, 45% of kindergarteners fell into the emerging category. The results are striking as children who did not demonstrate kindergarten readiness were more likely to fall into the emerging category instead of the approaching category since the pandemic.

1 *Ready for Kindergarten: Kindergarten Readiness Assessment Technical Report*, Prepared for the Maryland State Department of Education and the Ohio Department of Education by WestEd, Fall 2014, https://education.ohio.gov/getattachment/Topics/Early-Learning/Kindergarten/Ohios-Kindergarten-Readiness-Assessment/Kindergarten-Readiness-Assessment-for-Data-Manager/KRA_Technical_Report_2014_Final.pdf.aspx.

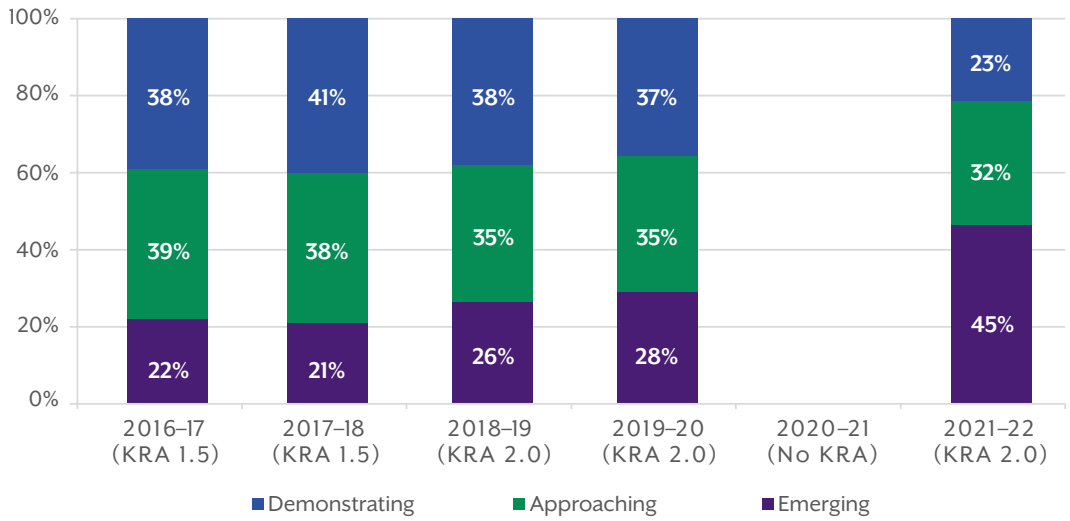
2 *Ready for Kindergarten: Kindergarten Readiness Assessment Technical Report Addendum*, Prepared for the Maryland State Department of Education and the Ohio Department of Education by WestEd, Fall 2015, https://ed.sc.gov/tests/tests-files/pre-k-and-kindergarten-readiness-assessments/kra-technical-report-2015/.

3 *Maryland KRA Scoring: Scoring Rules for KRA 2.0*, Ready for Kindergarten, https://pd.kready.org/data/ck/sites/116/files/MD%20KRA%2020%20Scoring.pdf.

4 "Kindergarten Readiness Assessment (KRA)," Ready for Kindergarten, https://pd.kready.org/105956.

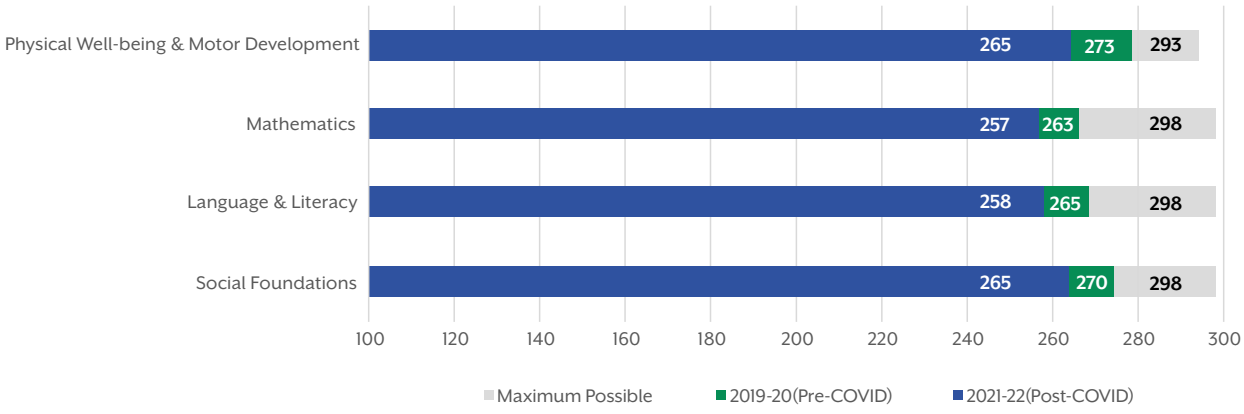
In this report, we newly created Table 2 in the Digest which includes a summary of domain average scores under the KRA 2.0 since the 2018–2019 school year. The information presented in Figure 2 indicates the average scores for each domain during the 2021–22 school year. As a reference, we included the scores during the 2019–20 school year (pre-COVID) and maximum possible on each domain. While the differences between the four domains are not substantial, students performed better in the Social Foundations and Physical Well-being & Motor Development domains than in the Mathematics and Language & Literacy domains. In addition, we observed that since the pandemic, there were similar levels of decline across all four domains.

FIGURE 1. **Baltimore City Kindergarten Readiness Assessment Trends**



Note. The KRA was not administered in 2020–21 when schooling in City Schools was conducted remotely.

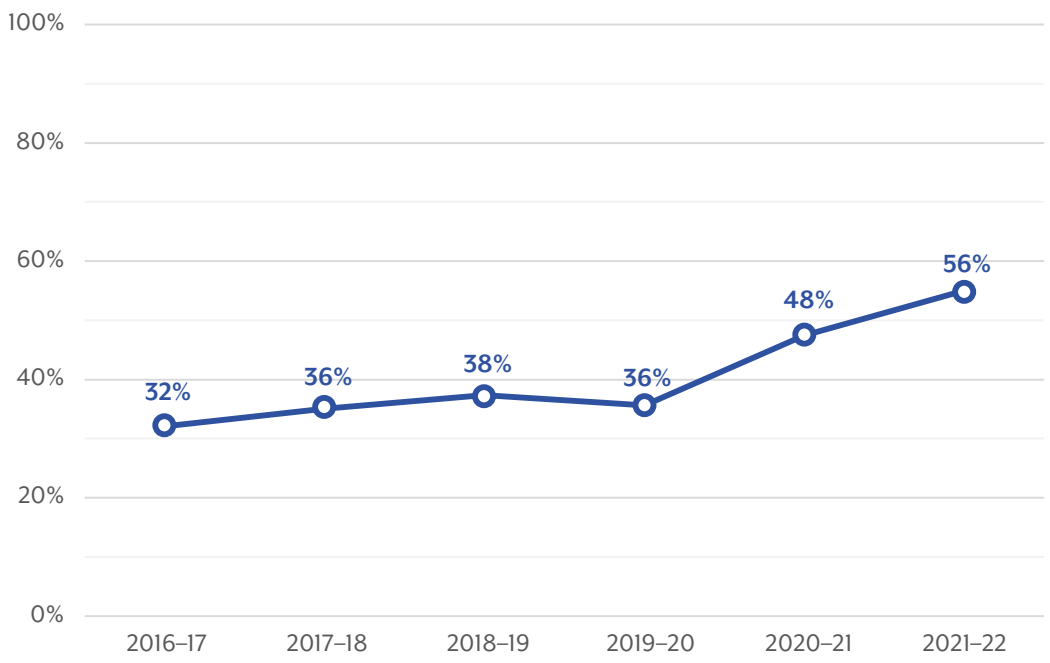
FIGURE 2. **Kindergarten Readiness Assessment Domain Average Scale Scores, 2019–22**



KINDERGARTEN ATTENDANCE.

Using kindergarten attendance data, we examined children's chronic absenteeism. Following the MSDE's definition, chronic absenteeism was defined as being absent for 10% or more of the total number of days enrolled during the school year. This definition was applied to all years of data, including the 2019–20 school year, during which chronic absence was calculated based on children's attendance and enrollment before COVID-19 pandemic-related school closures. When virtual learning was offered in the following year, attendance was taken during the virtual sessions. The results indicate that between the 2016–17 and 2019–20 school years, approximately 32% to 38% of kindergarteners were chronically absent (as illustrated in Figure 3). However, this rate of chronic absenteeism significantly increased to 48% and 56% during the 2020–21 and 2021–22 school years, respectively. Children's kindergarten attendance did not return to the pre-pandemic level. One of the reasons may be that families and children were still recovering physically and emotionally. In addition, some programs still had the mask mandates due to the health risks during the pandemic (Mehta, 2023).

FIGURE 3. **Kindergarten Chronic Absenteeism Trends Over Time**



Note. Chronic absence in 2019–20 was calculated based on student attendance and enrollment prior to COVID-19-pandemic-related school closures.

DYNAMIC INDICATORS OF BASIC EARLY LITERACY SKILLS.

