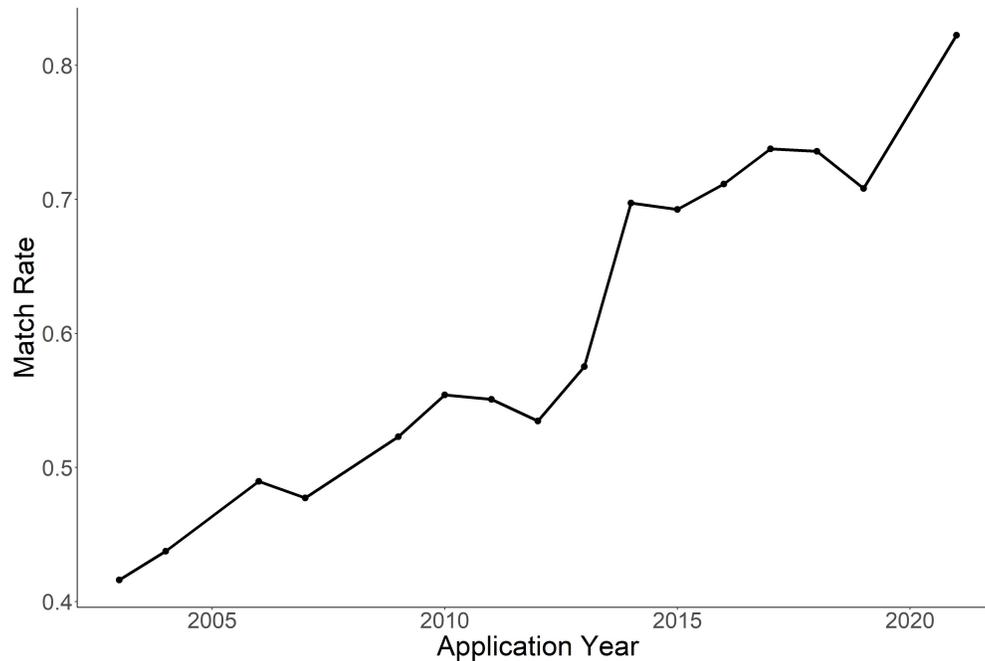


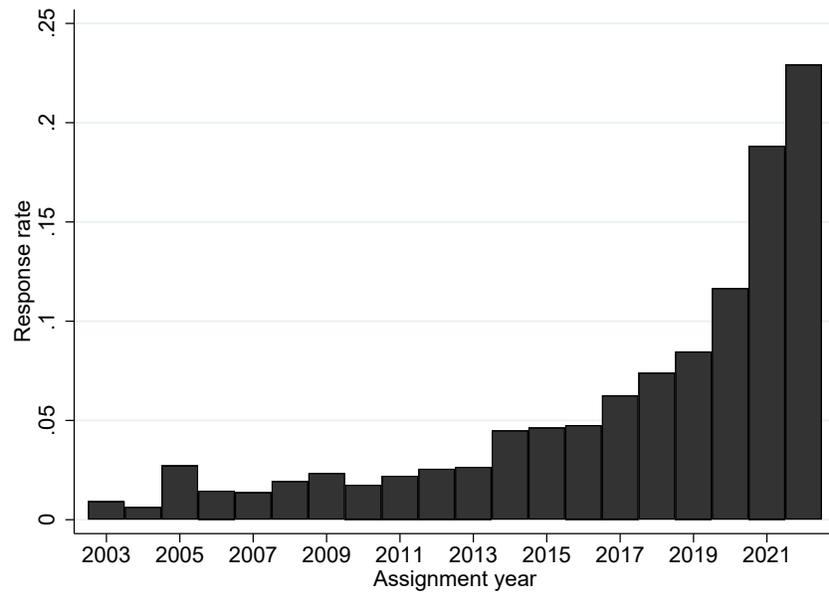
A Additional Tables and Figures

Figure A.1: Parental earnings match rate by application cohort



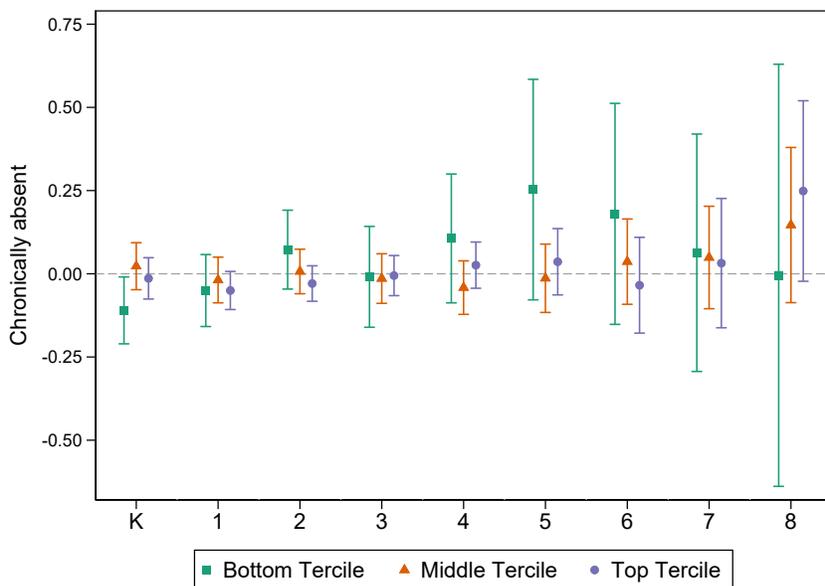
Notes: This figure shows the evolution of the match rate for parental earnings by application cohort. We can observe up to two contacts per applicant, usually one or both of their biological parents. We consider an applicant record matched if we can match at least one of their provided contacts to the administrative earnings records. We do not consider parental earnings for the 2005, 2008, and 2020 application cohorts. We did not recover historical records of the 2005 and 2008 application processes until after the merge with state records was conducted. As in our other analyses, we drop observations for the 2020 application cohort due to Covid. See section 3 for details.

Figure A.2: Survey response rate by application cohort

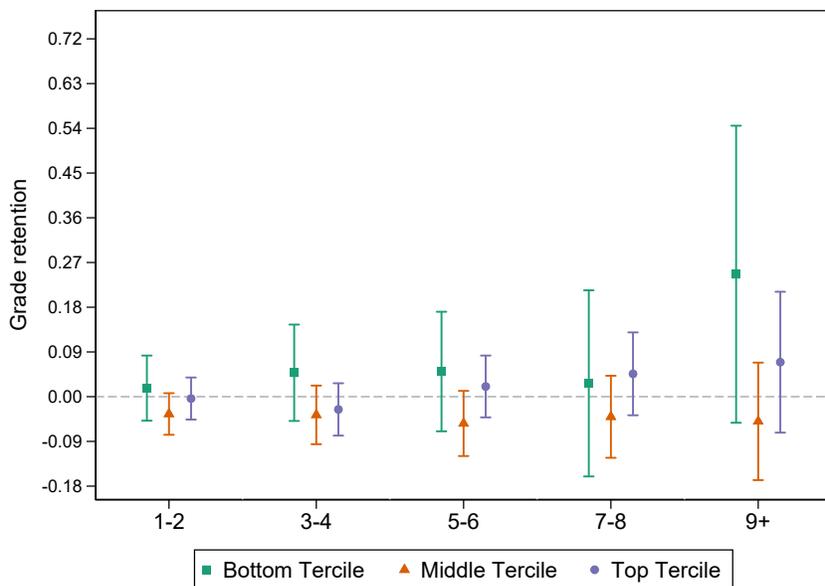


Notes: This figure reports survey response rates by application cohort. See section 3 for details.

Figure A.3: Effects of UPK on children’s academic outcomes by family income tercile



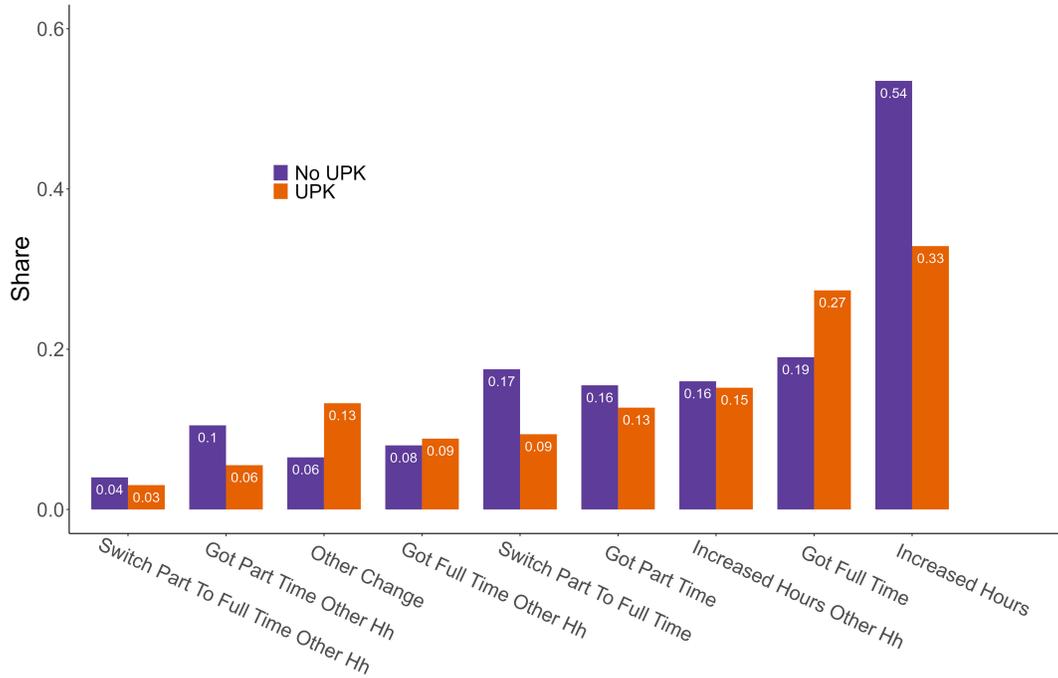
(a) Chronic absenteeism



(b) Grade retention

Note: This figure shows IV estimates for the effect of magnet childcare enrollment on chronic absenteeism and a cumulative indicator for ever retained in a grade by income tercile analogous to those presented in figure 4. Dots correspond to point estimates with the surrounding error bars indicating the 90% confidence interval.

Figure A.4: Subjective treatment effects: type of increase in work for those reporting an increase



Note: This figure reports the type of increase in work for survey respondents reporting that enrolling in a UPK program either did (if enrolled) or would have (if not enrolled) allowed them to work more. Shares for non-enrollees (“No UPK”) are in purple, shares for enrollees are in orange (“UPK”). Responses are reported both for the survey respondent and for other household members (labeled with “Other Hh”). See section 8 for details.

Table A.1: Descriptive Statistics - Comparison Set

Variable	Comparison Set
Asian	0.04
Black	0.22
Hispanic	0.36
White	0.35
English learners	0.17
Free or reduced price meals	0.72
Students with disabilities	0.34
KEI Score	-0.03
N	54517

Notes: This table shows descriptive statistics for the comparison set of children enrolled in a pre-kindergarten program in New Haven County during our sample period.

Table A.2: Lottery design validation - All Variables

	Comp Cont. Mean	Control Mean	NHPS sample	NHPS sample	State sample	Earnings sample	Survey sample
Black	0.347 (0.034)	0.430	-0.027 (0.009)	-0.006 (0.013)	-0.005 (0.014)	-0.011 (0.017)	-0.034 (0.053)
White	0.246 (0.028)	0.199	0.034 (0.007)	0.009 (0.011)	0.008 (0.012)	0.014 (0.016)	0.060 (0.050)
Female	0.565 (0.034)	0.509	-0.033 (0.009)	-0.028 (0.014)	-0.033 (0.015)	-0.019 (0.019)	-0.073 (0.058)
Age at application	3.490 (0.034)	3.727	-0.010 (0.005)	0.002 (0.008)	0.008 (0.009)	-0.004 (0.011)	0.039 (0.032)
ACS median HH income	63,609 (2,176)	58,651	1,510 (575)	-500 (777)	-272 (828)	-1,351 (1,066)	-3,664 (3,983)
Fraction renters	48.711 (2.047)	55.195	-2.412 (0.520)	0.071 (0.708)	-0.152 (0.754)	0.285 (0.944)	2.192 (3.447)
Fraction HH below poverty	0.063 (0.004)	0.075	-0.002 (0.001)	-0.001 (0.001)	-0.001 (0.002)	0.001 (0.002)	0.004 (0.006)
Fraction employed over 16	62.046 (0.737)	60.424	-0.254 (0.196)	0.098 (0.287)	0.228 (0.306)	-0.091 (0.393)	0.791 (1.114)
Pre-period income (dollars)	27,443 (2,286)	23,769				232 (949)	
Pre-period log income	10.022 (0.131)	9.775				0.027 (0.050)	
Any pre-period income	0.921 (0.030)	0.856				-0.006 (0.012)	
Earnings-weighted index			823 (197)	-41 (260)	25 (277)	-207 (357)	-526 (1,317)
Joint test			0.000	0.522	0.384	0.840	0.384
Year and Grade FEs			✓	✓	✓	✓	✓
Admit prob. indicators				✓	✓	✓	✓
First stage partial F-stat			5,481.1	842.3	836.7	569.4	63.0
N individuals			16037	15931	13847	9078	829
N applications			18795	18669	16389	10753	

Notes: This table expands the results reported in Table 3 by reporting reduced-form results for all variables used in the joint test. The reduced-form regression are again following equation 1 and take predetermined student and parent covariates as the dependent variable of interest. The joint test considers the hypothesis that all coefficients in a given column, except the one for the earnings-weighted index, are zero. Columns 1 and 2 report the control complier and control group means of the dependent variable listed in the row. Columns three through seven report regression results from a specification where the dependent variable is as listed in the table row and the controls and samples vary across columns. Each cell reports results from a separate regression. The reported estimates are coefficients on an indicator for being offered a UPK spot, with standard errors in parentheses. Column 3 uses all available application data and includes only grade-by-year fixed effects. Column 4 uses all available application data and adds controls for the P_i , as described in section 4.1. Column 5 has the same controls as column 4, but restricts to application data that is successfully matched to state records. Column 6 has the same controls as column 4 but restricts to application data merged to parent earnings records. Column 7 restricts to the survey sample and includes the modified P_i controls described in section 4.1. Standard errors are clustered at the level of the application (columns 3-5 and 7), or two ways at the level of the application and the level of the parent (column 6). See section 4.2 for details.

Table A.3: The effect of UPK enrollment on KEI subscores

	Comp Cont. Mean	Control Mean	Overall	ACS 1st tercile	ACS 2nd tercile	ACS 3rd tercile
Avg KEI Score	0.178 (0.067)	0.099	0.062 (0.072)	-0.176 (0.183)	0.295 (0.108)	0.012 (0.115)
Language Skills	0.131 (0.077)	0.104	0.108 (0.082)	-0.040 (0.208)	0.346 (0.122)	-0.064 (0.133)
Literacy Skills	0.255 (0.079)	0.124	0.040 (0.085)	-0.182 (0.207)	0.295 (0.124)	-0.010 (0.139)
Numeracy Skills	0.237 (0.081)	0.072	-0.018 (0.086)	-0.411 (0.221)	0.206 (0.127)	0.060 (0.137)
Physical/Motor Skills	0.165 (0.077)	0.080	0.011 (0.085)	-0.029 (0.218)	0.273 (0.128)	-0.046 (0.135)
Creative/Aesthetic Skills	0.116 (0.077)	0.090	0.113 (0.084)	-0.205 (0.210)	0.282 (0.125)	0.096 (0.135)
Personal/Social Skills	0.161 (0.076)	0.123	0.117 (0.081)	-0.191 (0.203)	0.366 (0.120)	0.037 (0.133)
First-stage partial F-stat			576.3	105.3	314.2	201.8
N			8716	2996	2909	2969

Notes: This table reports IV estimates of equation 1 for the effect of UPK enrollment on the Connecticut kindergarten Entrance Inventory (KEI). The first row reports results on the overall KEI score and subsequent rows report results for each of the six subscores. Complier control mean and control mean columns report statistics for the full sample. The three rightmost columns report IV estimates within samples defined by tercile of neighborhood income, as measured in the ACS. All scores have been z-scored by year. Clustered standard errors are in parentheses. See section 4 for details.

