Technical Report

EFFECTS OF PUBLIC QUALITY RATINGS ON PARENTS' EARLY CHILDHOOD PROGRAM PREFERENCES

EDUCATION RESEARCH ALLIANCE FOR NEW ORLEANS

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Abstract

Most states publish quality ratings for early childhood education (ECE) programs to inform families about their options. However, little evidence exists on the extent to which families use these ratings when selecting care. We examine how the addition of quality ratings to a centralized ECE application affected families' program rankings. We find some suggestive evidence that applicants to public PK4 programs used the ratings when ranking programs, though they relied more heavily on the letter grade used to rate the attached elementary school. Applicants to Head Start programs already preferred higher-quality programs and were not affected by the ratings. In designing an ECE rating system, policymakers should give careful consideration to when and how they communicate quality information to families.

Introduction

A substantial evidence base suggests that the quality of early childhood education programs in the US is both highly variable and highly predictive of K-12 education outcomes (Bassok et al., 2016; Yoshikawa et al., 2013). The importance of ECE quality in preparing children for kindergarten raises concerns that many young children continue to attend low-quality programs, often with support from taxpayer funds through public education and welfare programs. Unlike K-12 systems that typically assign students to schools by geography, public ECE systems have historically included substantial parent choice, allowing families to use public subsidies in a wide range of programs. In theory, a market-based system for publicly subsidized ECE might improve quality by placing competitive pressure on programs. In practice, it is particularly challenging for parents to assess and monitor the quality of programs for younger children. Incomplete information in a market-based system can lead to a market failure where parents choose lower-quality programs and children's outcomes suffer.

In an effort to improve both quality and information about quality, most state governments have implemented Quality Rating and Improvement Systems (QRIS) for early education programs. These systems encourage programs to improve through direct supports and financial incentives. They also are intended to create market pressure for improvement by collecting and publicizing quality information. In theory, families who want to select the best-quality programs available might lack information about quality. If so, the measurement and dissemination of quality indicators should increase demand for high-quality programs and create pressure for low-quality programs to improve. This depends on families (1) accessing quality ratings before selecting a program, and (2) prioritizing this information when making childcare choices.

Research on K-12 school choices shows that families do value academic performance, among other factors, when selecting a school (Denice & Gross, 2016; Frankenberg, 2018; Glazerman & Dotter, 2017; Harris & Larsen, 2019; Hastings, Kane, & Staiger, 2009; Ladd & Turaeva, 2020), and that families will respond to new information on school quality. For example, experimental studies have found modest effects of providing school-choosing families with school quality information on both families' school choices (Allende, Gallego, & Neilson, 2019; Hastings & Weinstein, 2008) and their likelihood of matching to higher-quality schools (Corcoran et al., 2018). However, ECE program quality information differs substantially from most K-12 quality indicators, in that K-12 schools are typically rated based on outputs (e.g., test score levels and graduation rates), whereas ECE programs are rated on inputs, such as classroom observation scores, teacher credentials, and program features. Parents may be more responsive to output information, and thus less responsive to ECE quality indicators. In a recent experiment, Valant and Weixler (2020) found that sending school-choosing pre-K, K, and 9th grade families information on school quality as measured by inputs only affected the choices of high school students and students with disabilities.

To date, we know little about how parents use public quality information when selecting ECE, and there are several reasons why information provision might not affect parent preference as intended. First, the program characteristics measured by state regulators might not be aligned with parent concerns – for example, if regulators emphasize academic skills, while parents' value social skills development. Second, results provided to parents might be difficult to process if measures are complex and opaque. Finally, parent options might be constrained in other ways that prevent them from acting on quality information even if they care about the quality measures – for example if high-quality programs are in the wrong location or operate under restricted

hours. Substantial empirical work is needed to fully understand the information mechanism in ECE choice and to use information to its greatest potential.

Recent evidence from North Carolina indicates that both programs and parents have responded to the incentives of that state's QRIS systems. Bassok, Dee, and Latham (2019) found that programs assigned a lower rating made efforts to improve their rating, and that programs with lower ratings saw an enrollment decline when ratings were publicized to parents, indicating that parents responded as intended and selected other programs. This effect was particularly concentrated in areas with higher competition among programs, where parents had more options from which to choose.

Bassok and colleagues only observe enrollment, which is only part of the picture of the theoretical impact of information on parents. If parents value both ECE quality and information about quality, there is likely a group of parents who are able to access quality information on their own. This is why high-quality programs are often oversubscribed even when specific quality measures are not published. Parents with resources for information gathering learn about high-quality programs through research and social networks. In this context, one of the most important effects of information provision is that it reduces the costs of information, so more parents are able to identify the high-quality programs. One of the largest impacts of information provision might be increased demand for high-quality programs that are already at or near capacity. In a centralized, lottery-based enrollment system where parents with and without resources competed equally for scarce seats, information could lead to more equitable access to existing high-quality ECE, as well as incentives for lower-quality programs to improve. The former effect might not be observed if we can observe enrollment only.

