

# Early Evidence of Learning Gains at Seattle's South Shore School

**Prepared for  
the Seattle  
Public School  
District &  
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Foundation**

***Final Report***

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## SUMMARY

The South Shore School, an elementary school in Seattle, is the result of an innovative public/private partnership between The New School Foundation and Seattle Public Schools. South Shore's program is based on rigorous, evidence-based interventions that includes high-quality pre-Kindergarten and Kindergarten, small class sizes in early grades, and extra supports for student and faculty. ECONorthwest conducted an evaluation of South Shore's impacts on student performance, comparing it to neighboring schools and to all Seattle Public Schools.

Examining student-level test data across multiple school years, ECONorthwest finds that attendance at South Shore is associated with improved scores on the 3<sup>rd</sup> and 4<sup>th</sup> grade WASL (Washington Assessment of Student Learning) and an increased likelihood of meeting the state benchmarks in math and reading. These effects are large and statistically meaningful, particularly in math. Specifically, we find:

- ▶ Students enrolled at South Shore for 3<sup>rd</sup> grade scored significantly higher in math and moderately higher in reading than demographically comparable students attending other schools.
  - ▶ South Shore 3<sup>rd</sup> graders also are significantly more likely to meet or exceed the WASL benchmarks in both reading and math. The effects of South Shore attendance on WASL performance are similar for 4<sup>th</sup> grade students.
  - ▶ The effects of attending South Shore are larger for students who enrolled during pre-Kindergarten or Kindergarten.
  - ▶ Effects on achievement are consistent across racial and ethnic groups.
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## WHAT IS THE SOUTH SHORE SCHOOL?

Seattle's New School Foundation began in 1998 as a public/private partnership with Seattle Public Schools. Its stated goal is to "transform one school at a time, and in the process, create new models for private support of public education, new sources of community support and new alignments of public resources."<sup>1</sup>

Currently, the New School Foundation primarily contributes to the operation of South Shore School—a public school established in 2002 and in the process of expanding to include grades ranging from pre-K through 8. The New School Foundation provides supplemental funding that allows South Shore to offer numerous enhancements to its educational program.

In the 2008-09 school year, South Shore enrolled approximately 430 students in grades pre-K through 6. Students at South Shore are predominantly African-American and Asian and are drawn mostly from southeastern Seattle.

Specifically, the New School Foundation supports rigorous, evidence-based programs that include the following key elements:

- ▶ High quality, integrated pre-Kindergarten
- ▶ Small class sizes that allow for individualized teaching and learning
- ▶ A wellness program that fosters development of the whole child
- ▶ Tutoring and other academic support for struggling students
- ▶ Enhanced professional development for teachers and staff.<sup>2</sup>

The pre-Kindergarten/Kindergarten program draws from the High/Scope model, which is the most frequently cited demonstration of the effects of early childhood development programs. Findings from a controlled experiment, which operated in Michigan in the 1960s and tracked enrollees into adulthood, indicated that High/Scope attendees had higher high school completion rates than their non-program counterparts (65 percent vs. 45 percent) and outperformed the non-program group on school achievement tests at ages 9, 10, and 14, and on literacy tests at ages 19 and 27. At age 40, 76 percent of program students were employed compared to 62 percent of their non-program peers.<sup>3</sup>

The South Shore School built its class size policy on the findings from the Tennessee STAR experiment—the only wide-scale, randomized field study to examine the effects of class size on achievement. The Tennessee STAR project reduced class sizes in Kindergarten through grade 3 from about 24 students down to 15. Students in STAR's small classes performed better than students in regular classes in all locations and at every grade level. STAR's Kindergarten students in small classes showed measurable achievement gains over students in regular classes and in regular classes with aides. The STAR achievement advantage persisted through first grade, with small-class students scoring in the 64<sup>th</sup> percentile in reading and the 59<sup>th</sup> percentile in mathematics on the Stanford Achievement Test. Meanwhile, students in regular classes scored in the 53<sup>rd</sup> percentile in reading (11 percentage points lower) and the 47<sup>th</sup> percentile in mathematics (12 percentage points lower).<sup>4</sup>

Given the strength of this evidence base, South Shore’s funders and administrators anticipate measurable effects on achievement relative to schools without integrated pre-Kindergarten programs and/or schools that have larger class sizes in the early grades.

## PURPOSE OF THIS REPORT

The New School Foundation commissioned ECONorthwest to perform a quantitative evaluation of the effectiveness of South Shore’s program. To date, the Foundation has relied on broad comparisons with other Seattle-area schools to assess the school’s impacts, but given the wide variation in student profiles and school types across the city, these relatively simple analyses are not convincing.

