

MEMORANDUM

June 17, 2014

TO: Board Members

FROM: Terry B. Grier, Ed.D.
Superintendent of Schools

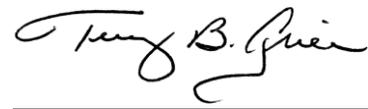
SUBJECT: **PREKINDERGARTEN EDUCATION PROGRAM: EFFECTS OF HISD
PREKINDERGARTEN ON KINDERGARTEN PERFORMANCE, 2013–2014**

CONTACT: Carla Stevens, (713) 556-6700

The purpose of this evaluation was to evaluate academic performance of students who attended HISD prekindergarten programs with the performance of students who were not enrolled in HISD prekindergarten programs in the previous year. The most notable findings of this evaluation were: a) the performance of students who attended HISD prekindergarten programs outperformed their peers who did not attend HISD prekindergarten programs on the 2013–2014 kindergarten Stanford and Aprenda reading and mathematics subtests; b) at the student group level, the results show that HISD prekindergarten programs had positive effects on Black, Hispanic, economically-disadvantaged, special education, LEP and at-risk students' kindergarten Stanford and Aprenda reading and mathematics performance.

Administrative Response: The HISD Early Childhood Department will continue to coordinate and geo-target recruitment efforts to communities with campuses who have enrollment capacity to ensure increased enrollment of eligible students. The department will also continue to provide aligned curriculum, instruction, and assessments to serve the academic needs of all prekindergarten students.

Should you have any questions or require any further information, please contact me or Carla Stevens in the Department of Research and Accountability, at 713-556-6700.



TBG

TBG/CS:lp

cc: Superintendent's Direct Reports
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RESEARCH

Educational Program Report

PREKINDERGARTEN EDUCATION PROGRAM: EFFECTS OF HISD PREKINDERGARTEN ON KINDERGARTEN PERFORMANCE, 2013–2014

DEPARTMENT OF RESEARCH AND ACCOUNTABILITY
HOUSTON INDEPENDENT SCHOOL DISTRICT



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PREKINDERGARTEN EDUCATION PROGRAM: EFFECTS OF HISD PREKINDERGARTEN ON KINDERGARTEN PERFORMANCE, 2013–2014

Executive Summary

Program Description

In compliance with the Texas Education Code § 29.153, the Houston Independent School District (HISD) has provided free prekindergarten classes for eligible Houston area four-year old students since the 1985–1986 academic year. The program curriculum focuses on beginning literacy, numeracy, social emotional development as well as supporting the individual linguistic and cultural needs of the children served. The prekindergarten program curriculum forms the basis of children's future academic success. The purpose of this evaluation is to examine the extent that students benefit from attending HISD prekindergarten. To determine the academic benefits of HISD prekindergarten programs, the academic performance of students who attended HISD prekindergarten programs were compared to students who were not enrolled in HISD prekindergarten programs in the previous year. The report will address the following research questions:

1. The performance of HISD and Non-HISD prekindergarten students on the 2013–2014 kindergarten Stanford 10 and Aprenda 3 reading and mathematics subtests;
2. The effects of HISD prekindergarten programs on students' reading performance by student subgroups; and
3. The effects of HISD prekindergarten programs on students' mathematics performance by student subgroups.

This evaluation also examined prekindergarten program enrollment trends and the proportion of kindergarten students enrolled in HISD and Non-HISD prekindergarten programs from 2006–2007 to 2013–2014.

Highlights

- Overall, the analysis showed that there is a statistically significant difference in the mean NCE scores on both 2013–2014 kindergarten Stanford and Aprenda reading and mathematics subtests between students who attended HISD prekindergarten programs and their peers who did not attend HISD prekindergarten programs.
- Comparisons by ethnicity showed that Black and Hispanic students who attended HISD prekindergarten programs outperformed their peers who did not attend HISD prekindergarten programs on the 2013–2014 kindergarten Stanford reading and mathematics subtests.
- Economically-disadvantaged, special education, limited English proficiency (LEP), and at-risk students who attended HISD prekindergarten programs outperformed their peers who did not attend HISD prekindergarten programs on the 2013–2014 kindergarten Stanford reading and mathematics subtests.

- The performance of students who attended HISD prekindergarten programs outperformed their peers who did not attend HISD prekindergarten programs on the kindergarten Aprenda reading and mathematics subtests in all student groups (ethnicity, gender, economically-disadvantaged, special education placement, LEP, and at-risk).

Recommendations

- HISD may consider modifying its student information database to collect prekindergarten educational placement at students' enrollment in HISD. This will enable district administrators and researchers to determine the full impact of HISD prekindergarten programs with other non-HISD prekindergarten class models or with students who did not attend prekindergarten programs.
- Given findings suggesting that HISD prekindergarten students are benefitting from the program, elementary grade curricular in the district should consider building on the prekindergarten curriculum to enhance the academic gains made by these students as they progress through elementary school.
- In future evaluations, observation data of classroom instruction may be collected to validate the implementation of the districts' plan in HISD prekindergarten classrooms.

Administrative Response

The HISD Early Childhood Department will continue to coordinate and geo-target recruitment efforts to communities with campuses who have enrollment capacity to ensure increased enrollment of eligible students. The HISD Early Childhood Department will continue to provide aligned curriculum, instruction, and assessments to serve the academic needs of all prekindergarten students.

Introduction

Early childhood education researchers have found that high quality prekindergarten programs enhance students' cognitive development and increase academic achievement, particularly for students from disadvantaged backgrounds (Brooks-Gunn, 2003; Currie, 2001; Gormley, Gayer, Phillips, Dawson, 2005; Magnuson, Rhum, and Waldfogel, 2007; Shager et al., 2013). Review of the literature also suggests that the beneficial effects of an early childhood interventions are typically much larger for more disadvantaged youth (see Currie, 2001; Magnuson et al., 2007). Despite the improved outcomes for economically-disadvantaged children who attend early childhood programs (i.e., Head Start), their average levels of achievement tend to be lower compared to their non-economically-disadvantaged peers (Currie & Neidell, 2007). The effects of early childhood intervention on low socioeconomic students' academic outcomes are well documented (e.g., Aikens & Barbarin, 2008; Brooks-Gunn, 2003; Chatterji, 2006). The current evaluation examined the effects of HISD's prekindergarten programs on student academic achievement by taking consideration of students' socioeconomic status, special education placement, LEP, and at-risk status.

