



THE CHICAGO UNIVERSAL PRE-K STUDY

The Impact of Chicago's Universal Prekindergarten Expansion on Access to School-Based Pre-K

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The Chicago Universal Pre-K Study: “The Impact of Chicago’s Universal Prekindergarten Expansion on Access to School-Based Pre-K”

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Overview of the Chicago Universal Prekindergarten Model

In the 2018–19 school year, Chicago began expanding free, full-day prekindergarten (pre-K) for 4-year-olds through Chicago Public Schools (CPS). The citywide expansion was designed to start in schools in the most economically disadvantaged communities, with the goal to provide universal prekindergarten (UPK) by 2023. The Office of the Mayor led the UPK initiative in partnership with the City of Chicago Department of Family Support Services (DFSS) and CPS.

To reach universal access, Chicago’s UPK model utilizes a mixed-delivery system. The system includes school-based pre-K programs for all 4-year-olds in public elementary schools combined with Illinois Child Care and Development Fund (CCDF), and Head Start programs that serve eligible low-income children in community-based organizations.

In this study, we examine the impact of the UPK expansion on access to CPS school-based pre-K on 3- and 4-year-olds.

The Pre-K Landscape in CPS Before the Universal Pre-K Expansion

Before the UPK expansion in 2019, approximately 370 CPS schools (including traditional and charter schools) offered pre-K in some capacity. The pre-K landscape in Chicago prior to the expansion included a combination of half- or full-day, as well as free or tuition-based programming (see Table A1 in the appendix for details). Most of Chicago’s pre-K capacity was in the form of free, half-day programming, funded mainly through state and federal programs such as Title I, Head Start, and Preschool 4 All. For example, in 2017–18, the city offered approximately 14,000 free, half-day slots and 8,000 free, full-day slots. The 2019 UPK expansion prioritized providing universal access to free, full-day programming for 4-year-olds.

The expansion took place in 212 CPS schools, which we refer to as “UPK expansion schools.” Some CPS schools also offered pre-K programming before the expansion but did not participate in it, as well as CPS schools that did not offer any form of pre-K. Together, the UPK expansion schools plus

the other CPS schools that offered pre-K prior to the expansion represent the district's total pre-K capacity and enrollment.

Characteristics of Schools That Participated in the Universal Pre-K Expansion

Table 1, below, presents the characteristics of UPK expansion schools. The majority of UPK expansion schools began expanding the number of free, full-day seats in 2018–19 (138 of the 212 eventual schools, 65% of the total, began that year); others began expanding in school year 2019–20 through school year 2021–22. Although a disproportionate share of schools began offering free, full-day pre-K in the first two years of the expansion, many of these schools added new classrooms in subsequent years, contributing to a continued increase in the number of seats (described in greater detail in the capacity section below).

Consistent with the intended design, the schools that began expanding first in 2018–19 and 2019–20 are located in neighborhoods with substantially higher poverty rates than schools that expanded in the final two years. For example, for schools that participated in 2018–19, the expansion's first year, the average percentage of families in the school's neighborhood living below the poverty level was 14%. Schools that first expanded in 2022–23 were located in more economically advantaged neighborhoods, with an average poverty rate of 3%. In addition, early expansion schools have higher enrollment of Black and Hispanic/Latinx students and lower enrollment of White students.

Table 1: School Characteristics by Year That the School First Expanded

School Year	Schools	School Characteristics ¹				School Neighborhood Characteristics ²
Year of Expansion	Number That First Expanded	Students Who Are English Learners (%)	White Enrollment (%)	Black Enrollment (%)	Hispanic/Latinx Enrollment (%)	Poverty Rate (%)
2018–19	138	28.3	10.5	34.2	48.9	14.1
2019–20	61	23.0	8.6	40.0	46.7	16.7
2021–22	9	27.4	34.9	10.9	44.3	5.8
2022–23	6 ³	12.4	46.0	8.0	27.3	3.1
Overall	212	26.3	12.0	34.1	47.5	14.3

Citywide Patterns in Pre-K Capacity, Enrollment, and Full-Day vs. Half-Day Seats

Chicago Universal Pre-K Expansion Leads to Increased Capacity for 3- and 4-Year-Olds

We define capacity as the number of free, full-day pre-K seats offered for 3- and 4-year-olds in CPS schools (school-based pre-K). In 2017–18, the year immediately prior to the UPK expansion, CPS schools across the district offered 22,569 pre-K seats for 3- and 4-year-olds. Most of these seats were free half-day ones (14,238 out of 22,569 seats), with the remaining as free full-day (8,071 seats) and a very small number of tuition-based, full-day seats (260 seats; see Table A1 of the appendix).

¹ School characteristics are based on annual demographic data from Chicago Public Schools. The year of expansion was determined based on the year the school first expanded its offering of free, full-day pre-K seats for 4-year-olds.

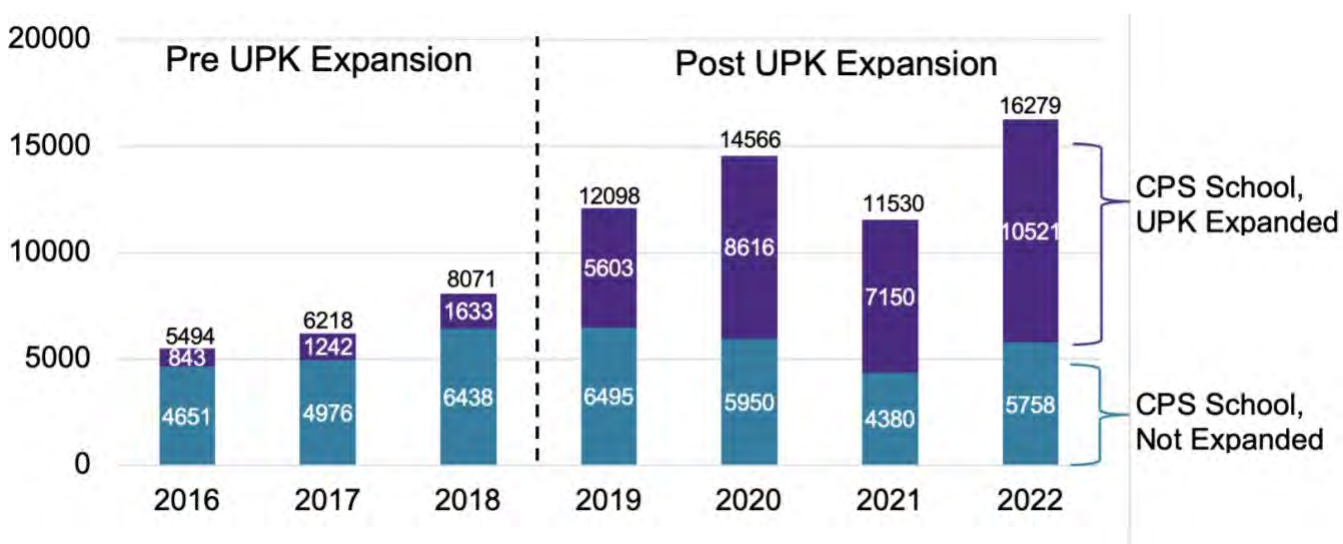
² School neighborhood characteristics are based on data from the American Community Survey (ACS). The school neighborhood poverty rate was determined based on the poverty rate in the school's census tract. For schools that expanded in 2021–22 and 2022–23, the poverty rate refers to the poverty rate in 2020–21, the most recent year of data available.