Table A.4: Control complier means for specifications in Table 6

	New main industry	One job over \$ 4,000	Quarters earn. ≤ \$ 4,000 (Incl. 0s)	Total qts earn. ≤ \$ 4,000 since PK	N individuals
<i>Disaggregated</i>					
Pre-K years	0.24 (0.02)	2.00 (0.12)	1.49 (0.10)	2.10 (0.14)	8743; 10621; 10727; 10727
Yrs after PK 1-2	0.17 (0.02)	2.08 (0.11)	1.46 (0.10)	4.70 (0.29)	8422; 10285; 10391; 10391
Yrs after PK 3-4	0.20 (0.02)	2.01 (0.11)	1.31 (0.10)	7.27 (0.46)	7877; 9990; 10096; 10096
Yrs after PK 5-6	0.15 (0.03)	2.05 (0.14)	0.99 (0.13)	9.13 (0.79)	6306; 8221; 8327; 8327
<i>Pooled post pre-k</i>					
Yrs after PK 1-6	0.18 (0.02)	2.05 (0.10)	1.29 (0.09)	6.73 (0.45)	9024; 10285; 10391; 10391
Yrs after PK 7+	0.20 (0.05)	1.97 (0.27)	1.01 (0.24)	13.52 (2.50)	4706; 6128; 6234; 6234

Notes: This table reports the complier control means for estimates in Table 6. See the note for that table and section 4.5.2 for details.

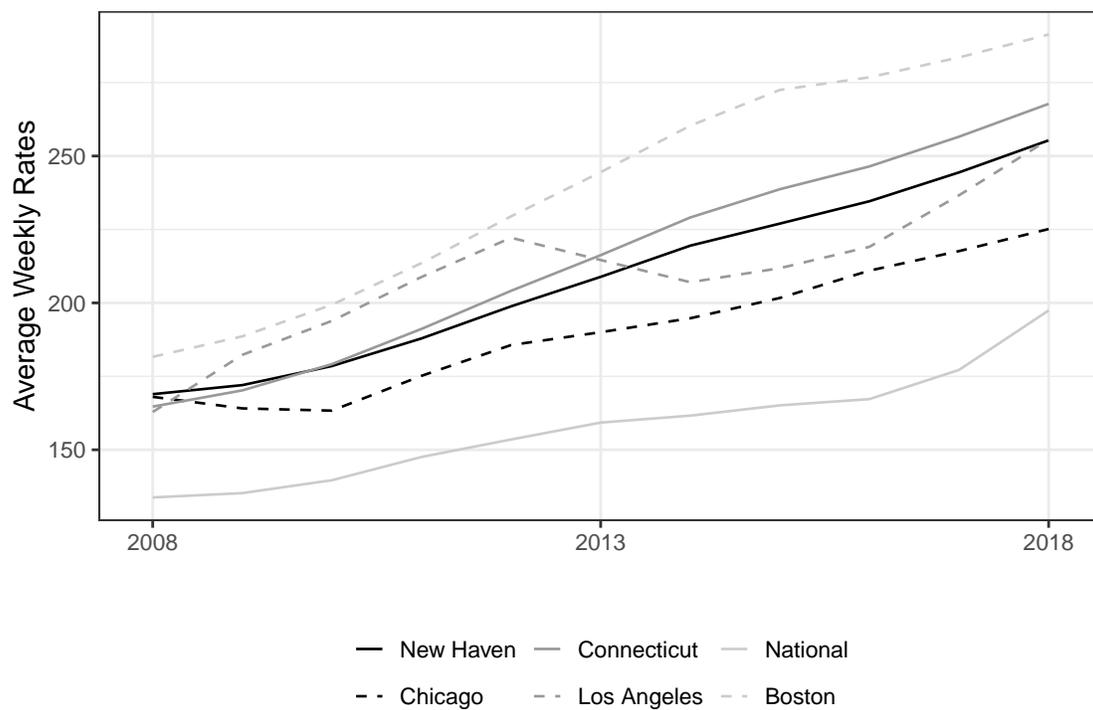
B Childcare costs over time

This appendix provides estimates of childcare costs over time from three sources, all of which provide evidence of increasing childcare costs. First, we use the National Database on Childcare Prices to estimate changes in the market rate for center-based preschool care. Figure B.1 plots the market rate for center-based preschool in New Haven County (purple line), Connecticut (dark blue line), and in the US overall (red line) from 2008 to 2018 in 2015 dollars. We additionally include dotted lines for Chicago (Cook County), Los Angeles (Los Angeles County) and Boston (Suffolk County). New Haven County is above the national average, but somewhat below the average for Connecticut. New Haven is somewhat above Chicago, similar to Los Angeles, and somewhat below Boston.

Second, we plot price changes using the seasonally adjusted CPI-U for US cities to plot the Full-basket CPI and the CPI for Daycare/Preschool, Shelter, Transportation, and Food. Specifically, we plot the percent change since 1990 for each basket from 1990 in Figure B.2. We see that the CPI for Daycare/Preschool increased much more rapidly than the total or any of the other categories we consider, rising by 250% nominally since 1990. The total CPI-U increased by 130% in the same time period.

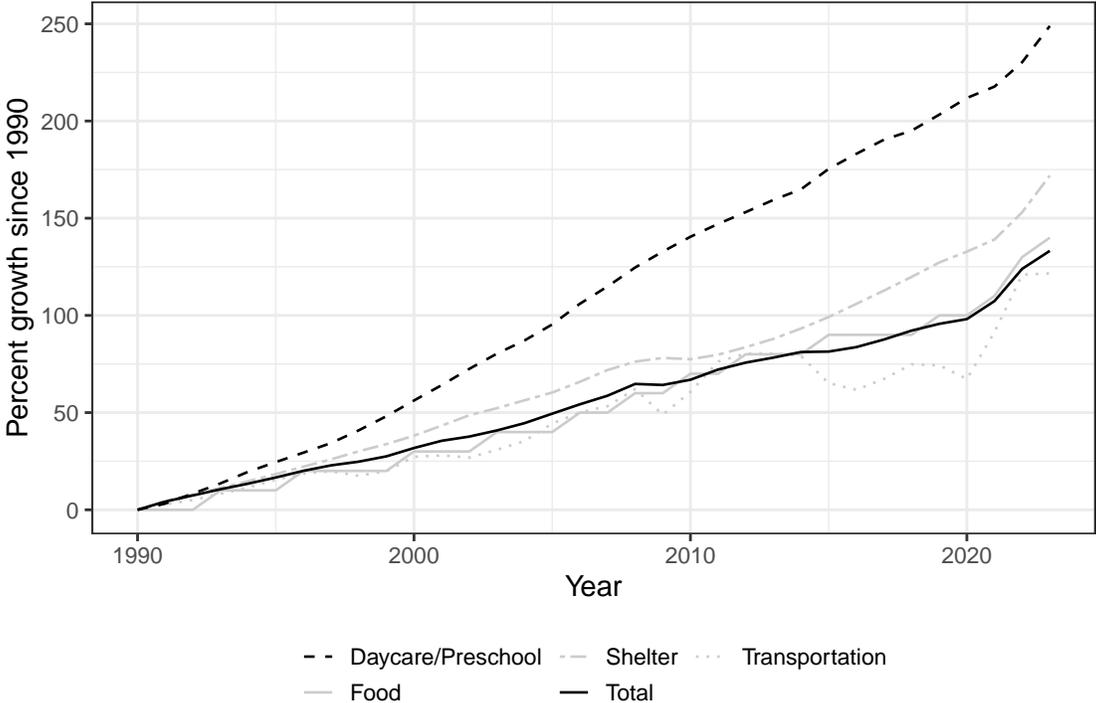
Third, we use the Current Population Survey Annual Social and Economic Supplements (CPS ASEC) to calculate households reported spending on childcare, restricted to households with children under the age of five. Total expenditure on childcare is divided by the number of children to approximate average cost per child. Figure B.3 shows that per-child household expenditure on childcare increased notably since 2005, with a drop in 2020, likely due to the Covid-19 pandemic.

Figure B.1: Market rates for formal preschool care in from 2008 to 2018



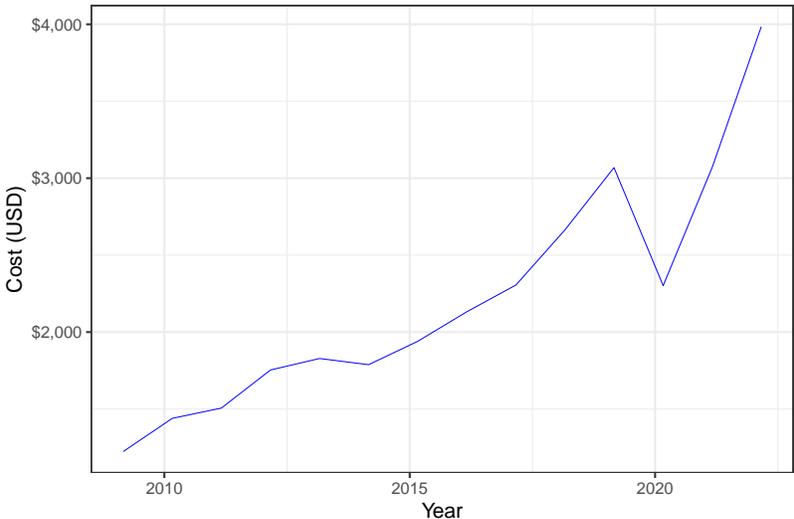
Notes: This figure plots weekly market prices for center-based preschool-aged childcare. The plot contains the following lines: New Haven County (purple line), Connecticut (dark blue line), and Nationally (red line) from 2008 to 2018 in 2015 dollars. We additionally include dotted lines for Chicago (Cook County), Los Angeles (Los Angeles County) and Boston (Suffolk County). Source: National Database on Childcare Prices ([Landivar et al., 2023](#))

Figure B.2: Percent growth in CPI-U for daycare/preschool vs other goods.



Notes: This figure plots the percent change since 1990 for the seasonally adjusted CPI-U for all goods (Total SA0), Daycare/Preschool (DAYCARE / PRESCHOOL SEEB03), Shelter (SHELTER AH1), Transportation (TRANSPORTATION AT), and food (FOOD AF1). Source: Bureau of Labor Statistics Consumer Price Index (CPI)

Figure B.3: Average annual household expenditure on childcare per child in households with children under the age of five



This figure plots the average monthly household spending on childcare per child for households with children under the age of five using data from the Current Population Survey Annual Social and Economic Supplements (CPS ASEC). Amounts are in 2015 dollars.

C Assignment mechanisms

NHPS used a centralized process to assign students to UPK programs over our entire study period, from 2003 to 2022. However, the city’s assignment mechanism and other elements of the application process changed several times over the period. This appendix describes changes in the NHPS UPK assignment system over time and how we use the data available under different assignment regimes to construct our school assignment instrument.

C.1 Assignment mechanisms and procedures

2003-2013

NHPS assigned students using an Immediate Acceptance (IA) mechanism with sibling and neighborhood priority, with ties broken using random draws. Students could apply to at most three schools. The mechanism was implemented by an IT consultant hired by the district, who wrote an NHPS-specific software package. Applications were primarily on paper, typically with one contact listed.

2014-2015

NHPS assigned students to schools using the “New Haven” mechanism, in which school preferences are lexicographic over 1) priority group (neighborhood, sibling, or both), and then 2) listed rank. Students apply to three schools. The district hired Smartchoice, a provider of school choice software to many districts, to implement the mechanisms. Application is primarily online, and applicants have the opportunity to list multiple contacts and define their relationship to the student.

2016-2017

NHPS returned to IA, and raised the maximum number of listed schools to four. The broader system continued to include neighborhood and sibling priority.

2018

NHPS continued as in 2016-2017, but added a priority system based on student zip code that comes after neighborhood and sibling preference in the lexicographic ordering.

2019

NHPS adopted a deferred acceptance (DA) procedure, keeping other process elements as in the previous year.

2020-2022

NHPS increased the length of the rank list from four to six. Other elements were unchanged.

C.2 Data on assignment processes and instrumental variable construction

The data we have about the assignment process changes when the district switches from the “old” procedure, a bespoke process run by a district-hired IT consultant, to the “new” procedure, run by a large purveyor of school choice services. This shift takes place after the 2013 assignment process.

2003-2013

Between 2003 and 2013, we observe applications, capacities, priorities, and realizations of the random lottery draws. We do not directly observe initial placement outcomes. Instead, we observe something closer to realized placements, inclusive of declined placements and the aftermarket processes through which NHPS filled declined spots.

To construct our UPK placement instrument, we simulate the school assignment process based on the applications, capacities, priorities, and realized values of the random draws. Using this simulation, we create an indicator equal to one if the student is assigned an offer in the main process. The feature of the data that lets us do this is that we observe the values of the randomized draws used to make assignments.

2014-2022

In 2014 and later, we observe applications, capacities, priorities, and initial placement outcomes. We take the presence of a main-round offer as our UPK placement instrument.

C.2.1 Simulated probabilities

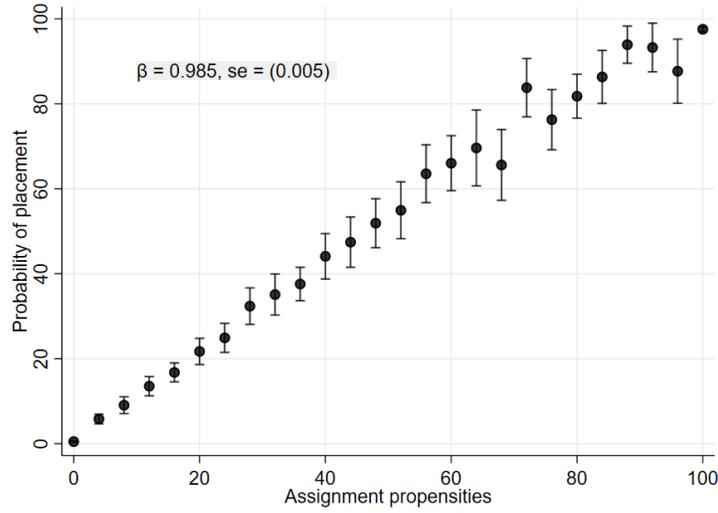
Our approach follows [Azevedo and Leshno \(2016\)](#) and [Agarwal and Somaini \(2018\)](#). We simulate random tiebreaker draws 500 times and run the assignment mechanism under each set of draws. We compute the admissions cutoff score in each simulation (based on the RSP+C representation of the mechanism), then take the average cutoff score across all simulations and use it to compute the assignment probabilities for each application.

