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Availability of and Equity in Access to HISD Pre-K Programs (Part 1)

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Research Brief

for the Houston Independent School District

Volume 8, Issue No. 4. | August, 2019

About HERC

The Houston Education Research Consortium (HERC) is a partnership between Rice University and several Houston-area school districts. Through this partnership, HERC aims to improve the connection between education researchers and decision makers for the purpose of closing the socioeconomic gaps in educational achievement and attainment for students.

Suggested Citation

Baumgartner, E., Sanchez, L., & Thrash, C. (2019). *Availability of and Equity in Access to HISD Pre-K Programs*. Houston, TX: Houston Education Research Consortium, Kinder Institute for Urban Research, Rice University.

Research Brief Abstract

Brief #1: Availability of and Equity in Access to HISD Pre-K Programs

This study examines student access to HISD pre-k programs, measured in multiple ways: whether a program exists in their elementary zone and whether a program exists within one mile of their residence. We also estimate whether there is equity in access, by examining whether students who have the greatest need (including economically disadvantaged and English learners) also have the greatest access to pre-k. Across measures, we find that economically disadvantaged students have a greater likelihood of access to pre-k than their non-economically disadvantaged peers. However, English learners, another population targeted by the state policy to receive pre-k, are not more likely to have access to pre-k than their peers who are not English learners.

The purpose of this study is to identify the spatial distribution of HISD pre-kindergarten (pre-k) programs across the district and better understand how program location may be associated with access and equity issues around pre-k. Our goal is to evaluate the extent to which families have nearby options for public pre-k and examine whether this accessibility is the same for students of all sociodemographic backgrounds.

This is the first in a four-part series of research briefs regarding student access to and utilization of HISD pre-k programs, with subsequent briefs examining possible ways to increase access to HISD pre-k programs and the relationship between access and utilization (Brief 2), the ways in which parents make decisions about pre-k programs for their children (Brief 3), and the relationship between access to HISD pre-k and student outcomes at kindergarten entry (Brief 4).

Background

Given what is known about short- and long-term benefits of participation in early childhood education, it is of no surprise that states and school districts increasingly offer these programs for families. In Texas, early education programs, in the form of pre-k, are targeted towards students considered most at risk.[1] The provision of public pre-k by a school district assumes that students will enroll if the programs are offered, but this assumption may overlook issues of access.

Access to educational programs can be considered in a few ways. First, programs must be within a distance that families are willing to travel, otherwise, these programs may feel inaccessible to families. Proximity may be measured in an actual travel distance (such as in miles) or whether an opportunity is outside of a real or perceived neighborhood boundary. Families may think about access explicitly as it relates to a district's own created boundaries, such as elementary zones. If no public pre-k program exists within the boundaries of an elementary school zone in which a family resides, families may believe that their access to these types of programs are limited or non-existent.

A growing body of research on educational opportunity considers the role of geography and place in student access to programs. This work generally considers some variation of three important questions relating to place and education: 1) Are there areas where few or no programs exist? 2) Is there variation in the distance someone needs to travel to reach a program? 3) Do all students experience access equally?

Though it provides an important starting place for thinking about pre-k access and opportunity, much of the prior research in this area has focused on K-12 education, higher education, or schools in rural areas, considering places with few or no options to be educational deserts.[i] Distance can be a deterrent to program enrollment for all students, but may serve as an even greater barrier for low income students.[ii] Overall, these studies find that areas experiencing racial/ethnic and economic segregation are aligned with fewer educational opportunities, reinforcing existing inequalities. This suggests that both the characteristics of students and the areas in which they reside may be associated with access to educational opportunities. To date, there is no research which explicitly examines access to public pre-k programs, but a smaller body of literature has examined what it means for children to live in childcare deserts, or spaces with few or no options for non-parental child care. Similar to educational deserts more broadly, childcare deserts are more likely to exist in low-income areas, rural areas, and places with a higher proportion of Hispanic residents.[iii]

There are reasons to think that questions related to availability and access may be particularly important for the district's youngest students. First, families are more likely to travel longer distances, or allow children to travel longer distances, if they are older (high school) rather than younger (elementary).[iv] The exact reasons behind this are unclear, but may be connected to parents giving more autonomy and responsibility to older children and parents valuing convenience when it comes to schooling, particularly when they are responsible for getting a child to school (more common for younger than older children).[v] Second, in the Houston Independent School District (HISD), students are not zoned to pre-k programs. This means that families can choose any program as long as there are seats available. Because pre-k programs are not zoned, it is not guaranteed that a pre-k program exists within the boundaries of every elementary school zone or every neighborhood. Third, pre-k attendance is not mandatory, thus families who are looking for an early educational experience for their child have a number of options available, ranging from in-home day care to center-based preschool programs. If districts are hoping to enroll students as early as possible in their

1 The student populations eligible for Texas free, public pre-k are: economically disadvantaged, non-English proficient, homeless, ever in the care of the Department of Family and Protective Services, the child of a member of the armed forces, the child of a peace officer, firefighter, or emergency responder eligible for the Star of Texas award. ("Eligibility for Prekindergarten." Texas Education Agency. Retrieved from: https://tea.texas.gov/ece/eligibility.aspx)

educational trajectories, ensuring that public pre-k is an option, because it is accessible to families, is an important step.