Methods

Data Collection and Analysis

- The current analysis focused on the academic performance of the 2013–2014 HISD kindergarten students. These kindergarten students were classified into two groups: HISD and Non-HISD prekindergarten students, based on their prekindergarten enrollment status in 2012–2013. **Table 1** (p. 15) summarizes the demographic characteristics of the 2013–2014 HISD kindergarteners by their prekindergarten enrollment status.
- The reading and mathematics tests in this evaluation were the 2013–2014 Stanford 10 and Aprenda 3 reading and mathematics subtests.
- Both Stanford and Aprenda are norm-referenced assessments, and were administered in December of students' kindergarten year. In order to compare scores from different administrations and from different instruments, the Normal Curve Equivalents (NCEs) were used for all subtests in this evaluation.
- Effect size was used to quantify the size of the performance difference between HISD and Non-HISD prekindergarten students. Borman and D'Agostino (1996) suggested that the average effect size associated with Title I programs is $d = 0.15$. Kulik, Kulik, and Bangert (1984) suggested that the average effect size in achievement test score is 0.32. Therefore, the effect size of $d = 0.15$ was considered as small-modest, $d = 0.3$ as modest-large, and $d = 0.5$ as large in this report.
- In this evaluation, analyses were conducted to examine the academic achievement differences on reading and mathematics subtests between HISD prekindergarten students and Non-HISD prekindergarten students. The following characteristics were explored in determining which student demographics were related to their reading and mathematics performance. These student characteristics included ethnicity, gender, economically-disadvantaged status, special education placement, LEP, and at-risk status.

Data Limitations

- The Non-HISD prekindergarten students may receive some other form of early childhood intervention before entering HISD kindergarten.
- A randomized experimental design was not implemented to evaluate the effects of HISD prekindergarten on student's academic performance; therefore, findings concerning the magnitude of the effect of HISD prekindergarten program on kindergarten performance may be biased.

Results

What was the HISD prekindergarten program enrollment trend in the last seven years?

- **Figure 1** (p. 5) presents the prekindergarten enrollment trend of HISD students from 2006–2007 through the 2013–2014 academic years.
- The prekindergarten enrollment decreased from 16,192 in 2012–2013 to 16,042 in 2013–2014, which is a 0.9% drop in the enrollment in 2013–2014 compared to the previous year.

What was the seven-year trend in the proportion of kindergarten students who were enrolled in HISD prekindergarten the previous year?

- **Figure 2** (p. 5) depicts the percent of kindergarteners from 2006–2007 through 2013–2014 who were enrolled in an HISD prekindergarten program the previous year.
- The proportion of kindergarteners who attended HISD prekindergarten the previous year increased on average by 1.0 percent annually from 2006–2007 through 2011–2012 with a slight drop from 2011–2012 through 2013–2014.
- In 2006–2007, approximately 63.0% of kindergarteners were enrolled in HISD prekindergarten the previous year. By 2013–2014, the proportion of kindergarteners who attended HISD prekindergarten was 65.5%.

Figure 1. The 2006–2014 Enrollment Trends of Students Who Attended HISD Prekindergarten

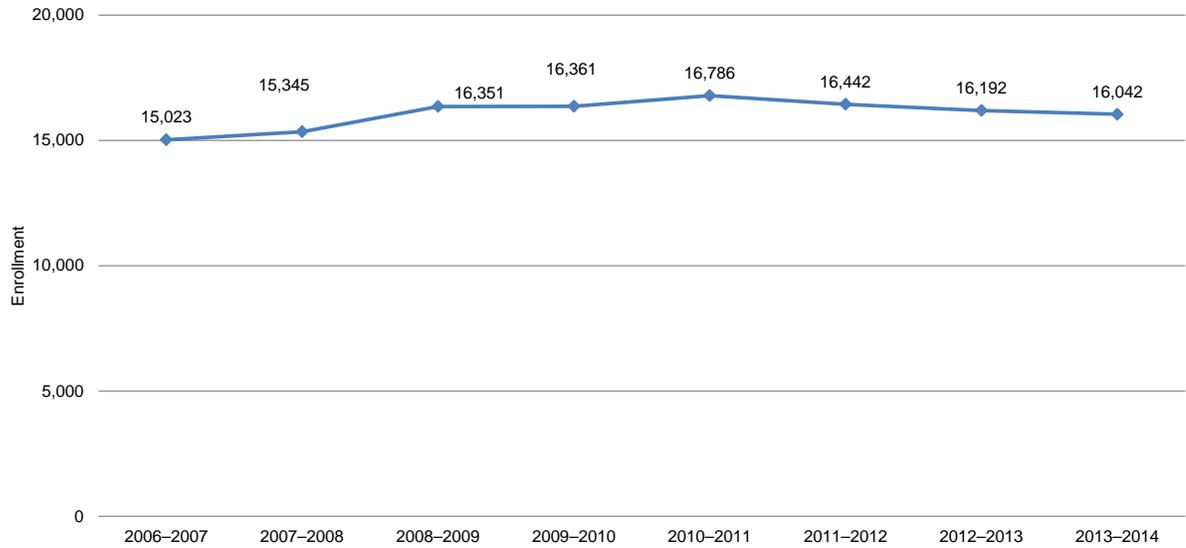
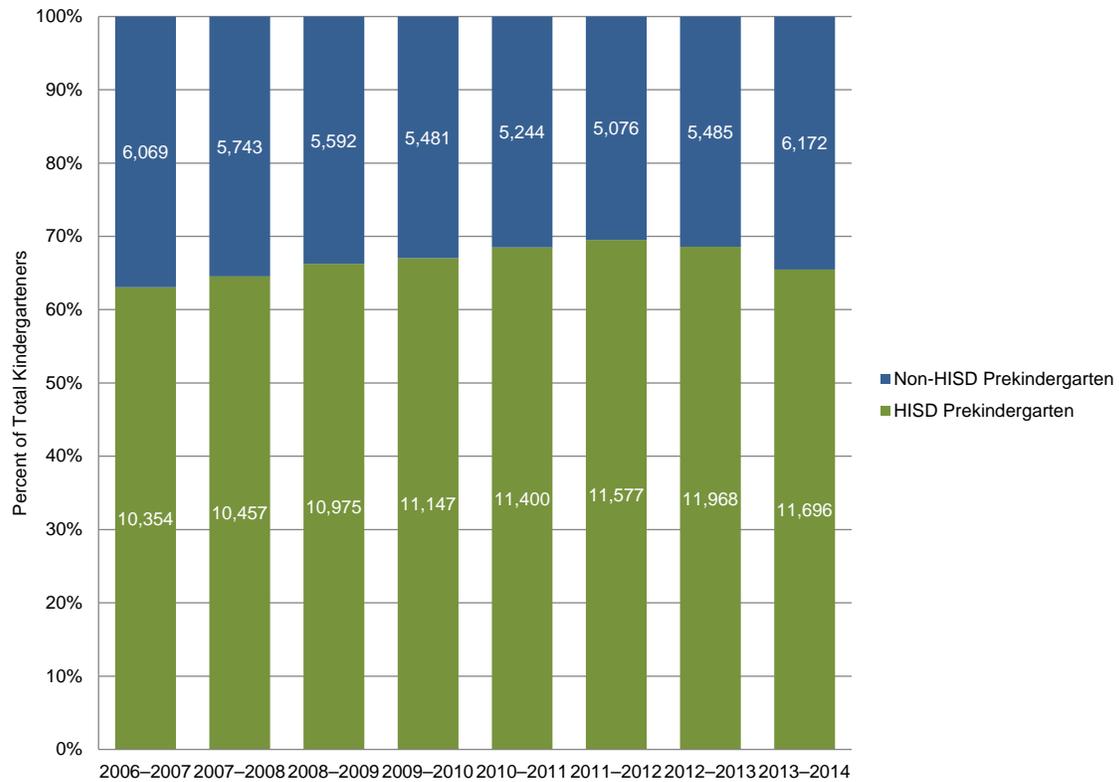