C.2.2 Tests of simulation validity

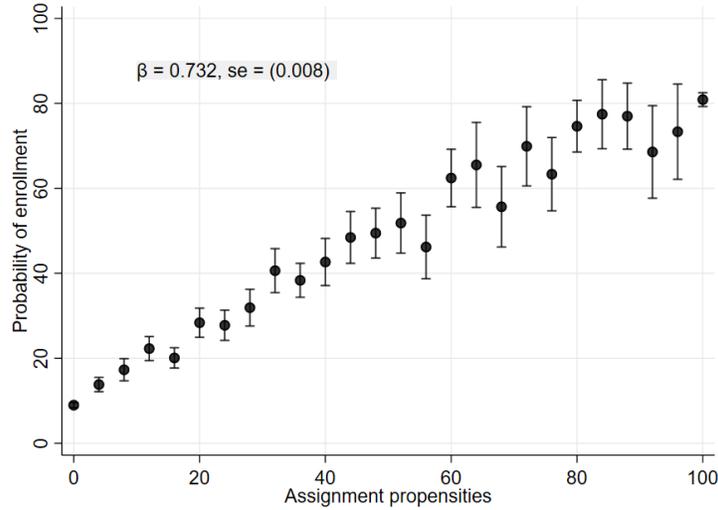
Our process for constructing the placement instruments Z_i and assignment propensities P_i relies on a reconstruction of the assignment process. To test the accuracy of our reconstruction, we regress an indicator for observed assignment on simulated assignment probability P_i . Panel A of Figure C.1 reports the results of this exercise. We see that, as predicted, observed assignment probabilities rise one-to-one with the simulated values.

We also see observed *enrollment* probabilities rising steeply with the P_i . We report these results in Panel B of Figure C.1. The slope here is not one-for-one, and we do not expect it to be due to noncompliance. However, the fact that enrollment rises steeply with simulated assignment probability helps confirm that our approach accurately describes the assignment and enrollment procedures that students encounter.

Figure C.1: Validating assignment propensities



(a) Placement



(b) Enrollment

Note: Panel A plots the share of observed UPK assignments (vertical axis) against simulated assignment probabilities P_i (horizontal axis). Each dot represents a 5pp bin of values of P_i . The coefficient from a linear regression of observed placement on P_i is reported on the figure. Panel B has the same structure as panel A, but the vertical axis variable reflects the probability of enrolling in UPK.

D Details on other subsidized programs

This appendix describes how we calculate enrollment in various subsidized pre-kindergarten programs in New Haven and also provides additional information on those programs. We aim to calculate the number of three- and four-year-old children enrolled in each subsidized pre-kindergarten program in New Haven from 2006 through 2022. We use data

from the Connecticut State Department of Education (SDE), NHPS' Public Schools Information System (PSIS), Connecticut's Office of Early Childhood (OEC), and aggregate data from the federal Office of Head Start (OHS) to categorize five main program types and determine enrollment figures for each. See section 3 for more details on each data source, and section 2 for discussion of the counts we obtain from this exercise, which are reported in Figure 1, panel C.

D.1 UPK enrollment

See Section 2 for details on New Haven's UPK program. To calculate UPK enrollment, we use data from the SDE and the PSIS to track enrollment in New Haven UPK programs in each school year.

D.2 School Readiness

School readiness programs are funded through grants to high-need communities. To be eligible, a school must serve one of the 50 lowest-wealth towns in Connecticut, or be designated as a priority school. School Readiness preschool programs vary in the amount of care they offer (full-time, school-time, part-time, wrap-around) and family fees depend on the type of program, its duration, and family size. For example, for a full-time program, those earning less than 12% of State Median Income (SMI) have a weekly family fee that is equivalent to 4% of family income (if attended for the full year) and slowly increases up to 10% for those making more than 150% of SMI ([Connecticut Office of Early Childhood, 2024](#)).

For School Readiness program enrollment, we rely on data from SDE, PSIS and OEC. School Readiness enrollment is recorded in PSIS data (for children enrolled in New Haven), in SDE data (for children enrolled in publicly-run non-NHPS programs), and OEC data (for children enrolled in subsidized programs run by other providers. SDE and PSIS data are available across the full analysis period, but OEC data are available only from 2013-2019 and are most complete from 2016-2018. We keep data from facilities based in New Haven. We erase duplicates in cases where we can identify the same child and school year combination in multiple datasets. Using the deduplicated data, we count the number of unique children across years.

Data on enrollment in OEC files do not include identifiers for children enrolled in subsidized programs who did not match to our record of applicants to the New Haven UPK lottery. The data are identified at the level of the enrollment spell. It is possible one child may account for multiple enrollment spell observations. We estimate the number of unique children from the spell data using the ratio of spells to unique applicants among children that did match our records, then compute total School Readiness

enrollment in each year by adding the scaled number of spells for non-applicant children to the number of unique individuals from our applicant records.

D.3 Care 4 Kids

Care 4 Kids offers families vouchers which can be used to pay for childcare. The program is primarily funded by the Federal Child Care Development Fund (CCDF) Plan. In addition to income requirements, Care 4 Kids requires the parent to be working or in an approved educational program. To be eligible, new applicants must earn less than 60% of the State Median Income (SMI), must remain below 85% of SMI while enrolled, and must be below 65% of SMI for redetermination ([Care4Kids, 2024](#)). Families must additionally pay a fee which is tied to annual gross income. This is 2% annually for those below 20% SMI, 4% for those above 20 but below 30% SMI, 6% for those above 30 but below 40% SMI, 8% for those above 40 but below 50% SMI, and 10% for those above 50 and below 85% SMI.

To estimate Care 4 Kids enrollment, we use data from the OEC to identify children enrolled in Care 4 Kids programs. Information on enrollment in Care 4 Kids is split between two datasets from the OEC, which jointly span the full analysis period. Unlike information used to calculate enrollment in the School Readiness program, here we cannot identify the town where a facility is located for most facilities. We can observe the town of residence for the child. Our approach is to include enrolled children in the program that matched to our record of applicants to the New Haven lottery, and from this set, we keep only those whose facility is in New Haven, if we can identify its location, or those that are New Haven residents in cases where we don't know where their facility is located.

Information on enrollment in Care 4 Kids programs do not include a variable that identifies individuals for those who did not match our record of applicants but are New Haven residents. The data are identified at the level of the enrollment spell. It is possible one child may account for multiple enrollment spell observations. We estimate the number of unique children from the spell data using the ratio of spells to unique applicants among children that did match our records, then compute total Care 4 Kids enrollment in each year by adding the scaled number of spells for non-applicant children to the number of unique individuals from our applicant records.

D.4 Head Start

Head Start is a nationally funded program for families with household incomes below the federal poverty line. In Connecticut, a child is also eligible if their family receives TANF or if they are homeless or in foster care. Head Start is free to eligible families.

Head Start programs in New Haven provided mostly part-day slots in 2013 and earlier before switching to mostly full-time slots of at least six hours per day thereafter (Source: authors' calculations from Office of Head Start data.). See [Friedman-Krauss et al. \(2022\)](#) for additional details on Head Start and Head Start in Connecticut.

To build estimates of Head Start enrollment in New Haven, we use four data sources. First, we use data from the SDE and PSIS to identify children enrolled in Head Start programs administered by public school systems. We then supplement with OEC data to capture additional enrollees from the New Haven Lottery that we might not cover using the SDE source.

The public and state sources of Head Start data have some limitations. In 2019, one of New Haven's largest Head Start providers, LULAC, leaves both district and state datasets despite continuing to operate. This appears to be related to the source of funding for the programs provided by LULAC. To address this issue, we use aggregate records of Head Start enrollment in New Haven from OHS. These data report enrollment counts by year and center, and generate counts close to those we observe in administrative data for years 2018 and earlier. We construct predicted enrollment using the OHS data by regressing our observed enrollment counts on OHS counts using pre-2018 data. We then use predicted values from this regression as our estimates of Head Start enrollment counts for 2019 through 2022.

D.5 Other programs

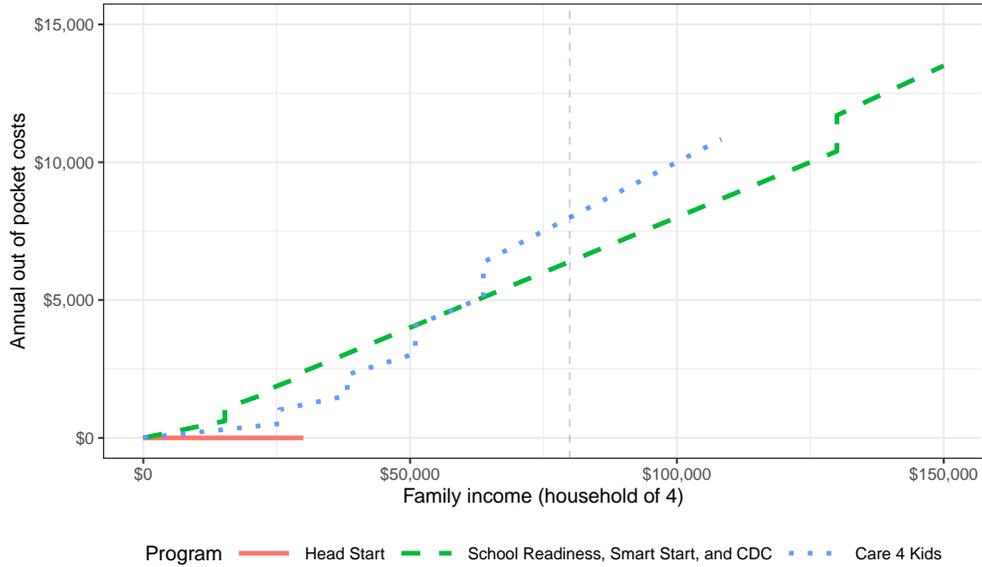
The OEC data includes information on other smaller programs in the state. In the category of "Other programs", we include children enrolled in the rest of subsidized options from the OEC data. This includes children enrolled in Smart Start programs, Child Day Care Contracts (CDCC), and the Preschool Development Grant (PDG) across years that matched to our records of applicants to the New Haven UPK lottery.

We also consider deflected spells to account for children enrolled in these programs that did not match to our records of applicants to the New Haven UPK lottery. We calculate total enrollment in these programs by adding the number of deflected spells and unique individuals that matched to our record of applicants whose facility is based in New Haven.

D.6 Payment schedules

To compare out-of-pocket costs for School Readiness, Care 4 Kids, and Head Start, Figure D.1 plots the annual out-of-pocket cost to families for enrolling in each of these programs as a function of family income. The Figure is for a household of four enrolling their child in a full-time preschool (ages 3 or 4). The dashed vertical line is the eligibility

Figure D.1: Payment schedules and eligibility



Note: This figure plots the annual out-of-pocket cost for families in Head Start, Care 4 Kids, and other OEC programs (School Readiness, Smart Start, and CDC) as a function of household income. Numbers are for a family of four enrolling in a full-time preschool program. All amounts and thresholds are based on 2023 values. The vertical line is the eligibility cutoff for new applicants for Care 4 Kids. Sources: [Care4Kids \(2024\)](#); [Connecticut Office of Early Childhood \(2024\)](#)

threshold for Care 4 Kids for new enrollees.

E Student achievement data

E.1 Test score data

This section describes that data we have on student achievement. We pay particular attention to achievement measures for kindergarteners, because these are the earliest measures we observe and likely also the least familiar to readers.

The earliest assessment we observe is the Connecticut Kindergarten Entrance Inventory (KEI). Kindergarten teachers conduct this assessment in the fall of each academic year. Students receive scores ranging from one to three on six readiness measures: creativity, language proficiency, literacy, numeracy, personal/social readiness, and physical readiness.

The Fall Kindergarten Entrance Inventory (KEI) is an evaluation performed at the beginning of the school year to document the skills students demonstrate upon arriving in kindergarten. The inventory was introduced in 2007 to comply with new state regulations and is administered statewide ([Connecticut State Department of Education, 2021, 2024](#)). Scores are based on teachers' evaluations across six domains:

Creative/Aesthetics, Language, Literacy, Numeracy, Personal/Social skills, and Physical/Motor skills. Students are rated on a 3-point scale reflecting the degree to which a child demonstrates the skills in a given domain and the amount of instructional support required. To give an example, for Language the teacher is asked the following question: At what level does the student:

- Participate in conversations
- Retell information from a story read to him/her
- Follow simple two-step verbal directions
- Speak using sentences of at least 5 words
- Communicate feelings and needs
- Listen attentively to a speaker.

The teacher then provides a single score of one, two, or three, where a higher score represents a more consistent demonstration of the skills and that the student requires less instructional support for the skills ([Connecticut State Department of Education, 2008](#)). Our data covers results for the KEI for the school years 2008/09 through 2018/19, 2020/21, and 2021/22. We standardize test scores by school year and subtest using data from all New Haven pre-kindergarten students. We do not use the 2020/21 years in our analysis because Covid school closures interfered with the administration of the evaluation.

Figure E.1 plots the average of the six raw scores for students in our sample, while Table E.1 reports the min, max, and quartiles of the normalized KEI scores for our sample. Figure E.2 reports the 25th, 50th, and 75th percentile of raw scores over time, showing that these are largely constant throughout the time window we study.

We also observe results from the Connecticut Mastery Test (CMT) and Smarter Balanced Assessment (SBA). These are high-stakes exams administered in grades three through eight that form the basis for Connecticut’s school accountability system. We observe these scores from 2007-08 through 2021-22.

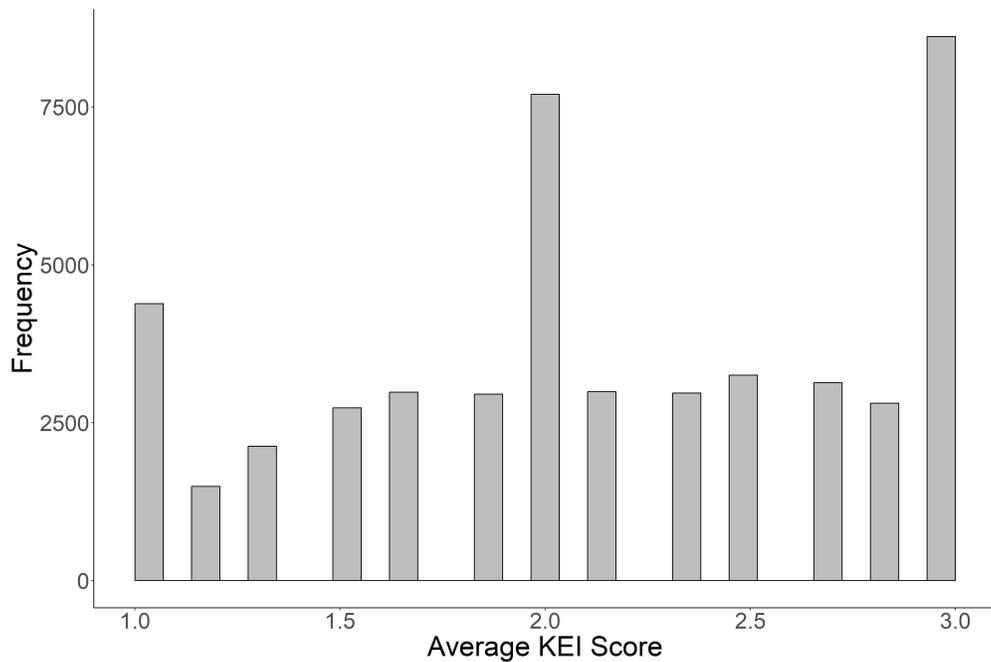
All test score data is missing for the 2019-20 school year due to the state Covid response; many Connecticut schools shut down in March 2020 just prior to the scheduled administration of most standardized exams. In addition, school closures in Fall 2020 interfered with the in-person administration of the KEI for the 2020-21 school year.