DIBELS is designed to assess children's early literacy skills. In this report, we use the DIBELS composite score, a combination of multiple items designed to provide an overall estimate of students' reading proficiency. City Schools used the DIBELS Next version from the 2016–17 to 2018–19 school years and then switched to the DIBELS 8th version in the 2019–20 school year. If students score above the benchmark, it is likely that they achieve about 90% to 99% reading outcomes in the future years.[5]

It is worth noting that the benchmark goals in DIBELS are designed to capture children's developmentally appropriate growth over time. To achieve this, the DIBELS Next assessment includes different tests at each time point. For example, in kindergarten, only First Sound Fluency is measured at the beginning of the year (BOY) for diagnostic purposes. At the middle-of-the-year (MOY) and the end-of-the-year (EOY) assessments, Phoneme Segmentation Fluency and Nonsense Word Fluency tests are added. Furthermore, the scoring criteria to meet the benchmark (i.e., cut points) increase over time to reflect children's growth. Therefore, while it remains crucial for students to meet the benchmark at each assessment, it is essential to recognize that different literacy skills are measured across those time points.

5 *DIBELS Next®: Summary of Benchmark Goals and Cut Points for Risk,* https://www.nncsk12.org/site/handlers/filedownload. ashx?moduleinstanceid=6044&dataid=5471&FileName=DIBELSNextBenchmarkGoals-7.pdf.

TABLE 1. Dynamic Indicators of Basic Early Literacy Skills Trends Over Time

	DIBELS Versions	Above Benchmark at BOY	Above Benchmark at MOY	Above Benchmark at EOY
2016–17	Next	66%	57%	60%
2017–18	Next	61%	54%	59%
2018–19	Next	58%	56%	59%
2019–20	8th Edition	43%	60%	N/A
2020–21	8th Edition	25%	32%	37%
2021–22	8th Edition	25%	39%	55%

Note. DIBELS was not administered at the EOY window in 2019–20 due to COVID-19-pandemic-related school closures.
BOY = Beginning of year, MOY = Middle of year, EOY = End of year

Table 1 shows that from the 2016–17 to the 2018–19 school years, approximately 58% to 66% of kindergartners scored above benchmark at BOY when DIBELS Next was administered, measuring First Sound Fluency. However, with the addition of the Phoneme Segmentation and Nonsense Word Fluency tests at MOY and EOY, student performance slightly decreased at those points, especially in 2016–17 and 2017–18. This likely reflects their challenges in acquiring new literacy skills.

Notably, after the introduction of the DIBELS 8th version in the 2019–20 school year, the percentage of students achieving above benchmark at BOY dropped to 43%. Although it is challenging to determine the exact cause of the drop, it is possible that the inclusion of the Phoneme Segmentation and Nonsense Word Fluency tests and Word Reading Fluency test at BOY in DIBELS 8th might contribute to the lower percentage of students meeting the benchmark.

In both the 2020–21 and 2021–22 school years after the COVID-19 pandemic, the percentage of students achieving above benchmark at BOY significantly declined to 25%, which was likely due to the impact of the pandemic on the educational environment. However, at EOY in 2021–22, the percentage of students scoring above benchmark returned to 55%, close to pre-pandemic levels. This is an optimistic outcome as school re-openings could have helped students achieve their early literacy skills that they potentially missed during the school closure.

PART 2.

KINDERGARTEN READINESS AND OUTCOMES BY SUBGROUPS

Kindergarten Readiness Assessment

Table 1 in the Digest describes KRA data by various subgroups.

GENDER. On average, girls were 10% more likely than boys to be in the demonstrating group, while boys were 10% more likely to be in the emerging group. These patterns have persisted over time before and after the pandemic. The distribution of the approaching group was similar for both boys and girls. These findings align with existing literature indicating that girls tend to perform better than boys in kindergarten (Eriksson et al., 2012). It is noteworthy that, in the 2021–22 school year, the percentage of students in the demonstrating group decreased by almost 15% for both boys and girls compared to their percentages in 2019–20.

RACE/ETHNICITY. Figure 4 illustrates the trends in the KRA data by race and ethnicity, with data presented only for Black or African American (referred to as Black), Hispanic, and White, non-Hispanic (referred to as White) children due to the small sample sizes for other races. The largest group, Black children (approximately 3,500 in the 2021–22 school year), is presented first, followed by Hispanic children (approximately 1,000) and White children (approximately 500). The data revealed that White children were more likely to demonstrate readiness (49–62%) than Black (21–40%) and Hispanic (12–32%) children.

The COVID-19 pandemic impacted all three racial and ethnic groups with a significant decrease in the proportion of students who demonstrate readiness. Within Black, White, and Hispanic children, the rate of demonstrating readiness decreased by around 10% in 2021–22 compared to pre-pandemic school years (50% for White, 21% for Black or African/American, and 12% for Hispanic). It is concerning that Hispanic children not only had the lowest rate of demonstrating readiness (12%), but were also most likely to fall into the emerging groups (60%); however, this presents the opportunity to support them at the beginning of the school year. It is also possible that Hispanic children's performance is related to proficiency in English (see the next section) because the KRA is only offered in English. The data shows that about 71.5% of Hispanic children were ELLs in the 2021–22 school year (N = 830). Expanding public early care and education programming and services for young children would provide substantial support for these students before they enter kindergarten.

Although we present data on other races in Table 2 in the Digest, their numbers were too small to draw meaningful conclusions about their KRA performance.

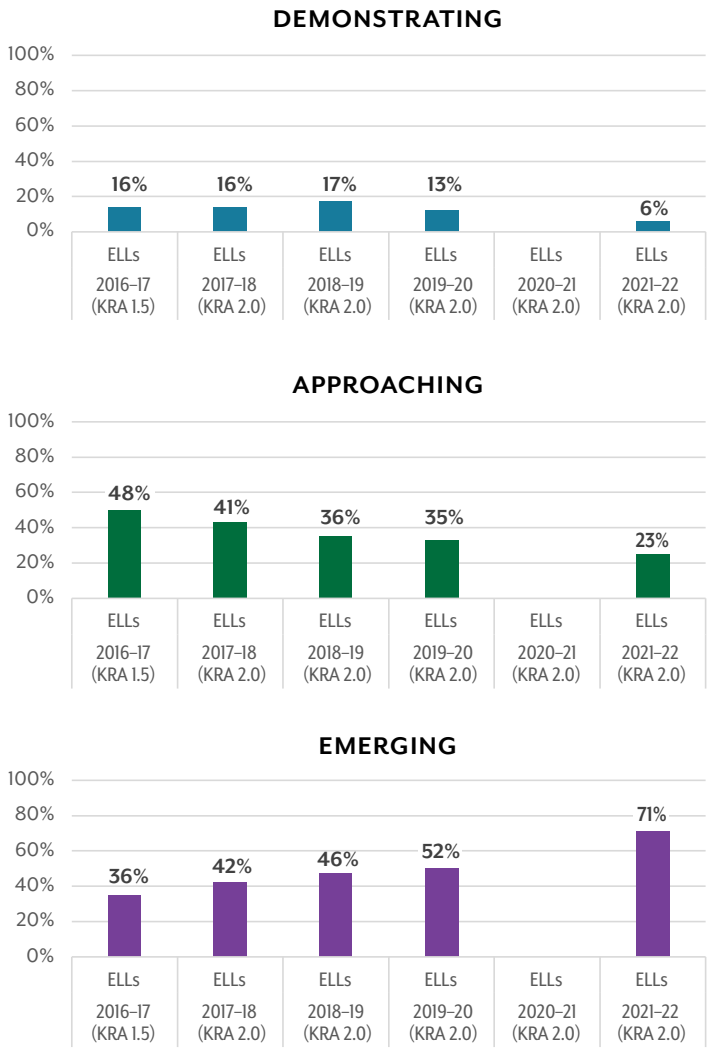
FIGURE 4. Baltimore City Kindergarten Readiness Assessment Trends by Race and Ethnicity

Note. The KRA was not administrated in 2020/21 when schooling in Baltimore City was conducted remotely.

ENGLISH LANGUAGE LEARNERS.

As shown in Figure 5, the percentage of ELLs who demonstrated readiness in the KRA remained low, ranging from 13% to 17% between the school years 2016–17 and 2019–20. It is possible that ELL children might not show proficiency in the KRA because it was only administered in English; as a result, the KRA may not accurately reflect their cognitive functioning and capacity. Therefore, it is crucial to provide follow-up programming and closely monitor the progress of ELLs to ensure that every child has an opportunity to succeed in kindergarten. Additionally, the pandemic-related school closures might have negatively impacted children's learning, contributing to the extremely low percentage of demonstrating group (6%) and high percentage of emerging group (71%) within ELLs in the most recent school year (2021–22).