In this study, we expand on Bassok and colleagues' work by directly observing changes in parent preferences for ECE programs before and after the provision of quality information, regardless of whether supply can meet demand. We do this by exploiting information on parents' ranked choices in a centralized ECE enrollment in lottery in New Orleans. Ranked preferences reflect parents' true demand for programs, regardless of capacity constraints, and therefore improve upon prior measure based on enrollment only. Using a ranked-ordered logit (ROL) strategy, we estimate the influence of quality indicators on parents' relative ranking of ECE program options, comparing effects in years when quality measures were difficult for parents to access and years when quality measures where clearly posted on the enrollment application. We find that parents applying to Head Start programs already demonstrated a preference for higher-quality programs prior to the addition of quality measures to the application, and this preference was stable over the time period we observe. Parents applying to school-based pre-K, on the other hand, selected on elementary school quality, and not on pre-K quality, prior to the addition of ratings to the application. We observe a small shift in preference toward higher-quality programs when ratings are easily accessible, but this preference is still heavily outweighed by preferences for high-scoring elementary schools.

Policy Context

Louisiana's state-subsidized ECE system includes Head Starts, childcare centers, school-based pre-K for four-year-olds (pk4) at both public and private elementary schools, and a small number school-based pk3 programs for gifted and special needs students. In 2012, the state began a process to overhaul both its QRIS system and enrollment processes for publicly funded ECE. First, the state required that all local districts centralize the enrollment process for publicly funded early childhood programs. This reform attempted to streamline choice for parents by

allowing them to select and rank multiple programs on a single application with a single annual application deadline. Districts first implemented centralized enrollment in winter/spring 2016 for seats in the 2016-17 school year.

Second, the state expanded and reformed quality measurement of ECE programs. Prior to 2012, districts used a star-rating system for Head Starts and centers based on structural features, such as teacher-child ratios and teacher credentials. Public schools with pk4 received a numeric School Performance Score (SPS) that was translated into an A-F letter grade from the Louisiana Department of Education. However, SPS and grades were based primarily on student proficiency rates on state standardized tests administered in grades 3-8, and so did not provide any specific information about the quality of ECE programs. The new system required that districts assess all types of ECE programs using the Classroom Assessment Scoring System (CLASS). CLASS rates teacher-child interactions instead of program components and is more predictive of child outcomes than quality indicators based on structural features of care (Mashburn et al., 2008).

Louisiana's CLASS-based rating system provides an overall score and performance category for each program. First, trained assessors observe each teacher using the CLASS assessment and rate them in each domain (three domains for ages 3-4 and two for ages 0-2), once in the fall, and once in the spring. These ratings are intended to capture the quality of interactions in the classroom, and in particular, how well the teacher's actions and language support children's emotional and cognitive development. Each teacher receives a score between one and seven on each domain, at each time point. The program's overall score is the average of all teachers' domain scores. The overall score is then translated into a performance category in which programs with scores < 3 are deemed "Unsatisfactory," programs scoring 3.0 – 4.49 rated "Approaching Proficient," programs scoring 4.5 – 5.99 rated "Proficient," and those scoring >= 6

rated “Excellent.” Very few programs statewide fall into the Unsatisfactory or Excellent categories. Beginning in the fall of 2019, the state divided the Proficient category into “Proficient” (4.5 – 5.24) and “High Proficient” (5.25 – 5.99). Districts conducted the first classroom observations to produce CLASS ratings during fall and spring of the 2015-2016 school year.

ECE in New Orleans

This study examines ECE applications in New Orleans, Louisiana. The city of New Orleans, which fully encompasses the Orleans Parish School System, is approximately 350 square miles, with a population of roughly 400,000. Some areas of the city, particularly Algiers and New Orleans East, are geographically separated from the rest of the city by the Mississippi River and other water ways. Parents living in these areas may have to travel longer distances to send their children to schools and ECE programs, particularly if the programs near them are full. Some neighborhoods are up to ten miles from the city center. New Orleans also does not have a robust public transit system, making these distances challenging for low-income families. Though most pk4 programs in New Orleans public schools provide school-bus transportation, almost no Head Start programs do. Unlike most districts, the New Orleans public school system is primarily charter schools plus a small number of autonomous public schools and private schools that accept publicly-funded students through the state’s voucher program. The decentralized system of school management means there is no centralized planning of school-based pre-K programs, and it is optional for charter and voucher schools to offer programs of their own design and to compete for student enrollment alongside center and head start programs (Weixler, Lincove, and Gerry, 2019). The student populations is approximately 90% Black and 80% economically disadvantaged.

New Orleans has a citywide system of school choice for all grade levels and since 2012, has used a centralized enrollment system – known as OneApp – to enroll students in most K-12 public schools and voucher-accepting private schools in the city. Following the state mandate, New Orleans added all the city's subsidized ECE programs to OneApp and expanded OneApp participation to eligible children ages 0-5. The first round of the ECE OneApp accepted applications in winter/spring 2016 for seats in the 2016-17 school year. The OneApp enrollment system has parents rank up to eight choices for ECE (12 for K-12 grades) and then uses a strategy-proof algorithm to match students to seats based on students' rankings and a series of program priorities (see Harris, Valant, and Gross, 2015). Because OneApp included almost all K-12 schools for several years before adding ECE, the application process, deadlines, and procedures were already well-publicized and well-known to parents in the city.