E.2 Testing KEI scores

Kindergarten readiness scores are strongly correlated with later achievement measures. Figure E.3 plots the relationship between the average KEI score in kindergarten against average test scores in grade 3, grade 8, grades 3-8, high school, and on the SAT. Each

subpanel plots the standardized average KEI score on the x-axis and the standardized other test score on the y-axis. The dots are binned means of the test listed in the title within quantiles of KEI score, while the line from a linear regression of the later test score on the KEI score. On each plot we report the slope of the linear regression (beta). Overall, there is a strong, linear relationship between the KEI score and later test scores, though the slope of line of best fit decreases as more time has passed, with a slope of 0.40 in 3rd grade and 0.27 in eighth grade. The slope of SAT scores with respect to KEI scores is 0.24.

Figure E.1: Distribution of KEI Scores



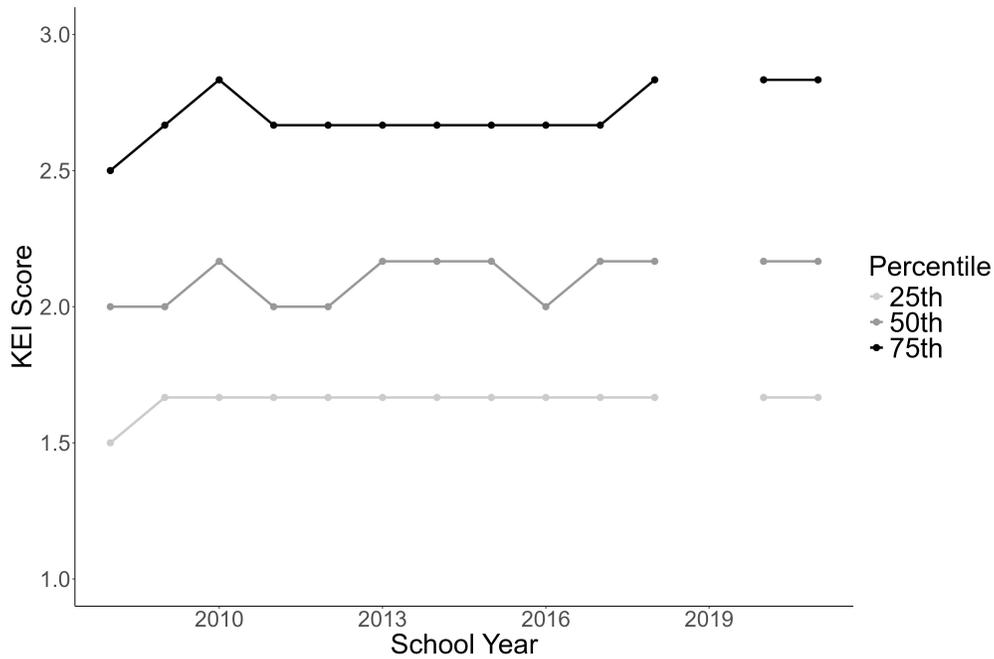
Notes: This figure shows the distribution of raw KEI scores, averaged across all six subtests, among all students in our SDE sample. The maximum attainable score in each subtest is 3, the minimum attainable score is 1. The time period covered is 2008/09-2018/19 and 2020/21-2021/22.

Table E.1: KEI Subtest Score Distribution

Subtest	Min	25th	Median	75th	Max
Average	-1.66	-0.40	0.09	0.94	1.27
Creative	-1.89	-0.38	-0.32	1.04	1.17
Language	-1.45	-0.18	-0.02	1.23	1.35
Literacy	-1.52	-0.25	-0.05	1.20	1.38
Numeracy	-1.56	-0.19	-0.07	1.19	1.33
Personal	-1.62	-0.23	-0.13	1.16	1.28
Physical	-1.96	-0.42	-0.29	1.02	1.13

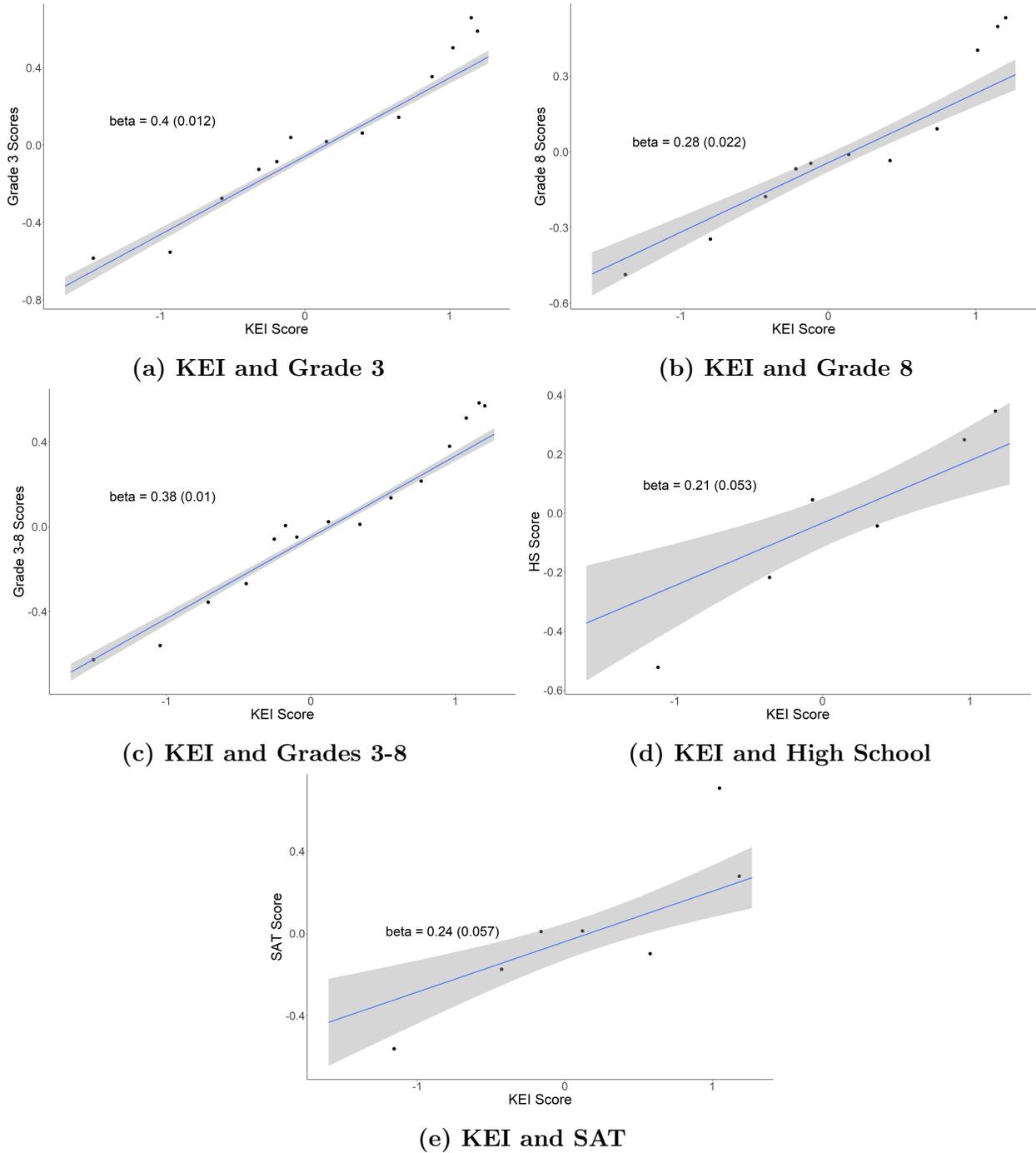
Notes: This table shows the minimum, 25th percentile, median, 75th percentile, and maximum of the standardized KEI score for the overall average across all six subtests and for each subtest. The underlying sample consists of all students contained in our SDE dataset. The time period covered is 2008/09-2018/19 and 2020/21-2021/22. Scores are standardized at the subtest-school year level.

Figure E.2: KEI Score Percentiles over Time



Notes: This figure shows the evolution of the 25th (red), 50th (green), and 75th (blue) percentile of the raw, overall KEI score, i.e. the average over all six subtests. The maximum attainable score in each subtest is 3, the minimum attainable score is 1. The underlying sample consists of all students contained in our SDE dataset. The time period covered is 2008/09-2018/19 and 2020/21-2021/22.

Figure E.3: KEI Score and Average Upper Grade Score



Notes: This figure shows binscatter plots visualizing the correlation between the overall standardized KEI score, i.e. the average over all six standardized subscores, and a selection of standardized test scores from later grades. The x-axis in each panel reflects the standardized KEI score. For the y-axis, panel (a) presents the grade 3 test scores, panel (b) grade 8 test scores, panel (c) shows the average test score across grades 3 through 8, panel (d) shows the average test score in high school, and panel (e) shows SAT scores. Each subfigure additionally plots the regression line and reports the slope of the line.

F Survey procedures and variable construction

F.1 Survey implementation

We worked with NHPS to survey the parents of past UPK applicants. The survey ran from May to November 2023. Using contact information provided on application forms, survey enumerators at NORC emailed parents of past applicants and followed up by phone with applicants who did not complete the survey or lacked email addresses. We prioritized phone follow-ups for parents whose children had interior placement probabilities to maximize statistical power within budget constraints. Survey respondents were rewarded with a chance to win a prize of \$100. We awarded 25 such prizes.

The survey launched in early May with emails to all parents in the survey sample. Emails highlighted the collaboration between NHPS, Yale, and NORC. The email also emphasized that responses would help improve pre-kindergarten programs in New Haven and that responses were confidential. See Figure F.1 for the email invitation. Upon clicking the email invitation link, respondents were directed to the landing page that reiterated the purpose of the survey, provided contact information for the research team, and asked for consent to continue. Each legal guardian with an available email received up to five reminders. Survey efforts continued until the second week of November.

Survey logic allowed for different questions based on the application status of the child, distinguishing between those children who applied but were not offered a seat, those who were offered a seat but chose not to enroll, and those who enrolled after receiving an offer. Online Appendix K contains the survey questionnaire.

F.2 Survey variable construction

In most cases our analysis relies on direct reports from survey responses. In some cases we combine responses from multiple questions into summary variables. We describe pertinent data construction choices below.

F.2.1 Pre-kindergarten outside options

If a survey respondent indicated that their child did not enroll in a UPK program, they were asked about the kind of childcare program their child was enrolled in. The answer options for this question consisted of

1. Head Start/Early Head Start
2. Another childcare center or pre-k (not Head Start)
3. A paid childcare provider operating out of their home (not Head Start)

4. Another town’s public pre-k or childcare program
5. Babysitter, nanny, or another private option
6. Other, please specify:

For our analysis, we code these responses into three categories as follows:

- *Head Start*: response option 1
- *Other Public PreK*: response option 4
- *Other Paid PreK*: response options 2, 3, 5

We additionally hand-code all free text responses to answer option 6.

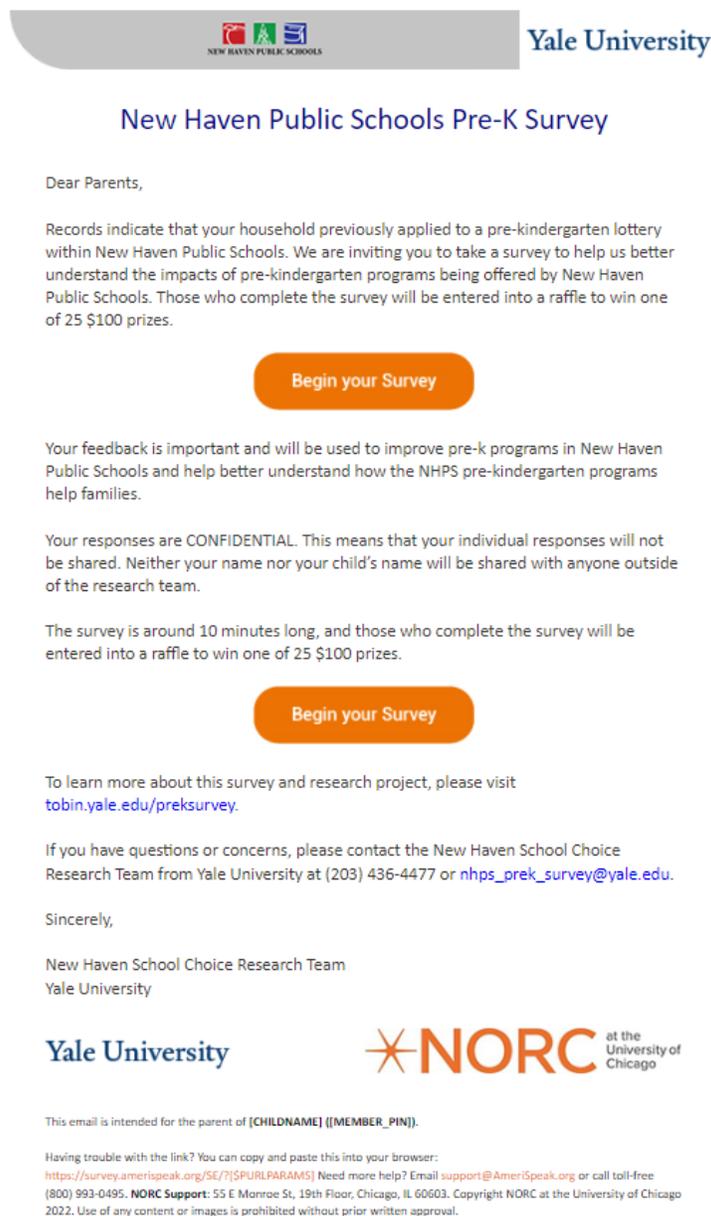
Finally, if a survey respondent indicates that their child did not enroll in any of these childcare options we assign that child to the category *Kid Stays Home*.

F.2.2 Out-of-pocket costs

Out-of-pocket (OOP) costs for non-UPK pre-kindergarten programs are taken directly from survey responses. Survey respondents could choose between seven bins to describe their monthly OOP costs, with a low value of zero dollars, a high value of \$2,000 or more, and five intermediate choices corresponding to ranges of dollar values. In our analysis we assign dollar values based on the midpoint of the selected bin for the middle bins and assign a dollar value of \$2,000 for the top bin.

Due to an error in survey logic, we did not collect information on OOP costs for children enrolled in UPK programs. While enrollment in magnet programs is free of charge and includes wraparound before- and after-care prior to 2021 (i.e., for almost all of our sample period), families may nevertheless incur other childcare costs. To address this issue, we impute OOP costs for UPK enrollees as the average OOP costs reported for children enrolling for Head Start programs. We choose Head Start because the programs are also free to participants. The key difference in structure is that Head Start programs do not provide as much extended-hours care as UPKs through most of our sample period. We therefore regard this approach as conservative in the sense that it is likely to overstate the OOP costs for UPK enrollees.

Figure F.1: UPK survey invitation



Note: This is the email sent to parents or guardians of past UPK applicants inviting them to participate in the survey. Respondents accessed the survey by clicking on any of the buttons displayed, and subsequently were directed to a landing page where they received additional information on the purpose of the survey.

G Pre-Kindergarten Hours

G.1 Childcare Hours Construction

Main Method

We assign each student in our survey dataset a value reflecting the daily hours of care the student has access to at their childcare facility in the year following application to the New Haven choice process (i.e., the first year they might be enrolled in a UPK program). We draw on and/or construct program-year level data from a variety of sources, including NHPS, the Connecticut Office of Early Childhood, and the Office of Head Start. To construct our main measure, we follow the steps outlined below.