In this report, we present the results of an analysis that is more rigorous than simple cross-school comparisons, although it stops well short of the “gold standard” of randomized controlled trials. Specifically, we use data provided by Seattle Public Schools that contain students’ demographic characteristics and educational outcomes to compare South Shore students to similar students attending other Seattle Public Schools.

Our analysis was designed to answer the following questions:

- ▶ How do the outcomes of South Shore students compare to:
  - ▶ Other Seattle-area students?
  - ▶ Students who applied to South Shore but did not get in?
- ▶ Are there meaningful differences in student performance between long-term students and new arrivals?

- ▶ Are there meaningful differences in student performance between African-American students and non-African-American students?

Examining these differences will help the New School Foundation, Seattle Public Schools administrators, teachers, parents and the community to better understand the program’s effectiveness, and illuminate areas where further examination may be warranted.

## METHODOLOGY AND DATA SOURCES

Fundamentally, an evaluation of South Shore (or any school) consists of comparing the outcomes of South Shore students to the outcomes of students that did not attend South Shore. However, it is not particularly informative to simply compare the outcomes of all South Shore students to all other SPS students or the students attending other specific schools. Raw differences between South Shore outcomes and the outcomes at other schools reflect much more than differences in the educational environment. In addition to school effectiveness, student performance depends on individual, family, and other contextual characteristics. As such, it is possible (even likely) that two equally effective schools will have significantly different student outcomes due to large differences in the composition of their student populations.

The goal of this evaluation is to isolate the effect of South Shore by accounting for underlying differences that affect academic performance, such as student demographic characteristics, family situations and other contextual factors.

The ideal method for this type of exercise is randomized controlled trials (RCT). In the case of South Shore, using this methodology would involve randomly assigning a large population of students to either South Shore (the treatment group) or to other SPS schools (the control group). Under this scenario, there should be no underlying, unobserved differences between the treatment and control groups (membership in each group is random).<sup>5</sup> As such, any differences between the two groups could be clearly attributed to attendance at South Shore.

In practice, students must apply to attend South Shore, so they are self-selected rather than randomly assigned. Because of this we cannot entirely rule out the effects of underlying differences. However, we can minimize the possibility that our results reflect such underlying differences by obtaining additional information about South Shore students and all Seattle Public Schools students. Specifically, we can use statistical information about characteristics that typically are correlated with performance on achievement tests, such as race, socioeconomic status and attendance, to statistically control for the effects of these underlying differences using regression analysis.<sup>6</sup> This allows us to compare groups of students who are similar in most other relevant, observable and measurable characteristics except their exposure to “treatment,” in this case South Shore attendance.

Even after accounting for observable differences, there remains a clear, fundamental difference between South Shore students and non-South Shore students—the parents of South Shore students choose to enroll them in South Shore. Given the longer school year, smaller classes, home visits, etc. associated with attending South Shore, it

is possible—even likely—that the parents and students who ultimately choose South Shore have different views about education than otherwise similar parents and students. If the factors that explain attendance at South Shore are positively (or negatively) correlated with an individual’s test scores or other outcomes of interest, then it is likely that the students who attend South Shore would have had higher (or lower) test scores regardless of whether or not they attended South Shore. A highly convincing evaluation would factor out these potential differences.

To do this, we conducted additional analyses that compare students who attend South Shore to students whose families showed similar motivation by applying to the school, but who were not accepted. If applications were denied randomly, this comparison would be ideal; however, applications are not denied randomly. In general, students who are admitted to South Shore are more likely to have siblings who attend and/or live closer to the school than students who apply but are not admitted.

This allocation mechanism raises two potential concerns for this method of evaluation. First, are applicant families who live closer to South Shore unobservably different than families living further away in some unobservable way? For instance, does the neighborhood around South Shore contain a higher proportion of families who are more concerned about education than otherwise similar neighborhoods? Second, if they had lived further from South Shore, would the admitted families still have applied? Since using applicants as a comparison group is supposed to account for differences in motivation to attend South Shore, we need to assume that the families who live close and are admitted

would still apply even if they lived further away. Otherwise, the comparison group is likely to include students from families who were even more motivated to attend South Shore than the families who ultimately enrolled.

While both of our analytical methodologies are subject to more error than a randomized controlled trial methodology, they nevertheless help us to understand the relationships between the relevant characteristics that we can observe and measure.

## Compared to What? Two Approaches to Examining Student Performance

Even after accounting for differences among students, evaluating school performance still requires some criteria to determine what constitutes good performance. That is, student and school outcomes need to be placed in some larger context that helps people understand what the results mean. Typically, there are two ways to judge performance:

- ▶ **Absolutely**—This approach compares student performance to the same set of pre-determined benchmarks.
- ▶ **Relatively**—This approach compares student performance to the performance of other students in their grade and year.