FIGURE 5. **Baltimore City Kindergarten Readiness Assessment Trends by English Language Learner Status**

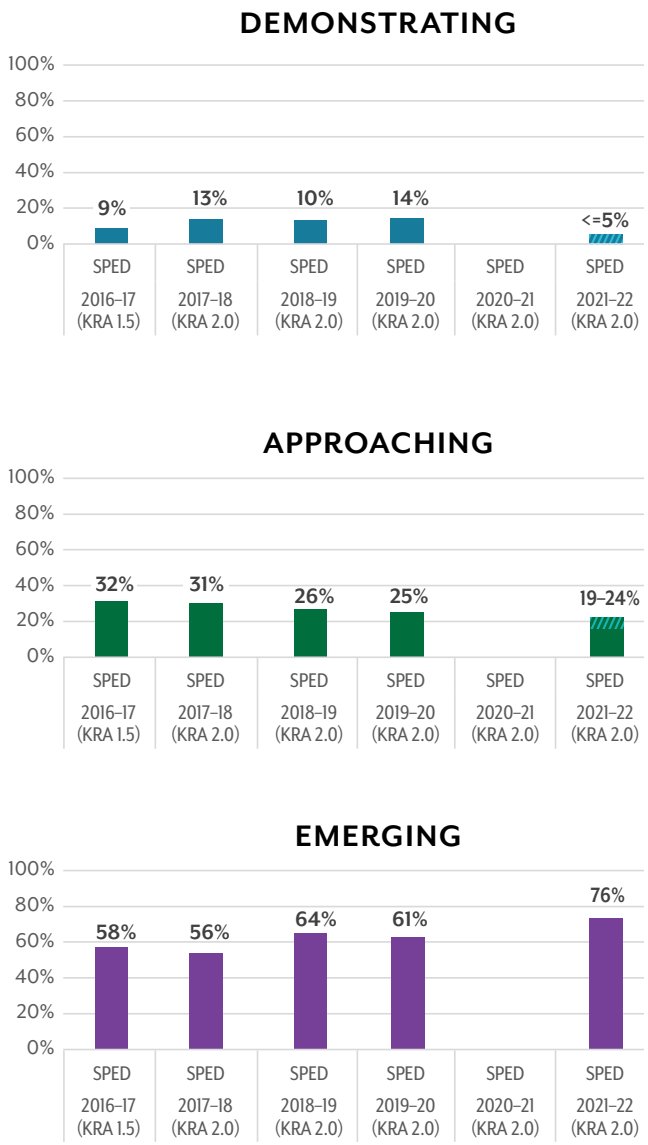


Note. The KRA was not administrated in 2020–21 when schooling in Baltimore City was conducted remotely.

SPECIAL EDUCATION.

The KRA analysis for students receiving special education services (SPED) revealed that between 9% and 14% of children demonstrated readiness from the 2016–17 to 2019–20 school years, as presented in Figure 6. However, the latest data from 2021–22 showed a significant decrease, with less than 5% of children in SPED demonstrating school readiness. Moreover, the percentage of children approaching readiness decreased from 32% to 19–24% over the same period. Prior to the COVID-19 pandemic, nearly 60% of children receiving SPED fell into the emerging category, which significantly increased to 76% in the 2021–22 school year. Research suggests that students with disabilities were more likely to be impacted by the disruptions of the pandemic, which caused school closures and restrictions, delaying one-on-one interactions with teachers and therapists (Hurwitz et al., 2022). In addition, parents and caregivers of special education students may have had difficulties supporting their child's learning during this period (Greenway & Eaton-Thomas, 2020). To address these findings, we recommend programs to implement additional monitoring of the progress of children receiving SPED services and provide more support to the large group in the emerging category.

FIGURE 6. **Baltimore City Kindergarten Readiness Assessment Trends by Special Education Status**



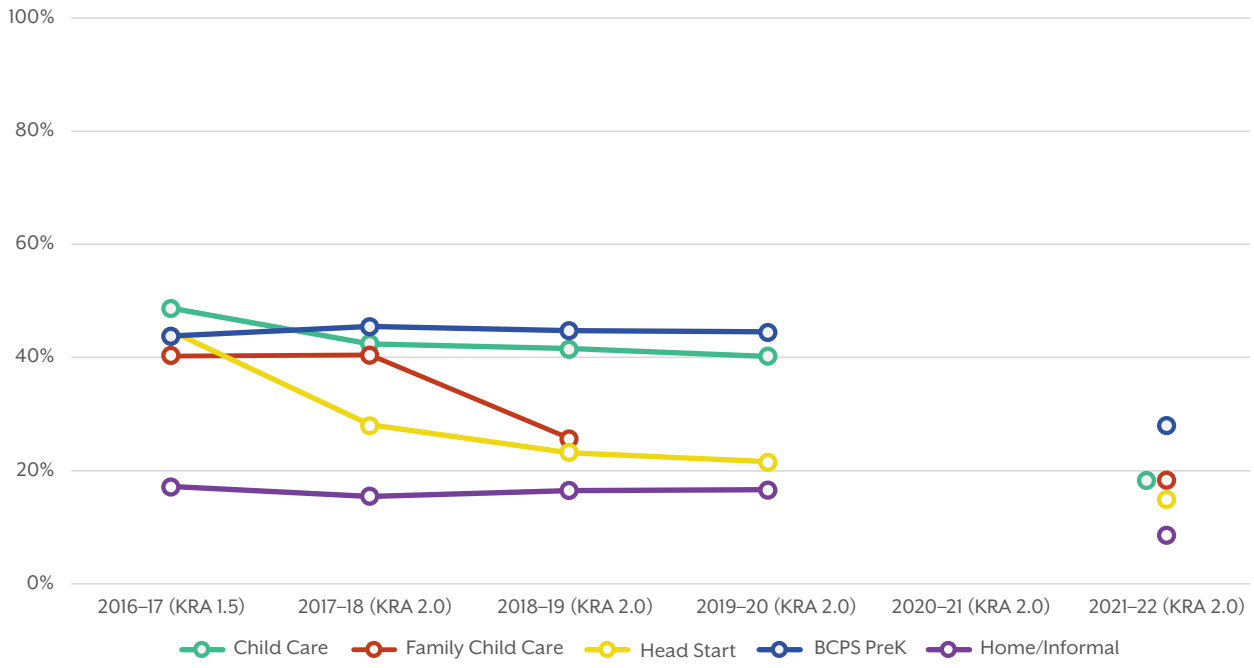
Note. The KRA was not administrated in 2020–21 when schooling in Baltimore City was conducted remotely. The bars with stripes represent ranges to protect student privacy.

PRIOR CARE AND KINDERGARTEN REPETITION.

We examined the KRA by prior-care settings, with prior-care information gathered through parents' responses during the kindergarten enrollment process. Table 1 in the Digest displays the distribution of parents' responses, while City Schools pre-kindergarten (PreK) enrollment data are retrieved from the BERC data archive. Comparing the parent-reported data with the official enrollment data revealed significant discrepancies. For instance, in the 2018–19 school year, only 300 parents reported their child attending PreK in the prior year, whereas actual enrollment data indicated around 4,000 children attended PreK. While the discrepancy has reduced in the most recent 2021–22 school year as the City Schools automated the prior care selection for those who attended PreK, it is likely that other prior care options still have discrepancies by using parent reports. Thus, more attention is needed to minimize discrepancies. It is worth noting that addressing this issue can improve the accuracy of data and ultimately aid in decision-making for early care and education programs. It is worthwhile to establish a more reliable administrative enrollment data archive across all early care and education sectors serving children from birth to age 5, including Head Start, Early Head Start, center-based private childcare, family childcare, and others. This would help the city track children's prior-care attendance before they enter kindergarten. Furthermore, the data discrepancies between parent reports and administrative data may suggest that parents are not fully aware of the different early childhood services available in the city. This has implications for families' ability to take advantage of benefits provided by childcare service providers and to feel comfortable advocating for their needs as well as their children's needs in different settings. While the Baltimore City Early Childhood Advisory Council (ECAC) has taken relevant actions to potentially reduce these discrepancies, such as inviting parents to join the Baltimore City Public Schools District Office to discuss mixed-delivery PreK, we recommend additional actions to educate families throughout the early childhood years to ensure that they are informed of available services.

Although parent-reported prior-care data has its limitations, we have included an analysis of the KRA by prior care in Figure 7 to provide a general understanding of children's early childhood experiences. Over the six-year period, children who did not participate in formal early care and education services (i.e., home/informal care) consistently demonstrated the lowest levels of readiness compared to other groups before and after the COVID-19 pandemic. This highlights the critical role of attending early care and education programs in preparing children for kindergarten. Furthermore, regardless of the type of early care and education services they received in the 2021–22 school year, children demonstrated decreased school readiness after the COVID-19 pandemic. This may suggest that caregivers and childcare providers were having challenges in supporting children to recover after the pandemic. We acknowledge that the decline in students' performance may be a reflection of the decline of the quality of life of the early care and education workforce itself.

FIGURE 7. Kindergarten Readiness Assessment Demonstrating by Prior Care



Note. Parent-reported prior care was used. For BCPS PreK, we used the City Schools enrollment data to improve accuracy. The KRA was not administrated in 2020–21 when schooling in Baltimore City was conducted remotely. The 2019–20 family childcare data point is omitted to protect student privacy. Other prior care options in Digest Table 1 are omitted due to small cell sizes.

Table 1 in the Digest also shows that there were children *repeating kindergarten*. Children who repeated kindergarten were less likely to demonstrate readiness compared to the district average in the repeating year. Most of them were in the approaching group. Although the number of children who repeat kindergarten was not large, it is important to pay attention to this group as kindergarten repetition has implications for their future outcomes (Burkam et al., 2007; Hong & Raudenbush, 2005). In particular, repeating kindergarten may result in older age at entry into first grade, which has been associated with lower academic achievement and increased risk of grade retention in later grades (Hong & Raudenbush, 2005). Therefore, it is crucial for educators and caregivers to identify and address the needs of children who may be at risk for repeating kindergarten, and to provide appropriate support to help them achieve school readiness and success in future academic endeavors.