This study is not only about access to pre-k programs in HISD, but understanding whether access to those programs is equitable. Providing an equitable opportunity is to ensure greater access to those who need it most. As Texas state policy regarding eligibility for free pre-k aims to reach those student groups who are at particular risk of being less prepared at school entry (see footnote 1), it is important to consider whether some of the targeted populations (e.g. economically disadvantaged or English learners) have greater access to HISD pre-k programs than their peers.

In order to address the questions raised above and to help HISD better understand the experiences of their students, the three research questions this study aims to address are:

1. To what extent do HISD students have access to public pre-k programs?

2. To what extent is there sociodemographic variation in student access to HISD pre-k programs?

3. What, if any, variation exists in the characteristics of places (elementary school zones) where HISD pre-k programs are and are not located?

Defining Access to Pre-K

In assessing the level of access to pre-k programs in the district, this analysis utilizes two ways to consider proximity: whether a program exists in the elementary school zone in which a student resides and the distance to the nearest program. We consider multiple indicators of access in order to capture a variety of ways in which families may interpret proximity.

For a number of reasons, using the elementary school zone in which a student resides is the most salient unit of analysis to consider in assessing access to a pre-k program. Though HISD is a school choice district, there are still school zones created for students in grades K-12 as a resource for families to understand nearby options. Currently, pre-k students do not fall under the same zoning guidelines as other students (as HISD pre-k programs are not zoned), however, for families who have older children in the school system or for people entering the HISD system for the first time, families may consider whether a pre-k exists in their zone when deciding whether and where to send a child to school.

The final units of analysis we consider are related to driving distance. As prior research on educational opportunities and distance has shown that distance can be an impediment to accessing services, we estimate the distance to the nearest HISD zoned elementary pre-k program, focusing on whether any programs exist within one mile.

Data and Methods

The data used for this analysis include administrative student- and school-level information from HISD for the 2018-19 school year. Specifically, student sociodemographic data are from 2018-19 PEIMS, student address data are from the 2018-19 Enrollment Card file, and school-level geographic data are from public geospatial files available on the HISD website. The sample is restricted to kindergarten students who appear in the 2018-19 PEIMS file and for whom we have addresses that were able to be geocoded. Additionally, we omit students who live outside of HISD's boundaries, as considerations of access for these students may be less relevant for the district. This results in a total of 14,622 students (of 15,639 total enrolled kindergarten students in 2018-19, per PEIMS). We examine kindergarten students instead of pre-k students as to not limit the sample to only those who attended HISD pre-k, but of the universe of HISD-enrolled kindergarteners who could have attended HISD pre-k. The pre-k programs examined in this study refer only to those which exist on zoned elementary school campuses in HISD, omitting charter pre-k programs, non-boundary elementary campuses, and the eight Early Childhood Centers in the district.[2]

Variables

Access to nearby public pre-k programs is measured in a number of ways, including:

- Presence of any HISD pre-k program within the elementary school zone in which the student resides (yes/no)
- Driving distance to nearest HISD pre-k program: number of miles (continuous) and any program within one mile (yes/no)

Student characteristics included in the analysis are gender, race/ethnicity, immigrant, English learner status (EL), economic disadvantage, and likely eligibility for pre-k.[3] Neighborhood-level characteristics (measured at the Census tract) include racial/ethnic composition, proportion of individuals who are non-English speaking, and the proportion of individuals below the poverty line. School level characteristics are aggregated from the student level PEIMS and include racial/ethnic composition and proportions English learner and economically disadvantaged.

Analytic Plan

The analysis for this study takes part in three stages. First, we conduct a student-level analysis, examining access to public pre-k by considering the relationship between student residence and the location of pre-k programs in HISD. This study utilizes two units of analysis when considering access to capture the variety of ways in which families may consider a program "accessible" (access to a zoned elementary school and the distance to the nearest program).

The second part of this analysis evaluates whether any variation in access to programs is associated with student characteristics, to examine student-level equity in access to public pre-k. And, finally, the third stage of this analysis examines the characteristics of places that have no or few pre-k options for students. All analyses conducted relying on mapping or spatial orientation were conducted in ArcMap 10.4.1. using Street Map Premium 2018, allowing for mapping distances using area street networks.