³ Two early learning centers are not included in this table due to missing data.

Overall, we find that the Chicago UPK expansion led to increased school-based pre-K capacity for both 3-year-olds and 4-year-olds across all CPS schools in the city.⁴ The positive effect on capacity occurred in the first year of the expansion and increased in magnitude over time.

Figure 1 illustrates 3- and 4-year-old free, full-day pre-K capacity in the district from 2015–16 to 2021–22 (representing approximately 368 schools each year). In the first year of the UPK expansion, the number of free, full-day seats across the district increased from 8,071 to 12,098. Although some seats were lost during the COVID-19 pandemic in 2020–21, the district’s pre-K capacity rebounded in 2021–22. In 2021–22, there were 16,279 free, full-day pre-K seats available in CPS—more than twice the number available in 2017–18.

Figure 1: Total Free, Full-Day Capacity for 3- and 4-Year-Olds in CPS by Year



Note: Includes the number of free, full-day seats for 3- and 4-year-olds. School years are labeled by the spring, i.e., 2016 denotes the 2015–16 school year. Includes all CPS schools that offered free, full-day pre-K. Of note is the impact of the COVID-19 pandemic on the 2020–21 school year. The dotted line denotes UPK expansion prior to the 2018–19 school year.

In the first year of expansion the number of free, full-day seats at CPS schools offering pre-K more than tripled from 1,633 to 5,603 (Figure 1). The second year, seats in UPK expansion schools increased to 8,616. From the beginning of the expansion to 2021–22, the number of free, full-day pre-K seats increased by more than a factor of five, from 1,633 to 10,521 seats. Thus, nearly all the growth in pre-K

⁴ We focus on total pre-K capacity for 3- and 4-year-olds because data on pre-K capacity is not available separately by age group. Therefore, these initial analyses that describe patterns in pre-K capacity and enrollment across the district consider both 3- and 4-year-olds.

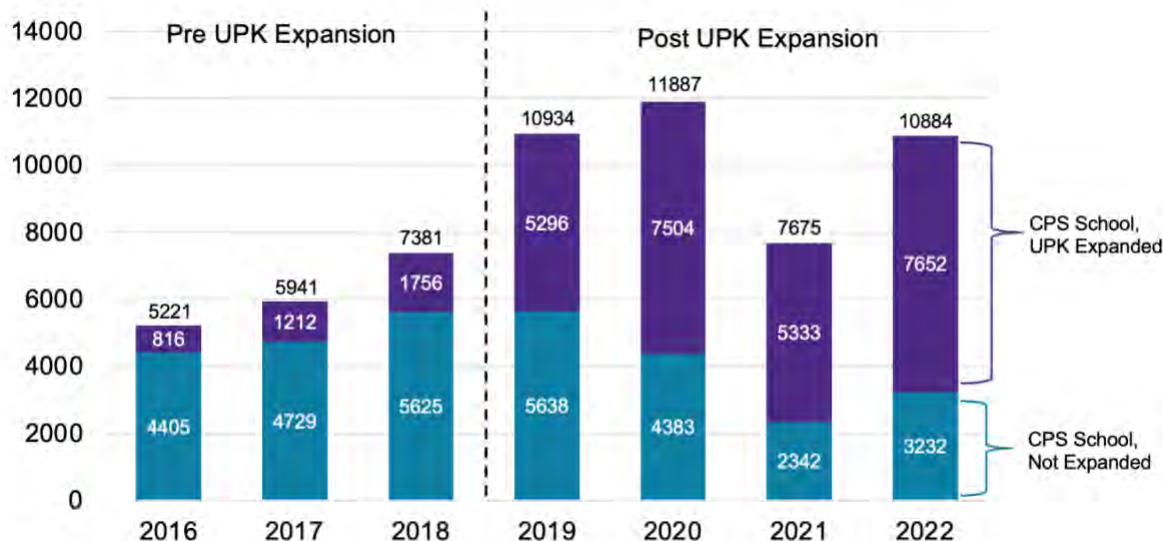
seats across the district took place in the CPS UPK expansion schools. See Appendix Figure A1 for a graph that illustrates growth in UPK expansion schools alone.

Chicago Universal Pre-K Expansion Leads to Increased Enrollment for 3- and 4-Year-Olds

While capacity tells us where and how many children have the opportunity to enroll in free, full-day pre-K, enrollment tells us where and how many children participate. Immediately prior to the UPK expansion (2017–18), enrollment in free, full-day pre-K seats neared capacity across the district: 7,382 seats were filled out of a capacity of 8,071 seats (91% enrollment). There were no unfilled free, full-day pre-K seats in the 212 schools that would go on to participate in the UPK expansion.

After the UPK expansion, we find a substantial increase in the number of children enrolled in pre-K. Between 2017–18 and 2018–19 enrollment in free, full-day pre-K in the district increased from 7,381 to 10,934 (see Figure 2). In the expansion schools, enrollment nearly tripled from 1,756 to 5,296, growing another 40% the subsequent year (see Figure 2’s purple bars). Although pre-K district enrollment declined during the COVID pandemic in 2020–21, enrollment was still elevated in expansion schools relative to the 2017–18 baseline observed prior to the UPK expansion. By 2021–22, enrollment in free, full-day seats rebounded to 10,884 students across the district and 7,652 students in expansion schools. District enrollment was 67% in the 2021–22 school year, with 10,884 seats filled out of 16,279 in all.

Figure 2. Total Free, Full-Day Pre-K Enrollment for 3- and 4-Year-Olds in CPS by Year



