

How Public PK3 Mitigated School Enrollment Declines during the Pandemic

An Essay for the Learning Curve by Anika Alam, Breno Braga, Justin B. Doromal, Erica Greenberg, Tomás Monarrez, Leonardo Restrepo, and Rachel Lamb

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The COVID-19 pandemic severely disrupted student learning and the delivery of public education. Across the United States, most public K–12 schools saw widespread enrollment declines during the 2020–21 school year, with many reporting continued declines in subsequent school years. But the District of Columbia (DC) stands out as one of the few jurisdictions that did not experience declines in public K–12 enrollment between fall 2019 and fall 2021.¹ This analysis investigates universal public prekindergarten as a mechanism for how DC’s public school system maintained student enrollment during the pandemic.

Although the benefits of public prekindergarten in early childhood development are well known, we know little about whether it fosters early engagement with education and whether it encourages families to remain in the school system.² Moreover, little work has examined prekindergarten for 3-year-olds (PK3) as a vital entry point for children because it remains a rare investment in the US.

This analysis examines the role of PK3 as a potential solution for stabilizing enrollment trends and supporting long-term educational engagement. Specifically, we assess whether students who participated in public PK3 programs before the pandemic were more likely to remain in the public school system during the pandemic years (2020 to 2022) compared with students who did not enroll in public PK3. We focus on DC’s universal preschool investment for 3-year-olds, one of very few public investments in universally available PK3. We use the centralized school assignment lottery to identify a set of PK3 applicants for whom receiving a PK3 assignment is as good as random.³

¹ Thomas S. Dee, “Where the Kids Went: Nonpublic Schooling and Demographic Change during the Pandemic Exodus from Public Schools” (Washington, DC: Urban Institute, 2023).

² Christina Weiland and Hirokazu Yoshikawa, “Impacts of a Prekindergarten Program on Children’s Mathematics, Language, Literacy, Executive Function, and Emotional Skills,” *Child Development* 84, no. 6 (November/December 2013): 2112, <https://doi.org/10.1111/cdev.12099>; and Jorge Luis Garcia, James J. Heckman, and Victor Ronda, “The Lasting Effects of Early-Childhood Education on Promoting the Skills and Social Mobility of Disadvantaged African Americans and Their Children,” *Journal of Political Economy* 131, no. 6 (June 2023): 1477, <https://doi.org/10.1086/722936>.

³ This study directly builds on the work of Braga and coauthors by investigating the causal effects of public PK3. See Breno Braga, Justin B. Doromal, Erica Greenberg, Tomás Monarrez, Leonardo Restrepo, and Rachel Lamb, *The Effects of Public Pre-K for 3-Year-Olds on Early Elementary School Outcomes: Evidence from the DC Centralized Lottery*, Working Paper 24-1019 (Annenberg Institute for School Reform at Brown University, August 2024).

We find that applicants who enrolled in public PK3 by chance between 2015 and 2018 were about 10 percentage points more likely to be enrolled in the DC public education system from 2020 to 2022 compared with applicants who did not enroll in PK3. Persistence in the public school system is strongest for enrolling in first grade and for residents of neighborhoods with low incomes. We find no increased persistence for applicants who enrolled in Montessori and dual language PK3 programs. These findings suggest the importance of early childhood investment in safeguarding student persistence in the public school system even under crisis conditions.

Students Who Attended Public PK3 Were More Likely to Have Remained Enrolled in DC’s Public Schools

DC provides PK3 through a centralized lottery system for admissions, My School DC.⁴ We use My School DC application data to identify a set of PK3 applicants whose likelihood of receiving a PK3 offer is nearly random.⁵ This setting mimics a randomized experiment where we compare applicants who enrolled by chance in public PK3 between 2015 and 2018 with applicants who did not enroll.