Figure 2. Seven-year Trend in the Percent and Number of Kindergarteners by Prekindergarten Enrollment in HISD and Non-HISD Prek Programs



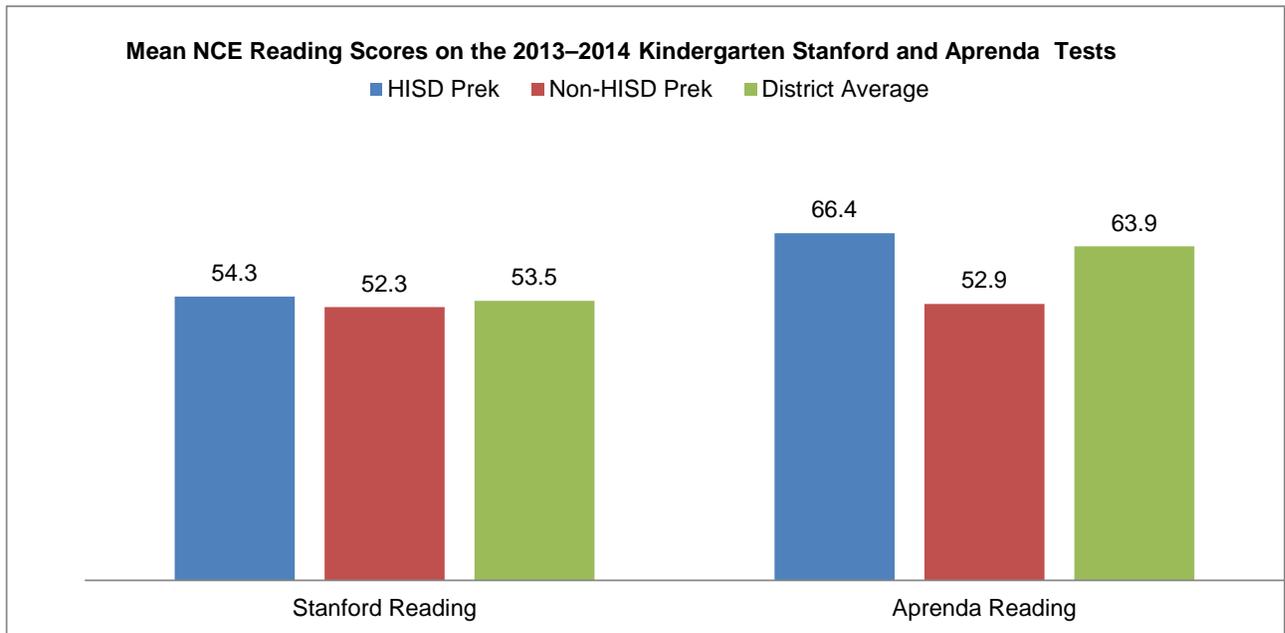
What were the demographic characteristics of HISD and Non-HISD prekindergarten students?

- The demographic characteristics of HISD and Non-HISD prekindergarten students were similar with respect to gender and special education placement, but were different relative to ethnicity, economically-disadvantaged status, LEP, and at-risk status based on their kindergarten enrollment record in 2013–2014 (Table 1, p. 15). Notably, 73.3% of the HISD prekindergarten students were Hispanic, 91.1% were economically-disadvantaged, 53.7% were LEP, and 84.0% were at-risk. These proportions of Hispanic, economically-disadvantaged, LEP and at-risk students were lower in the Non-HISD prekindergarten sample. There is a smaller proportion of White students in the HISD prekindergarten group (2.7%) than in the Non-HISD prekindergarten group (18.3%).

How did HISD and Non-HISD prekindergarten students perform on the 2013–2014 kindergarten Stanford and Aprenda reading subtests?

- The kindergarten reading subtest performance of HISD and Non-HISD prekindergarten students in 2013–2014 were compared by using descriptive statistics and independent two-sample t-tests, and the results are presented in **Figure 3** (p. 7). **Table 2** (p. 16) shows additional descriptive statistics. The similar analytic procedure was applied to the mathematics subtest data.
- The HISD prekindergarten students ($M = 54.3$) obtained a higher mean NCE score than Non-HISD prekindergarten students ($M = 52.3$) on the 2013–2014 kindergarten Stanford reading subtest. On the 2013–2014 kindergarten Aprenda reading subtest, HISD prekindergarten students ($M = 66.4$) obtained a higher mean NCE scores than their peers who did not attend HISD prekindergarten programs ($M = 52.9$) (Figure 3, p. 7).
- The HISD prekindergarten students obtained higher mean NCE scores than the district mean NCE scores on both 2013–2014 kindergarten Stanford and Aprenda reading subtests (Figure 3, p. 7).
- Independent t-test was used to examine the performance difference on the 2013–2014 kindergarten Stanford and Aprenda reading subtests between HISD and Non-HISD prekindergarten students. The t-test results showed that the mean NCE score differences on the 2013–2014 kindergarten Stanford and Aprenda reading subtests between HISD prekindergarten and Non-HISD prekindergarten students were statistically significant ($p < 0.05$) (Table 2, p. 16).