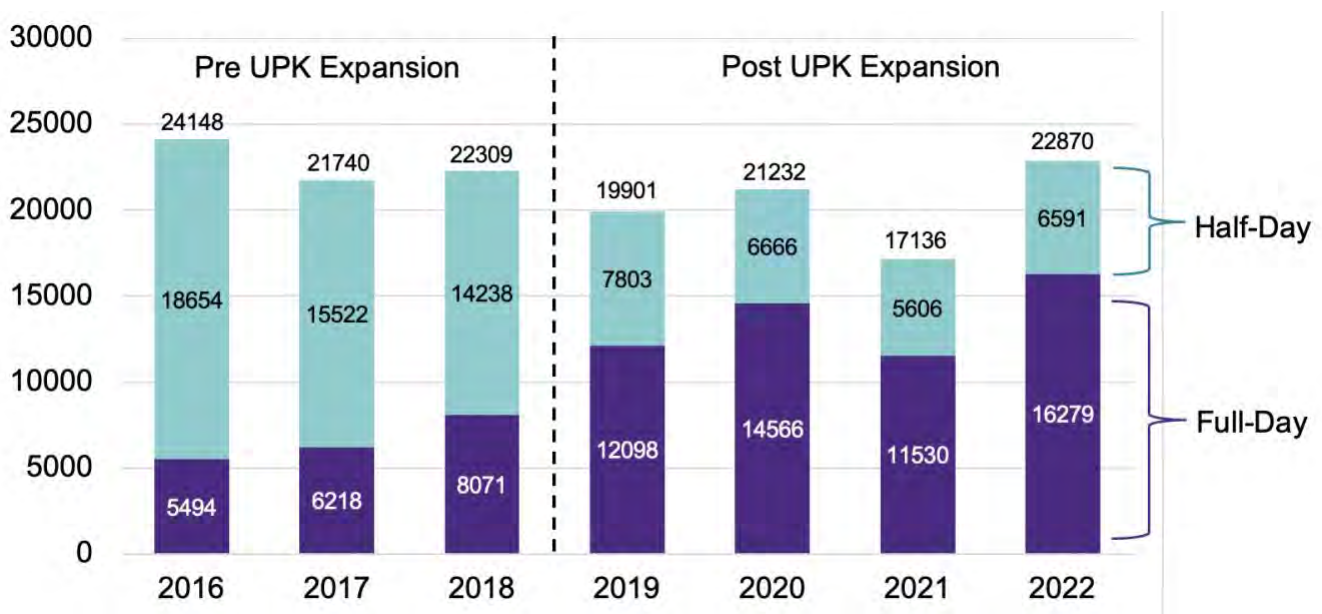
Note: Includes the number of 3- and 4-year-olds enrolled in free, full-day seats. School years are labeled by the spring, i.e., 2016 denotes the 2015–16 school year. Includes all CPS schools that offered free, full-day pre-K. Of note is the impact of the COVID-19 pandemic on the 2020–21 school year. The dotted line denotes the expansion of UPK prior to the 2018–19 school year.

Increase in Full-Day Seats Is Accompanied by a Decrease in Half-Day Seats

The UPK expansion increased the number of free, full-day seats offered and the number of enrolled 3- and 4-year-olds across the city. This increase in full-day participation was also accompanied by a decrease in the availability of half-day programming.

Between 2017–18 and 2021–22, the number of free, full-day Pre-K seats in the district grew from 8,071 to 16,279, an increase of 8,208 seats (see Figure 3). Over the same period, the number of free, half-day seats declined from 14,248 to 6,591 (a decrease of 7,657 seats). Overall, 551 additional seats became available, and more seats were shifted from half-day to full-day. Prior to the expansion, roughly one-third of free pre-K seats were full-day; after the expansion, this increased to more than two-thirds.

Figure 3. Total Free, Full-Day and Half-Day Pre-K Seats for 3- and 4-Year-Olds in CPS by Year



Note: Includes the number of 3- and 4-year-olds enrolled free, full-day and half-day seats. School years are labeled by the spring, i.e., 2016 denotes the 2015–16 school year. Includes all CPS schools that offered free, full-day pre-K. Of note is the enormous impact of the COVID-19 pandemic on the 2020–21 school year. The dotted line denotes the expansion of UPK prior to the 2018–19 school year.

The shift from half-day to full-day was even more pronounced when the analysis is limited to UPK expansion schools. Between 2017–18 and 2021–22, the number of free, full-day seats in these schools grew from less than 10% to more than 70%: Free full-day seats increased from 1,633 to 10,532 (or 8,899 more seats) and free, half-day seats declined from 11,690 to 4,005 (or 7,684 fewer seats).

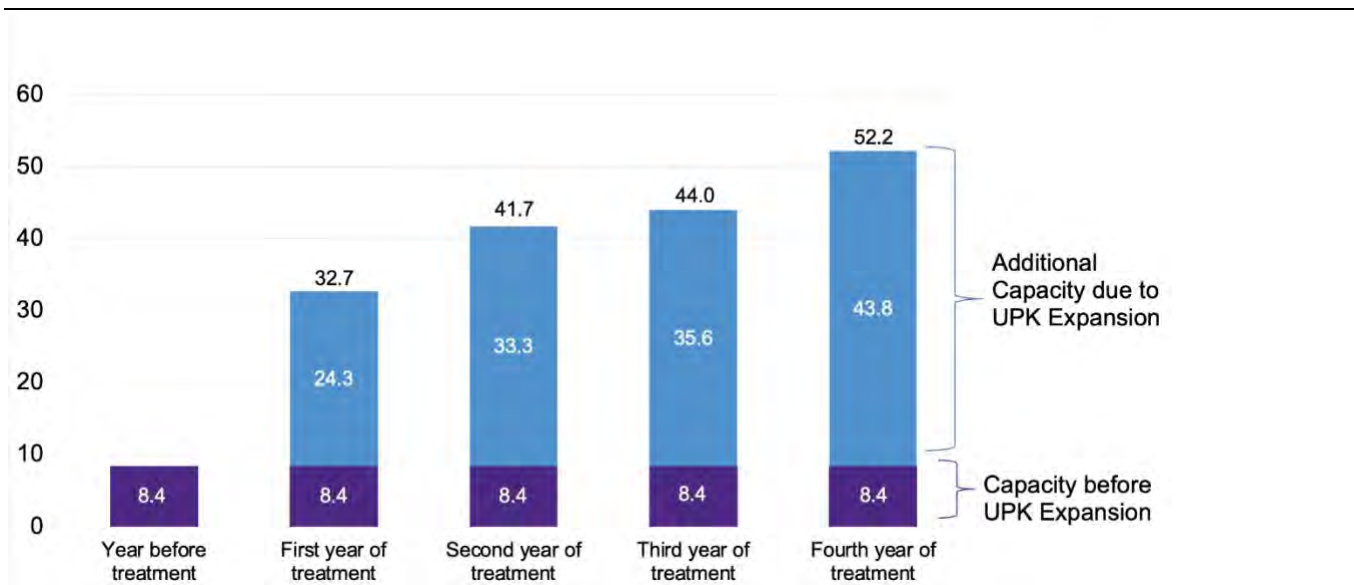
Within-School Analysis: Impact of Universal Pre-K Expansion on Capacity, Enrollment, and Full-Day vs. Half-Day Seats

Up to this point, we have concentrated on the patterns in pre-K capacity and enrollment in the district as a whole and separately by schools’ expansion status. Next, we estimate the impact of the UPK expansion at each school. We use a difference-in-differences approach that employs variation in the timing of the expansion of Chicago’s school-based pre-K program across schools. Our approach uses regression analysis to compare changes in pre-K capacity, enrollment, and full-day versus half-day seats over time in schools with and without expanded school-based pre-K to provide an estimate of the impact of UPK expansion in participating schools. See the appendix for more details on the analytic model.

Chicago Universal Pre-K Expansion Leads to Increased Capacity Within Schools

Regression results demonstrating the impact on the number of free, full-day pre-K seats in participating UPK expansion schools are summarized in Figure 4 and presented in Appendix Table A2. Prior to UPK expansion, the average number of free, full-day pre-K seats in these schools was 8. The first year that a school expanded to UPK (i.e., the first year of treatment) led to an increase in capacity of approximately 24 free, full-day pre-K seats. The increase in capacity continued to grow over time, with a school-level average increase of 33 seats in the second year, 36 seats in the third year, and 44 seats in the fourth year.