We then track applicants’ school enrollment during the pandemic school years (2020–21 through 2022–23). Table 1 provides a detailed overview of the student sample, highlighting when they apply to PK3 and the years and grades of enrollment we examine.⁶

TABLE 1
Enrollment Outcomes, by Year and Cohort

	Students Are in X Grade When We Examine Them in...		
	2020–21	2021–22	2022–23
PK3 applicant cohort			
2015–16	3rd grade	--	--
2016–17	2nd grade	3rd grade	--
2017–18	1st grade	2nd grade	3rd grade
2018–19	Kindergarten	1st grade	2nd grade

Note: PK3 = prekindergarten for 3-year-olds.

Our findings reveal that compared with students who did not enroll in PK3, students who attended PK3 by chance before the pandemic were 9.8 percentage points more likely to remain enrolled during a pandemic school year (2020 to 2022). Although this likelihood is less than what was observed in prepandemic years,⁷ these results reveal continuing persistence despite crisis conditions, highlighting

⁴ See the website for more information about My School DC at <https://www.myschooldc.org/>.

⁵ For additional information about DC’s centralized lottery public prekindergarten program, see Tomás Monarrez, Erica Greenberg, Grace Luetmer, and Carina Chien, *Using Centralized Lotteries to Measure Preschool Impact: Insights from the DC Prekindergarten Study* (Washington, DC: Urban Institute, 2020).

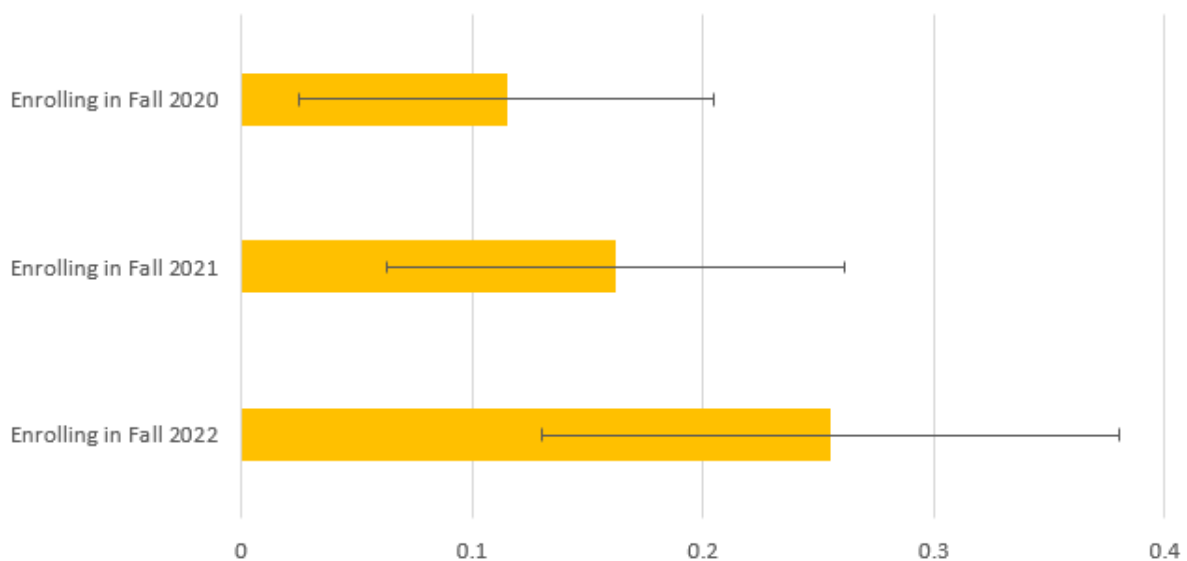
⁶ An important feature of this analysis is that there is no concern of missing data or differential attrition because the outcome reflects whether students are included in Office of the State Superintendent of Education data.

⁷ Braga et al., *The Effects of Public Pre-K*.

the enduring protective attributes of PK3. This finding suggests that early educational interventions continue to provide significant benefits even in challenging circumstances.