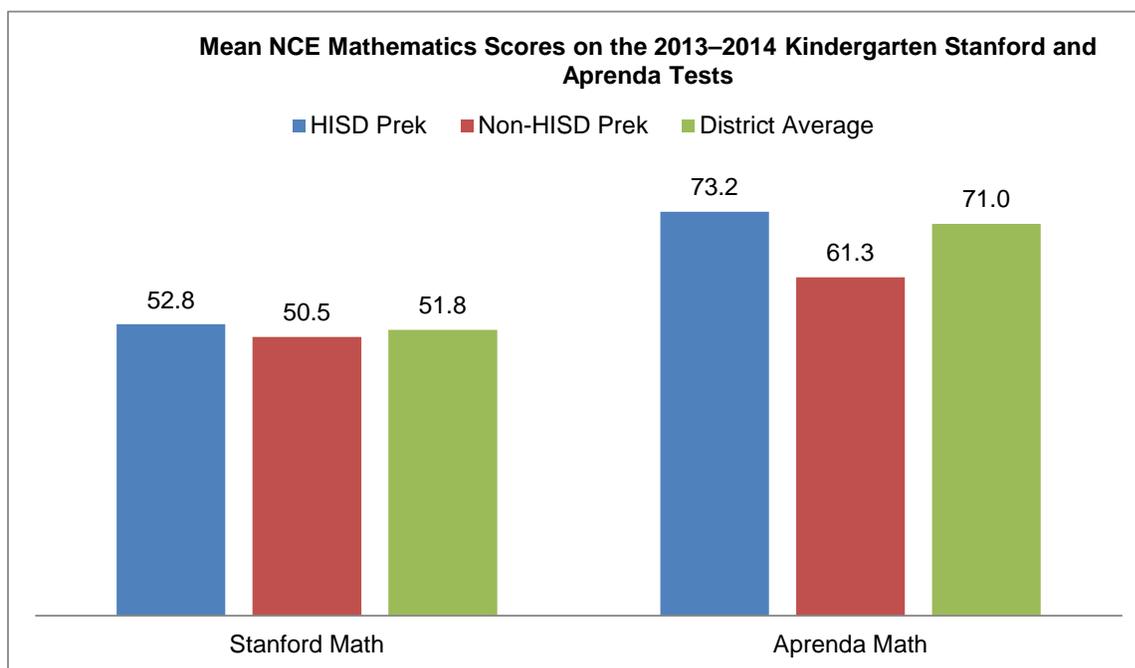
Figure 3. Mean NCE Scores on the 2013–2014 Kindergarten Stanford and Aprenda Reading Subtests for HISD and Non-HISD Prekindergarten Students



How did HISD and Non-HISD prekindergarten students perform on the 2013–2014 kindergarten Stanford and Aprenda mathematics subtests?

- **Figure 4** (p. 8) shows that students who attended HISD prekindergarten programs (M = 52.8) scored higher than their peers who did not attend HISD prekindergarten programs (M = 50.5) the previous year on the 2013–2014 kindergarten Stanford mathematics subtest. An even greater difference was evidenced on the Aprenda test (M = 73.2 vs. M = 61.3).
- HISD prekindergarten students obtained higher mean NCE scores than the district mean scores on both 2013–2014 kindergarten Stanford and Aprenda mathematics subtests (Figure 4, p. 8).
- Independent t-test results showed that the mean NCE score differences on the 2013–2014 kindergarten Stanford and Aprenda mathematics subtests between HISD prekindergarten and Non-HISD prekindergarten students were statistically significant ($p < 0.05$) (**Table 3**, p. 16).

Figure 4. Mean NCE Scores of Students on the 2013–2014 Kindergarten Stanford and Aprenda Mathematics Subtests for HISD and Non-HISD Prekindergarten Students