2 In collaboration with HISD Department Managers (including Elementary Curriculum and Early Childhood), a decision was made to limit the schools included in this sample to only those on zoned elementary campuses, as this study emerged as a result of interest in better understanding pre-k and zoning. There are 3 elementary zones that zone students to an Early Childhood Center (ECC) for the purposes of kindergarten (or kindergarten and first grade), these ECCs are not treated as zoned elementary campuses in this analysis. Subsequent studies (Brief 2) include ECCs in the analysis as an option for students.

3 "Likely eligibility" for pre-k may be an underestimate of the students who would qualify for pre-k. The indicators used to create this measure are whether a student was 4 years old at the start of the school year AND any of the following conditions: economically disadvantaged, ELL, or homeless. We are not able to capture whether students have ever been in the care of the Department of Family and Protective Services, have a parent who is active military (or was killed or wounded in action), or whether their parent qualifies for the Star of Texas Award.

Results

RQ1: To what extent do HISD students have access to public pre-k programs?

We first present the overall levels of access to HISD pre-k programs, by the two types of distance measures outlined above: elementary school zone and driving distance. In HISD, 145 of 163 elementary school zones have a pre-k program on the zoned elementary school campus. At the student level, this translates to approximately 84.5% of kindergarten students (12,362 of 14,622) residing in a zone with a pre-k program and 15.5% of students residing in a zone with no pre-k program.

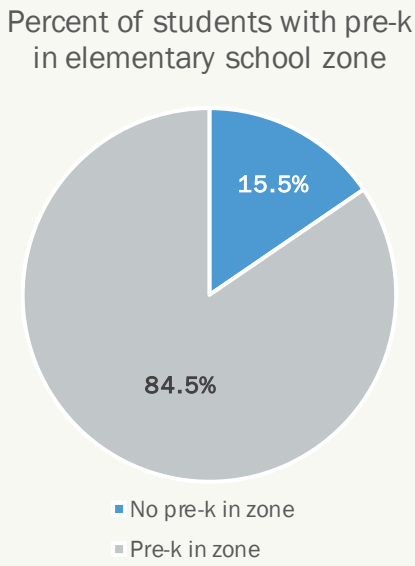
For kindergarten students in the district, approximately 59% of students have an HISD pre-k program within one mile with the median distance to the nearest pre-k program approximately 0.85 miles.

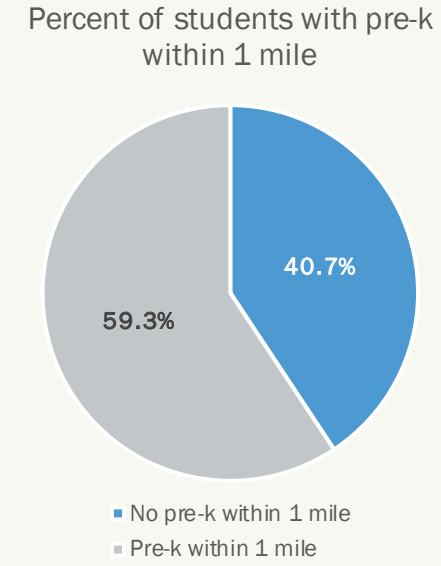
RQ2: To what extent is there sociodemographic variation in student access to HISD pre-k programs?

Elementary School Zone

As demonstrated in Figure 1, a majority of kindergarteners in HISD live in an elementary school zone with a pre-k program. However, there is some variation with respect to which students are more or less likely to reside in these zones. In the figures that follow, the values presented reflect predicted probabilities, which can be roughly interpreted as the probability of experiencing an event, which in our study would be the probability of living in an elementary school zone or neighborhood with a public pre-k program.

Figure 1. Proportion of 2018-19 HISD Kindergarten Students with Pre-K Program, Across Indicators of Access