We present additional causal estimates of attending PK3 by pooling enrollment by academic school year and by grade (table 1).⁸ We find that attending PK3 increases later K-3 enrollment across each subsequent pandemic year (figure 1). Compared with students who did not enroll in PK3, students who attended PK3 between 2015 and 2018 were 12 percentage points more likely to be enrolled in the 2020-21 school year, 16 percentage points more likely in 2021-22, and 26 percentage points more likely in 2022-23. The escalating effects of PK3 enrollment over time suggest that PK3 could encourage persistence in the public school system, underscoring the crucial role of early childhood education in shaping a resilient and engaged student population.

FIGURE 1
Effects of PK3 Program Enrollment on Later Enrollment in the DC Public School System during a Pandemic School Year (2020 through 2022)



Source: Authors' calculations of 2015-16 through 2018-19 My School DC administrative lottery data, DC Office of the State Superintendent of Education early childhood universe data from 2020-21 through 2022-23, and 2010 Census data.

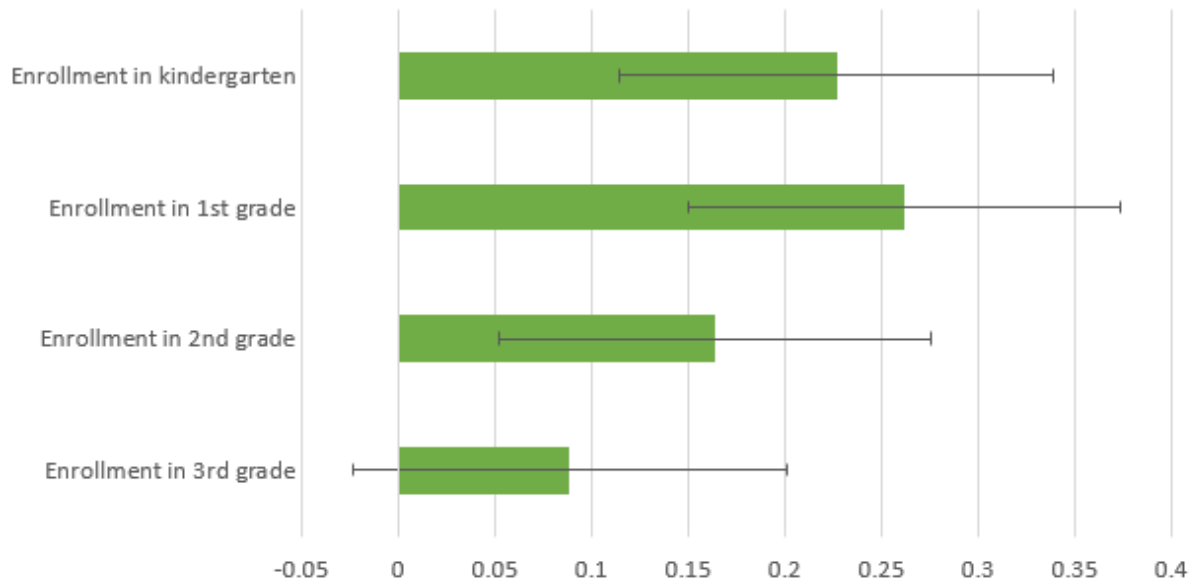
Notes: PK3 = prekindergarten for 3-year-olds. The figure reports estimated coefficients and 95 percent confidence intervals from the two-state least squares regression. Each bar reflects the likelihood of enrolling in an early grade (K-3) in the DC public school system. The regression includes controls for number of schools ranked, Spanish application, gender, ward fixed effects, and the following census block characteristics: median household income, percentage of the population by race and ethnicity, and percentage of the adult population by education level.