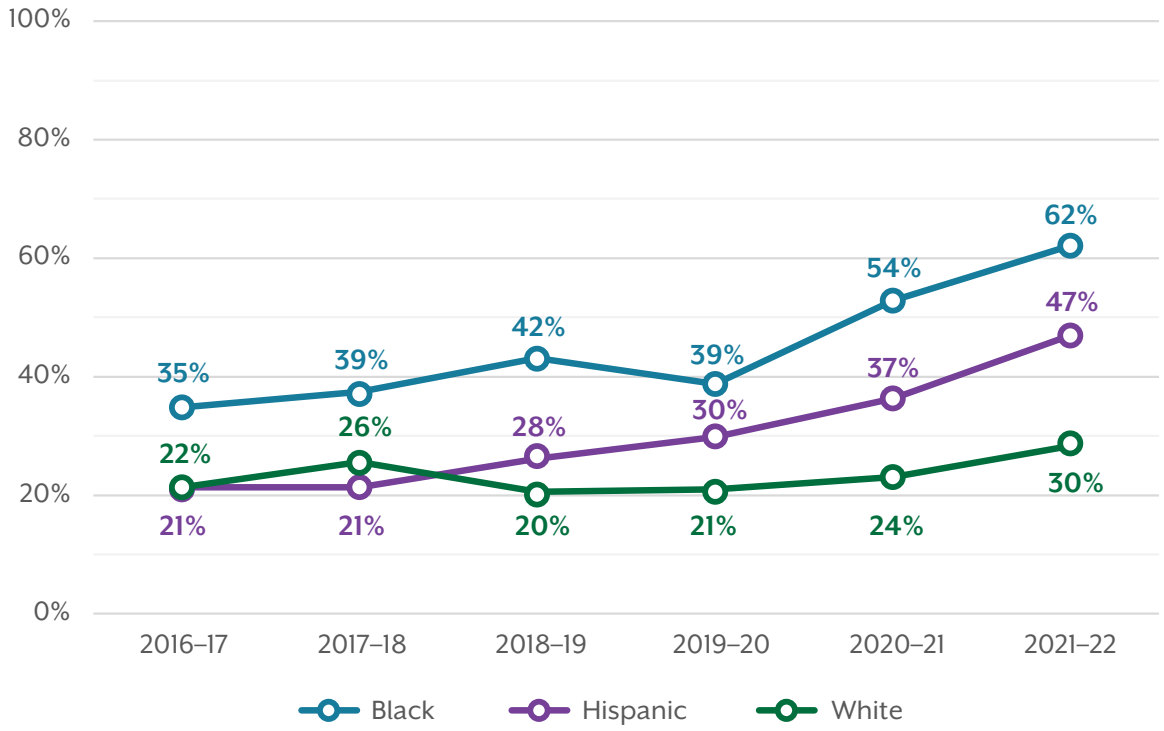
Kindergarten Chronic Absenteeism

Table 3 in the Digest displays data on chronic absenteeism (CA) analysis by subgroups. Note that there were no significant differences in CA between boys and girls over the six years (2016–17 to 2021–22).

RACE/ETHNICITY. Our analysis revealed disparities in chronic absenteeism (CA) rates among Black, Hispanic, and White children. As depicted in Figure 8, Black children had the highest CA rates among the three groups and experienced the largest increase from 42% to 62% during the pandemic period (2018–19 to 2021–22). Chronic absenteeism places children at a greater risk of falling behind, scoring lower on standardized tests, and dropping out of school (Gottfried, 2014). Multiple factors may contribute to high levels of CA among Black children, the largest group of children in Baltimore City Public Schools, including familial support and background (Black et al., 2014; Morrissey et al., 2014). Evidence-based interventions and prevention programs for families, such as basic and intensified messaging for parents, are needed to address this issue (Kurki et al., 2021). Furthermore, additional research is needed to understand the underlying reasons for absenteeism to help early care and education programs identify effective strategies to prevent chronic absenteeism.

Another important trend that requires attention is the increasing CA rate among Hispanic children over time. Between 2016 and 2018, the CA rate for Hispanic children was consistently around 21%; however, in the more recent years (2020–22), this rate had seen a significant increase of over 15 percentage points, with the rate now ranging between 37% to 47%. Given the unique challenges and barriers Hispanic families face in accessing early care and education services, it is crucial to investigate the reasons for this trend and provide necessary support for these children and their families. In addition to transportation assistance, culturally sensitive interventions could also be implemented, such as providing bilingual communication materials, hosting parent engagement events that are accessible and welcoming to Spanish-speaking families, and hiring bilingual staff to work directly with Hispanic families.

FIGURE 8. **Kindergarten Chronic Absenteeism Trends by Race/Ethnicity**



Note. Chronic absence in 2019–20 was calculated based on student attendance and enrollment prior to COVID-19-pandemic-related school closures.

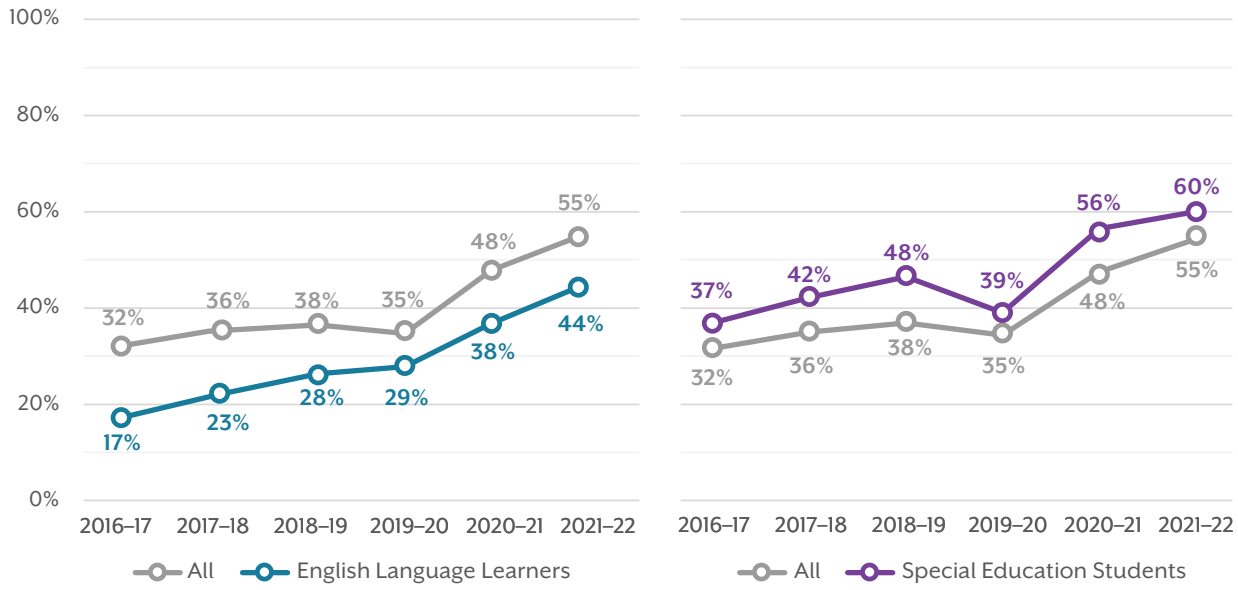
ENGLISH LANGUAGE LEARNERS. Similar to what we observed among children who were Hispanic or other races (e.g., Asian), ELLs had lower CA rates compared to the district average. However, ELLs showed higher percentages of CA in more recent years (Figure 9). Compared to 17% of CA in the 2016–17 school year, CA for ELLs was 38% and 44% in the 2020–21 and 2021–22 school years, respectively. Although the CA rate for ELLs was still lower than the overall kindergarteners in City Schools, it is important to pay attention to their increased rate of CA.

SPECIAL EDUCATION. Figure 9 shows the CA of students with SPED services. About 27% to 36% of these children had CA before the COVID-19 Pandemic (2016–17 to 2019–20 school year), which was slightly higher than the City Schools' overall average. It is not clear, though, whether the students who were absent still utilized other intervention services outside of City Schools. Careful consideration should be given to finding the best ways to support children with SPED. While there is evidence that students with disabilities, or those identified for special education, benefit academically (i.e.,

math and reading achievement) from spending more time in the kindergarten classroom, the evidence for academic, social skills and behavioral functioning is mixed (Gottfried & Le, 2016). Prior evidence shows that children with learning and communication disorders demonstrate greater academic achievement (i.e., math, reading), while children with physical impairments demonstrate less self-control and interpersonal skills when they attend formal programs (Gottfried & Le, 2016). For students with communication- or learning-related disorders, participating in a formal education setting has been found to reduce absenteeism over time (Gottfried et al., 2020). Perhaps students with physical impairments experience fatigue with the duration of the school day, which could contribute to school absence. Thus, it is important to consider that the effectiveness of school attendance may vary by the type and severity of children's disabilities (Gottfried & Le, 2016) and to use this information to support student needs.

It is also concerning that, in the recent two years (2020–21 and 2021–22), the rate of CA of students in SPED increased to nearly 60%. This may be due to a wide range of factors, including the disruptions in specialized services during this period and the challenges for parents and caregivers of SPED children to navigate the complex demands of virtual or hybrid learning and support their child's unique needs (Hurwitz et al., 2022). Given these challenges, it is essential for early care and education programs to provide additional support and resources to students with disabilities and their families, including more in-person support services and targeted interventions to address barriers to engagement and attendance.