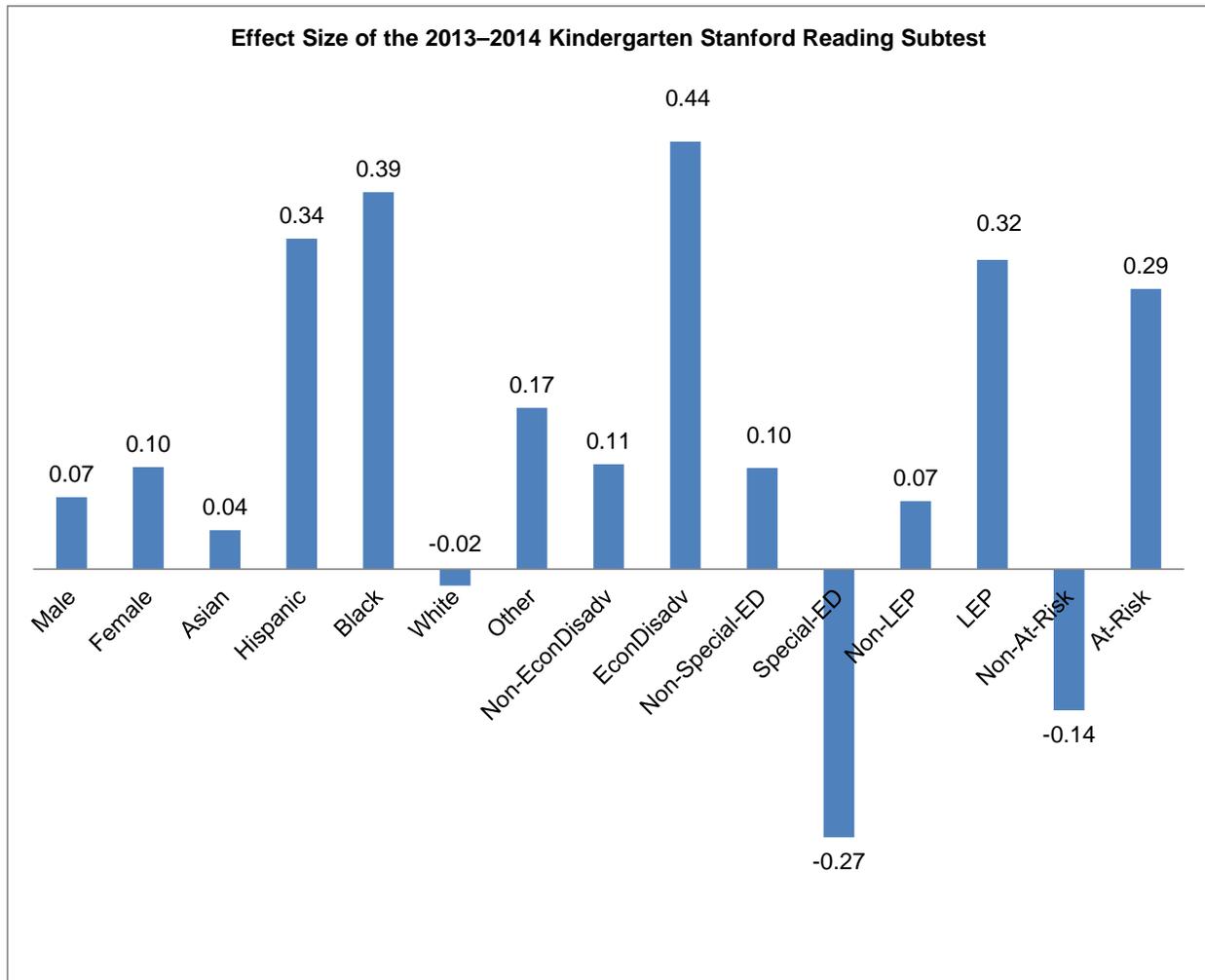


Did HISD and Non-HISD prekindergarten students perform differently on kindergarten reading subtests by student groups?

- At the student group level analysis, **Table 4** (p. 17) shows that Black and Hispanic prekindergarten students outperformed their Non-HISD prekindergarten peers on the 2013–2014 kindergarten Stanford reading subtest. The effect sizes were 0.34 and 0.39, respectively, for Black and Hispanic subgroups. The magnitude of the differences was modest-large (**Figure 5**, p. 9).
- Table 4 (p. 17) shows that the economically-disadvantaged students who attended HISD prekindergarten scored higher on the 2013–2014 Stanford reading subtest compared to their peers who did not attend HISD prekindergarten (mean difference = 8.6 NCEs). The corresponding effect size for the mean score difference between HISD and Non-HISD economically-disadvantaged students is 0.44. The effect size indicated that the magnitude of the difference was modest-large (Figure 5, p. 9).
- Among students who attended HISD prekindergarten programs, economically-disadvantaged students obtained a lower mean NCE score than their non-economically-disadvantaged peers on the 2013–2014 kindergarten Stanford reading (mean difference = 11 NCEs) (Table 4, p. 17). However, this is smaller than the gap for those students who did not attend HISD prekindergarten (mean difference = 17.2 NCEs).

- Table 4 (p. 17) shows that LEP and at-risk HISD prekindergarten students outperformed their Non-HISD prekindergarten peers on the 2013–2014 kindergarten Stanford reading subtest. The effect sizes were 0.32 and 0.29, respectively, for LEP and at-risk subgroups. The effect sizes indicated that the magnitude of the mean score differences were modest-large (Figure 5, p. 9).

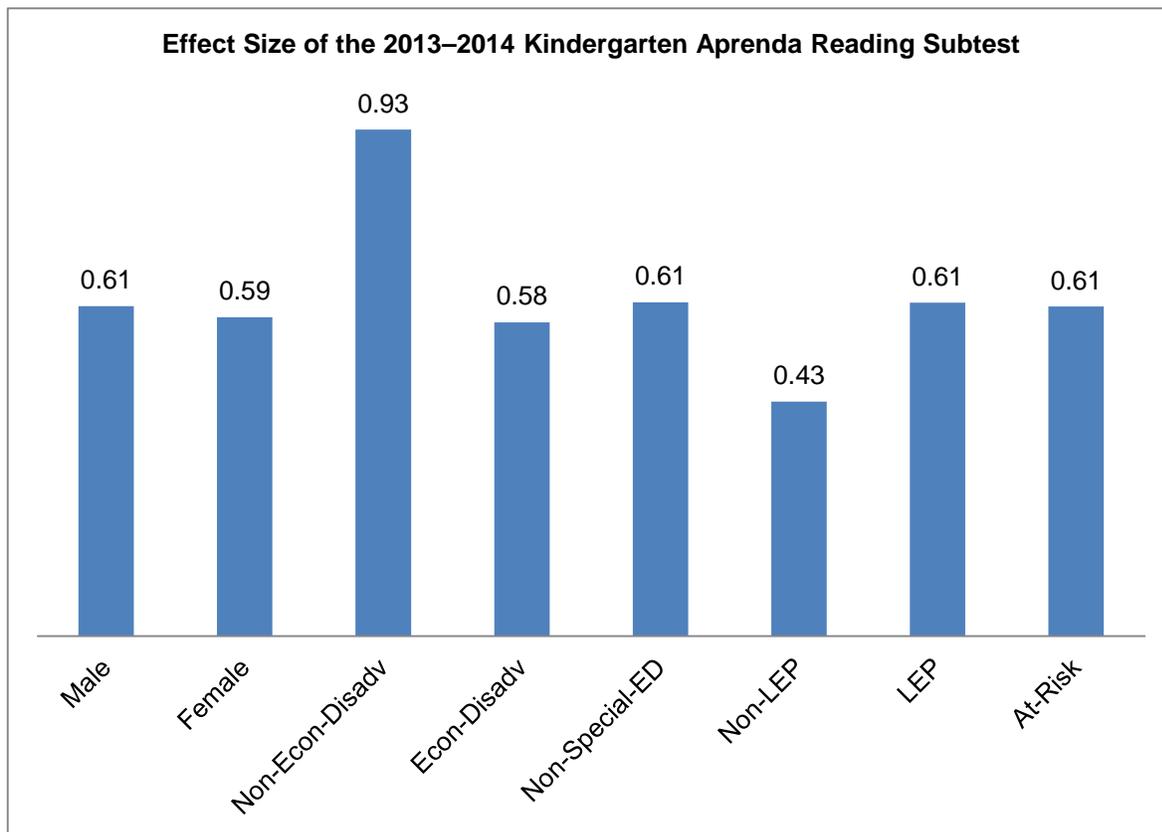
Figure 5. Effect sizes of HISD Prekindergarten Students vs. Non-HISD Prekindergarten Students on the 2013–2014 Kindergarten Stanford Reading Subtest by Student Groups



Note. Defined $d = 0.15$ as small-modest, $d = 0.3$ as modest-large, $d = 0.5$ as large.

- **Table 5** (p. 18) shows that HISD prekindergarten students obtained higher mean NCE scores on the 2013–2014 kindergarten Aprenda reading subtest than their Non-HISD prekindergarten peers within the following student groups: gender, economically-disadvantaged status, LEP status, and at-risk.
- **Figure 6** (p. 10) shows that the effect size within each student group was modest or large ($d > 0.3$) when HISD prekindergarten students were compared with their Non-HISD prekindergarten peers on the 2013–2014 kindergarten Aprenda reading subtest.