Each of these approaches has important strengths and weaknesses. If the benchmarks are clearly understood, the absolute approach provides an easily interpretable metric for school performance—X% of students met the defined standard. This simple comparison allows performance to be easily compared across time and space (assuming testing—

or other measurement tools—and the benchmarks remain constant).

The problem with the absolute approach is that it ignores what is happening away from the benchmark. Students may exceed or fall short of the benchmark by wide margins. The absolute approach ignores this information (and as such creates incentives for schools to divert resources from those students who clearly fall above or below the line to those who are likely to fall near the line). It is possible for two schools to have identical shares of students meeting the benchmark, but drastically different overall performance. For instance, one school could have most of its students exceeding the benchmark by a wide margin, while the other could have a most of its students just meeting the benchmark.

The relative approach helps address this problem. In the relative approach, the full distribution of student performance is used to evaluate student and school performance. Schools are evaluated based on their students' average performance relative to the average performance of students in the whole population. In this type of metric, every student's performance matters (not just those near the benchmark). Furthermore, since students are typically compared relative to those in the same year in the same grade, this type of metric does not require absolute consistency in the quality of the testing (and associated benchmarks).

The problem with the relative approach is that it is “zero-sum” so it may be difficult to interpret. Since students and schools are only moving relative to each other, for one student or school to move up another must move down. As such, the relative approach does not identify any

widespread gains (or losses) in student performance. Thus, unless the distribution of student performance remains constant over time, it can be difficult to understand the information provided by this approach. The same level of student understanding and performance can be scored very differently from year to year.

Neither of these approaches is sufficient by itself to provide a full picture of student and school performance, so throughout this report we examine both how South Shore students perform relative to statewide benchmarks and how they perform relative to students in other Seattle Public Schools in the same grade and year.

## Data Sources

Seattle Public Schools provided data for this evaluation from the district's electronic student database. We used de-identified records for all students attending SPS schools during the school years 2004-05 to 2007-08.

The data contains information on:

- ▶ Demographics and family characteristics
- ▶ Student participation in programs such as free and reduced price lunch or special education
- ▶ Attendance
- ▶ WASL scores (in standardized units)
- ▶ School choice rankings

Each of these data sources will be described in greater detail below.

## WASL Scores

In this evaluation, we focus on student performance on the Washington Assessment of Student Learning (WASL). The WASL is a mix of multiple-choice,

short-answer and extended-response questions. There are no testing time limits. Students in grades three through eight and grade ten take the WASL each spring in reading and math. Students also are tested in writing in grades 4, 7 and 10, and science in grades 5, 8 and 10. Since relatively few South Shore students have reached 4<sup>th</sup> and 5<sup>th</sup> grades, this analysis considers only reading and math WASL scores.

As discussed previously, we examine performance both absolutely and relatively. To measure absolute performance, we examine whether or not students met the state benchmark for reading or math in their grade. To measure relative performance, we calculated a standardized score (in standardized units—SUs) for each student's test results. A standardized score reports how far, in terms of standard deviations on a normal curve, the student is from the average student in his or her grade and year.

In order to help educators interpret results reported using standardized scores, the *Journal of School Improvement* published the following scale:<sup>7</sup>

- ▶ 0.1 SU - 0.19 SU = meaningful, worth mentioning
- ▶ 0.2 SU - 0.29 SU = quite good
- ▶ 0.3 SU or higher = substantial, quite impressive.

## Demographics, Attendance, and School Choice

In order to account for potential differences between students attending South Shore and those attending other SPS schools so that we can more clearly estimate the effects of South Shore, we utilized the following information:

- ▶ Sex
- ▶ Ethnicity (as coded in five categories including: Asian, Black, Latino, Native American, and White)
- ▶ Grade
- ▶ An indicator equal to one if SPS's classification of a student's free and reduced price lunch status was "Elig" or "Reduced"
- ▶ An indicator equal to one if a student is identified as having a special education classification
- ▶ Students' English proficiency level
- ▶ An indicator equal to one if the student is classified as living with both parents
- ▶ School year
- ▶ School choice rankings—Seattle students are allowed to rank their preferences for the school they attend. Actual school assignment is largely a function of geography and sibling attendance. In some of our analyses, we limit the sample of students to include only those attending South Shore or who ranked it as their first or second choice at some point.

## Data Limitations

The data used in this analysis have potential limitations that should be taken into consideration in interpreting the results. First, if the WASL tests do not accurately measure student ability, the results of the analysis will be affected. Second, the small sample sizes inherent in South Shore population increase the possibility of measurement and sampling error for key variables.