Figure 4: Impact of Chicago Universal Pre-K Expansion on Free, Full-Day Capacity (Average Increase per School)

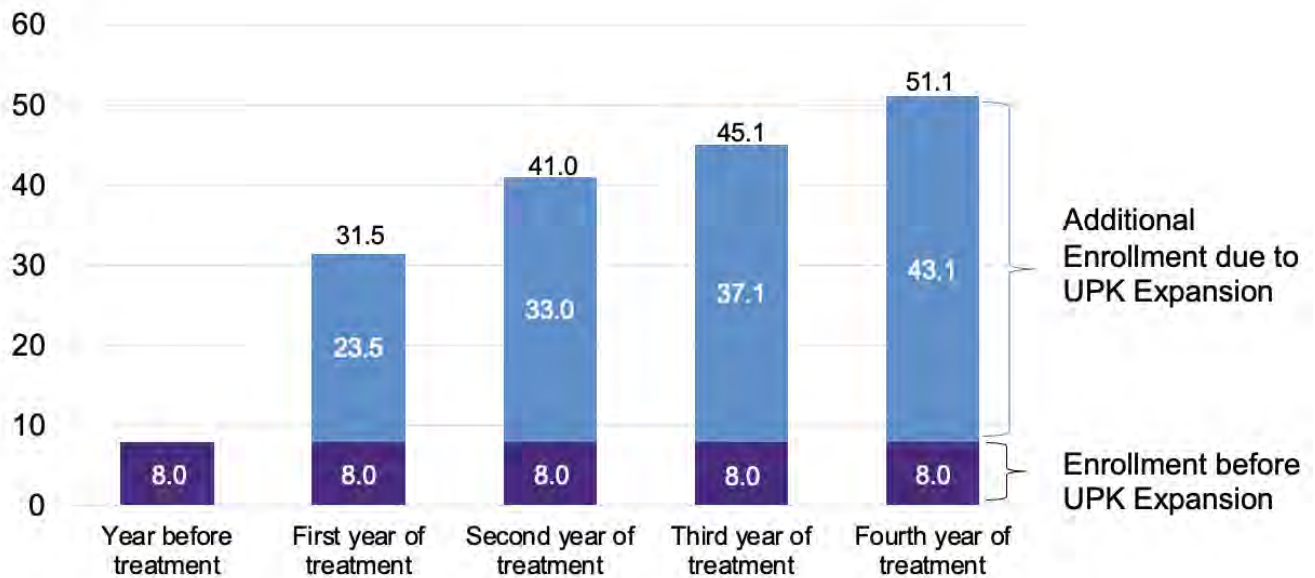


Note: Includes the average number of free, full-day pre-K seats in UPK expansion schools in the year prior to the expansion, and the estimated additional capacity due to the UPK expansion. See Appendix Table A2 for more detailed results on the impact of the UPK expansion on pre-K capacity.

Chicago Universal Pre-K Expansion Leads to Increased Enrollment of 3- and 4-Year-Olds in CPS Schools

Next, we examine the impacts on the free, full-day pre-K enrollment in UPK expansion schools. Regression results demonstrating the impact on enrollment in free, full-day pre-K seats in participating UPK expansion schools are presented in Appendix Table A3 and summarized in Figure 5. Prior to UPK expansion, the average number of 3-year-olds and 4-year-olds enrolled in free, full-day pre-K in these schools was 8. The first year that a school expanded UPK led to an increase in enrollment of approximately 24 children. The increase in enrollment continued to grow over time, with a school-level average increase of 33 children in the second year, 37 children in the third year, and 43 children in the fourth year.

Figure 5: Impact of Chicago Universal Pre-K Expansion on Free, Full-Day Enrollment (Mean Increase per School)



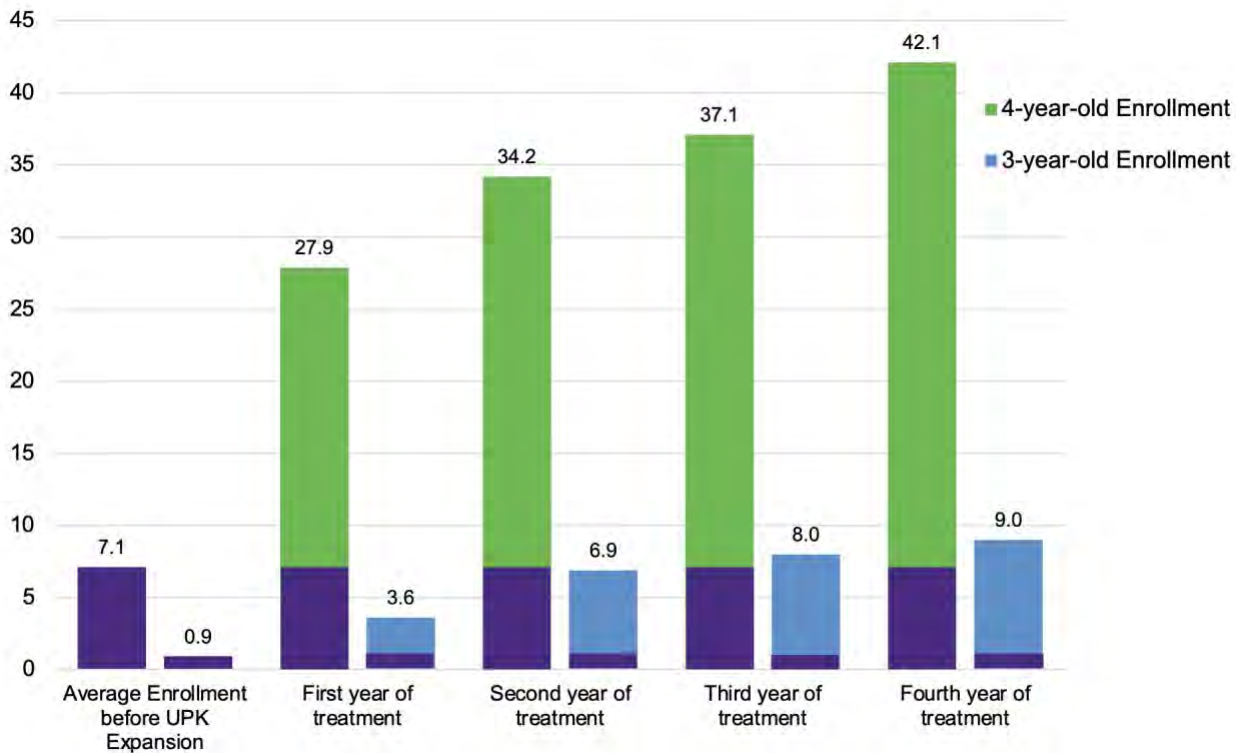
Note: Includes the average number of 3-year-olds and 4-year-olds enrolled in free, full-day pre-K in UPK expansion schools in the year prior to the expansion, and the estimated additional capacity due to the UPK expansion. See Appendix Table A3 for more detailed results on the impact of the UPK expansion on pre-K enrollment.