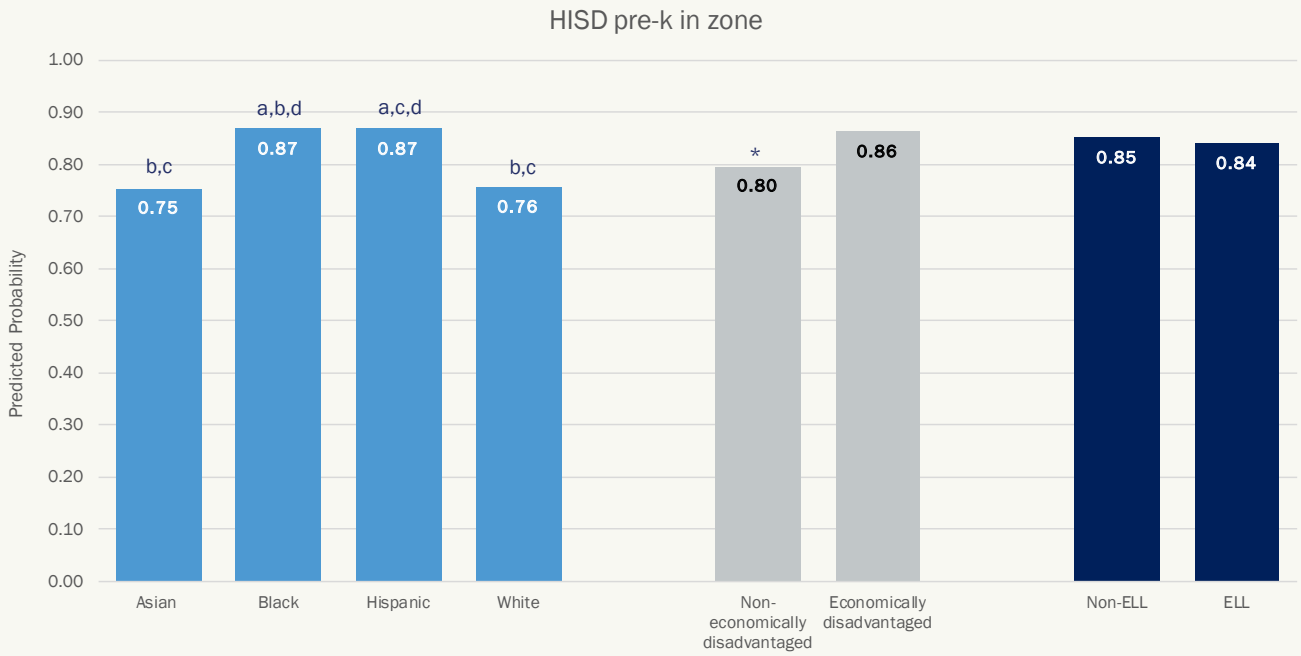


Source: HISD administrative data (student and campus-level), 2018-19

In examining racial and ethnic variation[4] in living in a zone with a pre-k program, as shown on the left side of Figure 2, we find that Hispanic and Black students are more likely to be in a zone with a pre-k program than their White and Asian peers. Additionally, economically disadvantaged students are more likely than non-economically disadvantaged students to have a pre-k program in the zone in which they reside, as shown in the center section of Figure 2. This is notable as economic disadvantage is one way students qualify for free, public pre-k in Texas.

The final panel of Figure 2 presents the variation between EL and non-EL students. Students who are classified as EL have a similar probability of having a pre-k program in the elementary school zone in which they reside than their non-EL peers. This finding is also notable, as a second way that students can qualify for free pre-k is to be classified as non-English proficient. As such, we might expect that EL students would have greater access to pre-k programs than their non-EL peers.

Figure 2. Predicted Probability of Having Pre-K in Zone for 2018-19 HISD Kindergarten Students, by Student Characteristics



a Significantly different from Asian students
b Significantly different from Black students
c Significantly different from Hispanic students
d Significantly different from White students
* Significant difference between groups

Note: The values presented in this graph are based on estimates derived from odds ratios reported in Appendix Table 1.

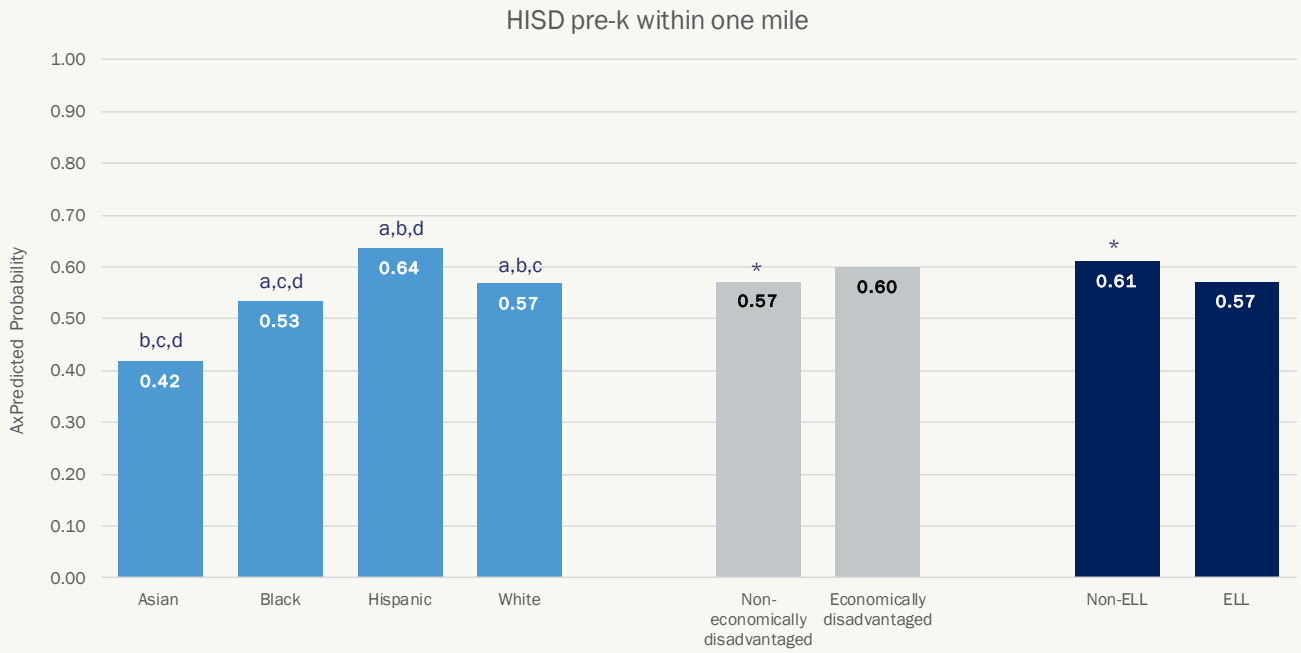
Source: HISD administrative data (student- and campus-level), 2018-19