Also, two important analytical issues must be considered. First, as discussed previously, this analysis is subject to

selection bias because students are not randomly assigned to either South Shore or the regular program. The factors that cause a student to apply to and attend South Shore may be a result of unobserved underlying differences in those students compared to those who do not apply. Therefore, the analytical results may reflect unobserved differences in student characteristics rather than, or in addition to, the observed differences that are accounted for in the regression analysis.

Second, this analysis does not measure the effects of specific South Shore programs. We simply calculate the total effects of South Shore on student achievement—accounting for the observable factors outlined above. These effects are what parents are most likely to be concerned with. That is, they reflect the expected change in student performance contingent on attending the school. We do not attempt to explain precisely which policies produce which effects, although this is what administrators are most likely to care about. We also cannot rule out the possibility that the results may reflect differences in context (or peer effects) and not policy.

## FINDINGS

Overall, we find that South Shore students perform at levels significantly higher than would be predicted based solely on their observable characteristics. Relative to similar students attending other schools, South Shore 3<sup>rd</sup> and 4<sup>th</sup> grade students are more likely to meet the WASL benchmarks in both reading and math, and they have higher standardized test scores. The sizes of the effects are larger for students who enrolled during pre-Kindergarten or Kindergarten compared to those who enrolled later. Also, South Shore's effects are consistent across ethnic groups. In particular, the effect of South Shore attendance on African-American students does not significantly differ from the overall effects.

In this analysis, we compare South Shore students to students attending neighboring schools and to students at all Seattle Public Schools. We begin by comparing raw differences in performance between these groups, and then we examine the potential underlying differences between the groups that could explain some of the raw differences in performance. These factors are used as statistical controls, helping us understand how much of the performance difference is attributable to the South Shore "treatment effect," and how much is attributable to, for example, differences in the racial composition of the school populations. We then report the performance of South Shore students after accounting for observable underlying differences.

### Unadjusted Performance

Looking at overall performance on math and reading assessments, without accounting for underlying differences between groups, the average South Shore

student scores close to the average SPS student, but above the average student at neighboring schools. Specifically, the average South Shore student's scores are approximately equal to the SPS mean in math and slightly below the SPS mean in reading. However, the average student at neighboring schools scores about 0.25 standard deviations below the SPS mean for both math and reading, meaning that, on average, South Shore students outperform their neighborhood peers.

### Observable Underlying Differences

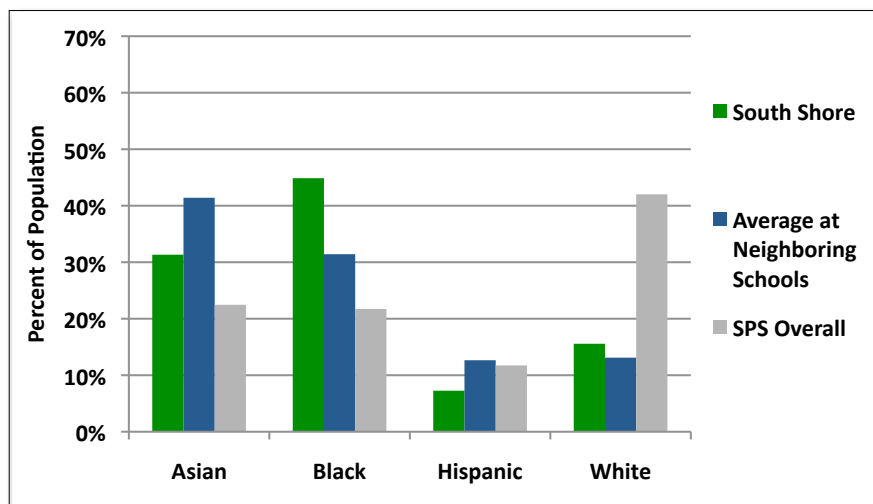
When comparing South Shore students' school performance to students at other schools, it is important to understand the observable underlying characteristics of the groups, because these may explain some of the performance differences. To student population that is different from that of its neighboring schools. It is likely that least some of the observed differences in school performance reflect differences in socio-demographic characteristics of South Shore students.

Figure 1 and Figure 2 show comparisons of demographic characteristics for South Shore compared to both neighboring schools and to all Seattle Public Schools. Compared to neighboring schools, South Shore has a smaller share of Asian and Hispanic students and a larger share of black students, while the proportion of white students is similar to that of neighboring schools. South Shore also has a slightly smaller share of male students, a slightly larger proportion of children living with both parents, fewer special education and limited-English proficiency students, and a significantly smaller share of students receiving free or reduced price lunch.

Differences in some demographic characteristics tend to be more dramatic when South Shore is compared to the entire Seattle Public Schools population. South Shore has significantly more Asian and black students and fewer Hispanic students than SPS overall. While both South Shore and neighboring schools have 12 to 13 percent white students, overall the SPS population is about 42 percent white.