Within the ECE OneApp, options depend on child age and program eligibility requirements. During the period studied, Early Head Starts, which serve children at or below the federal poverty line (FPL), were the only options for children ages 0-2. Options for three-year-olds included Head Starts for families at or below FPL and a small number of specialized school-based and center programs for gifted children, children with special needs, or for tuition-paying families.[1] Options for four-year-olds had varied eligibility requirements. Parents at all income levels could apply for pk4 for children with special needs, gifted pk3 and pk4 programs for students identified as gifted, and a small number of tuition-based seats at public schools and centers. Parents with incomes <=200% FPL were eligible to apply to approximately 40 public-school pk4 programs, 10-20 programs operated by centers in partnership with public schools,

[1] Public schools in Louisiana that offer subsidized pk4 for low-income families are allowed to also offer tuition-based seats.

and 10 subsidized pk4 programs at local private schools. Parents with incomes <=100% FPL could also apply to approximately 25 Head Starts, for a total of roughly 90 options.

Out of the available options, parents were able to rank up to 8 choices per child on the OneApp application. The placement algorithm assigns each child to the highest ranked program for which they are eligible and a seat is available. Seats are assigned based on program-determined priority groupings. For example, school-based pk4's might give priority to siblings of current students or to families who live in a geographic catchment zone. When programs are oversubscribed, seats are allocated within the priority groups based on random lottery. While students face different probabilities of assignment at different schools, there is no incentive for strategically rankings schools. Thus, parents' ranked choices in the OneApp should reflect their true preferences and order of preferences based on available information.

To identify the effects of not just program quality but information about program quality, our study exploits the fact that the ECE OneApp was rolled out two years before CLASS ratings were provided to parents. CLASS ratings were first measured in 2015-16, but these first ratings were not publicly released until January 2017, and in response to requests from program operators, the first release was not publicized to parents. It was not until November 2017 that the second round of CLASS performance ratings (based on performance in 2016-17) was released, widely publicized, and included on the OneApp. This means that the first time parents saw CLASS ratings was in the choice process for enrollment in the 2018-19 school year. While it is unlikely that the typical parent completing OneApp for enrollment prior to 2018 knew each programs' CLASS ratings, it is highly likely that parents using the OneApp for fall 2018, 2019, or 2020 seats saw this information. First, CLASS ratings were added to all ECE program information pages used for browsing options on the enrollment site. Second, when an applicant

selected a program for ranking, the site automatically displayed the program's CLASS rating, as well as the distance between the program and the applicant's home and (if applicable) the public school's SPS score.

As a result, within the first five years of the ECE OneApp, parents' access to CLASS-based ratings varied from no access in Year 1 (applications for 2016-17 seats), to access but likely lack of awareness in Year 2, to being automatically provided the information in Years 3, 4, and 5 (see Table 1). Prior to Year 3, the quality information available to parents were the star ratings (based on structural characteristics only) for centers and Head Starts, and the test-based letter grade for school-based program. In this analysis, we ask whether parent preferences shifted toward higher-rated programs after CLASS quality ratings (based on more predictive teacher interactions with students) were clearly revealed in the choice system.

Research Questions

1. Do applicants show a preference for high-quality programs when CLASS ratings are not easily accessible?
2. Do easily accessible CLASS ratings increase applicants' likelihood of applying to high-quality programs?

Method

Data

Our data include all ECE program applications from the first five years of centralized enrollment, provided as deidentified data through a joint agreement with LDOE and New Orleans Public Schools (NOLA-PS). This includes winter/spring choice processes for enrollment in fall 2016 through fall 2020. From now on, we will refer to OneApp years using the fall

enrollment years 2016 through 2020. The ECE OneApp received approximately 5,000 applications for children ages 0-5 each year, the majority of whom are living under 200% of the federal poverty line.

With the exception of the 2016 enrollment year, the following rules applied for ECE applications: (1) parents only need to apply if they are new to the system, want to change programs, or their program does not continue to the next age; (2) parents must apply online and can rank up to eight programs in order; (3) parents identify eligibility for Head Start (<100% of FPL), pk4 (<200% of FPL), and special education/gifted program on the application; and (4) parents must verify their eligibility for programs in person before the end of the application window.

In the first year of the ECE OneApp (applications for fall 2016), two rules differed from those above: (1) all students needed to submit an application, even if they were continuing in their current program, so that their enrollment was recorded in the system; (2) parents applied online and could list up to 20 programs in rank order. The system allowed 20 slots in that year because the application also included childcares participating in the Childcare Assistance Program (CCAP), which is Louisiana's implementation of the federal Childcare and Development Fund. CCAP is a subsidy for low-income parents to enroll in childcare while they work or attend school. However, these programs were removed from the application before parents were matched to seats, and the programs were not included in future years, because of the complexities in identifying CCAP eligibility for applicants.

Program quality information prior to publication on the OneApp was provided by LDOE. We use this information to reflect the measured, but unpublicized quality of programs in 2016 and 2017, which parents may or may not have known. Prior to the publication of CLASS ratings

measuring instructional quality, OneApp provided programs' star ratings, assigned by the state and reflecting characteristics like teacher credentials and teacher-child ratios. We include these ratings in models for these years. Importantly, high star ratings are not correlated with high CLASS-based ratings, which suggests that CLASS provides distinctly different information. CLASS-based program quality information for 2018, 2019, and 2020 was provided in the OneApp system, and we use these published measures to reflect what parents knew about quality in those application years. Parents may also care about school-wide performance when program are located in elementary schools, because ECE students in school-based programs have guaranteed future enrollment in the school's kindergarten. Therefore, we also included data from LDOE on the annual A-F letter grade assigned to each school-based program. Again, letter grades for elementary schools are not correlated with CLASS ratings for their pk4 programs, so the CLASS ratings should provide distinctly different information about quality.