4 All racial and ethnic groups were included in this, and all subsequent, analyses, but we present the four largest groups here. The full table of results can be found in the Appendix (Table 1).

Distance

The second unit of access we consider is driving distance. In this analysis, we estimate whether there is variation in the characteristics of students who live within one mile of a pre-k program.[5] As shown in Figure 3, we find that Hispanic students and economically disadvantaged students are both more likely than their peers to live within one mile of a pre-k program and EL students are less likely to live within one mile of a pre-k program. In contrast to previous results, Black students are less likely to live within one mile of a pre-k program than White or Hispanic students, and Asian students are less likely to live within one mile of a pre-k program than White, Hispanic, or Black students. As this relates to questions of equity, we would hope to see that economically disadvantaged students and EL students more likely to live within one mile of a pre-k program.

Figure 3. Predicted Probability of Having Pre-K Within One Mile for 2018-19 HISD Kindergarten Students, by Student Characteristics



a Significantly different from Asian students
b Significantly different from Black students
c Significantly different from Hispanic students
d Significantly different from White students
* Significant difference between groups

Note: The values presented in this graph are based on estimates derived from odds ratios reported in Appendix Table 2.

Source: HISD administrative data (student- and campus-level), 2018-19 & ArcMap Street Maps Premium 2018.

5 A continuous measure of distance (miles to pre-k) was also tested with substantively similar findings.

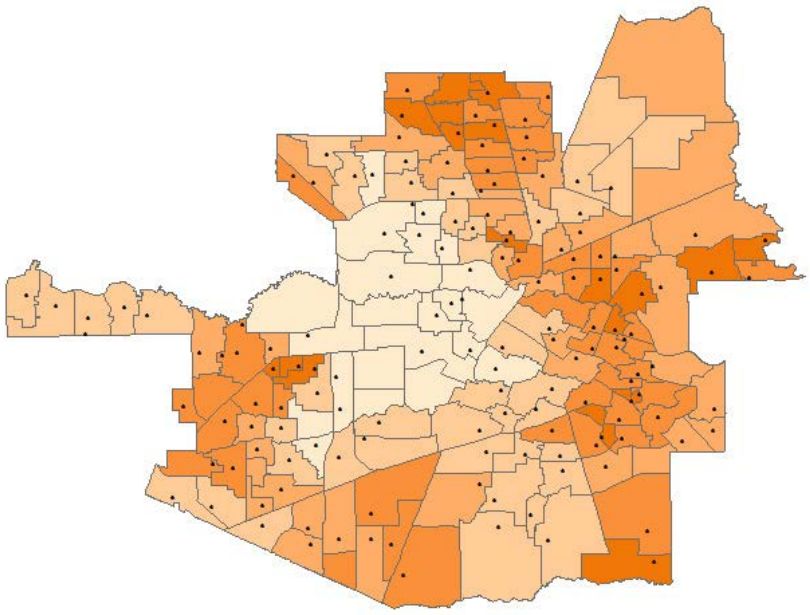
RQ3: What, if any, variation exists in the characteristics of places (elementary school zones) where HISD pre-k programs are and are not located?

While the previous analyses considered whether student-level characteristics predict access to pre-k in zone or proximity, next, we conducted a complementary set of analyses examining whether variation exists in the characteristics of the spaces where pre-k programs are available. Specifically, we consider the demographic characteristics of neighborhoods and schools where pre-k programs are provided in contrast to the characteristics of neighborhoods and schools where no zoned elementary pre-k program currently exists.