When examining grade-level enrollment trends during the pandemic school years (2020-21 through 2022-23), the effects of attending PK3 before the pandemic are the strongest for kindergarten

⁸ The sample sizes in the analysis are not balanced across years, and years are not balanced across grades. Despite the imbalance, we ensure the sample sizes are sufficiently large to maintain adequate statistical power.

and first grade (figure 2). Students who attended PK3 were 23 percentage points more likely to be enrolled in kindergarten, 26 percentage points more likely be enrolled in first grade, and 16 percentage points more likely to be enrolled in second grade. Although the likelihood of enrolling in the third grade is positive, it is smaller and not statistically distinguishable from zero. These findings suggest early childhood education might play a protective role for continuing student enrollment.⁹

FIGURE 2
Effects of PK3 Program Enrollment on Later Enrollment in the DC Public School System during a Pandemic School Year (2020 through 2022), by Grade



Source: Authors’ calculations of 2015–16 through 2018–19 My School DC administrative lottery data, DC Office of the State Superintendent of Education early childhood universe data from 2020–21 through 2022–23, and 2010 Census data.

Notes: PK3 = prekindergarten for 3-year-olds. The figure reports estimated coefficients and 95 percent confidence intervals from the two-stage least squares regression. Each bar reflects the likelihood of enrolling in that grade during a pandemic year (2020 through 2022). The regression includes controls for number of schools ranked, Spanish application, gender, ward fixed effects, and the following census block characteristics: median household income, percentage of the population by race and ethnicity, and percentage of the adult population by education level.

PK3 Enrollment Showed Positive Enrollment Effects by Income but Not by Race

Our data do not include demographic and socioeconomic information for PK3 applicants, which limits our ability to disaggregate the effects of public PK3 attendance. To explore whether specific

⁹ Christina Weiland, Rebecca Unterman, Anna Shapiro, and Hirokazu Yoshikawa, “[Findings on Boston Prekindergarten Through Early Elementary School](#)” (Ann Arbor: University of Michigan, Gerald R. Ford School of Public Policy, Education Policy Initiative, 2019).

populations might benefit more than others, we examine community-level measures of race and household income.¹⁰ We use 2010 Census data to approximate these characteristics.¹¹

We focus on students from the following backgrounds: communities of color, specifically communities where more than 50 percent of residents identify as people of color; and communities with low incomes, defined as census blocks with a median household income below \$85,000. The size of each classification reflects the characteristics of all PK3 applicants and the broader population of PK3-eligible children in DC.¹² We examine the likelihood of enrollment in the DC public school system for early grades (K–3) in any pandemic school year (2020–21 through 2022–23).

We find that students from communities with low incomes who attended public PK3 programs were 25 percentage points more likely to stay enrolled in DC’s public schools during this challenging time compared with students from higher-income communities.

But this positive trend is not uniform. Students from communities of color who participated in public PK3 did not demonstrate the same increased likelihood of enrolling in the DC school system compared with their peers who do not come from communities of color. We suspect that the shifts in the racial and ethnic composition of communities during the pandemic might not be fully captured by the 2010 Census data, which could explain the disconnect between communities based on income versus race and ethnicity in DC.