Figure 6. Effect sizes of HISD Prekindergarten Students vs. Non-HISD Prekindergarten Students on the 2013–2014 Kindergarten Aprenda Reading Subtest by Student Groups



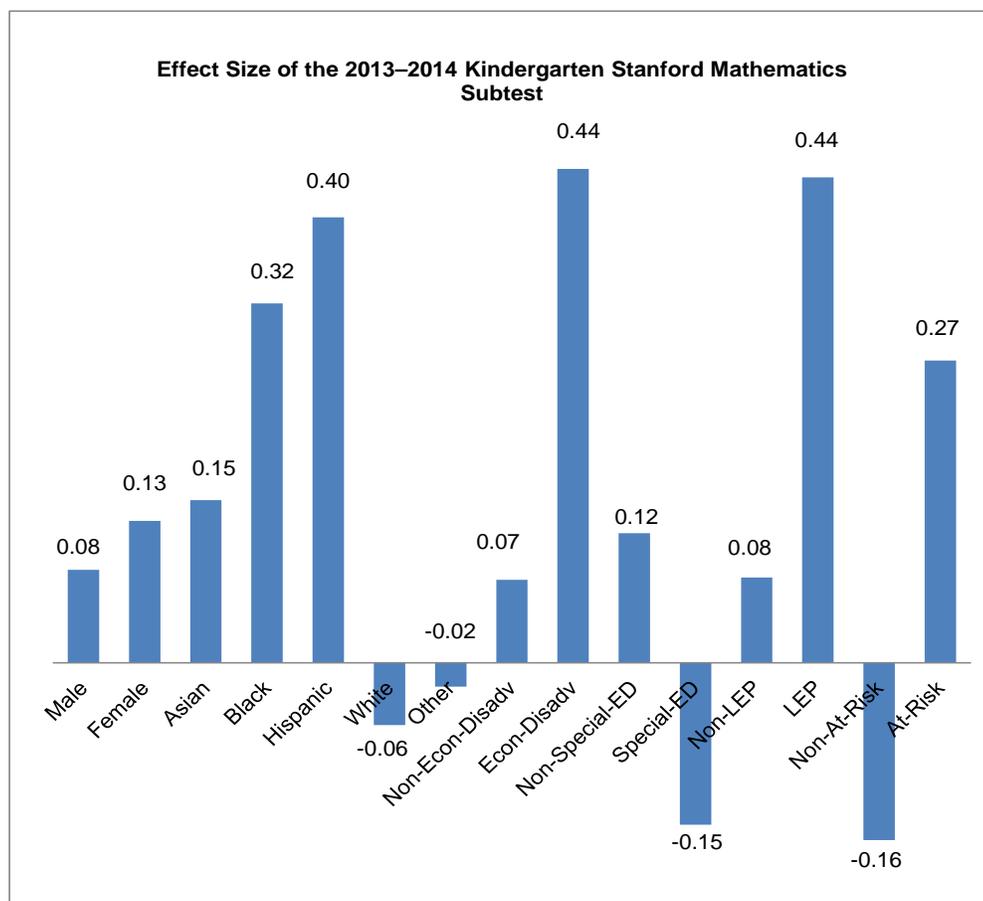
Note. Defined $d = 0.15$ as small-modest, $d = 0.3$ as modest-large, $d = 0.5$ as large.

Did HISD and Non-HISD prekindergarten students perform differently on kindergarten mathematics subtests by student groups?

- **Table 6** (p. 19) shows that Black and Hispanic HISD prekindergarten students outperformed their Non-HISD prekindergarten peers on the 2013–2014 kindergarten Stanford mathematics subtest. The effect sizes for the mean NCE score difference were 0.32 and 0.40, respectively, for Black and Hispanic subgroups. The effect size indicated that the magnitude of the differences was modest-large (**Figure 7**, p. 11).
- Economically-disadvantaged students who attended HISD prekindergarten scored higher on the 2013–2014 Stanford mathematics subtest compared to economically-disadvantaged students who did not attend HISD prekindergarten (mean difference = 9.3 NCEs) (Table 6, p. 19). The corresponding effect size for the mean NCE score difference between HISD and Non-HISD economically-disadvantaged students was 0.44. The effect size indicated that the magnitude of the difference was modest-large (Figure 7, p. 11).

- Among students who attended HISD prekindergarten, the economically-disadvantaged students obtained a lower mean NCE score than their non-economically-disadvantaged peers on the 2013–2014 kindergarten Stanford mathematics subtest (mean difference = 10.2 NCEs) (Table 6, p. 19). Similar to the results in reading, this gap was smaller than the one evidenced for students who did not attend HISD prekindergarten (mean difference = 18.0 NCEs).
- Table 6 (p. 19) shows that LEP and at-risk HISD prekindergarten students outperformed their Non-HISD peers on the 2013–2014 kindergarten Stanford mathematics subtest. The effect sizes for the mean NCE score differences were 0.44 and 0.27, respectively, for LEP and at-risk subgroups. The effect sizes indicated that the magnitude of the mean score differences were modest-large (Figure 7, p. 11).
- Among students who attended HISD prekindergarten, at-risk students obtained a lower mean NCE score than their non-at-risk peers on the 2013–2014 kindergarten Stanford mathematics subtest (16.5 NCEs) (Table 6, p. 19). Nevertheless, the gap was smaller than for those students who did not attend HISD prekindergarten (mean difference = 24.9 NCEs).