FIGURE 9. Kindergarten Chronic Absenteeism Trends by Special Status

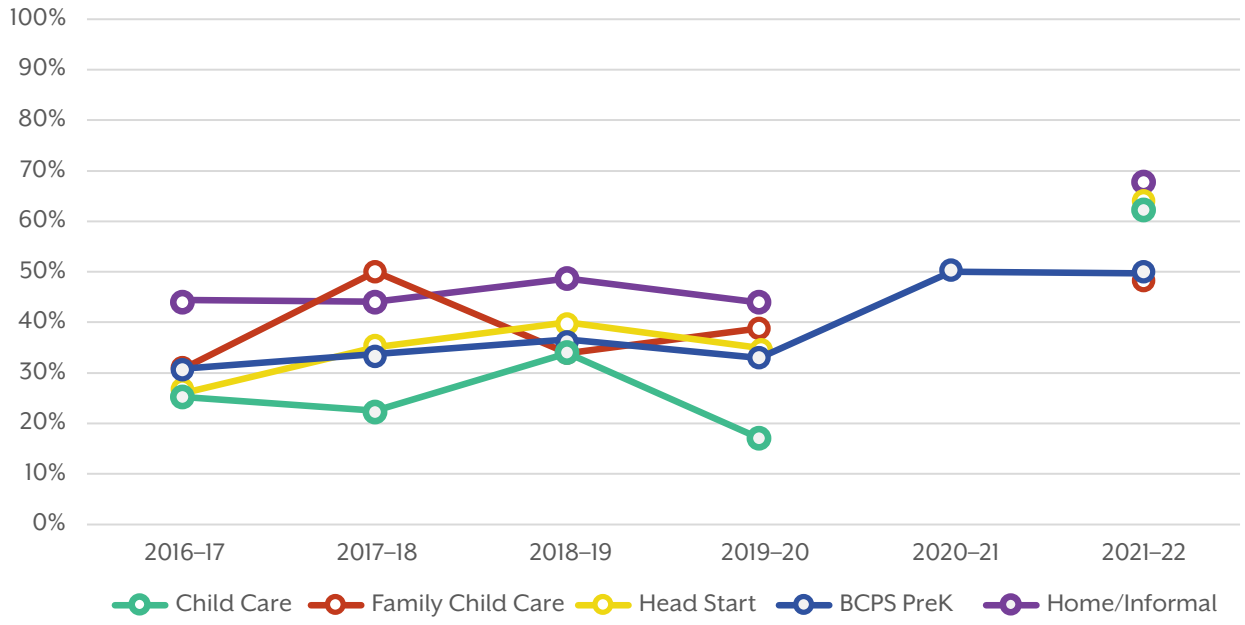


Note. Chronic absence in 2019–20 was calculated based on student attendance and enrollment prior to COVID-19-pandemic-related school closures.

PRIOR CARE AND KINDERGARTEN REPETITION. Although there are limitations to using parent-reported prior-care data, we examined CA by prior care to gain a preliminary understanding of trends. We reiterate that future reports would benefit from using administrative enrollment data. Figure 10 illustrates that children who did not attend formal early care and education (i.e., home/informal care) consistently had a higher prevalence of CA compared to those who used formal early care and education. In the 2021–22 school year, it is observed that the rate of CA increased across all prior care types.

It is noteworthy that children who repeated kindergarten consistently had the highest CA compared to others in the repeating year, particularly in the 2020–21 school year, with 79% of children who repeated kindergarten experiencing CA, a significantly higher rate compared to other groups (nearly 50%) in the same year. These results demonstrate the potential impact of repeating kindergarten on a child's development.

FIGURE 10. **Kindergarten Chronic Absenteeism Trends by Prior Care**



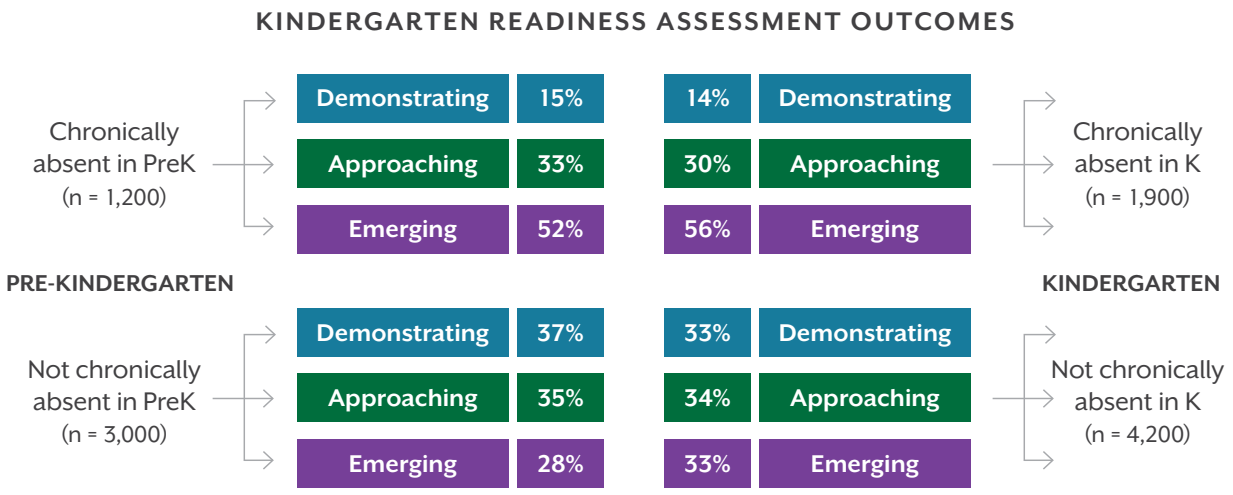
Note. Parent-reported prior care was used. Chronic absence in 2019–20 was calculated based on student attendance and enrollment prior to COVID-19-pandemic-related school closures. For BCPS PreK, we used the City Schools enrollment data to improve accuracy. KRA was not administrated in 2020–21 when schooling in Baltimore City was conducted remotely, therefore, prior care was not reported.

Relationships Between the Kindergarten Readiness Assessment and Chronic Absenteeism

Table 4 in the Digest shows the relationships between KRA performance and children's CA in PreK and kindergarten. Data collected before the COVID-19 pandemic (2016–17 to 2019–20) demonstrated that, among children who were chronically absent in PreK, 31% to 34% of children demonstrated kindergarten readiness, measured by the KRA, whereas among children who were not chronically absent in PreK, 48% to 51% of children demonstrated kindergarten readiness. Furthermore, only 26% to 30% of children who were chronically absent at the end of the kindergarten year were in the KRA demonstrating group at BOY. In contrast, 42% to 46% of children who were not chronically absent in kindergarten were in the KRA demonstrating group before the pandemic.

The pandemic widened the gap in the KRA scores between students who were chronically absent and not chronically absent. Figure 11 illustrates the relationship between the KRA and CA patterns using data collected after the COVID-19 pandemic during the 2021–22 school year. The figure shows that for children who were chronically absent in PreK, only 15% demonstrated readiness, while 52% fell into the emerging category on the KRA. In comparison, for children who were not chronically absent in PreK, 37% demonstrated readiness on the KRA. This illustrates the importance of attending PreK regularly during the pandemic to be ready for kindergarten. Additionally, the figure shows that among children who were chronically absent in kindergarten, only 14% demonstrated readiness at the beginning of kindergarten, whereas 33% of children who were not chronically absent in kindergarten demonstrated readiness.

FIGURE 11. **Relationships Between Kindergarten Readiness Assessment and Chronic Absenteeism, 2021–22**



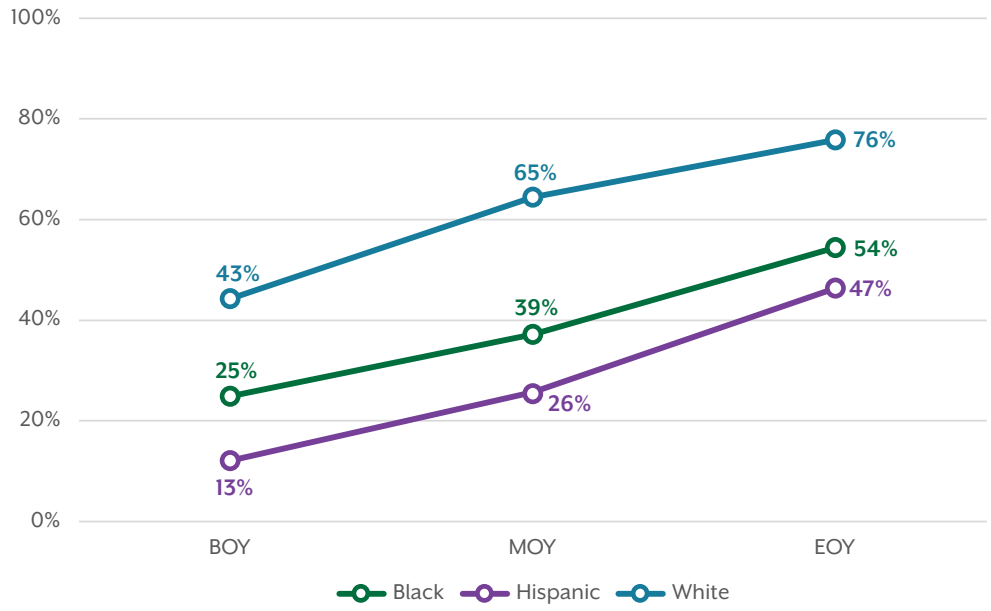
Dynamic Indicators of Basic Early Literacy Skills

Table 5 in the Digest shows the analysis of DIBELS by subgroups.[6]

GENDER. Overall, the performance of boys on DIBELS was slightly lower than the average levels of students across all cohorts. This finding is consistent with the disparities in their KRA performance, indicating that boys may need additional support to improve literacy and language development.

RACE/ETHNICITY. In the more recent years (2020–21 to 2021–22), Hispanic children demonstrated consistently the lowest percentage (12–13%) above benchmark in DIBELS at BOY than children with other racial/ethnical backgrounds. Although in the school year 2021–22 (Figure 12), Hispanic children started to catch up and had similar outcomes as Black children at EOY. Black and Hispanic children were, however, still less likely to have above-benchmark outcomes compared to their White peers. Specifically, White children had significantly better DIBELS outcomes (43% above benchmark) than Black (25% above benchmark) and Hispanic 13% above benchmark) children at BOY as shown in Figure 12.