We next examine impact on enrollment for 3-year-olds and 4-year-olds separately (see Figure 6; for more detailed results, see Appendix Table A3).

While the UPK expansion was targeted to 4-year-olds, there may be spillovers into other ages as well. One hypothesis is that expanded full-day opportunities for 4-year-olds could reduce opportunities for

3-year-olds. We test this directly, examining school-level enrollment in free, full-day seats among 3-year-olds. We find that the UPK expansion had a small, positive effect on 3-year-olds, full-day preschool enrollment. Prior to the UPK expansion, CPS had, on average, 1 enrolled 3-year-old child per school. The expansion led to an increase in 3-year-old, full-day preschool enrollment of nearly 3 in the first year, 6 in the second year, 7 in the third year, and 8 in the fourth year (see Appendix Table A5). Overall, results indicate the UPK expansion increased enrollment in full-day pre-K for both 3- and 4-year-olds.

Figure 6: Impact of Chicago Universal Pre-K Expansion on Free, Full-Day Enrollment for 3- and 4-Year-Olds (Mean Increase per School)



Note: Includes the average number of 3- and 4-year-olds enrolled in free, full-day pre-K in UPK expansion schools in the year prior to the expansion and the estimated additional capacity due to the UPK expansion. See Appendix Table A3 for more detailed results on the impact of the UPK expansion on pre-K enrollment.

As Full-Day Enrollment Increases, Half-Day Enrollment Decreases

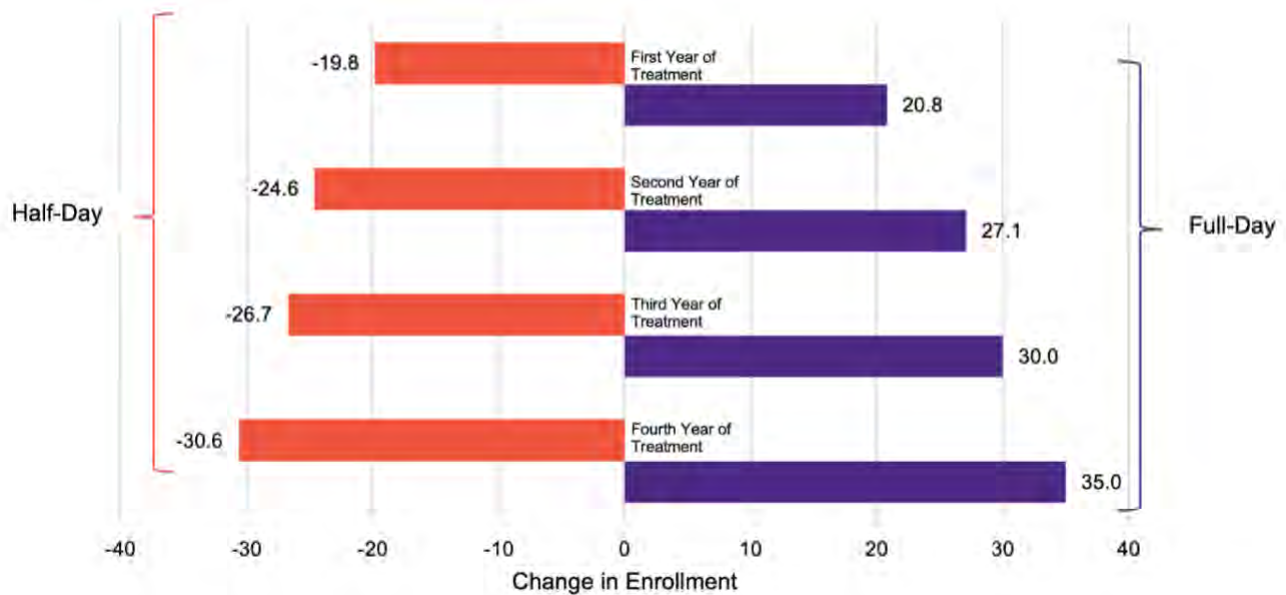
Prior to the implementation of the UPK expansion in 2018–19, many CPS schools had some sort of existing preschool offering. State and national programs such as Title I, Head Start, and Preschool 4 All were already present in CPS schools before 2018–19. But most of these only provided half-day

programming. Once the policy was enacted, those schools transitioned to providing full-day programming, regardless of income.

Figure 7 shows the impact of UPK expansion on full-day enrollment and half-day enrollment for UPK expansion schools. Overall, enrollment in half-day programs decreased and full-day enrollment increased in participating schools. The decrease in half-day enrollment was approximately equal to the increase in full-day enrollment, meaning little change in the total number of participating children. See Appendix Table A4 for full regression results that accompany this graph. We observe similar patterns when we examine 3-year-old enrollment in full-day and half-day programs (see Appendix Table A5).

Enrollment in full-day seats has increased, pushing Chicago towards its goal of universal full-day coverage. UPK has increased overall hours in pre-K programming for children and families in the district by allowing children to attend full-day, rather than half-day, programs.

Figure 7: Impact of Chicago Universal Pre-K Expansion on 4-Year-Old Full-Day and Half-Day Enrollment (Mean Increase or Decrease per School)