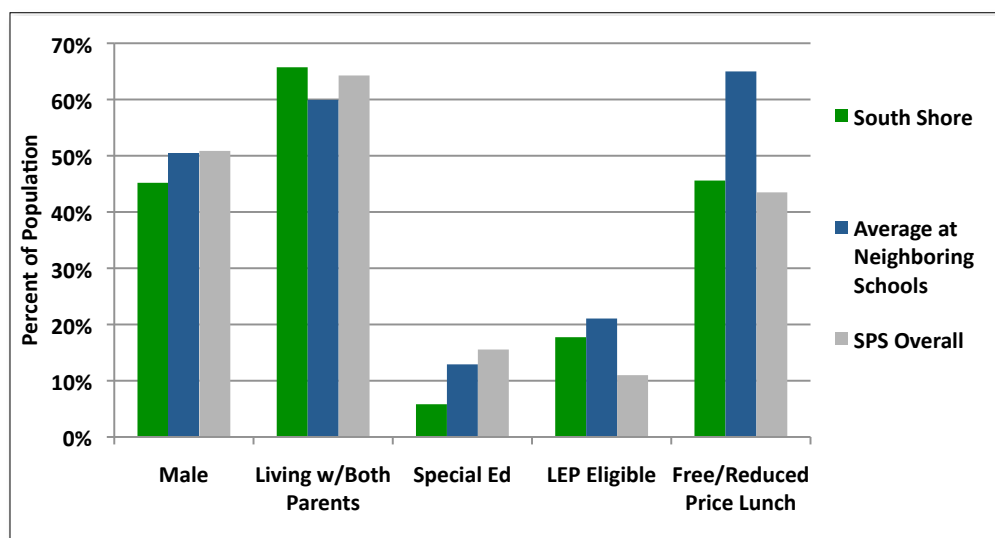
South Shore also has a smaller share of special education students and a larger share of limited English proficiency students. The South Shore population and the overall SPS population have similar shares of students living with both parents and students receiving free or reduced price lunch.

**Figure 1: Share of Student Population by Racial/Ethnic Group**



Source: ECONorthwest analysis of Seattle Public School data.

**Figure 2: Share of Students by Other Demographic Characteristics**



Source: ECONorthwest analysis of Seattle Public School data.

## Comparison of Outcomes Accounting for Observable Differences

In this section we examine differences in performance between South Shore students, students at neighboring schools, and students at all SPS schools after considering the underlying observable differences discussed above. To account for these potential differences, we estimate the effect of attending South Shore by estimating regression equations that include a variety of controls for student characteristics.<sup>8</sup> This means that we can assert with greater confidence that the differences between groups reported here are due to South Shore treatment effects and not to other observable differences.

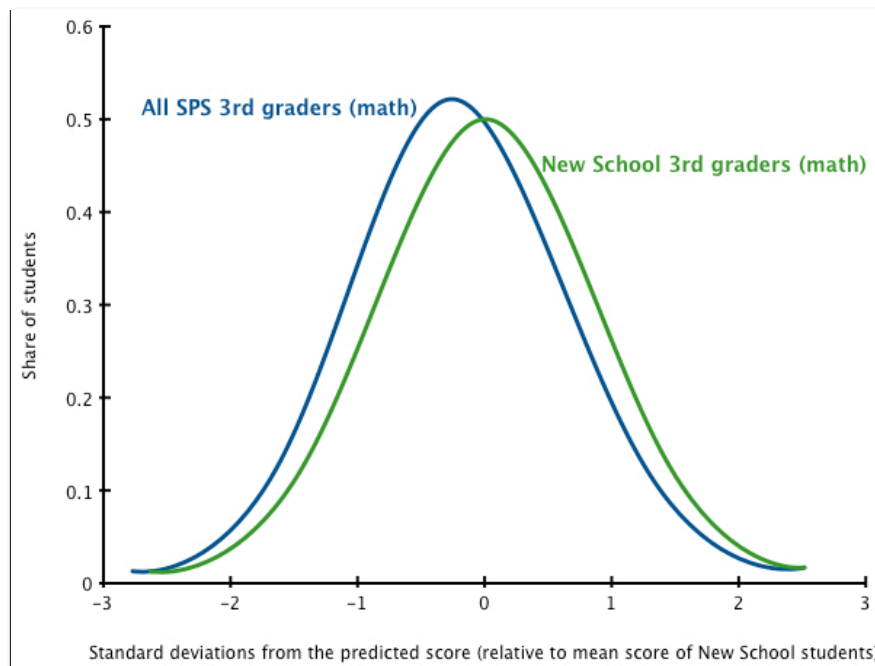
### 3<sup>rd</sup> and 4<sup>th</sup> Grade Math and Reading Performance

Examining student-level test data across multiple school years, ECONorthwest

finds that attendance at South Shore is associated with improved scores on the 3<sup>rd</sup> and 4<sup>th</sup> grade WASL and an increased likelihood of meeting the state benchmarks in math and reading. These effects are large and statistically meaningful, particularly in math. Specific findings are discussed below.