FIGURE 12. **Percentage of Kindergartners Scored Above Dynamic Indicators of Basic Early Literacy Skills Benchmark by Race/Ethnicity, 2021–22**

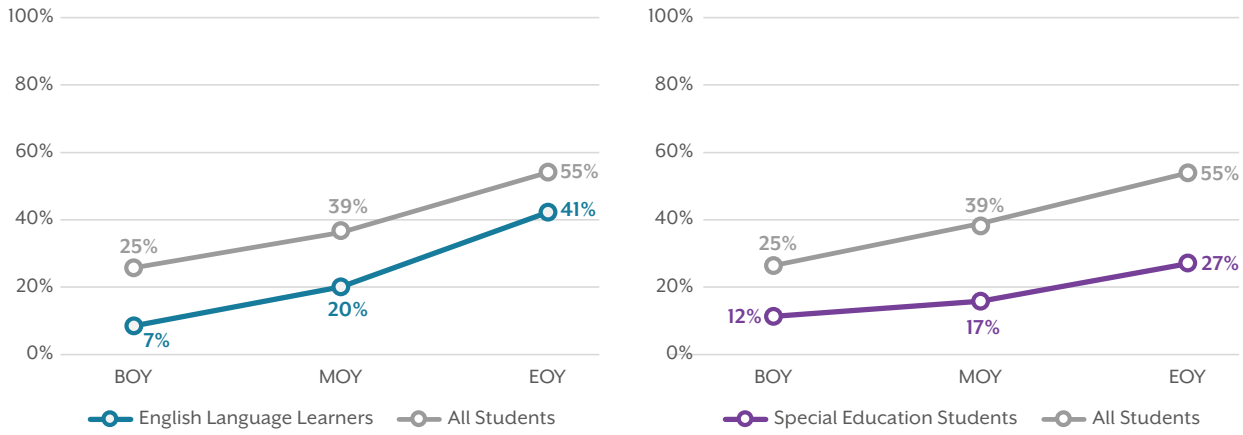


6 City Schools used DIBELS Next from 2014–15 to 2018–19 and DIBELS 8th in 2019–20. In both versions, DIBELS use different fluency domains and different cut points to determine the benchmark at BOY, MOY, and EOY. See DIBELS scoring details in Part 1 of this report.

ENGLISH LANGUAGE LEARNERS AND SPECIAL EDUCATION. Figure 13 displays the percentage of kindergarteners who scored above the DIBELS benchmark by ELL and SPED status in the 2021–22 school year, compared to the district average. While ELLs had historically scored lower than the overall average, they demonstrated improved performance in a more recent school year, with 41% scoring above the benchmark at EOY, up from 19% in the 2020–21 school year during the pandemic. There remains a significant concern regarding children with SPED, as less than 30% scored above the benchmark at EOY each year. In the 2021–22 school year, only 27% of children with SPED scored above the benchmark at EOY.

PRIOR CARE AND KINDERGARTEN REPETITION. Consistent with our findings on the KRA and CA, the parent-reported prior care data indicates that children who received formal early care and education were more likely to meet the DIBELS benchmark throughout the year than those with home/informal care. Although children who repeated kindergarten were more likely to meet the benchmark at BOY compared to those with home/informal care, they started falling behind other groups at MOY, and the gaps between them widened at EOY.

FIGURE 13. **Percentage of Kindergartners Who Scored Above Dynamic Indicators of Basic Early Literacy Skills Benchmark by Special Status, 2021–22**



Note. BOY = Beginning of Year, MOY = Middle of Year, EOY = End of Year

Relationships Between Dynamic Indicators of Basic Early Literacy Skills, the Kindergarten Readiness Assessment, and Chronic Absenteeism

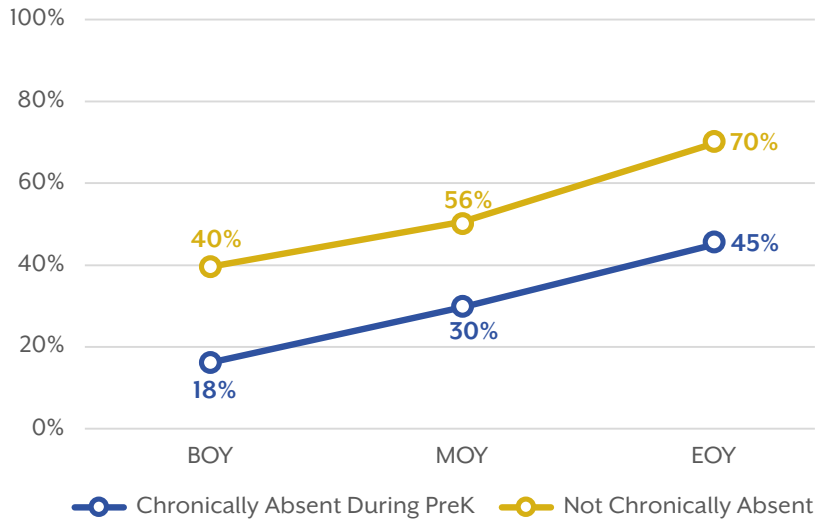
Table 6 in the Digest provides insight into the relationships between DIBELS and children's CA in PreK and kindergarten, as well as the relationships between DIBELS and the KRA.

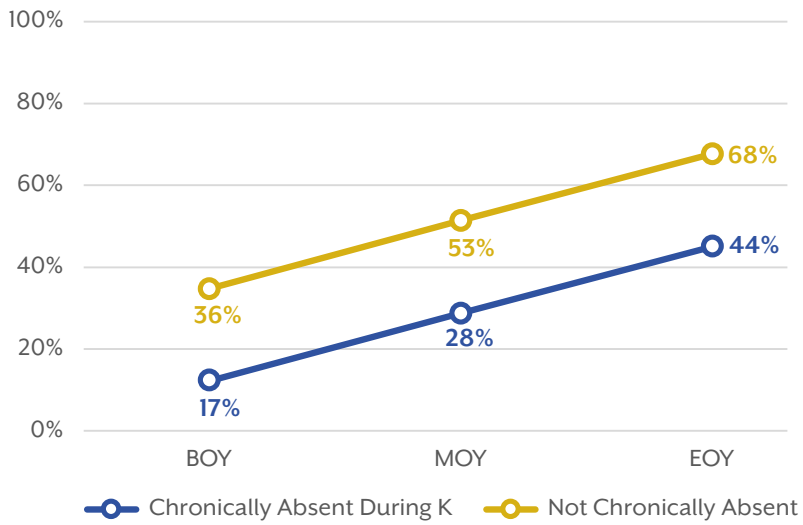
Among children who were chronically absent in PreK, 55% to 62% of them met the DIBELS Next benchmark at BOY across the school years from 2016–17 to 2018–19. In comparison, those who were not chronically absent scored higher on the DIBELS Next benchmark at BOY across the years, ranging from 74% to 81% in the 2016–17 to 2018–19 school years.

Despite the generally low performance of children in PreK on the DIBELS 8th Edition from 2019–20 to 2021–22, children who were chronically absent in CA had even greater difficulty meeting benchmark, ranging from 18% to 57% across the years. In contrast, those who were not chronically absent had higher rates of meeting benchmark, ranging from 33% to 73% across the years. Figure 14 displays the BOY, MOY, and EOY trends for the most recent school year (2021–22), where a consistent gap of approximately 20 percentage points persisted across all three time points between children who were chronically absent and those who were not in PreK. These findings underscore the significance of early attendance in achieving positive outcomes for children in kindergarten.

Likewise, children who were chronically absent in kindergarten underperformed their peers on literacy skills measured by DIBELS throughout the year. Less than half of the kindergarteners who were chronically absent in kindergarten scored above the DIBELS Next benchmark at BOY, ranging from 46% in 2018–19 to 55% in 2016–17. In contrast, kindergarteners who were not chronically absent were more likely to score above the benchmark, ranging from 65% in 2018–19 to 72% in 2016–17. Similar patterns emerged in the most recent school year (2021–22) when administering DIBELS 8th Edition, where kindergarteners in CA had lower percentages of scoring above benchmark than those who were not, with a 19% difference at BOY and a 24% difference at MOY and EOY. Absenteeism may have led to missed learning opportunities in kindergarten, which could have manifested as lower EOY DIBELS performance.

FIGURE 14. **Percentage of Kindergartners Who Scored Above Dynamic Indicators of Basic Early Literacy Skills Benchmark by PreK and Kindergarten Chronic Absenteeism Status, 2021–22**





The relationship between the DIBELS and the KRA indicates that a high percentage of children demonstrating readiness, ranging from 66% to 94%, met the DIBELS benchmarks throughout the years. However, only a small percentage of children with emerging readiness, ranging from 8% to 33%, met the DIBELS benchmarks. These findings demonstrate the potential connection between overall kindergarten readiness at the beginning of the school year and early literacy skill development throughout the kindergarten year.