1. Students with no reported pre-kindergarten are assigned a value of zero hours.
2. Students reported as enrolled in a UPK program are assigned a value of 10 hours for the school years 2003-04 through 2020-21 and a value of 6.5 hours for 2021-22 and 2022-23. These numbers reflect the official minimum hours offered by UPK programs during those periods. The 6.5-hour figure 2021-22 and later is a lower bound: many programs in practice did offer before- and after-care during this period.
3. For students reporting enrollment in other programs that appear in OEC records, we assign the modal value of hours among all students enrolled in a given program in a given year. If the OEC records don't indicate the number of childcare hours directly, we assign the midpoint on the range of hours that regulations permit.²¹
4. Remaining students without any information on pre-kindergarten hours who report in the survey that they have enrolled in a Head Start program are assigned the modal hours recorded for their respective program taken from the Office of Head Start (OHS).²²
5. For all remaining students without any information on pre-kindergarten hours, we look up the childcare programs reported in the survey and use the hours currently offered by the program.

Alternative Methods

We prepare a variety of alternative childcare hours measures that are used for robustness checks of our main measure:

- *Lower/Upper Bound Hours*: Instead of using the average number of hours observed for a given childcare program, we take the minimum/maximum value.
- *Childcare 211 hours*: We directly collect offered childcare hours, as reported by Connecticut 211 Childcare, for the childcare providers survey respondents re-

²¹See https://www.ctoec.org/wp-content/uploads/2020/02/GP-B-04-Definition-of-Space-Types-Categories-of-Care-and-Eligibility-for-Enrollment_FY25.pdf and <https://www.ctcare4kids.com/wp-content/uploads/2021/12/sample-certificate.pdf> (retrieved 25.06.2024).

²²Office of Head Start, Program Information Reports 2008-2022 (<https://hses.ohs.acf.hhs.gov>).

ported using.²³ For the majority of centers, we use their reported daily hours in this new data source. However, we manually adjust some of the hours for a small number of children based on several criteria.

- For providers missing hours information from the 211 website, we use data collected from the centers’ websites.²⁴
- For cases where the childcare name indicated no formal childcare (e.g., home-schooling or care by a family member), we assume zero hours.
- We assign 10 hours to children who are flagged as Magnet students in the survey if the application year is 2020 or earlier. For application years after 2020, we assign 6.5 hours.
- If children are flagged as Head Start students in the survey and hours are missing, we assign hours based on the main method unless the childcare name is "Reggie Mayo", in which case we assign 6 hours. If both hours measures are missing, we assign 7 hours as a default. - For any remaining cases where hours are still missing, we assign hours based on the main method.

Overall, this approach is conservative as CT 211 Childcare typically reports the maximum possible hours offered by the center, likely overstating the hours accessed by those not in UPK.

Finally, we similarly impute missing childcare hours using several different approaches:

- *Zero Hours*: Impute missing childcare hours as 0.
- *Average Non-UPK Hours*: Impute missing childcare hours as the average number of hours observed among all non-UPK childcare enrollees.
- *Median Non-UPK Hours*: Impute missing childcare hours as the median number of hours observed among all non-UPK childcare enrollees.
- *Maximum Non-UPK Hours*: Impute missing childcare hours as the maximum number of hours observed among all non-UPK childcare enrollees.
- *UPK Hours*: Impute missing childcare hours as the number of hours a UPK enrollee would have received in the same year.

G.2 IV Results

We estimate alternate versions of the hours of care IV specification described in section 4.3 and reported in Table 4 using the approaches to hours imputation described above.

²³Connecticut 211 Childcare is a website administered by The United Way of Connecticut and supported by the Connecticut Office of Early Childhood to facilitate access to childcare (<https://www.211childcare.org/>). Data retrieved on 07.18.2024.

²⁴The centers are Alice Peck Early Learning Center (9 hours - see [website](#)), and Overbrook Early Learning Center (10.5 hours - see [website](#)).

We report our findings for daily hours in Tables G.1 and G.2.

Table G.1: Daily childcare hours IV

	Childcare Hours			
	Main (1)	Lower (2)	Upper (3)	Childcare 211 (4)
UPK Enrollment	2.27 (0.640)	4.61 (0.537)	1.77 (0.637)	1.52 (0.596)
Grade and Year	✓	✓	✓	✓
Race	✓	✓	✓	✓
Gender	✓	✓	✓	✓
Dependent variable mean	7.44	6.76	7.69	7.85
Observations	724	724	724	756

Notes: This table reports IV estimates of equation 1 for UPK enrollment on childcare hours received among the sample of survey respondents. Column (1) presents results using our main measure of childcare hours. Columns (2)-(4) show results using a series of alternative methods to construct the measure of childcare hours. For details on the different methods, see Appendix G. All specifications control for student sex, race/ethnicity, and lottery probability-by-application cohort fixed effects where probabilities are grouped into 5% bins. Standard errors are clustered at the student level.

Table G.2: Daily childcare hours IV - impute missing values

	Childcare Hours, Missing Imputed as				
	Zero (1)	Average (2)	Median (3)	Max (4)	UPK (5)
UPK Enrollment	4.46 (0.648)	2.49 (0.504)	2.09 (0.519)	1.08 (0.618)	1.20 (0.557)
Grade and Year	✓	✓	✓	✓	✓
Race	✓	✓	✓	✓	✓
Gender	✓	✓	✓	✓	✓
Dependent variable mean	6.49	7.23	7.38	7.77	7.69
Observations	830	830	830	830	830

Notes: This table replicates the IV estimation in Table G.1, column (1), but imputes missing values in the measure of childcare hours. For details on the different methods used to impute missing values, see Appendix G. All specifications control for student sex, race/ethnicity, and lottery probability-by-application cohort fixed effects where probabilities are grouped into 5% bins. Standard errors are clustered at the student level.

H Poisson IV specifications

We follow [Lin and Wooldridge \(2019\)](#) and estimate a Poisson IV specification using a control function approach. We estimate a linear first-stage equation given by

$$D_i = \delta Z_i + X_i' \pi + \sum_p \rho_p 1[P_i = p] + \eta_i. \quad (2)$$

We obtain the estimated residual $\hat{\eta}_i$, and include this residual as a control in the second-stage Poisson specification, given by

$$E[Y_i | D_i, X_i, P_i, \hat{\eta}_i] = \exp \left(\beta D_i + X_i' \Gamma + \sum_p \alpha_p 1[P_i = p] + \phi \hat{\eta}_i \right) \quad (3)$$

We estimate this specification using Poisson pseudo maximum likelihood, as implemented in [Correia et al. \(2020\)](#). We compute bootstrapped standard errors clustered at the application level using 500 bootstrap samples. In contrast to our approach to linear specifications, we do not allow for two-way clustering in the Poisson specifications. Estimates of one-way clustered linear specifications suggest that clustering on the second dimension (parent identifier potentially spanning multiple applications) has little effect on estimated standard errors.

I Cost-benefit calculations

I.1 Inputs to MVPF calculation

This appendix provides details on the construction of the cost-benefit calculations described in section 5. We focus on the marginal value of public funds (MVPF), though we also consider benefit-cost ratios (BCR) and net social benefit calculations (NSB). Our cost-benefit calculations focus on four components: (1) the net change in per-pupil expenditure (PPE) before kindergarten, (2) the change in out-of-pocket childcare costs for families, (3) the discounted present value of the child’s wage gains estimated from changes in kindergarten test scores, and (4) the discounted present value of increased parental wage income. We first discuss how we calculate each of these four components and then discuss how they are used in our various benefit calculations.

Change in public per-pupil expenditure

As a first step in calculating the net change in PPE prior to kindergarten. To do this, we first calculate the causal impact of UPK enrollment on the number of years in the UPK

program, the number of years in Head Start, the number of years in School Readiness programs, the number of years with Care 4 Kids subsidies, and the number of years in other public or subsidized pre-k programs as recorded in administrative data from the State Department of Education and Office of Early Childhood. These are calculated for when the child is 3 and 4 and do not include enrollment at older or younger ages. These are estimated using our standard 2SLS specification as in Table 4 but using years of enrollment rather than indicators. We also calculate these values by tercile of median neighborhood income, using the neighborhood at the time of applying to the UPK program.

Next, we use PPE estimates for the various childcare and pre-kindergarten options from the National Institute for Early Education Research (NIEER) (Friedman-Krauss et al., 2022, 2023) and New Haven Public Schools (Connecticut Office of Elementary and Secondary Education, 2020). For childcare and pre-kindergarten options, we use PPE estimates for School Readiness, Care 4 Kids, and Head Start in Connecticut in 2021-2022 (2018-2019 for Head Start), all in real 2015 dollars. For all public programs in the State Department of Education and Office of Early Childhood data that we are not able to classify, we use the average PPE for state programs in Connecticut.

Combining our 2SLS estimates and our PPE estimates, we calculate the gross and net public program costs of UPK enrollment. Gross program costs are the PPE of the UPK program (PPE_m) multiplied by the 2SLS estimate of the increase in years of magnet pre-K (Δ_{magnet}). Net program costs then use the PPE for other programs and the change in years of enrollment in those other programs giving us:

$$\begin{aligned} \text{Net Program Costs} = & \Delta_{\text{magnet}} \cdot PPE_m + \Delta_{\text{headstart}} \cdot PPE_{hs} + \Delta_{\text{schoolreadiness}} \cdot PPE_{sr} \\ & + \Delta_{\text{care4kids}} \cdot PPE_{c4k} + \Delta_{\text{otherpublic}} \cdot PPE_{op}. \end{aligned}$$

We estimate similar regressions within terciles of neighborhood median household income. For these, we use the same PPE, but estimate the 2SLS estimates of years enrolled in the various programs conditional on each tercile at the time of application.

Reduction in out-of-pocket costs

We estimate the reduction in parents' out-of-pocket (OOP) costs of childcare using the 2SLS estimates reported in Tables 4 and 7. We assume that the estimated monthly reduction applies to the nine-month school year in each year the child enrolls in UPK. We estimate the effect of enrolling in UPK on total years of UPK enrollment using IV specifications with the count of years enrolled as the outcome. For years of enrollment beyond one, we discount the value using an interest rate of 0.03. We estimate these values in the full sample and within terciles of neighborhood median household income.

Projected earnings gains for children

We estimate the impacts of magnet pre-kindergarten enrollment on children’s kindergarten test scores, then project those impacts onto future earnings. To do this, we first estimate the impact of UPK on kids’ kindergarten test scores (measured in standard deviations) using the 2SLS estimates reported in the main paper. Next, we project these test score gains onto future earnings, closely following [Cascio \(2023\)](#), which also estimates MVFPs of UPK. First, [Cascio \(2023\)](#) assumes that the average present discounted value of earnings at age 4 is \$291,287 in 2005 dollars, which is the age 10 estimate from [Chetty et al. \(2011\)](#) of \$522,000 in 2010 dollars discounted back to age 4 using a 3% discount rate, which is also the discount rate we use in our estimates. Adjusting to 2015 dollars, we have an estimate of the average present discounted value of earnings at age 4 of \$353,507. Next, following [Cascio \(2023\)](#) and [Kline and Walters \(2016\)](#), we make the assumption that a one standard deviation increase in test scores increases earnings by 10%. We can then calculate the discounted present value of earnings gains for children as the product of the IV estimate, 0.1, and \$353,507. We produce similar estimates by tercile of neighborhood household income where we use 2SLS estimates calculated by tercile. Finally, our \$353,507 estimate is the average present discounted value of earnings. [Kline and Walters \(2016\)](#), who study children eligible for Head Start, multiply this number by 0.8 to account for the fact that these children are in lower-income families. When producing results by income tercile we assume 0.8 for the bottom tercile, 1 for the middle tercile, and 1.2 for the top tercile.

While the approach above follows the prior literature closely, it involves many assumptions. We therefore consider a number of alternative approaches. First, we consider larger test score gains of 0.4, as found in [Lipsey et al. \(2018\)](#). Second, we change our 2SLS specification so that the outcome is test score percentile rather than standardized test scores. We then use estimates from [Chetty et al. \(2011\)](#) that find a one percentile gain in test scores is associated with a \$76.7 dollar increase in earnings at age 27 (in 2009 dollars). We then assume this gain is constant from ages 22 to 65 and calculate the present discounted earnings gains, adjusted to 2015 dollars. Third, we calculate earnings gains for kids based on the increase in 4-year college enrollment after high school reported by [Gray-Lobe et al. \(2023\)](#), who study a similar UPK program in Boston (a 0.086 increase in the probability of enrollment). Then we use estimates from [Zimmerman \(2014\)](#) to estimate the returns to enrolling in college (\$142,757 in 2012 dollars, based on calculations from [Hendren and Sprung-Keyser \(2020\)](#)). We additionally adjust net costs by $0.086 * 2,617$, where the later number is the estimated net cost to the government of an additional enrollee in 4-year college.

Discounted present value of increased parental wage income

Tables 5 and 7 report the 2SLS estimates of enrolling in the UPK program on earnings in (1) the years when the student is enrolled in the program, (2) one to two years after, (3) three to four years after, and (4) five to six years after. Using these estimates, we construct the discounted present value of wage income gains using an interest rate of 0.03. We assume the effect is constant in each of the four time periods defined above, and then zero afterwards. The assumption of zero gains beyond six years out is based on Figure 5, which shows relatively large and persistent gains through six years after pre-kindergarten, after which estimates fall and have large confidence intervals, though this may be due to the smaller sample for which we can observe wage income that far after pre-kindergarten enrollment.

The gains to parents will differ if the child enrolls in one or two years of UPK. To address this we estimate the discounted present value of parents' wage income both under the assumption of 1 and of 2 years of UPK. We then weight these estimates using the estimated increase in years of UPK enrollment from the 2SLS estimates. For example, in the full sample we estimate that enrolling in UPK results in 1.56 additional years of UPK enrollment. This reflects a mixture of individuals enrolling for one year and individuals enrolling for two years, so 51 percent of applicants enroll for two years.

I.2 MVPF Calculations

Using the four inputs described above, we calculate the marginal value of public funds for the program as a whole and by tercile of neighborhood median household income. Below we describe how we calculate willingness to pay and net costs.

We calculate willingness to pay using the sum of the following inputs:

1. Discounted present value of after-tax wage income gains of parents.
2. Savings in out-of-pocket costs for childcare.
3. Discounted present value of after-tax wage income gains for kids.

For parents' wage gains, we calculate total wage income from the quarterly earnings records from the CT Department of Labor. We assume an effective marginal tax rate of 20%. This follows closely from [Hendren and Sprung-Keyser \(2020\)](#) who use effective marginal tax rates from [Congressional Budget Office \(2016\)](#) which are approximately 20% for incomes from 100 to 400 percent of the federal poverty line.

Based on our survey data, part of the wage income gains associated with increased earnings during pre-kindergarten are from increased hours worked. As such, total after-tax wage gains may not be the appropriate measurement of willingness to pay for earnings gains during this time because of the potential disutility of increased work

hours. This concern is mitigated by the fact that, during the pre-kindergarten years, the parent is likely trading off time working with childcare provision, so the disutility of increased work hours likely depends on the relative efforts of the two tasks. In our main specification we assume the disutility of childcare and working are the same. For robustness, we use [Mas and Pallais \(2019\)](#), who estimate that the utility cost of work is equal to 60% of pay on the margin for people coming from unemployment, which serves as a conservative estimate. We apply this discount to earnings gains during pre-kindergarten.

For children’s wage gains, we use the discounted present value described above net of taxes. We assume an effective tax rate of 0.2. Out of pocket costs come directly from the reduction in out-of-pocket costs described above.

To calculate net costs we use the change in per-pupil public expenditure discussed above and then additionally subtract the discounted present value of tax revenue increases associated with changes in wage income for the parents and children using the tax rates discussed above. The estimates above assume that the other publicly-funded pre-k programs students substitute away from are not rationed. As discussed in [Kline and Walters \(2016\)](#), if the programs children substitute from are also over-subscribed, the MVPF calculation would use the benefits to the child who takes up the now vacated slot in the other program (and the costs of what they substitute away from). As we cannot estimate the returns to the other programs, this is beyond the scope of our paper. As a robustness check, we include estimates that assume there are no cost savings from substituting from other programs, and also no benefits for children who gain access to the vacated slots. We view the resulting MVPF estimates as a loose lower bound, since they incorporate the cost side of children’s substitution into vacated slots, but not the benefits.