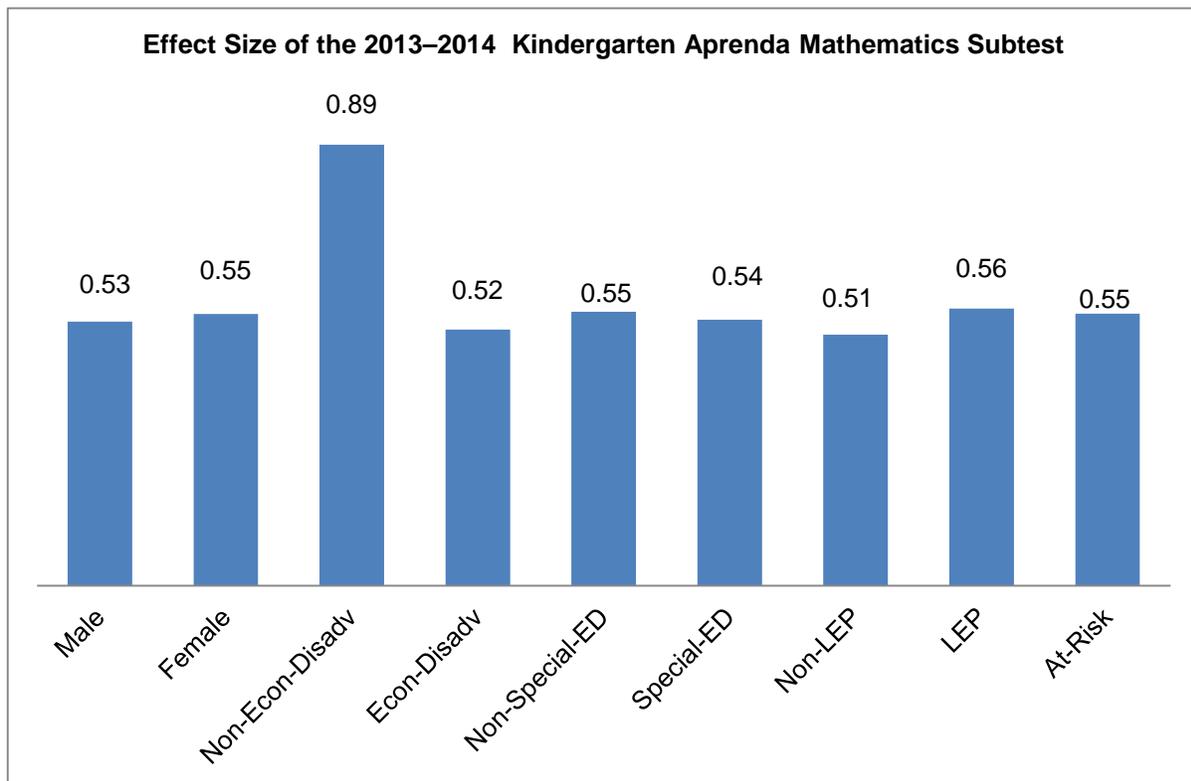
Figure 7. Effect sizes of HISD Prekindergarten Students vs. Non-HISD Prekindergarten Students on the 2013–2014 Kindergarten Stanford Mathematics Subtest by Student Groups



Note. Defined $d = 0.15$ as small-modest, $d = 0.3$ as modest-large, $d = 0.5$ as large.

- **Table 7** (p. 20) shows that HISD prekindergarten students obtained higher mean NCE scores on the 2013–2014 kindergarten Aprenda mathematics subtest than their Non-HISD prekindergarten peers within all of the student groups: gender, economically-disadvantaged status, special education placement, LEP, and at-risk.
- **Figure 8** (p. 12) shows that the effect size within each student group was modest or large ($d > 0.3$) when HISD prekindergarten students were compared with their Non-HISD prekindergarten peers.

Figure 8. Effect sizes of HISD Prekindergarten Students vs. Non-HISD Prekindergarten Students on the 2013–2014 Kindergarten Aprenda Mathematics Subtest



Note. Defined $d = 0.15$ as small-modest, $d = 0.3$ as modest-large, $d = 0.5$ as large.

Discussion

The overall goal of prekindergarten education is to increase school readiness of disadvantaged students who may otherwise fall behind because of their environments and conditions. The current evaluation examined the effect of 2012–2013 HISD prekindergarten programs on students' performance in kindergarten during the 2013–2014 academic year. Findings from the evaluation suggested that HISD prekindergarten programs had positive effects on Black, Hispanic, economically-disadvantaged, special education, LEP and at-risk students' kindergarten Stanford and Aprenda reading and mathematics performance. The findings suggested that HISD prekindergarten program may help to close the achievement gap between disadvantaged students and their non-disadvantaged peers.

A methodological challenge of this evaluation is selection bias. The Non-HISD prekindergarten students in this evaluation may have had preschool experience in other Non-HISD prekindergarten programs. The current HISD student information database does not identify children who did not attend any early childhood education programs or attended Non-HISD prekindergarten programs , therefore, there are two recommendations. First, policymakers must be cautious when they make inference about the quality of HISD prekindergarten programs based on the performance difference between HISD prekindergarten and Non-HISD prekindergarten groups. Second, HISD may consider modifying its student information database to collect prekindergarten educational placement information when students enroll in HISD kindergarten. This will enable district administrators and researchers to determine the full impact of HISD prekindergarten education. Another limitation of this evaluation is that the kindergarten academic performance was the only outcome variable to evaluate the quality of HISD prekindergarten programs. The observation data of classroom instruction may be collected to assess how HISD early childhood programs are implemented at the campus level, and to what extent quality and quantity of implementation may contribute to positive program outcomes.

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Table 1. Demographic Characteristics of HISD Kindergarteners by Prekindergarten Enrollment Status in 2012–2013

		HISD Prek		Non-HISD Prek	
		(n = 11,696)		(n = 6,172)	
Demographic Characteristic		n	%	n	%
Gender	Male	5,868	50.2	3,241	52.5
	Female	5,828	49.8	2,931	47.5
Ethnicity	Asian	269	2.3	492	8.0
	Black	2,456	21.0	1,580	25.6
	Hispanic	8,568	73.3	2,816	45.6
	White	312	2.7	1,132	18.3
	Other	91	0.8	152	2.5
Economically-Disadvantaged	No	1,037	8.9	2,352	38.1
	Yes	10,659	91.1	3,820	61.9
Special Education	No	11,265	96.3	5,915	95.8
	Yes	431	3.7	257	4.2
Limited English Proficient (LEP)	No	5,410	46.3	4,539	73.5
	Yes	6,286	53.7	1,633	26.5
At-Risk	No	1,872	16.0	1,612	26.1
	Yes	9,824	84.0	4,560	73.9

Note. All data retrieved from PEIMS 2013–2014. The demographic information used in this evaluation was based on student information at the time that the student enrolled in kindergarten.