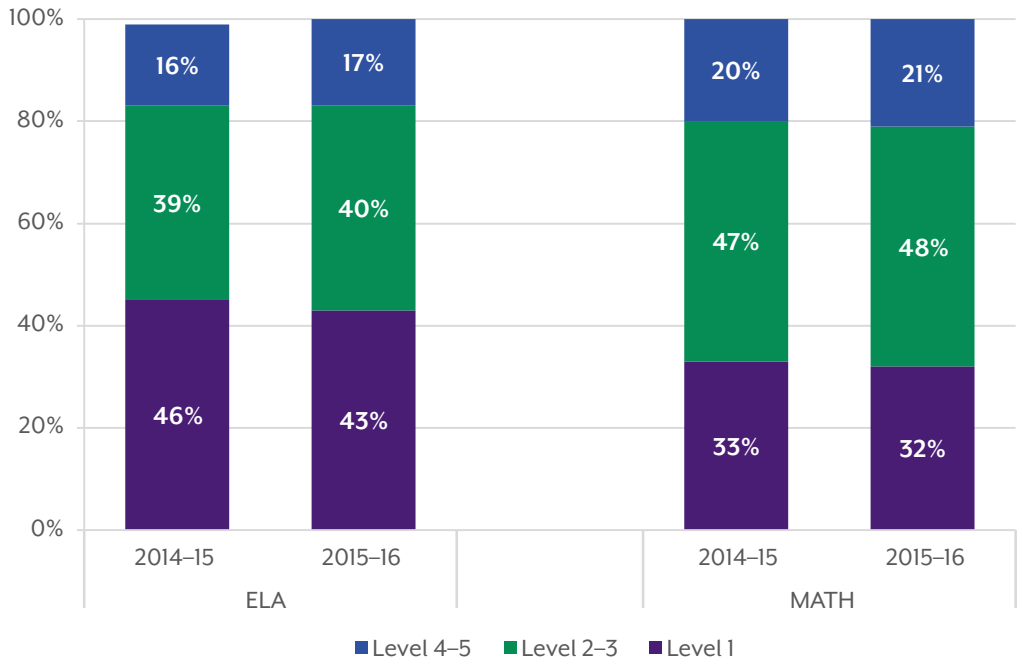
PART 3.

KINDERGARTEN SUCCESS AND 3RD GRADE OUTCOMES

To examine the relationships between kindergarten performance and 3rd grade outcomes, we used the kindergarten classes of 2014–15 and 2015–16. We note that this is a replication of the 2021 Kindergarten Success Fact Book. The data on more recent cohorts (kindergarten classes of 2016–17 and 2017–18) are not refreshed in this report because PARCC was not administered in 3rd grade for those cohorts due to COVID-19 closure. For the 2018–19 cohort who were in 3rd grade in the 2021–22 school year, the new Maryland Comprehensive Assessment Program (MCAP) test replaced PARCC. The results of this test were not available for the publication of this year's report. We will report the results in the next series of this report.

Table 7 in the Digest shows the overall trends of PARCC results for the two cohorts of kindergartners. Using an overall score, PARCC provides five different performance levels. In this report, we categorized the five levels into three: (a) level 1, representing "did not yet meet expectations"; (b) levels 2–3, representing "partially met or approached expectations"; and (c) levels 4–5, representing "met or exceeded expectations."[7] The data are updated from the 2021 Kindergarten Success Fact Book to reflect the changes that we did not restrict the sample for the entire analyses to students who completed the KRA. In this report, we are inclusive of all students enrolled in City Schools. For example, Figure 15 represents data for all students enrolled in 3rd grade in a given year.

FIGURE 15. **Baltimore City Kindergarten Cohorts 3rd Grade Partnership for Assessment of Readiness for College and Careers Trends**



7 "Maryland School Assessment," Maryland Governor's Office for Children, https://goc.maryland.gov/maryland-school-assessment/.

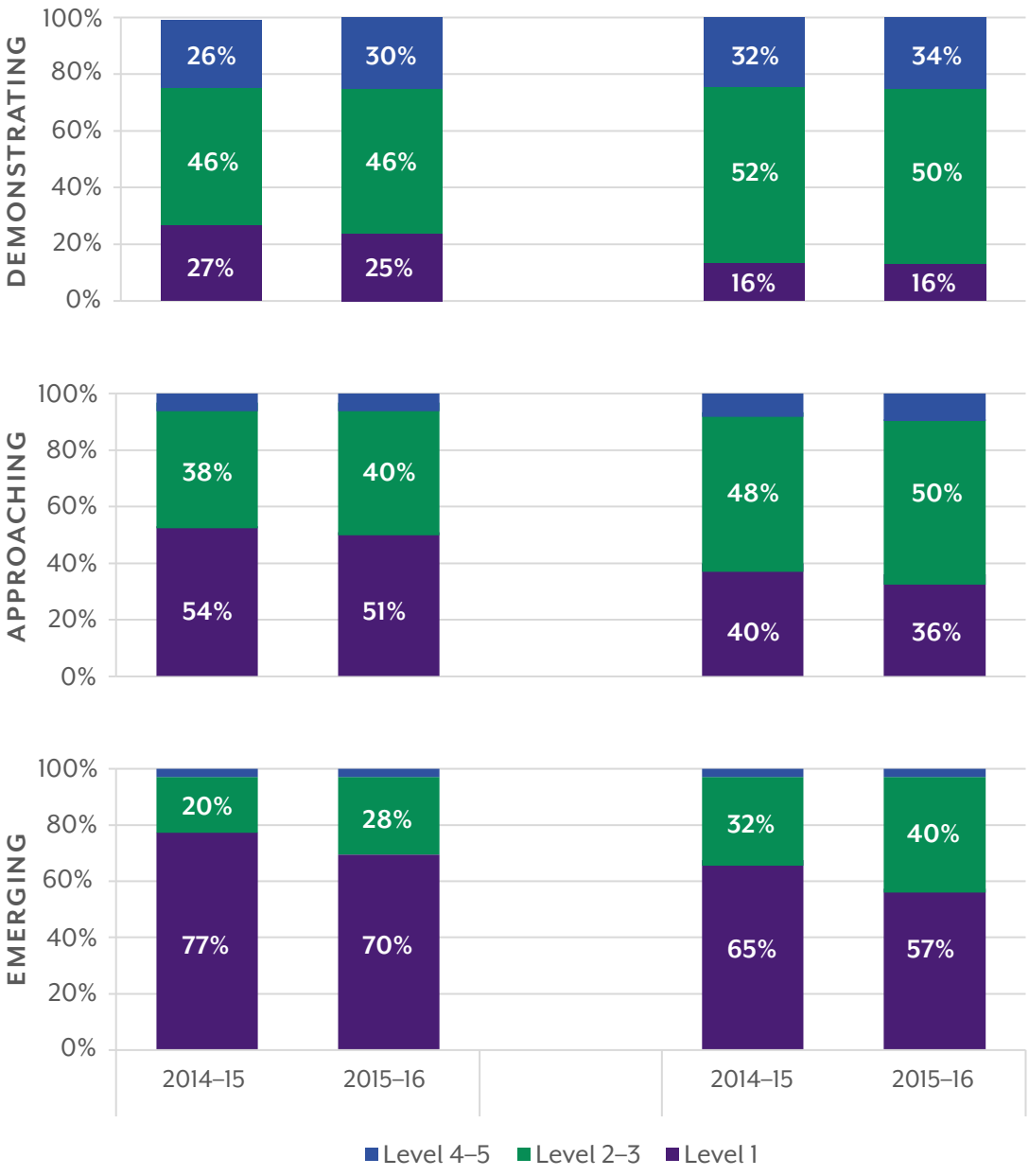
As shown in Figure 15, level 1 was dominant for the ELA assessment and levels 2–3 were dominant for the Math assessment. More specifically, in the ELA assessment, slightly more than half of the students achieved above level 2 (partially met expectations). There were only 16% to 17% of students who had levels 4–5, and 43% to 46% of the students fell into level 1 in ELA. Students performed better in Math: 20–21% in levels 4–5, 47–48% in levels 2–3, and 32–33% in level 1.

THE KINDERGARTEN READINESS ASSESSMENT AND PARTNERSHIP FOR ASSESSMENT OF READINESS FOR COLLEGE AND CAREERS.

Figure 16 displays the PARCC trends for students who completed the KRA, grouped by their demonstrating, approaching, and emerging KRA outcomes. Unfortunately, for kindergarteners who fell into the emerging group, less than 5% of them were able to meet expectations (levels 4–5) in PARCC ELA and Math assessments. Moreover, over half of students in the KRA emerging group were not yet able to meet expectations on the PARCC assessments (level 1). This indicates that without effective intervention for children who are not demonstrating readiness early on, it may be difficult to see growth to expectations on state standardized tests from kindergarten to 3rd grade.