OneApp provides little additional demographic information for applicants, but we use available information to identify several additional program characteristics that are likely to affect parent rankings including the location, neighborhood setting, and type of program. We use the addresses provided by parents on the OneApp to calculate the distance from families' homes to each program in their choice set. We use the 2018 five-year estimates from the American Community Survey to calculate each program's neighborhood poverty.

Table 2 displays program characteristics for Head Starts and pre-K4 programs by year. PK4 programs' average neighborhood poverty is very close to the citywide poverty rate (24.6%), but Head Starts, by design, are located in much higher-poverty neighborhoods. Additionally, on average, families travel further to get to their nearest Head Start than to get to their nearest pK4,

likely because there are only 20-25 Head Start programs for each age level, compared to 50 or more for PK4 students.

Analysis

Our research question asks whether parent access to CLASS quality indicators influenced their demand for ECE programs in New Orleans. To answer this question, we must estimate the degree to which demand varied across program quality indicators in each year of the ECE OneApp, and then determine whether quality has a stronger relationship with preferences in years when quality information was provided. If parents care about quality but can only observe quality if indicators are provided on OneApp, we should see stronger, positive effects of program quality in years when the information was provided.

To estimate the influence of quality on preferences, we employ two strategies. At the application level, we employ a McFadden choice model to examine how program quality and program quality information affect parent rankings of programs. At the program level, we employ an interrupted time series model to see if total demand changed when programs changed quality over time and when quality information was provided.

The McFadden choice model was initially implemented by Long (2004) as a conditional logit model for college choices of high school seniors, and more recently adapted for examination of the influence of school characteristics on parent preferences in K-12 school choice systems (Abdulkadiroğlu, Agarwal, & Pathak, 2017; Glazerman & Dotter, 2017; Harris & Larsen, 2019; Lincove, Cowen, & Imbrogno, 2018). Because OneApp offers parents the option to not only list choices but to accurately rank them in order of preference, we follow Lincove and colleagues (2018) and employ a ranked-ordered logit (ROL) model that estimates the influence

of program characteristics on both the probability of selecting a choice and its relative rank among multiple selections.

The ranked-ordered logit estimates:

$$\boldsymbol{Pr}\,(\boldsymbol{r_i}) = \frac{\boldsymbol{e^{Z_{ij}\beta}}}{\sum_{\boldsymbol{j}} \boldsymbol{e^{Z_{ij}\beta}}}$$

where

$$\boldsymbol{Z_{ij}\beta} = \boldsymbol{\beta_1 quality_j} + \boldsymbol{\beta_2 A_j} + \boldsymbol{\beta_3 distance_{ij}} + \boldsymbol{\delta_i} + \boldsymbol{\varepsilon_{ij}} \qquad \textbf{(1)}$$

In this model, applicant *i* faces a full choice set of programs J=$\{j_1, j_2 \ldots j_k\}$, and must select maximum of *m* programs to rank order on the application. $\boldsymbol{r_i}$ reflects the ordered ranking of *j* on *i's* application, with the option to leave *j* unranked. Our independent predictors include program quality, distance from home, and other characteristics ($\boldsymbol{A_j}$). $\boldsymbol{\delta_i}$ is a student fixed effect that reflects all observed family preference characteristics that are fixed across programs, such as the child's special needs or unique traits. $\boldsymbol{quality_j}$ is a matrix of quality indicators produced by the early childhood evaluation system. Functionally, the ROL estimates a series of multinomial logits comparing different rankings to being unranked to arrive at $\boldsymbol{\beta_1}$, which provides an estimate of the influence of program quality on the probability that a program be will ranked relatively higher than an otherwise similar option of lower quality (Fok, Paap, & Van Dijk, 2012).

Because the ROL model relies on within-application variation in rankings across programs, it is not feasible to include multiple years of choice data in a single specification. The provision of CLASS quality information occurred beginning in 2018 for all ECE options simultaneously. Here, we estimate eq (1) individually for each year of the ECE OneApp (2016 through 2020), including quality measures each year. If quality influences demand and quality

information is widely known, we should see that quality indictors are associated with higher rankings every year. If quality influences demand, but quality is unknown unless information is directly provided, we should see that quality indicators are only positively associated with rankings in years when the data were provided on OneApp. Thus, the comparison of $\beta_1's$ in pre- and post-information provision years tells us whether the information had its intended effect – i.e. to better align parent preferences with quality. Because parents may have different strategies for selecting Head Start and pk4 programs, and because they have different prior information about these options, we conduct separate analysis for ages 0-3 and pk4. The timeframe for implementation of quality measurement and displaying quality indicators on OneApp is displayed in Table 1.