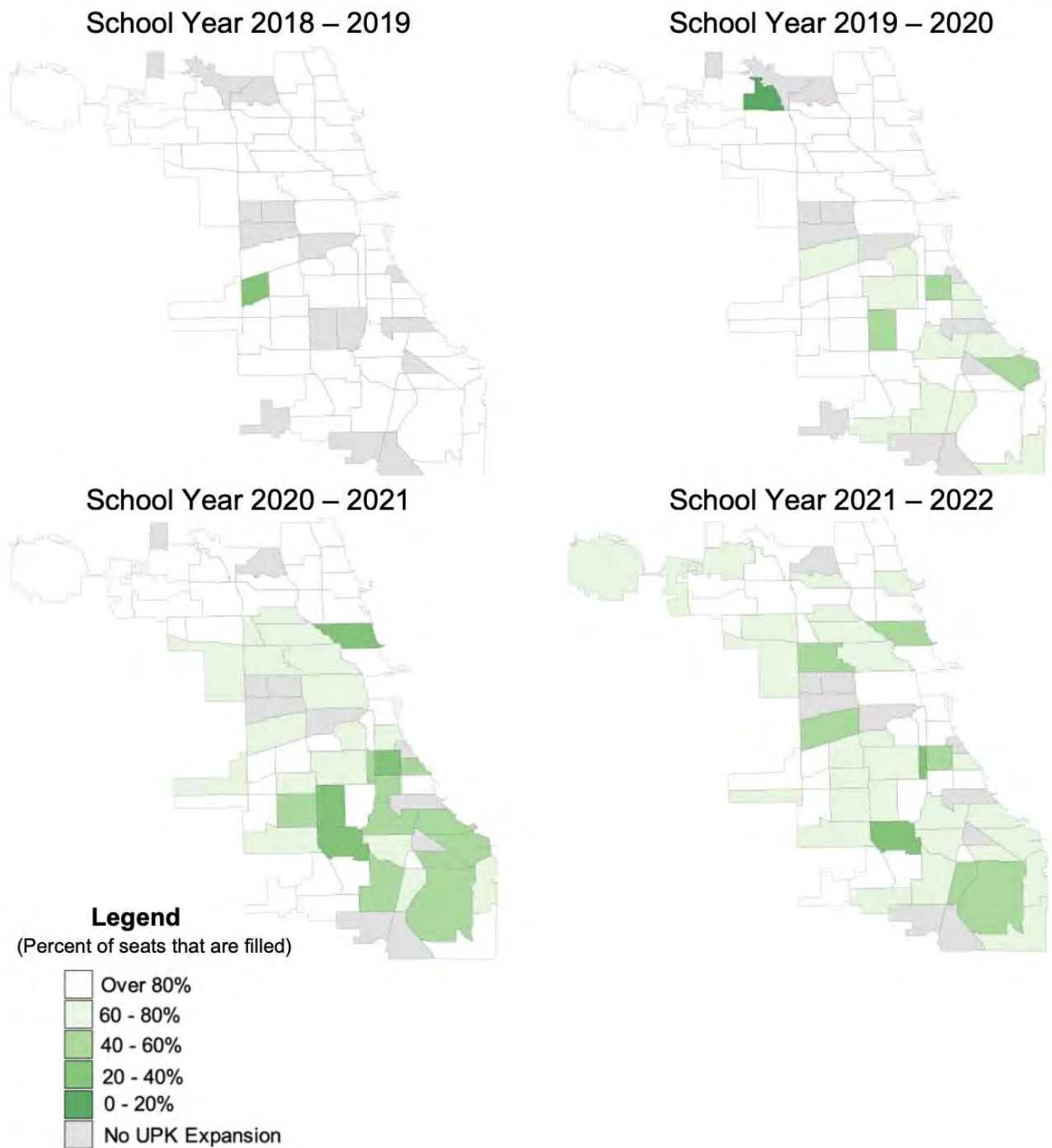
Note: Includes the estimated change in the number of 4-year-olds enrolled in free, full-day pre-K and free, half-day pre-K due to the UPK expansion. See Appendix Table A4 for more detailed results on the impact of the UPK expansion on full-day and half-day pre-K enrollment for 4-year-olds.

The Capacity for Additional Pre-K Enrollment Across the City

The district's UPK program can serve additional students because capacity has expanded more than enrollment. In the expansion's first year, 90% of available free, full-day seats were filled across the city. As capacity continued to increase during the COVID-19 pandemic, the utilization rate dropped to 82% in 2019–20, and 67% in 2021–22.

Key to understanding the system's capacity to equitably enroll additional students is neighborhood-level availability of open pre-K seats. Figure 8, below, maps the percentage of filled, free, full-day pre-K seats in CPS schools that were part of the expansion. Neighborhoods in dark green have more available capacity, neighborhoods in light green are fully enrolled, and those in white are overenrolled. Over time, there is much more capacity across Chicago neighborhoods as represented by darker shading and fewer neighborhoods shaded white. Our results demonstrate more open seats in neighborhoods on the city's South and West Sides. This suggests that the city met its goal of ensuring that children have increased access to free, full-day pre-K in more economically disadvantaged neighborhoods.

Figure 8: Percentage of Filled, Full-Day Free Seats Among Universal Pre-K Schools⁵

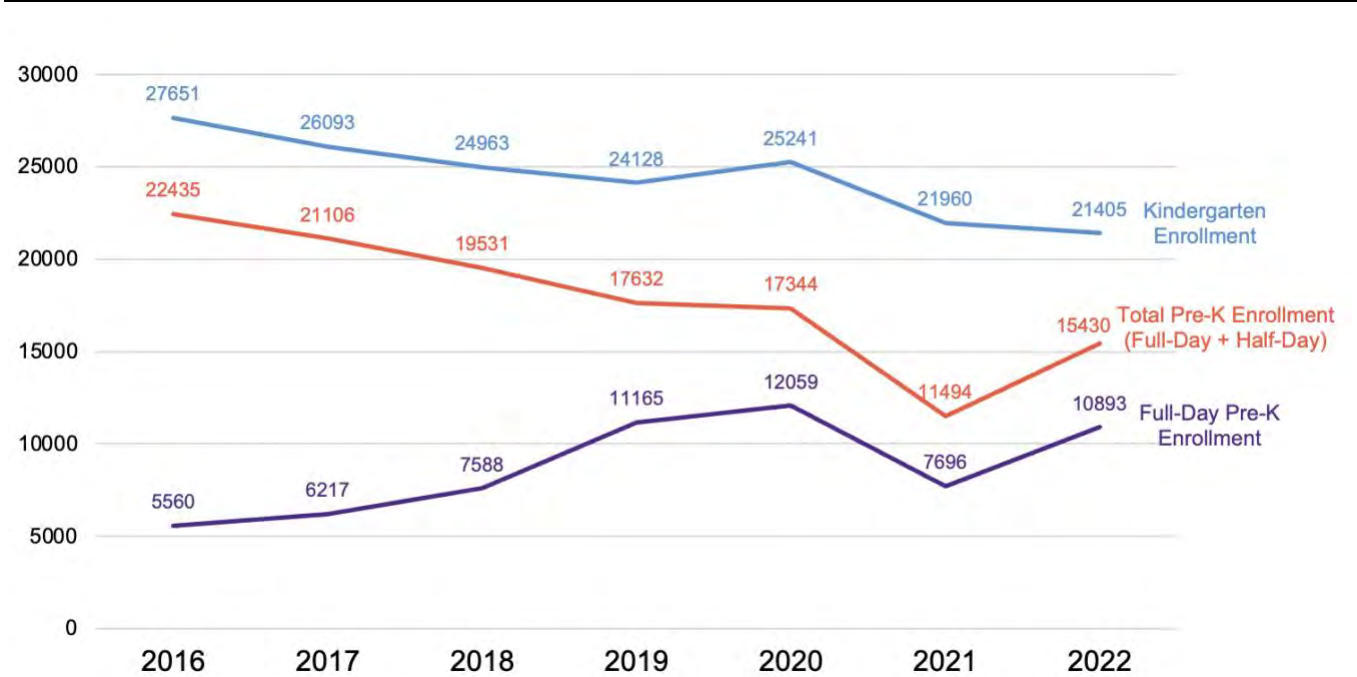


⁵ See Appendix Table A6 for details on which communities were overenrolled.

As Pre-K Enrollment Increases, Kindergarten Enrollment Decreases

In recent years, even prior to the COVID-19 pandemic, we have seen a sustained decline in CPS kindergarten enrollment. Enrollment in kindergarten and total pre-K enrollment is shown in Figure 9. In 2021–22, pre-K enrollment rebounded to above its trend decline, while kindergarten enrollment did not. Expanded full-day pre-K may be a mechanism to get more families to enroll in and stay in CPS. We will continue to track trends in relative enrollment in pre-K and kindergarten.