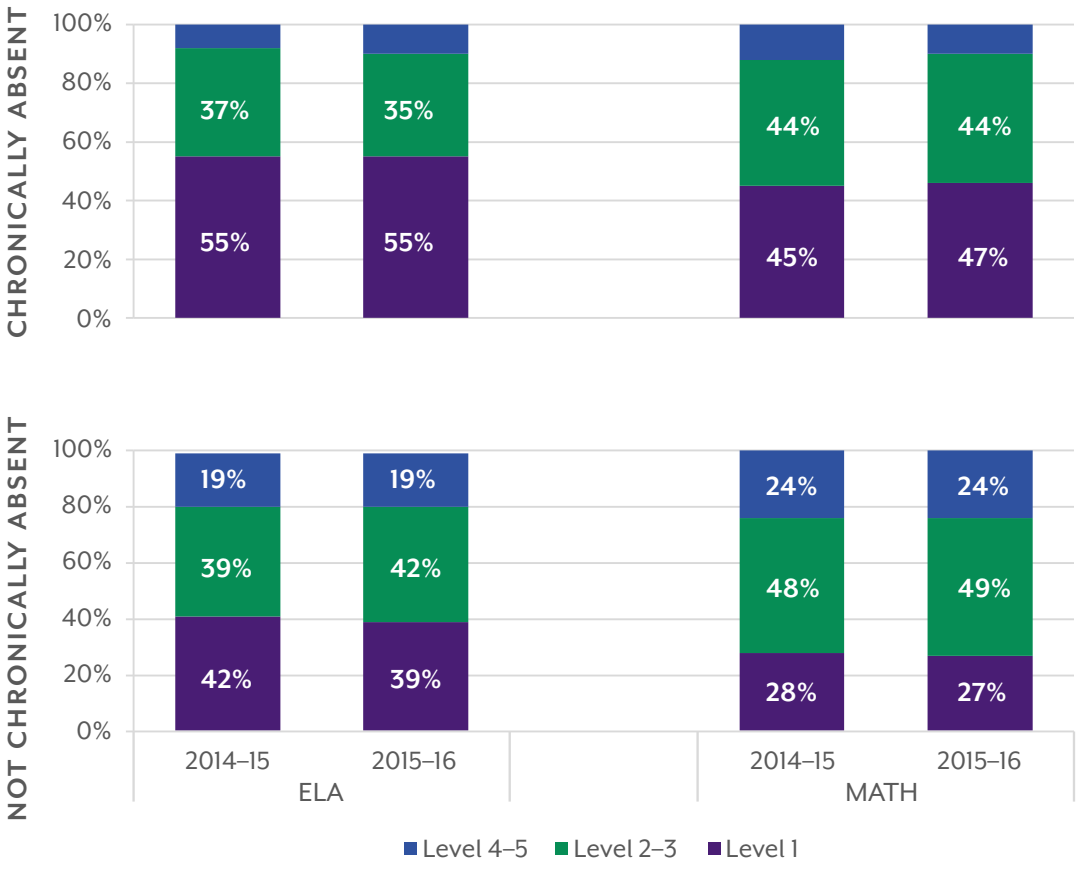
Conversely, around 30% of children who demonstrated readiness met expectations (levels 4–5) on the PARCC ELA and Math assessments, with roughly half of them scoring between level 2 and 3. On the other hand, children who were approaching kindergarten readiness were more likely to score within level 1 for ELA and level 2–3 for Math in 3rd grade. While it is not possible to establish causal relationships between KRA and PARCC performance, the results emphasize the importance of kindergarten experiences on children's later outcomes in 3rd grade.

FIGURE 16. **Baltimore City Kindergarten Cohorts 3rd Grade Partnership for Assessment of Readiness for College and Careers Trends by Kindergarten Readiness Assessment**



KINDERGARTEN CHRONIC ABSENTEEISM AND PARTNERSHIP FOR ASSESSMENT OF READINESS FOR COLLEGE AND CAREERS. Figure 17 depicts comparable trends with kindergarten CA data for students who were enrolled in kindergarten (regardless of whether they complete the KRA). Approximately half of the kindergarten children who were chronically absent scored within level 1 for Math and ELA, which was a higher rate than those who were not chronically absent. Additionally, in both the 2014–15 and 2015–16 kindergarten cohorts, students who were not chronically absent were almost twice as likely to achieve levels 4–5 compared to those who were chronically absent.

FIGURE 17. Baltimore City Kindergarten Cohorts 3rd Grade Partnership for Assessment of Readiness for College and Careers Trends by Chronic Absenteeism



DYNAMIC INDICATORS OF BASIC EARLY LITERACY SKILLS AND PARTNERSHIP FOR ASSESSMENT OF READINESS FOR COLLEGE AND CAREERS. The data on DIBELS shows that students who scored below the benchmark at BOY in kindergarten most often scored at level 1 for ELA and Math in 3rd grade, whereas those who scored at the benchmark at BOY most often scored at level 2–3 for ELA and Math. Similarly, for the MOY DIBELS assessment, students who scored below the benchmark received level 1 scores for ELA and Math in 3rd grade, while those who scored at the benchmark most often scored at level 2–3 for ELA and Math. At the EOY DIBELS assessment, students who scored below the benchmark received level 1 scores for ELA and Math, while those who scored at the benchmark most often scored at level 2–3 on the PARCC ELA and Math assessments. These findings suggest that children's kindergarten experiences are related to their 3rd grade performance, underscoring the significance of investing in early care and education.

CONCLUSIONS AND IMPLICATIONS

Young children's school readiness sets their future developmental trajectories. This report provided an overview of children's kindergarten readiness and outcomes by examining data on the KRA, kindergarten attendance, and DIBELS using six years of data. In addition, we examined how children's kindergarten performance was related to their 3rd grade outcomes, measured by PARCC ELA and Math assessments.

This work shows how **multiple indicators for kindergarten success are related.** For example, KRA scores, DIBELS scores, and CA patterns are all related, which emphasizes the importance of understanding children's kindergarten readiness and success holistically. While there is no one measure that provides a comprehensive understanding of children's capacity and potential, we encourage researchers, practitioners, and policymakers to consistently utilize multiple indicators to understand children's kindergarten experiences across care types and settings.

One important finding the DIBELS BOY, MOY, and EOY data reveals is that students started to catch up at the end of the 2021–22 school year as they are exposed to in-person schooling again after coming back to school from the pandemic. This shows the importance of schooling in supporting young children's development. In addition, attending school appears to be more important than ever in promoting kindergarten outcomes.

This work reveals **a wide range of disparities in kindergarten indicators and outcomes across subgroups of children before and after the COVID-19 pandemic.** These findings are consistent with previous studies suggesting the literacy skills gaps exist across gender and race/ethnicity (Chatterji, 2006; Lee & Al Otaiba, 2015) and that these gaps may widen over time (McCoach, et al. 2006). In particular, we find that children of color, ELLs, and children with disabilities have kindergarten indicators that are consistently lower when compared to their peers. Some of the variation in outcomes we observe may be related to CA, however, these disparities are likely multi-dimensional and include systemic and other individual-level factors that we cannot observe in these data. Family-engagement efforts may help programs to be able to cultivate relationships with families that help them to better understand children's needs. Furthermore, given the growing number of Hispanic children in Baltimore, we should consider language accommodations for assessments to more accurately capture children's skills and development.

This work shows that **children's exposure to formal early care and education before they enter kindergarten is beneficial** and related to better kindergarten indicators and outcomes. Expanding available seats for early childhood programming from birth to age 5, ensuring the quality of those services, and implementing improvements for

the early childhood workforce (e.g., higher pay, continuing professional development) are necessary. To obtain a holistic picture of children's access to prior care, **the city needs to build a collective data archive that all early childhood stakeholders can access.** A holistic data system could help all stakeholders estimate important indicators of service demand, including the number of births, enrollment from birth to age 5, and allocation of seats by geographic regions.

Finally, demonstrating readiness on the KRA and high kindergarten attendance are related to better 3rd grade PARCC ELA and Math outcomes. Our findings highlight the importance of preparing children early in their life.

Over the course of the COVID-19 pandemic, early care and education providers have struggled with financial hardship (e.g., food insecurity), and symptoms of emotional distress, such as loneliness, anxiety, stress, and symptoms of depression. Some providers meet their need for financial security by working more than one job (Center for Translational Neuroscience, 2021). As one might expect, poor health outcomes are related to the strain on the mental and physical health of employees (Bakker et al., 2007). Given that teacher well-being is related to children's development (Jennings & Greenburg, 2009), as well as their ability to manage their work responsibilities (Demerouti et al., 2001), we might consider that the experience of increased burden during the pandemic would also mean strain on the ability of providers to support and effectively instruct young children. Given the high demands of providers' work during the pandemic, there may also be greater burnout demonstrated as disengagement from their role, physical exhaustion or emotional exhaustion (Bakker et al., 2004).

As such, the evidence in the current report detailing lower assessment scores around the time of the pandemic may be an indication of the strain of the demands of educators' role during turbulent times. It is necessary to support the well-being of the early care and education workforce by first assessing which resources are available to early childhood educators (e.g., sense of community, paid time off, retirement benefits, healthcare, professional development). Furthermore, it would be beneficial to understand the nature of the demands of the workplace and role responsibilities. Strategies for acquiring resources might include allocating federal and state funds to retirement and healthcare benefits provision to all early childhood staff members. Additionally, federal funding allocations such as the Child Care and Development Fund Supplementary Discretionary Funds and the Child Care and Development Block Grant create flexibility in spending. Funds could also be used to invest in collaboration with community resource partners, health services,

mental health support, and support for families (e.g., housing, utilities, social service assistance). These funds could also support workforce development, including hiring staff, professional development, and mental health support.

Taken as a whole, this work points out that comprehensive support is needed to narrow disparities in outcomes for children across various early care and education settings. To ensure that every child is ready for and capable of succeeding in kindergarten, systematic improvement efforts are needed in the community. These include ensuring families have access to quality and formal early care and education, academic progress monitoring as well as other social and cognitive supports across all care settings, and efforts to reduce CA in early childhood (Pinto et al., 2013; Rhoad-Drogalis & Justice, 2018).

While we believe that this work provides a better understanding of kindergarten readiness and outcomes in Baltimore, we also believe that no single or set of measures derived from administrative data can provide a comprehensive understanding of our children's capacity and potential. Children's kindergarten readiness and success needs to be understood holistically. To remedy this problem of measurement, we encourage researchers, practitioners, and policymakers to consistently utilize multiple indicators in understanding children's kindergarten experiences across care type and setting. Furthermore, support for children and families needs to happen at multiple administrative levels, from classroom resources to community infrastructure investment and public investment. While it is important to create positive school environments for children, it is also critical to invest in public infrastructure that provides access to dependable public transit (e.g., bus, trains) so that families are able to maintain better attendance as well as learning tools and resources at home so that children continue their learning beyond the classroom.

We hope that this report provides initial data points that form the basis of a shared understanding and a starting point for us to identify challenges and opportunities for the City of Baltimore and its children and families.

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