For applications for 2016 and 2017, we use the year that programs were observed to predict rankings for the following fall (i.e., we use 2015-16 observation ratings to predict rankings for fall 2016 applications). If parents were observing quality directly, or gathering information in other ways, their assessments of quality would be drawn from the same year as the observations. Beginning with fall 2018, we use the ratings that were listed on the OneApp, which are based on the prior year's observations. As a result, ratings from 2016-17 observations are used to predict rankings for fall 2017 (when parents could not see these ratings) and for fall 2018, when the same ratings were on the application.

The ROL makes the best use of parent rankings to discern the effect of program quality on choices. However, the limitations of the model prevent a direct statistical comparison of the effect of quality indicators across years. Our second strategy complements the ROL by estimating, at the program, level how the total demand for a program changed when quality information was directly provided. We model this as an interrupted-time series:

$$Demand_{jt} = \alpha_0 + \boldsymbol{\beta_1 enrollment\ year_t} + \boldsymbol{\beta_2 quality_t} +$$

$$\boldsymbol{\beta_3 quality_t \cdot enrollment\ year_t} + \boldsymbol{\beta_4 X_{jt}} + \boldsymbol{\vartheta_j} + \varepsilon_{jt} \quad \textbf{(2)}$$

where demand for program *j* is estimated as a linear function of enrollment year dummies, quality indicator dummies, and the interaction of quality and enrollment year. The vector of coefficients $\boldsymbol{\beta_3}$ indicate the differential effects of quality in years with and without direct provision of quality information. $\boldsymbol{X_{jt}}$ is a matrix of time-varying program characteristics and the program fixed, $\boldsymbol{\vartheta_j}$, captures non-varying program characteristics. Thus, we estimate the effect of changes in quality and information provision within programs over time. If information affects demand, we should see larger positive effects of indicators of high quality in 2018-2020, compared to 2016 and 2017. We measure *Demand* as the total number of applications for a program in year *t*, ignoring the rank, and separately as the total number of first-choice ranks.

Results

RQ1: Do applicants show a preference for high-quality programs when CLASS ratings are not easily accessible?

In the tables below, we display exponentiated coefficients for easier interpretation. Table 3 displays results separately by applicant age and year. Our preferred models control for program setting, neighborhood poverty, and distance from the applicant's home. However, coefficients for CLASS ratings are similar across robustness checks, which include models with only first-time applicants, and models with and without controls (available upon request).

Across ages, families consistently prefer programs that are closer to their home. All else equal, the odds of preferring a program one mile further away from home range between about 0.70 and 0.80. For example, holding all else constant, families' probability of selecting a

program one mile away from home is 43%, compared to a 36% probability if the program is two miles away. Families also slightly prefer programs in higher-income neighborhoods. For example, on average, applicants are 3 percentage points more likely to select a program in a neighborhood with a 15% poverty rate than they are a program in a neighborhood where 25% of residents live in poverty (the city average).

Prior to the release of CLASS scores, parents of 0-3-year-olds had only star ratings as an official source of program quality, and parents of pre-K4 applicants had only elementary school SPS. When star ratings were available, parents displayed a preference for the small number of 5-star programs, though their preference for 4-star programs (about 50% of all programs) was inconsistent. Though the likelihood of receiving a 4- or 5-star rating had no association with the likelihood of receiving a higher CLASS rating, we control for programs' star ratings in all years when those ratings were available.

In the first year of the ECE OneApp, parents did not show a preference for higher-rated programs. However, in the second year, applicants to Head Start did appear show a preference for these programs, even without direct access to the ratings (OR=1.85; $p<.01$; see Table 3), such that on average, applicants rank a Proficient program over an Approaching Proficient program 65% of the time. To investigate this discrepancy in Head Start applicants' preferences in the two pre-treatment years, we examine their preference for programs that received a high rating in every year of our five-year panel. Across the period, and especially in the earlier years, there is substantial variability in the programs which receive high ratings. However, programs which always receive high ratings likely have more stable and enduring underlying quality that parents may identify in other ways, beyond the specific ratings listed on the application in a given year.

In this model, we find that Head Start, but not PK4, applicants show a preference for programs that were always highly rated, regardless of whether they can observe the ratings (see Table 4).

PK4 applicants did not display a preference for Proficient programs in either year prior to the addition of ratings to the application. These applicants, unsurprisingly, strongly select on the widely publicized SPS that measures elementary school quality, using primarily test score levels. Applicants tend to prefer programs in public schools over those in private settings, and in particular, applicants rank A/B-rated schools over unrated schools and private programs about 72% of the time.

R2: Do easily accessible public ratings increase applicants' likelihood of applying to high-quality programs?

We see some evidence that public ratings increase families' preferences for higher-rated programs, at least for applicants to pk4 programs. Head Start applicants' rankings of Proficient programs are similar across the transition to public ratings (see Table 5). PK4 applicants, however, do show a shift toward preferring higher-rated programs in the second year that ratings appeared on the application, such that a program receiving a high rating on the 2019 OneApp is likely to receive an average of 37 additional applications. This difference is statistically significant in models with and without controls, and when comparing to either pre-treatment year. However, this preference only appears in one post-treatment year and is not maintained into the final year of the period.