When aggregating student characteristics to the school-level, we find no variation in the demographic characteristics of zoned elementary schools which do and do not have a pre-k program (Appendix, Table 3). In this analysis, we include the 163 elementary zoned campuses in the district. Given the small number of zones, there may not be enough variation to observe differences in aggregated student demographic characteristics.

The final way which we examine the relationship between access to pre-k and space is by creating a map to better visualize potential areas of need of pre-k programs, based on the characteristics of the overall population of Houston-area residents who fall in HISD's boundaries. The map provided as Figure 4 presents a spatial representation of relative pre-k need in HISD, using the boundaries of elementary school zones. "Relative pre-k need" is measured by combining standardized indicators of the number of children under 5 years old, the proportion of those below the poverty line, and the proportion of those speaking a language other than English at home from 2012-15 ACS data (see Methodological Appendix for more information). We examine these characteristics as they are associated with the ways in which a student can qualify for public pre-k programs in the state of Texas. The legend shows the division of the relative need indicator into quintiles, with darker colors on the map reflecting areas of higher relative need and lighter areas reflecting less relative need. Each dot on the map represents an HISD pre-k program on a zoned elementary campus. In an analysis of the relationship between relative pre-k need and the location of pre-k programs, we find no evidence that areas of higher need are more likely to have a pre-k program.

Figure 4: Map of HISD Elementary School Zones and Indicator of Relative Pre-K Need



Note: Darker areas reflect elementary zones of higher need, relative to other zones in the district, with need measured using the characteristics of the overall Houston-area population falling within the district's boundaries (tract characteristics include: # children under 5, % households speaking language other than English, % households below poverty line; see Methodological Appendix for more information).

Source: HISD campus-level administrative data, 2018-19 & 2011-2015 American Communities Survey

Conclusion

The purpose of this study is to provide a portrait of access and equity in access to public pre-k programs in HISD. Overall, the findings from this study provide both reason for optimism and reflect opportunities for addressing student need. While it is useful to learn that over 80% of kindergarten students appear to have nearby access to pre-k and some at-risk student populations (economically disadvantaged) are more likely than their peers to have access to pre-k across units of analysis, other at-risk student populations (EL students), appear to be less likely to have these opportunities.

There are three important take away messages from this study. The first point is that though a number of students have access to pre-k programs in their zone or within a mile of where they live, a significant number of students do not have access to HISD's pre-k programs across either of these indicators. Importantly, variations in access to pre-k in HISD may more accurately reflect issues around access to zoned elementary schools, as demonstrated in our analyses of nearby access to pre-k programs. Secondly, equity in access to pre-k in HISD would mean that those groups who are most at risk would be most likely to have access to these programs. For economically disadvantaged students, we find this to be the case, as they have greater access, across measures, than their non-economically disadvantaged peers. But, a finding repeated across many of the analyses is that students who are EL may have less than or equal access to pre-k programs as their non-EL peers. Though this finding may be concerning because this is one of the populations of students explicitly targeted by the state's pre-k policy, it also provides an opportunity for the district to consider more targeted resources for these students and families. Finally, distance to a program may be a prohibitive factor in student access to pre-k. Considering prior research that suggests families of young children are less likely to travel long distances to take their children to school and that a distance of three-quarters of a mile may be the farthest a family is willing to travel to get their child to a better school, the finding that students live approximately 0.85 miles from the nearest pre-k campus may help us better understand why the families of some kindergarteners, who would have qualified for free, public pre-k, chose not to enroll them.

One implication of this study may be an opportunity for HISD to work closely with its demographer to understand changing population patterns over time across the Houston area. Though overall population growth in the region may be slowing, identifying areas where families are increasingly settling, particularly those who are low income or may have limited English proficiency, can help the district plan for the needs of a new student population.

Future studies in this series will attempt to better understand the relationship between access to programs and a student's likelihood of enrolling in pre-k. We will consider ways to increase utilization, with a particular focus on estimating whether zoning pre-k might lead to a greater proportion of qualified children enrolling in pre-k in HISD.

There are a few limitations of this study to note. First, we analyze kindergarten students, with the underlying expectation that a student's address in kindergarten is the same as the prior year (when they were potentially eligible for pre-k). Given the high mobility within the district, we know that this may not be the case. We decided to make this concession rather than limiting the sample to only those students who attended HISD pre-k and missing out on the universe of students who could have attended but did not. In addition, we chose to limit the pre-k campuses used in the study to only those on zoned elementary campuses, omitting Early Childhood Centers, non-boundary elementary schools, and pre-k district

charter schools from the analysis. While pre-k available on these other campuses may be a viable option for families near their residence, we chose to omit ECCs and non-boundary schools because they may more accurately reflect an option for school choice than for a zoned school and we chose to omit charter campuses because HISD has relatively little control over whether a campus may open or close year-to-year and cannot (potentially) zone students to those campuses. Significant attention will be paid to these other campus types as a source of potential access in the second brief in this series.