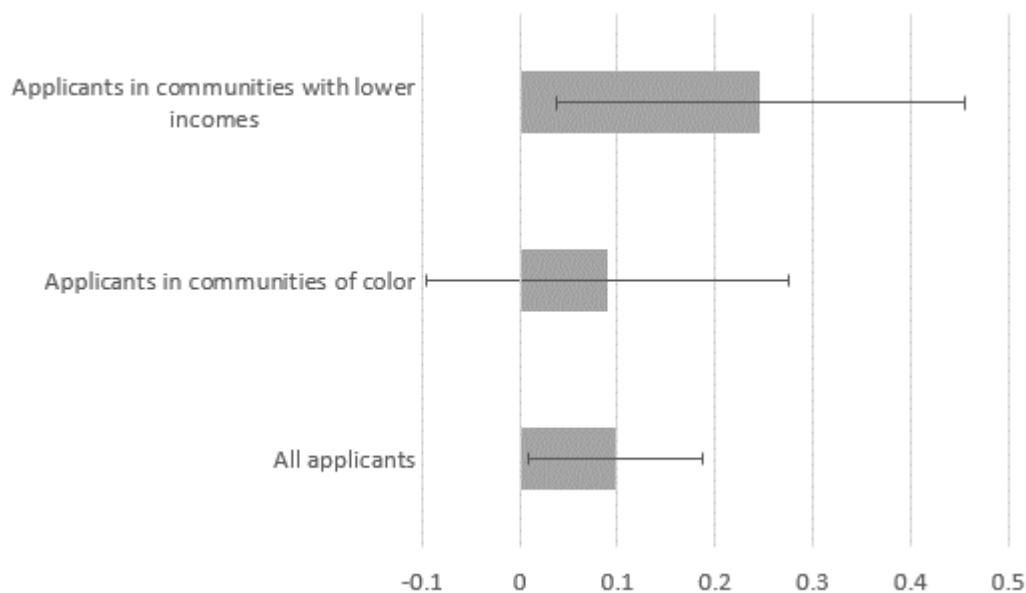
¹⁰ Our data do not include demographic and socioeconomic information for PK3 applicants, which limits our ability to disaggregate the effects of public PK3 attendance. This alternative approach relies on residential information provided in PK3 applications.

¹¹ We used a secure geocoder matched to each applicant’s home address to the nearest census block, enabling us to merge these data with publicly available information. Detailed information on the inclusion of community-level characteristics is available in Braga et al., *The Effects of Public Pre-K*.

¹² Erica Greenberg, Grace Luetmer, Carina Chien, and Tomás Monarrez, *Who Wins the Preschool Lottery? Applicants and Application Patterns in DC Public Prekindergarten* (Washington, DC: Urban Institute, 2020).

FIGURE 3

Effects of PK3 Program Enrollment on Kindergarten Enrollment in the DC Public School System during a Pandemic School Year (2020 through 2022), by Applicant Characteristics



Source: Authors' calculations of 2015–16 through 2018–19 My School DC administrative lottery data, DC Office of the State Superintendent of Education early childhood universe data from 2020–21 through 2022–23, and 2010 Census data.

Notes: PK3 = prekindergarten for 3-year-olds. The figure reports estimated coefficients and 95 percent confidence intervals from the two-stage least squares regression. Each bar reflects the likelihood of enrolling in an early grade (K–3) in the DC public school system during a pandemic year (2020 through 2022). The regression includes controls for number of schools ranked, Spanish application, gender, ward fixed effects, and the following census block characteristics: median household income, percentage of the population by race and ethnicity, and percentage of the adult population by education level. Communities of color are census blocks where more than 50 percent of the population identifies as people of color. Communities with lower incomes are census blocks with a median income lower than \$85,000.

Montessori PK3 and Dual Language PK3 Programs Do Not Show an Increased Likelihood of Enrollment