Table 2. Performance of HISD PreK Students and Non-HISD PreK Students on the 2013–2014 Kindergarten Stanford and Apenda Reading Subtests

	HISD Prek			Non-HISD Prek			Mean Difference	t	df	Sig. (2-tailed)
	Mean	SD	n	Mean	SD	n				
Stanford	54.3	19.9	6,243	52.3	22.8	4,513	2.0	4.7	8,914.1	<0.001
Apenda	66.4	22.6	5,083	52.9	22.9	1,154	13.5	18.3	6,235	<0.001

Table 3. Performance of HISD PreK Students and Non-HISD PreK Students on the 2013–2014 Kindergarten Stanford and Apenda Mathematics Subtests

	HISD Prek			Non-HISD Prek			Mean Difference	t	df	Sig. (2-tailed)
	Mean	SD	n	Mean	SD	n				
Stanford	52.8	20.6	6,282	50.5	23.5	4,567	2.3	5.4	9,038.4	<0.001
Apenda	73.2	21.2	5,081	61.3	24.7	1,154	11.9	15.2	1,562.1	<0.001

Table 4. Performance of HISD PreK Students and Non-HISD PreK Students on the 2013–2014 Kindergarten Stanford Reading by Student Groups

Student Group		HISD Prek			Non-HISD Prek			Mean Difference	Effect Size (d)
		Mean	SD	n	Mean	SD	n		
Gender	Male	51.9	20.0	3,116	50.3	23.0	2,354	1.6	0.07
	Female	56.8	19.6	3,127	54.6	22.3	2,159	2.2	0.10
Ethnicity	Asian	70.3	20.5	258	69.4	24.5	449	0.9	0.04
	Black	54.0	20.0	2,334	47.1	21.0	1,400	6.9	0.34
	Hispanic	52.5	19.0	3,294	45.1	19.8	1,454	7.4	0.39
	White	60.6	20.6	278	60.9	21.2	1,067	-0.3	-0.02
	Other	63.7	21.2	79	60.1	22.8	143	3.6	0.17
Economically-disadvantaged	No	63.8	20.4	873	61.4	22.6	2,130	2.4	0.11
	Yes	52.8	19.4	5,370	44.2	19.7	2,383	8.6	0.44
Special Education	No	54.7	19.8	6,069	52.5	22.8	4,386	2.2	0.10
	Yes	40.3	19.7	174	46.0	22.8	127	-5.7	-0.27
Limited English Proficient (LEP)	No	54.4	19.7	5,121	52.9	22.6	4,076	1.5	0.07
	Yes	54.1	20.9	1,122	47.2	23.9	437	6.9	0.32
At-Risk	No	67.7	17.7	1,750	70.4	19.9	1,450	-2.7	-0.14
	Yes	49.1	18.3	4,493	43.8	18.7	3,063	5.3	0.29

Table 5. Performance of HISD PreK Students and Non-HISD PreK Students on the 2013–2014 Kindergarten Aprenda Reading by Student Groups

Student Group		HISD Prek			Non-HISD Prek			Mean Difference	Effect Size (d)
		Mean	SD	n	Mean	SD	n		
Gender	Male	64.1	22.7	2,545	50.4	22.5	600	13.7	0.61
	Female	68.6	22.2	2,538	55.5	23.2	554	13.1	0.59
Economically-disadvantaged	No	68.5	21.5	138	48.1	22.7	89	20.4	0.93
	Yes	66.3	22.6	4,945	53.2	22.9	1,065	13.1	0.58
Special Education	No	67.0	22.4	4,928	53.2	23.0	1,128	13.8	0.61
	Yes	47.1	20.1	155	38.2	16.5	26	--	--
Limited English Proficient (LEP)	No	68.1	22.0	45	58.8	21.7	67	9.3	0.43
	Yes	66.3	22.6	5,038	52.5	23.0	1,087	13.8	0.61
At-Risk	No	75.8	17.6	27	68.8	20.7	17	--	--
	Yes	66.3	22.6	5,056	52.6	22.9	1,137	13.7	0.61

Note. Effect size and mean difference were not reported when n<30, and were denoted by "--".

Table 6. Performance of HISD PreK Students and Non-HISD PreK Students on the 2013–2014 Kindergarten Stanford Mathematics by Student Groups

Student Group		HISD Prek			Non-HISD Prek			Mean Difference	Effect Size (d)
		Mean	SD	n	Mean	SD	n		
Gender	Male	51.1	20.9	3,134	49.3	24.3	2,391	1.8	0.08
	Female	54.5	20.1	3,148	51.8	22.5	2,176	2.7	0.13
Ethnicity	Asian	65.4	17.9	257	62.3	22.8	447	3.1	0.15
	Black	50.8	21.2	2,363	43.7	22.9	1,440	7.1	0.32
	Hispanic	52.5	19.9	3,301	44.2	22.1	1,464	8.3	0.40
	White	60.8	19.4	280	61.9	19.8	1,072	-1.1	-0.06
	Other	59.1	20.0	81	59.5	19.2	144	-0.4	-0.02
Economically-disadvantaged	No	61.6	18.8	877	60.1	21.1	2,136	1.5	0.07
	Yes	51.4	20.5	5,405	42.1	22.2	2,431	9.3	0.44
Special Education	No	53.3	20.3	6,105	50.7	23.3	4,440	2.6	0.12
	Yes	37.8	22.6	177	41.4	27.6	127	-3.6	-0.15
Limited English Proficient (LEP)	No	53.0	20.6	5,157	51.3	23.2	4,123	1.7	0.08
	Yes	52.0	20.6	1,125	42.6	24.2	444	9.4	0.44
At-Risk	No	64.7	16.3	1,762	67.4	17.4	1,460	-2.7	-0.16
	Yes	48.2	20.2	4,520	42.5	21.7	3,107	5.7	0.27

Table 7. Performance of HISD PreK Students and Non-HISD PreK Students on the 2013–2014 Kindergarten Aprenda Mathematics by Student Groups

Student Group	HISD Prek			Non-HISD Prek			Mean Difference	Effect Size (d)	
	Mean	SD	n	Mean	SD	n			
Gender	Male	71.7	21.5	2,547	59.9	25.0	601	11.8	0.53
	Female	74.6	20.8	2,534	62.8	24.2	553	11.8	0.55
Economically-disadvantaged	No	74.6	20.0	138	55.2	24.5	90	19.4	0.89
	Yes	73.1	21.2	4,943	61.8	24.6	1,064	11.3	0.52
Special Education	No	73.6	20.9	4,927	61.7	24.5	1,128	11.9	0.55
	Yes	58.0	24.7	154	44.7	26.1	26	13.3	0.54
Limited English Proficient (LEP)	No	79.4	20.9	45	68.3	22.5	67	11.1	0.51
	Yes	73.1	21.2	5,036	60.8	24.7	1,087	12.3	0.56
At-Risk	No	84.4	16.4	27	76.0	21.7	17	--	--
	Yes	73.1	21.2	5,054	61.1	24.6	1,137	12.0	0.55

Note. Effect size and mean difference were not reported when $n < 30$, and were denoted by "--".