Despite these limitations, this study provides an important starting place for HISD in considering whether students across the district have access to pre-k programs. In addition to the findings presented throughout the paper, using an indicator like the relative pre-k need index may provide another piece of information to the district to use in deciding whether or where to add pre-k programs in HISD. As with all studies to emerge from the Houston Education Research Consortium, the ultimate goal of this work is aimed at reducing disparities in access to educational opportunities, and in turn, reducing disparities in educational outcomes.

Appendix

Table 1. Odds ratios from logistic regression models predicting having a pre-k on zoned campus in elementary zone for 2018-19 kindergarten students.

	Odds Ratio	Std. Error	p-value
Race/ethnicity (ref = White)			
Asian/PI	0.989	0.096	
Black	2.118	0.191	***
Hispanic	2.112	0.169	***
Gender (ref = Male)			
Female	0.940	0.044	
Economic disadvantage (ref = No)			
Yes	1.608	0.107	***
Immigrant (ref = No)			
Yes	0.885	0.073	
English Learner (EL) (ref = No)			
Yes	0.919	0.054	
Intercept	2.302	0.143	***
N	14,622		

***p<0.001 **p<0.01 *p<0.05 +p<0.10

Note: All between group differences were tested for significance (available upon request).

Source: HISD administrative data (student and campus-level), 2018-2019.

Table 2. Odds ratios from logistic regression models predicting having pre-k within one mile of residence for 2018-19 kindergarten students.

	Odds Ratio	Std. Error	p-value
Race/ethnicity (ref = White)			
Asian/PI	0.546	0.049	***
Black	0.872	0.063	+
Hispanic	1.333	0.089	***
Gender (ref = Male)			
Female	1.069	0.036	+
Economic disadvantage (ref = No)			
Yes	1.120	0.059	*
Immigrant (ref = No)			
Yes	0.887	0.057	+
English Learner (EL) (ref = No)			
Yes	0.848	0.036	***
Intercept	1.254	0.070	***
N	14,622		

***p<0.001 **p<0.01 *p<0.05 + p<0.10

Note: All between group differences were tested for significance (available upon request).

Source: HISD administrative data (student and campus-level), 2018-2019 & ArcMap Street Maps Premium 2018.

Table 3. Odds ratios from logistic regression models of a zone-level analysis predicting having a pre-k on zoned campus in elementary zone, by school demographic composition.

	Odds Ratio	Std. Error	p-value
Racial/ethnic composition (ref = % White)			
% Asian/PI	1.059	0.067	
% Black	1.091	0.076	
% Hispanic	1.115	0.073	
% Other race	1.044	0.284	
% Students classified as English learners	0.967	0.031	
% Students classified as having economic disadvantage	0.973	0.050	
Intercept	0.035	0.122	
N	163		

$^{***}p<0.001$ $^{**}p<0.01$ $^{*}p<0.05$ $^{+}p<0.10$

Note: All between group differences were tested for significance (available upon request).

Source: HISD administrative data (student and campus-level), 2018-2019.

Methodological Appendix

Measuring Relative Pre-K Need

Relative pre-k need is an indicator of which elementary school zones in HISD boundaries may have higher need than others, using data from the Census Bureau's American Community Survey (ACS) 2011-15. ACS provides estimates of population-level information, with the intention of helping communities understand the needs of their population.

To create an indicator of relative pre-k need, we begin with three pieces of information from the ACS:

1. The number of children under the age of 5 in a Census tract (Aggregated from Source Table: B01001)

2. The proportion of households speaking a language other than English at home in a Census tract (Aggregated from Source Table: B99162)

3. The proportion of households below poverty line in a Census tract (Aggregated from Source Table: C17002)

These three indicators are used as they are connected to the way in which students qualify for free, public pre-k in Texas. While this does not capture every way in which students qualify for these programs, a majority of students in HISD likely qualify because of non-proficiency in English or economic disadvantage.

First, each of these indicators at the Census tract level are aggregated to create an indicator at an HISD elementary school zone level, with each tract that exists within an elementary school zone contributing to the average for that zone. A Census tract does not have to be completely encompassed by the zone boundaries, so some Census tracts may contribute to the averages for multiple zones.

Second, each of the three, new, zone-level variables are standardized across the district, so that each elementary zone would have z-scores for each variable, indicating whether they are above or below the district average for the number of under 5 year old children in the zone, the proportion of households speaking a language other than English in the zone, and the proportion of households below poverty line in the zone.

Finally, the three indicators are summed to create an index, with each contributing equally:

> Relative pre-k need = z(number of children under 5) + z(proportion of households speaking language other than English) + z(proportion of households below poverty line)

For the purposes of map creation in this report, we have chosen to divide this final index into quintiles, with the lowest quintile representing the area of lowest relative need and highest quintile representing an area of highest relative need.