Benefit Cost Ratio and Net Social Benefit Calculations

An alternative approach to constructing the benefits of a program is the benefit cost ratio (BCR, [García et al., 2020](#); [García and Heckman, 2022](#)). This largely uses the same inputs as the MVPF. The numerator includes the numerator from (1) the MVPF (willingness to pay) plus (2) the indirect cost saving (savings from substitution from other publicly-funded pre-k and childcare programs), where (2) is then multiplied by one times the dead-weight loss associated with raising taxes to fund the program, which we assume to be 0.3. The denominator is the direct cost of the program, calculated as the yearly PPE of the magnet program multiplied by the increase in the number of years of magnet enrollment, multiplied by one plus the dead-weight loss term.

Lastly, we estimate the net social benefit (NSB, [García and Heckman, 2022](#)) of the program. This is the willingness to pay from the MVPF calculation minus the net cost

term from the MVPF calculation multiplied by one plus the dead-weight loss term.

I.3 Additional cost-benefit analysis results

Figure I.1 reports benefit-cost ratios as described in section I.2. The first bar reports the BCR for the full population, while the second through fourth bars report the BCR by tercile of neighborhood median household income based on the neighborhood of residence when applying for the UPK program. The overall BCR is 1.93, which, being above one, suggests the benefits outweigh the costs of the program. Similar to our MVPF calculations, the BCR is increasing as we move up neighborhood income terciles. At the bottom tercile the BCR is 0.58, which is below the break-even value of one, while for the top tercile it is 2.45.

Figure I.2 reports the net social benefit as described in I.2. Similar to the prior plot, the first bar reports the NSB for the full population, while the second through fourth bars report the BCR by tercile of neighborhood median household income based on the neighborhood of residence when applying for the UPK program. The overall NSB is \$31,830. The NSB is also increasing as we move up neighborhood income terciles. At the bottom tercile the NSB is -\$10,515, while for the top tercile it is \$49,324.

Table I.1 reports estimates of the MVPF for the full population and by tercile of neighborhood income. The first row reports the main specification from the paper while the remaining rows report alternative formulations of the MVPF:

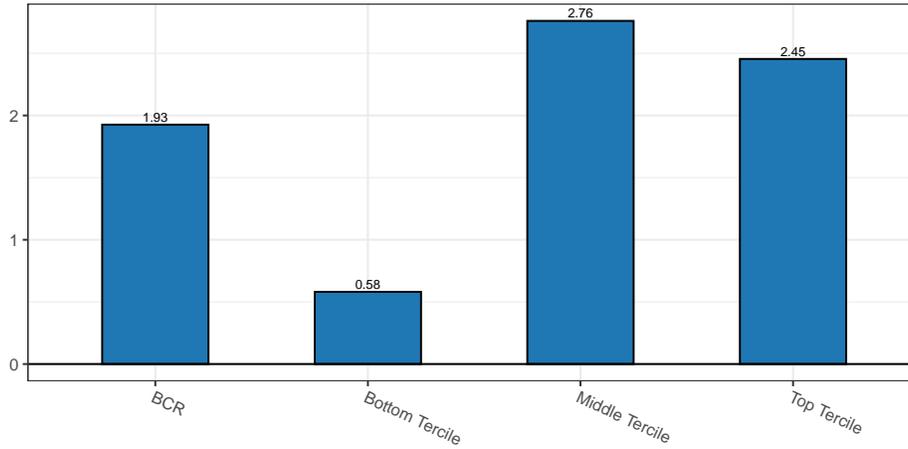
- Kids' effects of 0.4sd: assumes that the 2SLS estimate of UPK on kindergarten test scores is 0.4 standard deviations
- No parental wage gains: excludes parents' wage income gains from WTP and the increased tax revenue from the net costs
- Kids' effects of 0.4sd, no parent effects: assumes no impact on parents earnings and a 0.4 standard deviation impact on kindergarten test scores.
- No kids' wage gains: excludes the estimates of kids' wage income gain from WTP and the increase in tax revenue from the net costs
- GPW Kids' effects: assumes kids only benefit from increased college attendance using results from [Gray-Lobe et al. \(2023\)](#) and the lifetime wage gains from college enrollment from [Zimmerman \(2014\)](#).
- GPW Kids' effects, no parent effects: assumes kids only benefit from increased college attendance using results from [Gray-Lobe et al. \(2023\)](#) and the lifetime wage gains from college enrollment from [Zimmerman \(2014\)](#), and additionally assumes no wage income gains for parents.

- No program substitution: excludes the public cost-saving of individuals substituting away from other publicly funded pre-kindergarten and childcare programs
- Survey-based program substitution: uses substitution patterns estimated from survey data rather than state administrative data
- Alternative PPE Estimate: Uses New Haven School District budget data to estimate pre-k specific per-pupil expenditures of \$12,591 based on the method used by [Kabay et al. \(2020\)](#)²⁵
- No out of pocket costs: Excludes the savings in out-of-pocket costs to families
- Kid’s wage effects consts across terciles: assumes the overall impact on test scores for all three neighborhood income terciles.
- 60% opportunity cost of work: Assumes that the WTP for parents are only 40% of their gains in wage income during the pre-k years since during pre-k years much of the wage gains come from increased hours
- 10% higher tax rates: scales up all taxes by 10% as a robustness test
- 25% higher tax rates: scales up all taxes by 25% as a robustness test
- 10% lower tax rates: scales down all taxes by 10% as a robustness test
- 25% lower tax rates: scales down all taxes by 25% as a robustness test

For each estimate we report 90% confidence intervals in brackets, which are based on 500 bootstrap samples. Following [Hendren and Sprung-Keyser \(2020\)](#), when net costs are negative and willingness to pay is positive, we report the MVPF to be infinity.

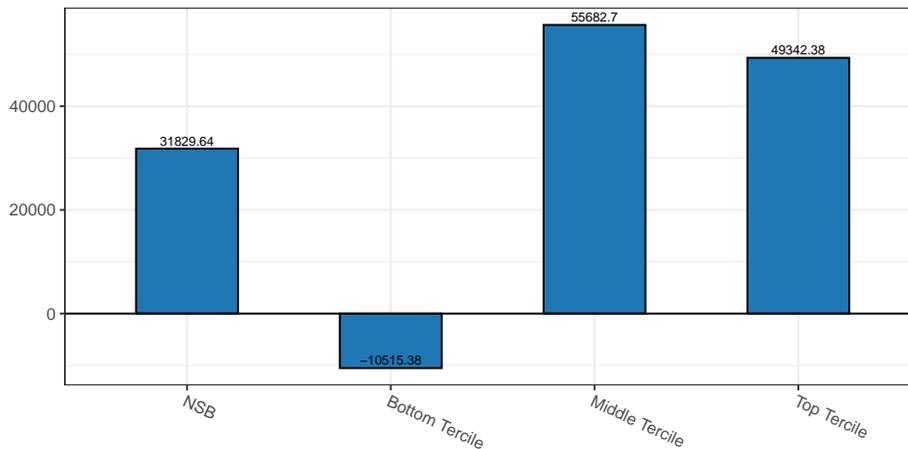
²⁵Estimates used the NHPS 2021-2022 budget ([New Haven Board of Education, 2022](#)), average CT teacher salaries ([Teach Connecticut, 2021](#)) and average CT paraprofessional salaries

Figure I.1: BCR: overall and by neighborhood income terciles



Notes: This figure reports the benefit-cost ratio for the UPK program we study. The first bar reports the benefit cost ratio (BCR) based on the full sample, while the second through fourth bars report the BCR calculated by terciles of neighborhood median household income. The numerator is the willingness to pay used in the MVPF calculations plus the change in the discounted present value of tax revenue from parents and kids and the savings from substitution away from other public programs, where the second term is multiplied by one plus the a dead weight loss term of 0.3 to capture the DWL associated with raising additional tax revenue. The denominator is the direct cost of adding an additional student to the UPK program times one plus a dead weight loss term. See [García et al. \(2020\)](#) and [García and Heckman \(2022\)](#) for additional details on benefit cost ratios.

Figure I.2: NSB: overall and by neighborhood income terciles



Notes: This figure reports the net social benefit (NSB) for the UPK program we study. The first bar reports the NSB based on the full sample, while the second through fourth bars report the NSB calculated by terciles of neighborhood median household income. The NSB is the willingness to pay used in the MVPF calculation minus the net cost from the MVPF calculation times one plus the deadweight loss of generating the taxes that fund the program, which we assume to be 0.3. See [García and Heckman \(2022\)](#) for additional details on net social benefit.

Table I.1: Sensitivity of MVPF calculations to underlying assumptions

Specification	Full	Bottom	Middle	Top
Main	6.13 [2.15,41.14]	0.46 [-1.25,4.94]	26.68 [3.69,Inf]	13.09 [1.52,Inf]
<i>Panel A: Counterfactuals</i>				
Kids' effects of 0.4sd	11.92 [3.94,Inf]	2.04 [-0.56,15.93]	42.59 [4.23,Inf]	76.56 [3.67,Inf]
No parental wage gains	0.46 [0.19,0.77]	-0.2 [-0.81,0.38]	1.02 [0.47,1.78]	0.52 [0.08,1.1]
Kids' effects of 0.4sd, no parent effects	1.32 [1.07,1.6]	0.89 [0.5,1.56]	1.32 [0.88,1.83]	1.71 [1.27,2.31]
No kids' wage gains	5.51 [1.98,25.4]	0.85 [-1.03,7.02]	11.75 [2.26,Inf]	12.7 [1.71,Inf]
GPW Kids' effects	11.42 [3.76,Inf]	2.25 [-0.52,20.86]	39.92 [4.05,Inf]	42.45 [3.12,Inf]
GPW Kids' effects, no parent effects	1.2 [0.96,1.46]	1.01 [0.59,1.79]	1.2 [0.78,1.69]	1.35 [0.98,1.84]
<i>Panel B: Robustness</i>				
No program substitution	2.62 [1.2,5.34]	0.23 [-0.72,1.64]	5.85 [2.05,40.56]	4.23 [0.95,27.52]
Survey-based program subs.	3.79 [1.56,10.14]	0.32 [-1.02,2.62]	10.56 [2.72,Inf]	6.72 [1.2,Inf]
No out of pocket costs	5.34 [1.74,37.33]	0.37 [-1.31,4.95]	24.24 [3.12,Inf]	11.22 [0.91,Inf]
Kids' wage effects const across terciles	6.13 [2.15,41.14]	1 [-0.96,7.08]	13.52 [2.57,Inf]	15 [1.85,Inf]
60% opportunity cost of work	5.52 [1.92,38.05]	0.21 [-1.29,4.14]	24.76 [3.34,Inf]	11.6 [1.22,Inf]
10% higher tax rate	6.92 [2.21,613.46]	0.45 [-1.19,5.53]	66.17 [3.91,Inf]	17.81 [1.53,Inf]
25% higher tax rate	8.7 [2.29,Inf]	0.44 [-1.09,6.87]	Inf [4.33,Inf]	41.52 [1.55,Inf]
10% lower tax rate	5.53 [2.11,21.77]	0.46 [-1.33,4.53]	16.99 [3.5,Inf]	10.44 [1.51,Inf]
25% lower tax rate	4.85 [2.05,13.02]	0.47 [-1.46,4.04]	11.21 [3.26,Inf]	8.11 [1.5,Inf]
25% higher UPK cost.	3.19 [1.39,7.73]	0.3 [-0.94,2.32]	7.3 [2.25,143.16]	5.29 [1.04,77.38]
25% lower UPK cost.	76.23 [4.65,Inf]	0.96 [-1.98,Inf]	Inf [10.2,Inf]	Inf [2.93,Inf]

Notes: This table reports estimates of the MVPF under our standard assumptions (first row) and several other assumptions. The “Main” column reports estimates for the whole sample while the remaining three columns report estimates by tercile of neighborhood median household income, which are based on the block group the family lived in at the time they applied. “Kids’ effects of 0.4sd” assumes test score gains of 0.40 standard deviations. “No parental wage gains” calculates the MVPF excluding parental wage income gains. “Kids’ effects of 0.4sd, no parent effects” assumes both test score gains of 0.4 standard deviations, and excludes parental wage income gains. “No kids’ wage gains” assumes no wage income gains for kids. “GPW Kids’ effects” assumes kids benefit through increased college enrollment as reported in [Gray-Lobe et al. \(2023\)](#). “GPW Kids’ effects, no parent effects” further excludes parental wage income gains. “No program substitution” excludes savings from reduced use of other public programs from the net costs. “Survey-based program subs.” uses the substitution patterns away from other public programs based on survey responses rather than the administrative data. “No parental wage gains” excludes parents’ wage income gains from the willingness to pay, and the tax revenue generated from net costs. “No out of pocket costs” excludes reductions in out of pocket costs from the willingness to pay. “60% opportunity cost of work” aims to account from the additional disutility of work. We assume this applies only while the child is in pre-k as we find no evidence on extensive or intensive labor supply after pre-k. We discount after-tax earnings in that period by 60% based on estimates from [Mas and Pallais \(2019\)](#). The next four rows scale the assumed taxes are 10 and 25 percent higher or lower respectively. 90% confidence intervals are reported in brackets based on 500 bootstraps.

J Integration effects

Within New Haven, the pre-kindergarten programs are perceived as crucial to this goal, because they pull in children from suburban towns where public pre-kindergarten is not available, who may then stay.²⁶

The efficacy of subsidized pre-kindergarten as a school integration policy depends on how many children, in particular suburban, white, and Asian-American children, stay in the NHPS system after pre-kindergarten. We quantify these effects by estimating versions of equation 1 that take NHPS enrollment in grades beyond pre-kindergarten as the dependent variable. We estimate separate specifications for each grade from kindergarten through grade eight and then pool over high school grades. Figure J.1 reports results from this exercise in the full sample and split by geography (New Haven vs. the surrounding suburbs) and race (white/Asian vs. non-white/Asian). Each subfigure reports the control complier mean rate of NHPS attendance in a given grade (solid bars) and the treatment effect of UPK enrollment added to the complier mean (dots and standard error bars) Note that our definition of NHPS enrollment in pre-kindergarten includes means-tested programs run by the district, so the control complier mean in pre-kindergarten is not zero.

UPK enrollment has large and long-lasting crowd-in effects for suburban and white/Asian students. Panel A of Figure J.1 reports results for the full sample of applicants. UPK enrollment raises NHPS enrollment in each elementary and middle school grade and in high school as well. In total, UPK enrollment generates 2.41 years of K-8 enrollment, 83% of the complier control mean. Effects are largest for suburban and white/Asian applicants. For suburban applicants, UPK enrollment generates 2.71 additional years of K-8 enrollment, 234% of the complier control mean, and raises high school enrollment rates by 17 percentage points, 283% of the complier control mean. For white and Asian applicants, UPK enrollment generates 1.00 years of K-8 enrollment, 56% of the complier control mean. Enrollment effects are smaller and complier control means much higher for applicants from New Haven and applicants who are not white or Asian.