Focusing on 3<sup>rd</sup> grade students, the first grade for which we have WASL scores and for which we have four cohorts of data, we find that students enrolled at South Shore for 3<sup>rd</sup> grade score significantly higher in math and moderately higher in reading than demographically comparable students attending other schools.<sup>9</sup> Rather than being the result of a few high-scoring students, Figure 3 shows that nearly the entire population of South Shore 3<sup>rd</sup> graders shifted their math scores upward relative to other demographically similar Seattle Public School 3<sup>rd</sup> graders.

**Figure 3: Shift in Math Scores for South Shore 3<sup>rd</sup> Graders Compared to All SPS 3<sup>rd</sup> Graders**

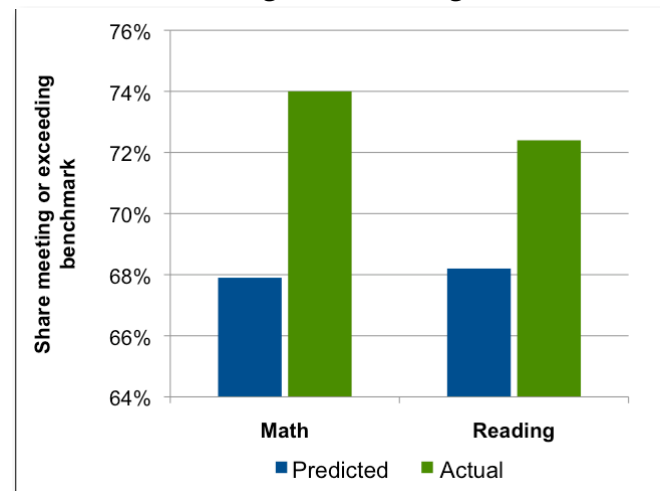


Source: ECONorthwest analysis of Seattle Public School data.

South Shore 3<sup>rd</sup> graders also are significantly more likely to meet or exceed the WASL benchmarks in both reading and math. Figure 4 shows the share of South Shore students we expect to meet or exceed the benchmarks in math and reading based solely on student demographic characteristics, compared to the actual share of students meeting the benchmarks. The figure indicates that South Shore students scored 6.4 percentage points above their expected scores in math, and 4.0 percentage points above their expected scores in reading. Put another way, for every 100 South Shore 3<sup>rd</sup> graders, an additional 6.4 students will meet or exceed the 3<sup>rd</sup> grade math benchmark and an additional 4.0 students will meet or exceed the reading benchmark than would be expected had these students attended a different school.

If we restrict the comparison so that it includes only students attending South Shore or those who indicated they would like to attend South Shore on their school choice applications, we observe a similar pattern of results. The magnitude of the difference in WASL performance between South Shore students and South Shore applicants attending other schools are similar in math and larger in reading. This suggests that the differences between South Shore 3<sup>rd</sup> graders and their demographically similar counterparts at other SPS schools are not the result of differences in parental motivation or unobserved family characteristics, but rather the improved performance of South Shore students is likely the result of the educational environment at the school. The effects of South Shore attendance on WASL performance persist into 4<sup>th</sup> grade (the other grade for which we have data from several cohorts). Compared to demographically similar students at other

**Figure 4: Predicted and Actual South Shore Students Meeting or Exceeding Benchmarks**



Source: ECONorthwest analysis of Seattle Public School

schools, South Shore 4<sup>th</sup> graders are eleven percentage points more likely to meet the WASL benchmark in math and four percentage points more likely to meet the benchmark in reading. Again, limiting the analysis to include only applicants to South Shore does not substantially change our conclusions.

We do not yet have sufficient data to measure South Shore's effects on the performance of the 5<sup>th</sup> and 6<sup>th</sup> grade cohorts. To date, South Shore has had too few 5<sup>th</sup> and 6<sup>th</sup> grade students to allow us to confidently analyze the effects of South Shore attendance for these grades. Also, it is more difficult to interpret an analysis for these later grades due to the fact that a significant number of 5<sup>th</sup> and 6<sup>th</sup> grade students transferred into South Shore in later grades and thus missed out on many of the programs offered by South Shore. As full cohorts age through the South Shore program, their performance data will illuminate the longer-term impacts of South Shore attendance.