Endnotes

i Catt, A. D., & Shaw, M. (2018). Indiana's Schooling Deserts (p. 64). Indianapolis: Edchoice.

Hastings, J., Van Weelden, R., & Weinstein, J. (2007). Preferences, Information, and Parental Choice Behavior in Public School Choice (No. w12995). Cambridge, MA: National Bureau of Economic Research. https://doi.org/10.3386/w12995

Hillman, N. W. (2016). Geography of College Opportunity: The Case of Education Deserts. American Educational Research Journal, 53(4), 987–1021. https://doi.org/10.3102/0002831216653204

Hillman, N., & Weichman, T. (2016). Education Deserts: The Continued Significance of "Place" in the Twenty-First Century, 24.

Jepsen, C., & Montgomery, M. (2009). Miles to go before I learn: The effect of travel distance on the mature person's choice of a community college. Journal of Urban Economics, 65(1), 64–73. https://doi.org/10.1016/j.jue.2008.08.004

Lubienski, C., Gulosino, C., & Weitzel, P. (2009). School Choice and Competitive Incentives: Mapping the Distribution of Educational Opportunities across Local Education Markets. American Journal of Education, 115(4), 601–647. https://doi.org/10.1086/599778

Miller, P. M. (2012). Mapping Educational Opportunity Zones: A Geospatial Analysis of Neighborhood Block Groups. The Urban Review, 44(2), 189–218. https://doi.org/10.1007/s11256-011-0189-7

Roscigno, V. J., Tomaskovic-Devey, D., & Crowley, M. (2006). Education and the Inequalities of Place. Social Forces, 84(4), 2121–2145. Retrieved from http://www.jstor.org/stable/3844492

Tate, W. F. (2008). "Geography of Opportunity": Poverty, Place, and Educational Outcomes. Educational Researcher, 37(7), 397–411. Retrieved from http://www.jstor.org/stable/25209024

Turley, R. N. L. (2009). College Proximity: Mapping Access to Opportunity. Sociology of Education, 82(2), 126–146. Retrieved from https://www.jstor.org/stable/40376042

ii Andre-Bechely, L. (2007). Finding space and managing distance: Public school choice in an urban California district. Urban studies, 44(7), 1355-1376.

Burgess, S., Greaves, E., Vignoles, A., & Wilson, D. (2014). What parents want: School preferences and school choice. The Economic Journal, 125(587), 1262-1289.

Harris, D. N., & Larsen, M. (2015). What schools do families want (and why). Policy Brief (New Orleans, LA: Education Research Alliance for New Orleans.

He, S. Y., & Giuliano, G. (2018). School choice: understanding the trade-off between travel distance and school quality. Transportation, 45(5), 1475-1498.

iii Dobbins, D., Tercha, J., McCready, M., & Liu, A. (2016). Child Care Deserts: Developing Solutions to Child Care Supply and Demand (p. 28). Child Care Aware.

Fuller, B., & Liang, X. (1996). Market Failure? Estimating Inequality in Preschool Availability. Educational Evaluation and Policy Analysis, 18(1), 31–49. https://doi.org/10.2307/1164229

Greenberg, E. (n.d.). Barriers to Preschool Participation for Low-Income Children of Immigrants in Silicon Valley: Part II (p. 55). Washington D.C.: Urban Institute.

Guzman, L., Forry, N., & Zaslow, M. (2009). "Design Phase of the National Study of Child Care Supply and Demand—2010 (p. 121). Office of Planning, Research and Evaluation Administration for Children and Families U.S. Department of Health and Human Services.

Malik, R., & Hamm, K. (2017). Mapping America's Child Care Deserts. Washington D.C.: Center for American Progress. Retrieved from https://www.americanprogress.org/issues/early-childhood/reports/2017/08/30/437988/mapping-americas-child-care-deserts/

Reichman, J. (2017). Mapping Child Care Deserts in Texas. Children At Risk. Retrieved from https://www.januaryadvisors.com/mapping-child-care-deserts-across-texas

iv Blagg, K., Chingos, M., Corcoran, S. P., Cordes, S. A.,Cowen, J., Denice, P., Gross, B., Lincove, J., Sattin-Bajaj, C., Schwartz, A., & Valant, J. (2018). The road to school: How far students travel to school in the choice-rich cities of Denver, Detroit, New Orleans, New York City, and Washington, DC. Urban Institute Student Transportation Working Group, https://www.urban.org/sites/default/files/publication/97151/the_road_to_school_6.pdf.

v ibid.

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The Kinder Institute for Urban Research builds better cities and improves people's lives by bringing together data, research, engagement and action.

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