The single year of post-treatment effects makes us less confident that the addition of the ratings to the application affected families' preferences. However, there are contextual factors that make this single-year effect plausible. In 2018, the first year with ratings on the application, the new ratings were released about one week into the application period, and due to a technical

issue, not completely uploaded to the application until about one month into the period. As a result, the roughly 40% of applicants who applied in the first month saw ECE ratings for only some programs. In 2020, applicants saw the ratings from the beginning of the application period, but the information changed due to the expansion of the rating categories and the upward shift of scores. Nearly 90% of programs scored at proficient or above, and the primary distinction – proficient vs. high proficient – may not be a meaningful difference in families' assessment of program quality.

Discussion

In theory, CLASS ratings should influence parent choices because the metrics are painstakingly designed to align with future outcomes for students. The provision of CLASS ratings for both programs and parents, while theoretically useful, is also very expensive relative to publishing structural characteristics that can be observed without site visits and expert observations. Thus, it is important to measure whether this useful but costly information is supporting program improvement. We find overall, that publicizing CLASS ratings had little effect on revealed parent preferences. This does not necessarily mean that the information is not useful, but possibly that market conditions or the way the information was provided are equally important.

Unsurprisingly, families with young children prefer to utilize ECE programs that are closer to their homes. However, families also use at least some quality information to inform their choices. Applicants to Head Start showed a consistent preference for five-star programs when that information was available and also prefer programs that maintained a high rating across the five-year period, regardless of the availability of those ratings. PK4 applicants select heavily on the letter grade of the attached elementary school; selecting an A or B-rated school

over a C-rated school about 70% of the time. Selecting a PK4 in New Orleans has long-term consequences, as elementary schools with PK4 programs often have limited seats for new kindergartners. However, public CLASS ratings appear to have had little impact on applicants' rankings. We can detect no difference in Head Start applicants' preferences for programs when those programs change rating categories, and we only observe a difference in PK4 applicants' preferences in one year, and with an effect size that is about half of the effect of the associated school receiving an A or B grade. It is possible that parents were willing to accept a lower quality pk program to ensure access to higher-quality elementary school.

Our findings mirror what we hear from parents in ongoing interviews about their ECE application process. As part of a separate project, we are asking parents about their recent OneApp applications (in 2019-20 for fall 2020 seats), and in particular, why they selected the programs listed on their application. Not surprisingly, Head Start applicants frequently mention the convenience of the location, either near their home, near a family member's home, or near their workplace. Parents also often mention knowing someone who works at the program or who has had a child attend and who spoke positively about the program. PK4 applicants often reference features of the associated elementary school, like the letter grade and the activities for older students, and having older siblings who already attend. Neither group ever mentions the CLASS scores when explaining their selections.

Our results deviate somewhat from recent findings from Bassok and colleagues (2019), who identified a clear drop in enrollment among lower-rated programs in North Carolina. There are a few possible reasons for the differences in effects here. First, they examine patterns at the program level, and as they point out, it is possible that they are picking up supply-side decisions to decrease enrollment, rather than changes in parent demand. However, there are other

differences between the settings that might explain why parents respond to ratings there, but not here. First, North Carolina uses a more familiar 5-star rating system, which is likely more intuitive to parents in gauging quality than distinguishing between "High Proficient," "Proficient," and "Approaching Proficient." Supporting this interpretation, we find a consistent preference for programs with a five-star rating in the earlier years of our panel. Second, they are examining the private childcare market, where we are studying rankings of public programs, where parents have a limited set of choices. Parents in these two sectors may have different prior information and preferences for programs and approach their choices differently. Third, we are examining program rankings at the time of application, which in New Orleans occurs six to nine months prior to enrollment. Parents' decision-making may differ when they are actually at the point of enrollment, rather than ranking programs months in advance.

Additionally, some features of this system decrease the likelihood that these ratings will affect parents' decisions. Though the ratings are publicly released and receive some minimal media coverage, applicants are most likely to see individual program ratings on the application itself. However, program details do not appear until an applicant selects a program for their ranked list. There is no way to sort or filter on any program characteristic within the application, and many applicants have likely selected some or all of their choices before arriving at the ranking page. So in order for the ratings on the application to have an effect, an applicant would have to select a program, see its rating, and change their ranking as a result.

In designing a rating system for ECE programs, policymakers need to give careful consideration to when and how they communicate with families about program quality. The steady increase in program scores since the implementation of the CLASS ratings indicates that programs are responding to the system's incentives and working to improve the quality of their

instruction, which is a positive outcome of this system. However, in order for parents to act on this information and push for improvements from the demand side, the information has to be presented in an intuitive fashion and made easily accessible before parents make their selections.

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Table 1: Timeline of Information Available to Families

		Head Start (Ages 0-3)		School-Based Pre-K (Age 4)	
School Year:	Families Applying for:	Public Information	Information on OneApp	Public Information	Information on OneApp
2015-16	Fall 2016	Star Ratings	Star Ratings	SPS	SPS
2016-17	Fall 2017	Star Ratings and CLASS	Star Ratings	SPS and CLASS	SPS
2017-18	Fall 2018	CLASS	CLASS	SPS and CLASS	SPS and CLASS
2018-19	Fall 2019	CLASS	CLASS	SPS and CLASS	SPS and CLASS
2019-20	Fall 2020	CLASS	CLASS	SPS and CLASS	SPS and CLASS

Note. CLASS observations began in 2015-16, but ratings are released in the fall following the year of the observations. For example, families applying for seats for the fall of 2020, during the 2019-20 application period, see ratings based on 2018-19 observations.