Figure 9. Total CPS Kindergarten and Pre-K Enrollment by Year



Conclusion

This first set of results from “The Chicago Universal Pre-K Study” demonstrates the impact of the expansion of UPK on capacity, enrollment, and full-day versus half-day programming in CPS schools. In terms of capacity, the Chicago UPK expansion substantially increased the number of available, free, full-day seats in CPS for 3- and 4-year-olds. The expansion also led to increased enrollment of 3- and 4-year-olds in free, full-day pre-K programs in CPS. Most of the full-day expansion was offset by declines in half-day seats. Importantly, we still see capacity to serve additional children throughout the city based on availability of seats, especially in economically disadvantaged neighborhoods. In sum, UPK has increased both capacity and enrollment in free full-day seats in CPS schools for 3- and 4-year-olds.

APPENDIX

Table A1: Total Pre-K Capacity and Enrollment in CPS Prior to the 2019 Universal Pre-K Expansion

School year	No. of Schools with Pre-K	Capacity for 3- and 4-Year-Olds			4-Year-Old Enrollment			3-Year-Old Enrollment			Kindergarten (K) Enrollment	
		Free, Full-Day	Tuition-Based, Full-Day	Free, Half-Day	Free, Full-Day	Tuition-Based, Full-Day	Free, Half-Day	Free, Full-Day	Tuition-Based, Full-Day	Free, Half-Day	No. of Schools with K	Total Enrollment
2015–16	370	5,494	360	18,654	3,937	217	9,867	1,284	122	7,008	464	27,651
2016–17	368	6,218	280	15,522	4,416	171	8,438	1,525	105	6,451	461	26,093
2017–18	366	8,071	260	14,238	5,074	124	6,883	2,308	82	5,060	461	24,963

Table A2: Impact of Chicago Universal Pre-K Expansion on the Number of Free, Full-Day Seats

	Free, Full-Day Pre-K Seats β (SE)
Year 1 Treatment	24.3*** (2.0)
Year 2 Treatment	33.3*** (2.3)
Year 3 Treatment	35.6*** (2.3)
Year 4 Treatment	43.8*** (3.4)
Observations	2549
Adjusted R^2	0.777
Mean in the Year Before Expansion	8.4
Covariates	Yes

*Note: Standard errors in parentheses and clustered at the community level. Model includes school and year fixed effects. "Mean in the Year Before Expansion" only refers to the UPK schools, since it is not applicable to the non-UPK schools. Covariates include the following: Students in special education (%), families and people living below the federal poverty level (%), White enrollment (%), Black enrollment (%), Hispanic/Latinx enrollment (%), * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.*

Table A3: Impact of Chicago UPK Expansion on Free, Full-Day Enrollment

	(1)	(2)	(3)
	4-Year-Old Enrollment in Free, Full-Day Pre-K β (SE)	3-Year-Old Enrollment in Free, Full-Day Pre-K β (SE)	Total Enrollment in Free, Full-day Pre-K β (SE)
Year 1 Treatment	20.8***	2.7***	23.5***
	(1.6)	(0.5)	(1.8)
Year 2 Treatment	27.1***	6.0***	33.0***
	(2.0)	(0.8)	(2.4)
Year 3 Treatment	30.0***	7.1***	37.1***
	(2.0)	(0.9)	(2.5)
Year 4 Treatment	35.0***	8.1***	43.1***
	(2.3)	(1.0)	(2.8)
Observations	2549	2549	2549
Adjusted R^2	0.732	0.560	0.711
Mean in the Year Before Expansion	7.1	0.9	8.0
Covariates	Yes	Yes	Yes

*Note: Standard errors in parentheses and clustered at the community level. Model includes school and year fixed effects. "Mean in the Year Before Expansion" only refers to the UPK schools, since it is not applicable to the non-UPK schools. Covariates include the following: Students who are English learners (%), students in special education (%), families and people living below the federal poverty level (%), White enrollment (%), Black enrollment (%), Hispanic/Latinx enrollment (%), * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.*

Table A4: Impact of Chicago Universal Pre-K Expansion on 4-Year-Old Full-Day and Half-Day Enrollment

	(1)	(2)	(3)
	4-Year-Old Enrollment in Free, Full-Day Pre-K β (SE)	4-Year-Old Enrollment in Free, Half-Day Pre-K β (SE)	4-Year-Old Enrollment in Free, Half-Day or Full-Day Pre-K β (SE)
Year 1 Treatment	20.8*** (1.6)	-19.8*** (1.9)	1.0 (1.1)
Year 2 Treatment	27.1*** (2.0)	-24.6*** (2.4)	2.4 (1.4)
Year 3 Treatment	30.0*** (2.0)	-26.7*** (2.7)	3.3 (1.7)
Year 4 Treatment	35.0*** (2.3)	-30.6*** (3.3)	4.4 (2.5)
Observations	2549	2549	2549
Adjusted R^2	0.732	0.796	0.838
Mean in the Year Before Expansion	7.1	30.0	37.1
Covariates	Yes	Yes	Yes

Note: Standard errors in parentheses and clustered at the school level. Model includes school and year fixed effects. "Mean in the Year Before Expansion" only refers to the UPK schools, since it is not applicable to the non-UPK schools. Covariates include the following: Students who are English learners (%), Students who are special education students (%), Families and people living below the poverty level (%), White Enrollment (%), Black Enrollment (%), Hispanic/Latinx Enrollment (%), * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table A5: Impact of Chicago Universal Pre-K Expansion on 3-Year-Old Full-Day and Half-Day Enrollment

	(1)	(2)	(3)
	3-Year-Old Enrollment in Free, Full-Day Pre-K β (SE)	3-Year-Old Enrollment in Free, Half-Day Pre-K β (SE)	3-Year-Old Enrollment in Free, Half-Day or Full-Day Pre-K β (SE)
Year 1 Treatment	2.7***	-6.8***	-4.1***
	(0.5)	(1.0)	(1.1)
Year 2 Treatment	6.0***	-8.8***	-2.9**
	(0.8)	(1.1)	(1.2)
Year 3 Treatment	7.1***	-9.0***	-1.9
	(0.9)	(1.3)	(1.4)
Year 4 Treatment	8.1***	-10.3***	-2.3
	(1.0)	(1.3)	(1.6)
Observations	2549	2549	2549
Adjusted R^2	0.560	0.791	0.750
Mean in the Year Before Expansion	0.9	20.1	21.0
Covariates	Yes	Yes	Yes