## The effects of starting at South Shore in Pre-K or Kindergarten

A key component of South Shore is high quality pre-Kindergarten and Kindergarten. In this section, we examine the effects of these particular programs. Unfortunately, we do not currently have a reliable measure of student performance prior to third grade. Instead, we look for the effects of the pre-Kindergarten and Kindergarten programs by examining third grade WASL scores (the first grade level with test score data) and restricting the analysis to include only students who attended pre-Kindergarten or Kindergarten at South Shore.

Specifically, we conduct three analyses. First, we compare the third grade WASL performance of students who enrolled at South Shore during pre-Kindergarten or Kindergarten to all demographically similar SPS 3<sup>rd</sup> graders. Second, we conduct the same comparison, but we focus only on students who applied to South Shore for pre-Kindergarten or Kindergarten but were not admitted.

Finally, we compare students who enrolled at South Shore prior to Kindergarten to demographically similar students who enrolled after Kindergarten.

Table 1 summarizes the results of our analyses. Students who enrolled at South Shore prior to first grade significantly outperformed demographically similar students attending other schools in math and moderately outperformed similar students at other schools in reading. In analysis 1, compared to all SPS 3<sup>rd</sup> graders, students who attended South Shore in pre-K or Kindergarten are eight percentage points more likely to meet the 3<sup>rd</sup> grade benchmark for math, and six percentage points more likely for reading. These students scored an average of 0.37 standardized units (SU) higher on the math WASL and 0.07 SU higher on the reading WASL.

Looking at the second analysis, relative to students who applied to attend Kindergarten or pre-K at South Shore but were not admitted, those who actually attended South Shore are eight percentage

**Table 1: Changes in Probability of Meeting Benchmarks and Changes in Standardized Scores for Three Comparison Groups**

	Math		Reading	
	Change in Probability of Meeting Benchmark	Change in Average Standardized Score	Change in Probability of Meeting Benchmark	Change in Average Standardized Score
<b>Analysis 1:</b> Early South Shore enrollees compared to all SPS 3 <sup>rd</sup> graders	<b>0.08***</b> (0.01)	<b>0.37***</b> (0.03)	<b>0.06***</b> (0.01)	<b>0.07*</b> (0.03)
<b>Analysis 2:</b> Early South Shore enrollees compared to early South Shore applicants not admitted	<b>0.08**</b> (0.02)	<b>0.42***</b> (0.07)	<b>0.07**</b> (0.02)	0.10 (0.05)
<b>Analysis 3:</b> Early South Shore enrollees compared to later South Shore enrollees	0.06 (0.07)	<b>0.40**</b> (0.15)	0.12 (0.08)	0.20 (0.14)

Standard errors in parentheses. Bolded numbers indicate statistical significance; asterisks indicate the level of significance: \* p<0.05, \*\* p<0.01, \*\*\* p<0.001

Source: ECONorthwest analysis of Seattle Public School data.

points more likely to meet the 3<sup>rd</sup> grade WASL benchmark in math and seven percentage points more likely to meet the WASL benchmark in reading. In addition, for these early enrollees, attending South Shore is associated with a 0.42 SU increase in the average WASL math score and a 0.1 SU increase in the average WASL reading score.<sup>10</sup>

The third analysis compares early South Shore enrollees to later South Shore enrollees. In general, the effects shown here are larger than the previously reported results that examined all South Shore 3<sup>rd</sup> graders. This suggests that the differences between South Shore students and comparable non-South Shore students are larger among the set of students who enrolled at South Shore for PreK or Kindergarten. Indeed, when we compare South Shore students who enrolled prior to Kindergarten to the demographically similar South Shore students who enrolled after Kindergarten, we find that early enrollees out-performed later enrollees (although many of these differences are not statistically significant – perhaps due to the small sample sizes). For instance, relative to students who enrolled after Kindergarten, those who enrolled early at South Shore are six percentage points more likely to meet the 3<sup>rd</sup> grade WASL benchmark in math and twelve percentage points more likely to meet the benchmark in reading.

These results indicate that the effects of attending South Shore are larger for students who enrolled during pre-Kindergarten or Kindergarten. While this pattern of results does not conclusively prove that South Shore's pre-Kindergarten and Kindergarten programs are responsible for these differences (the differences could reflect other unobserved differences between early and late

enrollees), our results are certainly consistent with the belief that attending South Shore's pre-Kindergarten and Kindergarten programs significantly improves subsequent student performance.

### **The Effect of South Shore on African-American Students**

As discussed previously, South Shore attendance increases students' average WASL score and the likelihood of meeting the state WASL benchmarks. An important question is whether that effect is the same for all groups of students, or if it has greater impacts on some groups compared to others. Because South Shore has a significantly higher share of African-American students compared to neighboring schools and Seattle Public Schools overall, we focus on potential differences for this group.