How big are these effects? One way to quantify them is to assess the share of white/Asian students in NHPS who are there because of the UPK program. We compute average per-cohort counts of white and Asian-American students over the 2014-2018 period and scale this number by the IV estimates of UPK enrollment on enrollment in later grades to obtain the total number white/Asian K-8 students whose later NHPS

²⁶A local newspaper article described the issue as follows: “[Superintendent Reggie] Mayo said suburban enrollment tends to fall off in the higher grades, so the city needs to stack the school with more suburban kids in pre-K. The district aims to keep suburban enrollment at higher than 35 percent, he said, because of the risk that kids will later leave the school. Often suburban parents don’t have preschool in their towns. So they grab urban pre-K slots at the magnet schools, then move their kids back to their hometown schools for higher grades, leaving the higher grades at the urban magnet schools underenrolled” (Bailey, 2011).

enrollment is attributable to UPK enrollment.²⁷ We then divide this figure by overall grade-specific enrollment of white or Asian-American students in NHPS.

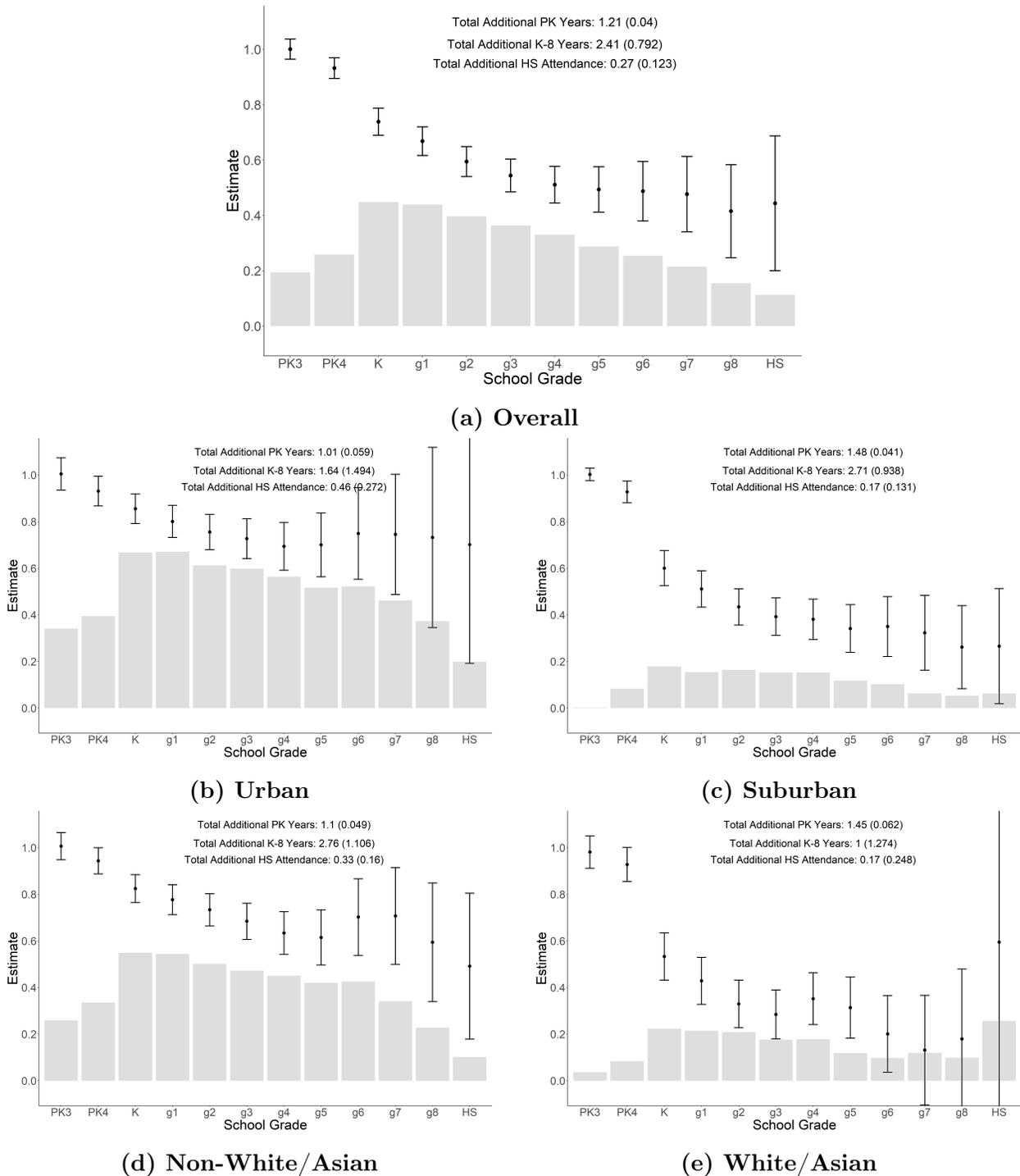
Table J.1 reports results from this exercise. We find that the causal effect of UPK enrollment accounts for 7% of all white/Asian-American NHPS enrollment in grades K-8. Grade specific shares start at 16% in kindergarten and decline to 7% by grade 8 as the students induced to enroll in NHPS by the UPK program leave the district.

A 7% increase in non-URM enrollment share is fairly large in the context of the school integration literature. For example, [Lutz \(2011\)](#) reports that the termination of court-ordered desegregation plans reduced the share of white students at the average black student's school (i.e., the black-white exposure index) by 10-15%. [Guryan \(2004\)](#) finds that this same exposure index rose by about 50% (15pp on a base of about 30%) for districts desegregated in the 1970s following the Brown vs. Board decision.

To what extent do the integration benefits of UPK depend on the absence of a means test? To get a back-of-the-envelope sense of this tradeoff, we conduct an exercise where we drop UPK enrollees from the top tercile and replace them with students with a race distribution matching what we observe in the lower two terciles. The rightmost column of Table J.1 reports the share of white or Asian-American NHPS enrollment attributable to UPK in this counterfactual scenario. Compared to what we see in the data, means-testing causes this share to fall by more than half, from 7% to 3% in grades K-8 combined. Means-testing may substantially reduce UPK's integration effects.

²⁷We focus on 2014-2018 because this period reflects steady-state UPK program size in the pre-Covid period. See Figure 1.

Figure J.1: UPK enrollment and racial/ethnic integration in NHPS



Note: This figure visualizes the effect of UPK enrollment on the probability of students enrolling in the NHPS school system at different grade levels based on IV estimates and control complier means. Panel (a) shows the overall results across all subpopulations, whereas panels (b)-(c) split the sample into children from an urban or suburban area and panels (d)-(e) into Non-White/Asian and White/Asian children. The x-axis for each panel reflects the grade of enrollment from PK3 through grade 8 as well as grades 9-12 grouped together as high school (HS). The y-axis reflects the share of children enrolled in NHPS by grade level. Gray bars represent complier control means by grade level. Black dots are the point estimates of treatment effects from 2SLS estimates added to the complier means (i.e. the vertical distance from the complier mean to the dot is the treatment effect). The bars show 95% confidence intervals for the 2SLS estimates. See section 9 for details.

Table J.1: UPK effects on non-URM NHPS Enrollment

Grade	IV Estimate	Attr. Students	Total NHPS	Attr. Share	Means-Tested CF
K	0.31 (0.06)	44 (8.66)	270	0.16 (0.03)	0.08 (0.02)
Grade 1	0.21 (0.06)	29 (8.63)	264	0.11 (0.03)	0.05 (0.02)
Grade 2	0.12 (0.06)	16 (8.67)	262	0.06 (0.03)	0.03 (0.02)
Grade 3	0.11 (0.06)	15 (8.87)	256	0.06 (0.03)	0.03 (0.02)
Grade 4	0.17 (0.07)	24 (9.41)	236	0.1 (0.04)	0.05 (0.02)
Grade 5	0.19 (0.08)	27 (11.11)	238	0.11 (0.05)	0.05 (0.02)
Grade 6	0.11 (0.1)	15 (13.95)	256	0.06 (0.05)	0.03 (0.03)
Grade 7	0.02 (0.14)	2 (19.81)	242	0.01 (0.08)	0 (0.04)
Grade 8	0.09 (0.18)	12 (25.23)	241	0.05 (0.1)	0.02 (0.05)
K-8	1.14 (1.24)	158 (172.50)	2264	0.07 (0.08)	0.03 (0.04)

Notes: This table shows results from an exercise estimating the share of White and Asian students enrolled in the NHPS system due to the UPK program. IV estimates are taken from Figure J.1, panel (e). We compute the number of attributable students by grade level (column *Attr. Students*) by multiplying the grade-specific IV estimate of the effect of UPK enrollment on later NHPS enrollment by the average number of Asian and White UPK enrollees for 2014-2018. The total number of Asian and White students enrolled in NHPS (column *Total NHPS*) is calculated as the average number of Asian and White students enrolled in NHPS for 2014-2018 in the relevant grade, across all schools. The share of Asian and White enrollment attributable to the UPK program (column *Attr. Share*) is then calculated by dividing the number of attributable students by the total number of students in the NHPS system. The column *Means-Tested CF* reports estimates for the counterfactual attributable share of White and Asian students enrolled in NHPS if a means-tested reform was introduced that bars students from the top tercile of the income distribution from the UPK lottery and replaced them with students drawn from the bottom two terciles. Robust standard errors clustered at the applicant level are shown in parentheses. See section 9 for details.

K Survey Questionnaire

Dear Parent,

We are inviting you to take this survey as New Haven Public School records indicate that your child previously participated in the pre-kindergarten choice process for the New Haven Public Schools. If eligible, you will be entered into a sweepstakes for the chance to receive one of 25 \$100 rewards for taking our survey.

Your feedback is important and will be used to improve the pre-k programs in the New Haven Public Schools. Thank you very much for taking the survey!

Your responses are CONFIDENTIAL meaning that your individual responses will not be shared. Neither your name nor your child's name will be shared with anyone outside of the research team.

If you have questions or concerns, please contact Yale's NHPS pre-k survey team at (203) 432-5820 or nhps_prek_survey@yale.edu.

Sincerely,

New Haven School Choice Research Team Yale University

Do you consent?

- (a) Yes
- (b) No

1. Please describe your relationship to (child name)

- (a) Mother
- (b) Father
- (c) Stepmother
- (d) Stepfather
- (e) Grandmother
- (f) Other, please specify:

2. Can you confirm that, in [PROCESSYEAR], your child

[IF STATUS=1: participated in the New Haven Public Schools' School Choice Process and applied to at least one New Haven Public School free magnet pre-k program, but did not get offered a slot]

[IF STATUS=2: enrolled in a New Haven Public School free magnet pre-k program]

[IF STATUS=3: was offered a New Haven Public School free magnet pre-k program slot, but did not enroll]?

(a) Yes,

IF STATUS=1: my child applied to an NHPS pre-k program in [PROCESSYEAR], but was not offered a slot

IF STATUS=2: my child enrolled in an NHPS pre-k program in [PROCESSYEAR]

IF STATUS=3: my child applied to an NHPS pre-k program in [PROCESSYEAR] and was offered a slot, but we chose not to enroll

(b) No, to my knowledge, this information is not correct.

If answer to question 2. was (b), then

3. Which best applies:

- (a) My child enrolled in an NHPS magnet pre-k program
- (b) My child applied to an NHPS magnet pre-k program, but was not offered a slot
- (c) My child applied to an NHPS magnet pre-k program and was offered a slot, but I chose not to enroll
- (d) To my knowledge, my child did not apply for a slot at an NHPS magnet pre-k program.

If answer to question 3. was (d), the following message was displayed

*Thank you for your time today. Unfortunately you are not eligible for this study.
We appreciate your participation.*

Otherwise, respondents were re-classified in three categories:

1. **Enrolled** if answer to question 3 was (a)
2. **Applied but no offer** if answer to question 3 was (b)
3. **Received offer but chose not to enroll** if answer to question 3 was (c)

If **Enrolled**:

We would now like to ask you about your experiences with NHPS's pre-k program.

4. Thinking back to when your child was enrolled in NHPS's pre-k, how satisfied were you with your child's experience?
 1. Overall
 - (a) Very dissatisfied
 - (b) Somewhat dissatisfied
 - (c) Neither satisfied nor dissatisfied
 - (d) Somewhat satisfied
 - (e) Very satisfied
 - (f) Not applicable
 2. The quality of the teachers and instruction
 - (a) Very dissatisfied
 - (b) Somewhat dissatisfied
 - (c) Neither satisfied nor dissatisfied
 - (d) Somewhat satisfied
 - (e) Very satisfied
 - (f) Not applicable
 3. The quality of the facilities
 - (a) Very dissatisfied
 - (b) Somewhat dissatisfied
 - (c) Neither satisfied nor dissatisfied
 - (d) Somewhat satisfied
 - (e) Very satisfied
 - (f) Not applicable
 4. The quality of communication between the program and your family
 - (a) Very dissatisfied
 - (b) Somewhat dissatisfied
 - (c) Neither satisfied nor dissatisfied
 - (d) Somewhat satisfied
 - (e) Very satisfied
 - (f) Not applicable

5. The other children and families enrolled in the program
 - (a) Very dissatisfied
 - (b) Somewhat dissatisfied
 - (c) Neither satisfied nor dissatisfied
 - (d) Somewhat satisfied
 - (e) Very satisfied
 - (f) Not applicable

The next few questions ask you to think back to when your child was enrolled in New Haven Public Schools' pre-k program, and to think about what options for pre-k or childcare you would have used *if you had not been able to enroll your child in the NHPS pre-k program.*

5. If your child had not enrolled in the NHPS pre-k program, what best describes the childcare or pre-k option that you would have used for the child?
Select the best option available. If you are uncertain or don't recall, please choose the option you think would have been most likely.

- (a) I would have ***not enrolled*** my child in any pre-k or daycare program
- (b) I would have ***enrolled*** my child in a pre-k or daycare program or service

If answer to question 5. was (a), the following question was displayed:

6. If you had not enrolled in the NHPS pre-k program, who would have most likely watched over the child during the day prior to kindergarten?
Select the best option available. If you are uncertain or don't recall, please choose the option you think would have been most likely.

- (a) The mother, father, or other legal guardian would have taken care of the child
- (b) Another family member would have taken care of the child
- (c) A family friend or neighbor would have taken care of the child
- (d) A babysitter or other childcare provider would been paid to take care of the child
- (e) Other, please specify:

If answer to question 5. was (b), the following question was displayed:

7. If you had not enrolled in the NHPS pre-k program, what best describes the type of pre-k or child-care program you think your child would have likely enrolled in?

- (a) Head Start or Early Head Start programs
- (b) Another childcare center or pre-k (not Head Start)
- (c) A paid childcare provider operating out of their home (not Head Start)
- (d) Another town's public pre-k or childcare program
- (e) Babysitter, nanny, or another private option
- (f) Other, please specify:

If answer to question 5. was (b), the following question was also displayed:

8. What was the name of the program your children would have likely enrolled in if you had not enrolled in the NHPS pre-k program ?

- (a) Program name:
- (b) I didn't have a specific program in mind
- (c) I don't remember
- (d) I prefer not to say

9. Thinking back to when your child was enrolled in an NHPS pre-k program, do you think enrolling resulted in:

1. You or other adults in your household being able to work more

- (a) Yes
- (b) No

2. Less stress about money

- (a) Yes
- (b) No

3. Better pre-kindergarten education for your child

- (a) Yes
- (b) No

If answer to question 9.1. is (a), the following question was displayed:

10. In the previous question, you said that enrolling your child in the NHPS pre-k program allowed you or another adult in your household to work more. Which of the options below describes how it changed your situation?

Select all that apply

- (a) I got a part time job
- (b) I got a full-time job
- (c) I switched from working part time to full time
- (d) I increased the number of hours I worked
- (e) Another member of the household got a part time job
- (f) Another member of the household got a full-time job
- (g) Another member of the household switched from working part time to full time
- (h) Another member of the household increased the number of hours they worked
- (i) Other, please specify:
- (j) None of the above

If Applied but no offer

NHPS pre-k programs cannot offer a slot to every family that applies. The following questions aim to help us better understand what childcare and daycare options families use when they are not able to enroll their child in the NHPS pre-k program.