Table 2: Program Characteristics by Age and Year

	Age 0-3					PK4				
	2016	2017	2018	2019	2020	2016	2017	2018	2019	2020
Total Programs	53	45	46	45	50	68	63	64	60	57
Mean Neighborhood Poverty (%)	40.73	42.64	42.58	42.59	42.49	25.73	25.34	24.90	24.13	23.62
Mean Distance to Applicant Home (Miles)	4.89	4.96	4.94	4.98	4.99	5.19	5.21	5.32	5.36	5.34
Mean Distance to Nearest Program (Miles)	0.90	0.96	0.97	0.97	0.98	0.56	0.57	0.58	0.59	0.59
CLASS Rating										
Approaching Proficient	24	15	16	2	3	31	31	31	11	7
Proficient	14	25	25	42	30	26	23	23	39	19
High Proficient	0	0	0	0	15	0	0	0	0	25
Excellent	0	0	0	0	0				1	3
High Star Rating (4-5)	33	28	26							
Setting										
AB-rated Public School						11	7	5	4	5
C-rated Public School						9	15	14	17	12
DF-rated Public School						12	15	18	12	20
Unrated New Public School						4	1	5	5	3
Private School						11	10	10	11	10
Childcare/Head Start	53	45	46	45	50	21	15	12	11	7

Note. Though there are at least 45 programs in the Head Start analysis in each year, each applicant only has 20-25 in their choice set, as these programs are designated as either Early Head Start, for ages 0-2, or Head Start for ages 3-4. However, many of these programs are at the same site and offer continuous enrollment from ages 0-4. Programs are missing CLASS ratings if they were not open in the prior year to be observed.

Table 3: Odds of Program Rankings by Annual CLASS Rating

	Age 0-3					PK4				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	2016	2017	2018	2019	2020	2016	2017	2018	2019	2020
Proficient	0.860***	1.846***	1.682***	1.485***	1.594***	1.015	0.822***	1.026	1.054	0.542***
	(0.0318)	(0.0784)	(0.0478)	(0.116)	(0.0796)	(0.0291)	(0.0260)	(0.0329)	(0.0352)	(0.0264)
High Proficient					0.908*					0.496***
					(0.0499)					(0.0226)
Excellent									0.814	0.582***
									(0.106)	(0.0379)
4 Stars	0.936*	0.707***	0.675***							
	(0.0358)	(0.0249)	(0.0225)							
5 Stars	1.411***	0.858***	1.374***							
	(0.0643)	(0.0439)	(0.0670)							
Distance (Miles)	0.807***	0.741***	0.761***	0.750***	0.759***	0.766***	0.746***	0.751***	0.692***	0.710***
	(0.00730)	(0.00694)	(0.00662)	(0.00611)	(0.00627)	(0.00767)	(0.00804)	(0.00721)	(0.00757)	(0.00727)
Neighborhood	0.992***	1.002	0.997***	0.988***	0.985***	0.978***	0.985***	0.994***	0.999	0.991***
Poverty (%)	(0.00106)	(0.00133)	(0.000932)	(0.000630)	(0.000655)	(0.00114)	(0.00133)	(0.00133)	(0.00126)	(0.00145)
Public School						1.484***	1.700***	2.038***	0.985	2.153***
						(0.120)	(0.213)	(0.231)	(0.118)	(0.131)
A/B-rated						2.578***	2.625***	3.190***	5.746***	1.887***
						(0.169)	(0.310)	(0.342)	(0.735)	(0.135)
C-rated						1.331***	1.110	0.893	1.739***	0.848***
						(0.0820)	(0.126)	(0.0952)	(0.192)	(0.0454)
D/F-rated						0.848**	0.701***	0.389***	1.055	0.337***
						(0.0547)	(0.0843)	(0.0409)	(0.133)	(0.0206)
N	32691	28487	30532	44416	48042	103345	79092	93492	97053	101654

Note. Exponentiated coefficients, standard errors in parentheses. N counts the number of applicants by school rankings (including schools in the choice set but not ranked). Effects of CLASS ratings are relative to programs in the "Approaching Proficient" category; 4- and 5-star ratings are compared to ratings below 4; and preferences for public schools of each rating level are relative to private schools, childcare programs and new public schools, which do not receive a letter grade. *p<.10, **p<.05, ***p<.01.