Throughout SPS, African-American students score below non-African-American students in both reading and math in 3<sup>rd</sup> and 4<sup>th</sup> grade. This pattern generally holds at South Shore as well (although the exact magnitudes of the differences are not identical). However, relative to demographically similar African-American students attending other schools, African-American students attending South Shore have higher average scores and are more likely to meet the state benchmarks in math and reading. For instance, in 3<sup>rd</sup> grade, South Shore African-Americans are 5 percentage points more likely than demographically similar African-Americans at other SPS schools to meet the state benchmark in math and 2.4 percentage points more likely to meet the state benchmark in reading. These effects are slightly smaller than overall differences between South Shore 3<sup>rd</sup> graders and non-South Shore 3<sup>rd</sup> graders described in the previous section.

This suggests that the effects of South Shore attendance through 3<sup>rd</sup> grade are slightly smaller for African-Americans than for non-African-Americans. However, this pattern is reversed in 4<sup>th</sup> grade: the effect of South Shore attendance is much larger for African-Americans than it is for non-African-Americans. For instance, South Shore African-Americans are 16 percentage points more likely to meet the state math benchmark than similar African-Americans at other schools, while South Shore non-African-Americans are only 8 percentage points more likely than similar non-African-Americans attending other schools to meet the state math benchmark.

From this pattern of results, we cannot conclude that attendance at South Shore is less beneficial to African-Americans, nor can we conclude that it is more beneficial to African-Americans. Thus, it does not appear that the effects of attending South Shore are significantly affected by race.

### **South Shore Compared to Other Seattle Elementary Schools**

ECONorthwest conducted analyses similar to the one described for each Seattle public school. We estimated the difference in the probability that a student attending a given elementary school will meet WASL benchmarks by comparing them to students with observably similar characteristics attending other Seattle public schools. We found that South Shore's effect size is among the top 10 elementary schools in 3<sup>rd</sup> and 4<sup>th</sup> grade math and among the top 20 elementary schools in 3<sup>rd</sup> and 4<sup>th</sup> grade reading.

It is important to note, though, that the precise estimated effects and thus the precise rankings are sensitive to the outcome examined and control variables

included in the analysis. Furthermore, the differences in the estimated effect size across most of the other "top" schools are not statistically significant; that is we cannot say with confidence that these results did not occur randomly. Thus, while we can reasonably assert that schools with large, statistically significant positive effects are improving student outcomes, we are less comfortable asserting that there is a meaningful difference between the effects of South Shore in particular and other schools with similar estimated effects sizes.

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## ENDNOTES

<sup>1</sup> [http://www.newschoolfoundation.org/about\\_faqs.html](http://www.newschoolfoundation.org/about_faqs.html)

<sup>2</sup> Ibid.

<sup>3</sup> Schweinhart, Lawrence. 2004. *The High/Scope Perry Preschool Study Through Age 40: Summary, Conclusions, and Frequently Asked Questions*. High/Scope Educational Research Foundation. Ypsilanti, MI.

<sup>4</sup> See Boyd-Zaharias, Jayne. *Project STAR The Tennessee Student/Teacher Achievement Ratio Study: Background and 1999 Update*. HEROS, Inc. Lebanon, TN.

<sup>5</sup> This statement assumes that there are sufficient numbers of observations in the data to prevent a handful of extreme or odd observations to be randomly assigned to one group or the other and create meaningful differences between the groups.

<sup>6</sup> Regression analysis is a quantitative analysis technique that describes the statistical relationship between a given variable (the dependent variable) and one or more other variables (the independent variables). For example, achievement test scores (the dependent variable in this case) might be related to certain observable characteristics such as socioeconomic status, English as a Second Language status, special education status, and in the case of this evaluation, attendance at South Shore. With a sufficient number of observations, regression analysis allows us to estimate how students included in the model who are similar in all other observable characteristics (the independent variables) will differ based on their exposure to South Shore.

<sup>7</sup> [http://www.icsac.org/jsi/2000v1i2/standard\\_score](http://www.icsac.org/jsi/2000v1i2/standard_score)

<sup>8</sup> The specific list of control variables are outlined in the data section above. Each of the discussed variables is included, untransformed, in a standard OLS regression.

<sup>9</sup> After accounting for student demographics, the average South Shore student scored approximately 0.26 standard deviations (approximately 10 WASL scale points) above the average SPS 3<sup>rd</sup> grader on the math test and 0.06 standard deviations (approximately 2 WASL points) above the average SPS 3<sup>rd</sup> grader in reading.

<sup>10</sup> The increase in reading is not statistically distinguishable from zero.

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