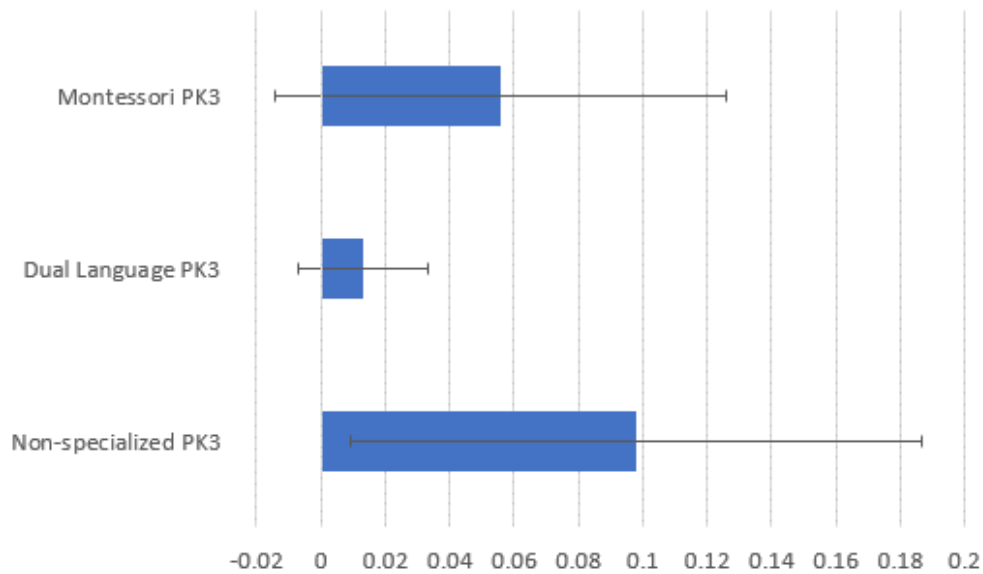
Lastly, we examine lottery and enrollment data for the 20 dual language programs and 14 Montessori programs available in DC, following the approach of Braga et al. (2024).¹³ These programs were not observed in earlier findings of this analysis. These schools are integral to DC's public prekindergarten ecosystem because they cater to diverse student populations and implement specialized approaches to family engagement and student learning. Consequently, examining their effectiveness is as crucial for understanding the value of DC's early childhood education system as examining general prekindergarten programs.

We find no association between students who attended either a Montessori or dual language PK3 program and later enrollment in the DC school system. Students who enroll in either of these specific

¹³ Braga et al., *The Effects of Public Pre-K*.

PK3 programs are just as likely to persist in the system compared with students who applied to these programs but did not get a seat.¹⁴ One might expect that specialized PK3 programs would lead families to remain in the public school system longer, but our evidence suggests otherwise.

FIGURE 4
Effects of PK3 Program Enrollment on Kindergarten Enrollment in the DC Public School System during a Pandemic Year (2020 through 2022), by PK3 Type



Source: Authors' calculations of 2015–16 through 2018–19 My School DC administrative lottery data, DC Office of the State Superintendent of Education early childhood universe data from 2020–21 through 2022–23, and 2010 Census data.

Notes: PK3 = prekindergarten for 3-year-olds. The figure reports estimated coefficients and 95 percent confidence intervals from the two-stage least squares regression. Each bar reflects the likelihood of enrolling in an early grade (K–3) in the DC public school system during a pandemic year (2020 through 2022). The regression includes controls for number of schools ranked, Spanish application, gender, ward fixed effects, and the following census block characteristics: median household income, percentage of the population by race and ethnicity, and percentage of the adult population by education level.

Policy Implications

This analysis demonstrates how public prekindergarten helped shield DC from widespread pandemic-related enrollment declines. We find that enrolling in PK3 before the pandemic generally increased public school enrollment in pandemic years, with the strongest effects observed in kindergarten and first grade enrollment and for PK3 applicants who reside in neighborhoods with low incomes. These

¹⁴ This is a departure from the findings presented in Braga et al. (2024), where the positive effect of dual language PK3 on persistence through kindergarten was higher than that of students who attend a nonspecific PK3 program. But their study found no significant impact associated with Montessori PK3 attendance.

findings affirm the potential of public prekindergarten for protecting student and family engagement. Even under extreme conditions, PK3 creates a constituency for public education.¹⁵

For policymakers, these findings underscore the importance of expanding access to PK3 programs, particularly in low-income communities, to support long-term public school engagement. Public prekindergarten—especially when starting as early as 3 years old—can promote student persistence by providing early exposure to a classroom setting and fostering foundational academic and nonacademic skills. Further, our results suggest that students who attend prekindergarten exhibit greater continuity in their educational trajectory. Overall, these insights highlight the vital role public prekindergarten plays in enhancing enrollment rates and in sustaining student engagement throughout their educational journey.

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¹⁵ This analysis extends the work by Braga and coauthors (2024) by including more recent cohorts of PK3 applicants who applied in 2018 and by focusing on public school enrollment during pandemic years (2020 through 2022).

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