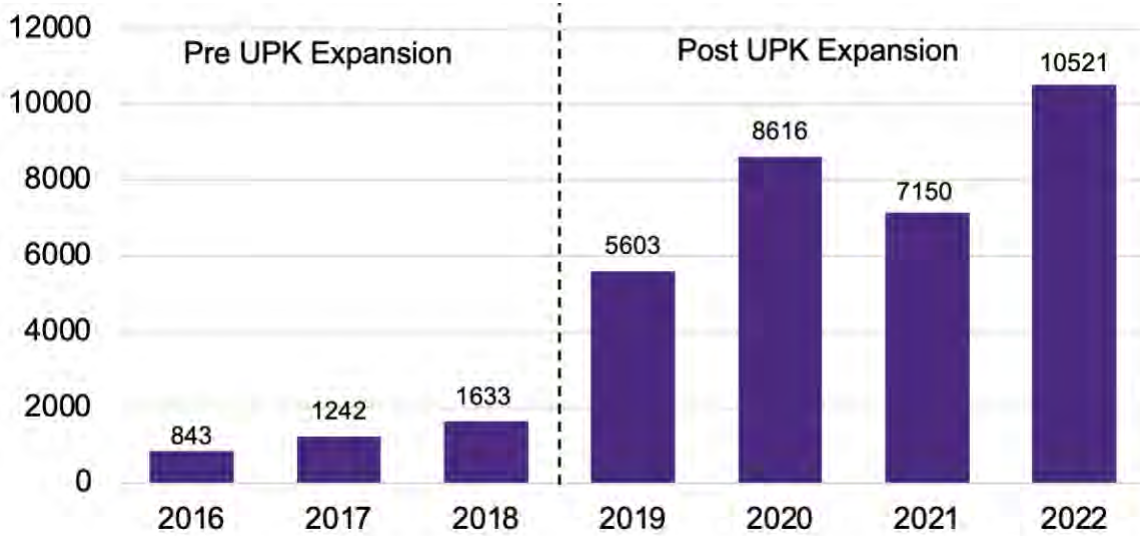
*Note: Standard errors in parentheses and clustered at the community level. Model includes school and year fixed effects. "Mean in the Year Before Expansion" only refers to the UPK schools, since it is not applicable to the non-UPK schools. Covariates include the following: Students who are English learners (%), students in special education (%), families and people living below the federal poverty level (%), White enrollment (%), Black enrollment (%), Hispanic/Latinx enrollment (%), * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.*

Table A6: Oversubscribed Communities by Year

School Year	Oversubscribed Communities (over 80% of seats filled)			
2018–19 (60 oversubscribed communities)	Albany Park Armour Square Ashburn Auburn Gresham Austin Avondale Belmont Cragin Beverly Bridgeport Brighton Park Burnside Calumet Heights Chatham Chicago Lawn Clearing Douglas	Dunning East Side Edgewater Fuller Park Gage Park Garfield Ridge Grand Boulevard Greater Grand Crossing Hegewisch Hermosa Humboldt Park Hyde Park Irving Park Jefferson Park Kenwood	Lake View Lincoln Park Lincoln Square Logan Square McKinley Park Montclare Morgan Park Near North Side Near South Side Near West Side New City North Center Norwood Park O'Hare Portage Park Pullman	Rogers Park Roseland South Chicago South Deering South Lawndale South Shore Uptown Washington Heights Washington Park West Elsdon West Lawn West Ridge West Town
2019–20 (48 oversubscribed communities)	Albany Park Archer Heights Armour Square Ashburn Auburn Gresham Austin Avondale Belmont Cragin Beverly Brighton Park Burnside Calumet Heights	Chatham Chicago Lawn Dearing Douglas Dunning East Side Edgewater Englewood Fuller Park Gage Park Garfield Ridge Hermosa	Humboldt Park Irving Park Lake View Lincoln Park Lincoln Square Logan Square McKinley Park Montclare Near North Side Near South Side Near West Side North Center	Norwood Park O'Hare Portage Park Rogers Park South Deering Uptown Washington Heights Washington Park West Elsdon West Lawn West Ridge West Town
2020–21 (34 oversubscribed communities)	Albany Park Archer Heights Armour Square Belmont Cragin Beverly Brighton Park Burnside Clearing Dunning Edgewater	Englewood Forest Glen Hegewisch Hyde Park Irving Park Jefferson Park Lake View Lincoln Square McKinley Park Montclare	Morgan Park Mount Greenwood Near North Side Near South Side North Center Norwood Park O'Hare Portage Park Rogers Park Uptown	Washington Heights West Elsdon West Lawn West Ridge
2021–22 (31 oversubscribed communities)	Archer Heights Armour Square Beverly Bridgeport Burnside Douglas Dunning Edgewater	Edison Park Englewood Forest Glen Garfield Ridge Hermosa Hyde Park Irving Park Jefferson Park	Lake View Lincoln Square Montclare Mount Greenwood Near North Side Near South Side Near West Side North Center	Portage Park Rogers Park Washington Heights Washington Park West Elsdon West Lawn West Ridge

Note: Oversubscribed communities are communities where more than 80% of free, full-day seats Pre-K are filled in UPK expansion schools.

Figure A1: Universal Pre-K (UPK) Expansion Schools Only: Total Free, Full-Day Seats for 3- and 4-Year-Olds by Year



Note: Includes the number of free, full-day seats for 3- and 4-year-olds. School years are labeled by the spring, i.e., 2016 denotes the 2015–16 school year. Of note is the impact of the COVID-19 pandemic on the 2020–21 school year. The dotted line denotes the expansion of UPK prior to the 2018–19 school year.

Description of Methods

To study the effects of the expansion of Chicago’s school-based pre-K, we perform a secondary data analysis of city-wide administrative data from Chicago Public Schools.

Data Sources

We established a data use agreement with CPS. Our study draws from existing administrative and census data from 2015–23, including:

- UPK/school-based pre-K expansion year data from CPS
- Enrollment and capacity on school-based pre-K programs for 3- and 4-year-olds from CPS
- Community characteristics from the American Community Survey (ACS)

Analytic Model

We use a difference-in-differences approach that leverages variation in the timing of the expansion of Chicago’s school-based pre-K program across schools. Our approach compares changes in pre-K capacity and enrollment over time in schools with and without expanded school-based pre-K to provide an estimate of the causal impact of UPK expansion. This approach accounts for all time-invariant school characteristics, and annual trends or shocks that affect pre-K capacity and enrollment across all CPS schools.

Specifically, we estimate an event-study model of the following form for school i in community j and year t :

$$(1) Y_{ijt} = \alpha + \sum_{T=1}^4 PostFDExpansion_{ijT} + \theta Covarites_{ijt} + \lambda_t + \mu_{ij} + \epsilon_{ijt}$$

where Y_{ijt} is pre-K enrollment or capacity for school i in year t , $PostFDExpansion_{ijT}$ is an indicator for whether an observation for school i in year t is T years after the UPK expansion began (for example, $PostFDExpansion_{1jT} = 1$ in the first year of UPK expansion), $Covarites_{ijt}$ is a series of time-varying school-level covariates, λ_t are year fixed effects, and μ_{ij} are school fixed effects. This approach allows us to estimate the impact of UPK expansion in the first four years after the expansion began. We estimate separate models for 3-year-old and 4-year-old capacity and enrollment. For all models, standard errors were clustered at the community level. We ran both unweighted and weighted regressions and chose unweighted for ease of interpretation but results still hold with weighted as well.

We include all CPS schools that did not have any (0%) preschool enrollment in the analysis, including schools that participated in the UPK expansion and schools that did not. We also confirmed that results were similar if we restricted the sample to schools that participated in the UPK expansion.

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