11. After your pre-k application in [PROCESSYEAR], was your child ever enrolled in a pre-k or daycare program?
- (a) Yes, I enrolled my child in a pre-k or daycare program
 - (b) No, I did not enroll my child in a pre-k or daycare program

If answer to question 11 was (b), the following question was displayed

12. Who watched over the child during the day prior to kindergarten?
- Select the best option available. If more than one option was used, please select the one used most frequently that year.*
- (a) The mother, father, or other legal guardian took care of the child
 - (b) Another family member took care of the child
 - (c) A family friend took care of the child
 - (d) A babysitter or other childcare provider was paid to take care of the child
 - (e) Other, please specify:

If answer to question 11 was (a), the following questions were displayed

13. What type of pre-k or child-care program was your child enrolled in?
- Select the best option available. If more than one option was used, please select the one your child was enrolled in for the longest time.*
- (a) Head Start/Early Head Start
 - (b) Another childcare center or pre-k (not Head Start)
 - (c) A paid childcare provider operating out of their home (not Head Start)
 - (d) Another town's public pre-k or childcare program
 - (e) Babysitter, nanny, or another private option
 - (f) Other, please specify:

14. How satisfied were you with your child's experience at their pre-k or childcare program?

1. Overall

- (a) Extremely dissatisfied
- (b) Somewhat dissatisfied
- (c) Neither satisfied nor dissatisfied
- (d) Somewhat satisfied
- (e) Extremely satisfied

2. The quality of the teachers and instruction

- (a) Extremely dissatisfied
- (b) Somewhat dissatisfied
- (c) Neither satisfied nor dissatisfied
- (d) Somewhat satisfied
- (e) Extremely satisfied

3. The quality of the facilities

- (a) Extremely dissatisfied
- (b) Somewhat dissatisfied
- (c) Neither satisfied nor dissatisfied
- (d) Somewhat satisfied
- (e) Extremely satisfied

4. The quality of communication between the program and your family

- (a) Extremely dissatisfied
- (b) Somewhat dissatisfied
- (c) Neither satisfied nor dissatisfied
- (d) Somewhat satisfied
- (e) Extremely satisfied

5. The other children and families enrolled in the program

- (a) Extremely dissatisfied
- (b) Somewhat dissatisfied
- (c) Neither satisfied nor dissatisfied
- (d) Somewhat satisfied
- (e) Extremely satisfied

15. What was the name of the program that your child enrolled in?

- (a) Program name:
- (b) I don't remember
- (c) Prefer not to say

16. Do you believe that receiving an NHPS pre-k slot would have resulted in:

- 1. You or other adults in your household being able to work more
 - (a) Yes
 - (b) No
- 2. Less stress about money
 - (a) Yes
 - (b) No
- 3. Better pre-f education for the child
 - (a) Yes
 - (b) No

If answer to question 16.1 was (a), the following question was displayed

17. In the previous question you said that if your child had received a slot in the NHPS pre-k program, you or another adult in your household would have been able to work more. Which of the options below describes how it would have changed your household's work situation?

Select all that apply

- (a) I would have gotten a part-time job
- (b) I would have gotten a full-time job
- (c) I would have switched from working part-time to full-time
- (d) I would have increased the number of hours I worked
- (e) Another member of the household would have gotten a part-time job
- (f) Another member of the household would have gotten a full-time job
- (g) Another member of the household would have switched from working part-time to full-time
- (h) Another member of the household would have increased the number of hours they worked
- (i) Other, please specify:

If received offer but chose not to enroll

We see that your child was offered a slot but did not end up enrolling in a NHPS pre-k program. We would now like to ask you about your decision to not enroll in the NHPS pre-k program and what childcare or daycare options your family chose instead.

18. What best describes your reason for not enrolling?
- (a) I found a better option, such as being moved off a waitlist at another program
 - (b) I moved and attending the NHPS pre-k program was no longer feasible
 - (c) Upon learning more, I decided that the NHPS pre-k program was not a good fit
 - (d) Other, please specify:

19. After your pre-k application in [PROCESSYEAR], was your child ever enrolled in a pre-k or daycare program?
- (a) Yes, I enrolled my child in a pre-k or daycare program
 - (b) No, I did not enroll my child in a pre-k or daycare program

If answer to question 19 was (b), the following question was displayed

20. Who watched over the child during the day prior to kindergarten?
- Select the best option available. If more than one option was used, please select the one used most frequently that year*
- (a) The mother, father, or other legal guardian took care of the child
 - (b) Another family member took care of the child
 - (c) A family friend took care of the child
 - (d) A babysitter or other childcare provider was paid to take care of the child
 - (e) Other, please specify:

If answer to question 19 was (a), the following three questions were displayed

21. What type of pre-k or child-care program was your child enrolled in?
- Select the best option available. If more than one option was used, please select the one your child was enrolled in for the longest time.*
- (a) Head start/Early head start
 - (b) Another childcare center or pre-k (not Head Start)

- (c) A paid childcare provider operating out of their home (not Head Start)
- (d) Another town's public pre-k or childcare program
- (e) Babysitter, nanny, or another private option
- (f) Other, please specify:

22. How satisfied were you with your child's experience at their pre-k or childcare program?

1. Overall
 - (a) Extremely dissatisfied
 - (b) Somewhat dissatisfied
 - (c) Neither satisfied nor dissatisfied
 - (d) Somewhat satisfied
 - (e) Extremely satisfied
2. The quality of the teachers and instruction
 - (a) Extremely dissatisfied
 - (b) Somewhat dissatisfied
 - (c) Neither satisfied nor dissatisfied
 - (d) Somewhat satisfied
 - (e) Extremely satisfied
3. The quality of the facilities
 - (a) Extremely dissatisfied
 - (b) Somewhat dissatisfied
 - (c) Neither satisfied nor dissatisfied
 - (d) Somewhat satisfied
 - (e) Extremely satisfied
4. The quality of communication between the program and your family
 - (a) Extremely dissatisfied
 - (b) Somewhat dissatisfied
 - (c) Neither satisfied nor dissatisfied
 - (d) Somewhat satisfied
 - (e) Extremely satisfied
5. The other children and families enrolled in the program

- (a) Extremely dissatisfied
- (b) Somewhat dissatisfied
- (c) Neither satisfied nor dissatisfied
- (d) Somewhat satisfied
- (e) Extremely satisfied

23. What was the name of the program your child attended?

- (a) Program name:
- (b) I don't remember
- (c) I prefer not to say

If respondents were classified as either **applied but no offer** or **received offer but chose not to enroll**, they were asked the following questions:

24. Thinking back to when you applied to the NHPS pre-k program in [PROCESSYEAR], were you aware of any other programs that could have helped pay for alternative childcare options?

- (a) Yes
- (b) No

If answer to question 24. was (a), the next question was displayed

25. In [PROCESSYEAR], did you or anyone else in your household apply to a program to help pay for childcare or pre-k?

- (a) Yes
- (b) No

If answer to question 25. was (a), the next question was displayed

26. In [PROCESSYEAR], did you or anyone else in your household get help paying for childcare or pre-k from one of these programs?

- (a) Yes
- (b) No

If answer to question 25. was (b), the next question was displayed

27. What best describes your reason for not applying?

Select all that apply

- (a) I was not interested in enrolling my child in childcare or pre-k
- (b) I did not think my household would be eligible
- (c) I did not know enough about the programs to know how to apply
- (d) I did not have the time to apply
- (e) The application process was too complicated or involved too many steps
- (f) I did not need the subsidy

If answer to question 11 or 19 was (a), the next question was displayed

28. After your pre-k application in [PROCESSYEAR], approximately how much did your family pay out of pocket each month for pre-k or childcare for your child?

- (a) \$0

- (b) \$1-\$200
- (c) \$201-\$500
- (d) \$501-\$1,000
- (e) \$1,001 - \$1,500
- (f) \$1,501 - \$2,000
- (g) More than \$2,000
- (h) I don't remember
- (i) I prefer not to say

Respondents were asked the following questions regardless their re-classification

29. Thinking back to when you applied to the NHPS pre-k program in [PROCESSYEAR], what was important to you when you were making your childcare or pre-k decisions?

1. Affordability
 - (a) Not important
 - (b) A little important
 - (c) Somewhat important
 - (d) Important
 - (e) Very important
2. Convenient location (such as close to home or close to work)
 - (a) Not important
 - (b) A little important
 - (c) Somewhat important
 - (d) Important
 - (e) Very important
3. Convenient schedule (such as full day program, or flexible drop-off hours)
 - (a) Not important
 - (b) A little important
 - (c) Somewhat important
 - (d) Important
 - (e) Very important
4. Class size (i.e. how many other children were in the same group as your child)
 - (a) Not important
 - (b) A little important
 - (c) Somewhat important
 - (d) Important
 - (e) Very important
5. The quality of the teachers or childcare providers
 - (a) Not important
 - (b) A little important
 - (c) Somewhat important

- (d) Important
- (e) Very important

6. The other children and families enrolled in the childcare or pre-k program
- (a) Not important
 - (b) A little important
 - (c) Somewhat important
 - (d) Important
 - (e) Very important

Parent - Family Demographics

To better understand who applies to the NHPS pre-k program, we would now like to ask you a few questions about your household.

30. What is your highest level of education?
- (a) Some high school, no diploma
 - (b) High school graduate, diploma or the equivalent (for example: GED)
 - (c) Some college credit, no degree
 - (d) Trade/technical/vocational training
 - (e) Associate degree
 - (f) Bachelor's degree or more.
 - (g) Prefer not to say
31. When you applied to the NHPS pre-k program in [PROCESSYEAR], was there another parent or legal guardian for the child in the household?
- (a) Yes
 - (b) No
 - (c) Prefer not to say

If answer to question 31 was (a), the following question was displayed.

32. What is the highest level of education of the child's other parent or legal guardian?
- (a) Some high school, no diploma
 - (b) High school graduate, diploma or the equivalent (for example: GED)
 - (c) Some college credit, no degree
 - (d) Trade/technical/vocational training

- (e) Associate degree
- (f) Bachelor's degree or more.
- (g) Prefer not to say

33. In [PROCESSYEAR], how many adults and children, including you, were in your household?

- (a) Range [0 - 20]
- (b) Prefer not to say

Parents' Employment

We would now like to ask a few questions about your household's work situation in [PROCESSYEAR+1], the year after you applied to the NHPS pre-k program.

34. Thinking back to [PROCESSYEAR+1], what was your total household income?

- (a) Less than \$5,000
- (b) 5,000 to 7,499
- (c) 7,500 to 9,999
- (d) 10,000 to 12, 499
- (e) 12,500 to 14, 999
- (f) 15,000 to 19,999
- (g) 20,000 to 24,999
- (h) 25,000 to 29,999
- (i) 30,000 to 34,999
- (j) 35,000 to 39,999
- (k) 40,000 to 49,999
- (l) 50,000 to 59,999
- (m) 60,000 to 74,999
- (n) 75,000 to 99,999
- (o) 100,000 to 149,999
- (p) 150,000 or more
- (q) Prefer not to say

35. What best describes your employment situation in [PROCESSYEAR+1]?

- (a) I was employed full time most of the year

- (b) I was employed part time most of the year
- (c) I was in and out of work that year
- (d) I was not employed and was searching for a job
- (e) I was not employed, and I was not looking to be employed
- (f) Prefer not to say

36. In [PROCESSYEAR+1], when working, how many hours did you usually work per week?

RANGE [0 - 120] hours per week

You are halfway done!

If answer to question 35 was (c), the following question was displayed

37. In [PROCESSYEAR+1] approximately how many weeks do you think you worked (for example, working the whole year with two weeks of vacation would be 50 weeks).

RANGE [0 - 52] weeks

If answer to question 31 was (a), the following question was displayed

38. What best describes the employment situation of the child's other parent or legal guardian in [PROCESSYEAR+1]?

- (a) They were employed full time most of the year
- (b) They were employed part time most of the year
- (c) They were in and out of work that year
- (d) They were not employed and were searching for a job
- (e) They were not employed, and weren't looking to be employed
- (f) Prefer not to say

If answer to question 35 was (a), (b) or (c) or answer to question 38 was (a), (b) or (c), the following question was displayed

39. When you applied to the NHPS pre-k program, were you or someone in your household working in the city of New Haven?

- (a) Yes
- (b) No
- (c) Prefer not to say

Financial

We would now like to ask you some questions regarding your household's current financial situation. These questions will help us better understand who applies to the NHPS pre-k program, and the potential benefits of that program.

40. What best describes your current employment situation?
- (a) I am employed full time (30 hours or more per week on average)
 - (b) I am employed part time (less than 30 hours per week on average)
 - (c) I am not employed and am searching for a job
 - (d) I am not employed, and I am not looking to be employed
 - (e) Prefer not to say

If answer to question 40 was (a) or (b)

41. How many hours do you usually work per week?
- (a) *RANGE* [0 - 120] hours per weeks
 - (b) Prefer not to say
42. Thinking back to last year, what was your total household income?
- (a) Less than \$5,000
 - (b) 5,000 to 7,499
 - (c) 7,500 to 9,999
 - (d) 10,000 to 12, 499
 - (e) 12,500 to 14, 999
 - (f) 15,000 to 19,999
 - (g) 20,000 to 24,999
 - (h) 25,000 to 29,999
 - (i) 30,000 to 34,999
 - (j) 35,000 to 39,999
 - (k) 40,000 to 49,999
 - (l) 50,000 to 59,999
 - (m) 60,000 to 74,999
 - (n) 75,000 to 99,999
 - (o) 100,000 to 149,999

- (p) 150,000 or more
- (q) Prefer not to say

Educational history

This section asks a few brief questions about where your child went to elementary school and their experiences since then.

43. What best describes the type of school your child attended for first grade?
- (a) Traditional Public School
 - (b) Magnet Public School
 - (c) Charter School
 - (d) Private School
 - (e) Home School
 - (f) My child has not attended first grade yet
 - (g) Other, please specify: [TEXTBOX]
 - (h) Prefer not to say

If answer to question 43. was (a) or (b)

44. Where did your child attend first grade?
- (a) New Haven Public Schools
 - (b) A district near New Haven Public Schools (for example, East Haven, West Haven, North Haven, Hamden, Woodbridge, or Orange)
 - (c) A district in Connecticut, but not near New Haven Public Schools
 - (d) Outside Connecticut
 - (e) Prefer not to say

If the respondent's child participated in the process in 2010 or before

45. Is your child currently enrolled in 1st through 12th grade?
- (a) Yes
 - (b) No

If answer to question 45 was (b), the following question was displayed

46. Did your child graduate from high school?

- (a) Yes
- (b) No, they left school without a diploma
- (c) Other, please specify: [TEXTBOX]
- (d) Prefer not to say

If answer to question 46 was (a), the following question was displayed

47. Is your child currently enrolled in:

Select all that apply

- (a) A 4-year college degree program
- (b) A 2-year college degree program
- (c) Trade school or another training program
- (d) None of the above
- (e) Prefer not to say

Other questions

48. Does your child currently live in Connecticut?

- (a) Yes
- (b) No

If answer to question 48. was (b), the following question was displayed

49. When did your child move out of Connecticut?

- (a) [Dropdown: 2000 - 2022]
- (b) [Text Entry: 2000 - 2022]
- (c) Prefer not to say

You will be entered into a sweepstakes for the chance to receive one of 25 \$100 rewards for taking our survey

Those are all of the questions we have. You will be entered into a sweepstakes for the chance to receive one of 25 \$100 rewards for completing the survey. If you have any questions at all for us, you can email us at nhps_prek_survey@yale.edu or call us toll-free at (203) 432 5820.

Thank you for participating in this survey!

You can close your browser window now.