Table 4: Odds of Program Rankings by Consistent CLASS Rating

	Age 0-3					PK4				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	2016	2017	2018	2019	2020	2016	2017	2018	2019	2020
High Rating	1.498***	1.150***	1.215***	1.371***	1.558***	0.779***	0.822***	1.075	0.995	0.791***
All Years	(0.0452)	(0.0300)	(0.0321)	(0.0340)	(0.0414)	(0.0336)	(0.0345)	(0.0518)	(0.0418)	(0.0372)
4 Stars	1.505***	1.444***	1.823***							
	(0.0547)	(0.0523)	(0.0789)							
5 Stars	1.166***	0.983	0.898***							
	(0.0332)	(0.0273)	(0.0224)							
Distance (Miles)	0.808***	0.747***	0.765***	0.754***	0.767***	0.760***	0.741***	0.747***	0.682***	0.708***
	(0.00688)	(0.00641)	(0.00583)	(0.00609)	(0.00598)	(0.00737)	(0.00802)	(0.00694)	(0.00692)	(0.00714)
Neighborhood	0.989***	0.990***	0.990***	0.993***	0.993***	0.975***	0.984***	0.982***	0.992***	0.986***
Poverty (%)	(0.000734)	(0.000671)	(0.000626)	(0.000622)	(0.000672)	(0.00117)	(0.00124)	(0.00131)	(0.00116)	(0.00132)
Public School						1.904***	1.955***	1.864***	2.312***	2.789***
						(0.151)	(0.243)	(0.113)	(0.119)	(0.171)
A/B-rated						2.492***	2.528***	2.958***	2.282***	1.416***
						(0.164)	(0.296)	(0.171)	(0.129)	(0.0822)
C-rated						1.297***	0.918	0.873***	0.768***	0.725***
						(0.0814)	(0.104)	(0.0429)	(0.0293)	(0.0367)
D/F-rated						0.943	0.607***	0.412***	0.419***	0.309***
						(0.0595)	(0.0719)	(0.0252)	(0.0265)	(0.0190)
N	53061	39055	44633	45458	50310	118377	92781	111132	114180	107408

Note. Exponentiated coefficients, standard errors in parentheses. N counts the number of applicants by school rankings (including schools in the choice set but not ranked). Effects of CLASS ratings are relative to programs in the "Approaching Proficient" category; 4- and 5-star ratings are compared to ratings below 4; and preferences for public schools of each rating level are relative to private schools, childcare programs and new public schools, which do not receive a letter grade. *p<.10, **p<.05, ***p<.01.

Table 5. Interrupted Time Series of Program Applications by CLASS Rating

	Age 0-3				PK4			
	Ranked		Ranked First		Ranked		Ranked First	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
High Rating	-11.73	-19.80	-0.366	-2.006	-1.683	-0.138	0.260	0.323
	(16.54)	(17.80)	(5.092)	(5.647)	(12.75)	(12.49)	(3.865)	(3.745)
High Rating x 2016	-0.489	-0.968	-8.069	-7.163	-0.712	-11.27	0.393	-2.055
	(21.13)	(22.55)	(6.505)	(7.151)	(17.23)	(16.96)	(5.225)	(5.084)
High Rating x 2018	28.55	27.84	6.680	8.629	-4.899	-5.513	-2.787	-2.622
	(19.45)	(21.06)	(5.987)	(6.678)	(15.00)	(14.72)	(4.550)	(4.412)
High Rating x 2019	3.188	55.67	-1.391	8.695	48.51**	36.63**	12.97**	9.423*
	(37.80)	(52.23)	(11.63)	(16.56)	(18.82)	(18.36)	(5.708)	(5.503)
High Rating x 2020	8.617	17.78	15.02	16.89	20.06	0.959	7.571	2.544
	(32.01)	(32.50)	(9.852)	(10.31)	(23.25)	(22.83)	(7.051)	(6.844)
2016	-40.10***	-40.81**	7.674*	7.820	17.59*	15.77	4.222	3.197
	(14.63)	(15.87)	(4.503)	(5.033)	(10.57)	(10.13)	(3.205)	(3.037)
2018	13.23	19.43	-2.824	-1.739	11.29	13.54	-0.387	-0.115
	(15.28)	(16.79)	(4.702)	(5.326)	(9.792)	(9.501)	(2.969)	(2.848)
2019	-0.503	-26.16	-1.516	-2.763	-27.93*	-13.11	-12.59***	-7.933*
	(35.44)	(49.52)	(10.91)	(15.71)	(14.55)	(14.18)	(4.412)	(4.250)
2020	-48.03	-33.74	-17.00*	-10.58	-30.11	-6.971	-12.99**	-6.687
	(29.40)	(30.57)	(9.048)	(9.697)	(19.64)	(19.46)	(5.955)	(5.833)
% Neighborhood		10.57		1.985		0.112		0.0224
Poverty		(13.73)		(4.354)		(1.114)		(0.334)
High Star Rating		28.10**		10.38**		23.37		8.231
		(12.83)		(4.071)		(20.27)		(6.074)
AB-rated						71.46***		23.68***
						(23.34)		(6.997)
C-rated						-6.329		-2.344
						(19.26)		(5.774)
DF-rated						-14.18		-2.139
						(18.77)		(5.626)
Constant	267.8***	-170.5	51.26***	-32.34	100.9***	92.28***	28.89***	26.18***
	(12.46)	(559.2)	(3.835)	(177.4)	(7.644)	(29.75)	(2.318)	(8.919)
N	211	185	211	185	270	264	270	264

Note. Table shows results from an OLS regression at the program level. Outcomes are each program's total number of applications and total number of first-choice rankings, where N counts the number of program by year observations. Years 2018-2020 are the post-treatment years in which ratings appear on the application. Effects of CLASS ratings compare all ratings of Proficient or higher to the "Approaching Proficient" category; 4- and 5-star ratings are compared to ratings below 4; and preferences for public schools of each letter grade are relative to private and childcare programs, and new public schools, which do not receive a letter grade. Model includes a program fixed effect; all characteristics in the model are time-varying. *p<.10, **p<.05, ***p<.01.