



**The Impact of Participation in Supplemental Educational Services  
(SES) on Student Achievement: 2007-08**

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## **Acknowledgements**

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## Preface

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Eight years after adoption of the No Child Left Behind Act (NCLB) in 2001, lawmakers, researchers, and practitioners continue to debate the merits of the legislation. The provision of supplemental educational services (SES) is only one of many components within the accountability system established by NCLB, yet it reflects two substantial controversies regarding educational policy: school choice and privatization.

Under NCLB, school districts must offer low-income students in Title I schools that fail to meet Adequate Yearly Progress (AYP) for three consecutive years the option of receiving free tutoring services outside of regular school hours. Districts are required to allocate 20% of their Title I funds to finance school choice options and SES. Students eligible for SES can apply for tutoring services from any provider that has been approved by the state, and the approved list of providers may include for-profit, non-profit, and faith-based organizations.

This is the fourth year the Beyond the Bell Branch has asked Research & Planning to examine SES participation and impacts for students in the Los Angeles Unified School District (LAUSD). Similar studies conducted in 2004-05, 2005-06, and 2006-07 found low overall SES participation and attendance among eligible students and a small overall impact on California Standards Test (CST) results in English language arts (ELA) and math. Last year, a more in-depth study of SES found that there was no cumulative effect of participation in SES for more than one year; in other words, students who participated in SES for one year performed as well as those who participated in SES for multiple years. This study expands upon the previous work on SES conducted by Research & Planning, and is designed to examine the impact of SES for 2007-08.

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## Introduction

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For the past six years, low-income students enrolled in LAUSD Program Improvement schools have had the option of receiving free tutoring services under NCLB. These services are referred to as supplemental educational services (SES) and are typically offered online or in individual or small group sessions for reading and mathematics during non-school hours. Providers of SES services, which include for-profit, non-profit, and faith-based organizations, must be on a state-approved list.

School districts in Program Improvement status must reserve 20% of their Title I funds for supplemental educational services and school choice options for students (Munoz, Potter, & Ross, 2008). In particular, five percent of their Title I funding must go to SES, another 5% must go to school choice, and the remaining 10% may be split between the two services at the discretion of the district. Since 2002-03, which was the first year that LAUSD was required to offer SES, the District has spent approximately over \$110 million of its Title I funds specifically for SES, with nearly two-thirds of this money being spent in the last two years alone.

Last year, Research & Planning conducted an in-depth analysis of the impact of SES participation on student achievement during the first five years that SES were offered to LAUSD students. Overall, the study failed to find a positive effect for multiple years of participation in SES. In other words, students who enrolled in SES for more than one year did not show significantly higher gains on the California Standards Test (CST), which is administered to all students in grades 2-11. Nevertheless, for the 2006-07 school year, the researchers reported a positive effect of SES on student achievement, although the magnitude of the effect was very small and equivalent to approximately two scale points on the CST (Rickles, Barnhart, & Gualpa, 2008).

In 2007, the U.S. Department of Education released the first in a series of reports on NCLB, which examined the impact of SES among seven large, urban school districts—including LAUSD. In addition to examining the effects of participating in SES for one year, the report explored the effects of SES for more than one year. Unlike the LAUSD study, the study by the Department of Education concluded there were “statistically significant average effects in both reading and math for participants in supplemental services, with evidence that students participating for multiple years saw accumulating benefits in both subjects” (Zimmer et al., 2007, p. 31). The Department of Education study did not specifically identify the impact for LAUSD students, although the magnitude of the overall effects was small and comparable to those found in LAUSD studies.

More commonly, studies have looked at the impact of SES in a single year and found low participation rates with small or no statistically significant effects on academic achievement (Chicago Public Schools, 2007; Rickles & White, 2006; Rickles & Barnhart, 2007; Potter et al., 2007). This single year study examined the impact of SES on CST performance for the 2007-08 school year, using SES participation data provided by the Beyond the Bell Branch and student CST performance data. As in previous LAUSD studies, a value added model was used to estimate the impact of SES participation on CST scores. Appendix A provides a more detailed description of the research methods.

Overall, the findings from SES participation for 2007-08 are similar to those from the previous five years in LAUSD. First, there continued to be a low demand for SES, as only one in ten eligible students applied for SES. In addition, there was a small, positive impact of SES participation on CST performance. This report elaborates on these findings in two separate sections:

1. analysis of SES participation rates and the availability of SES within LAUSD;
2. analysis of the impact of SES on student achievement for 2007-08.

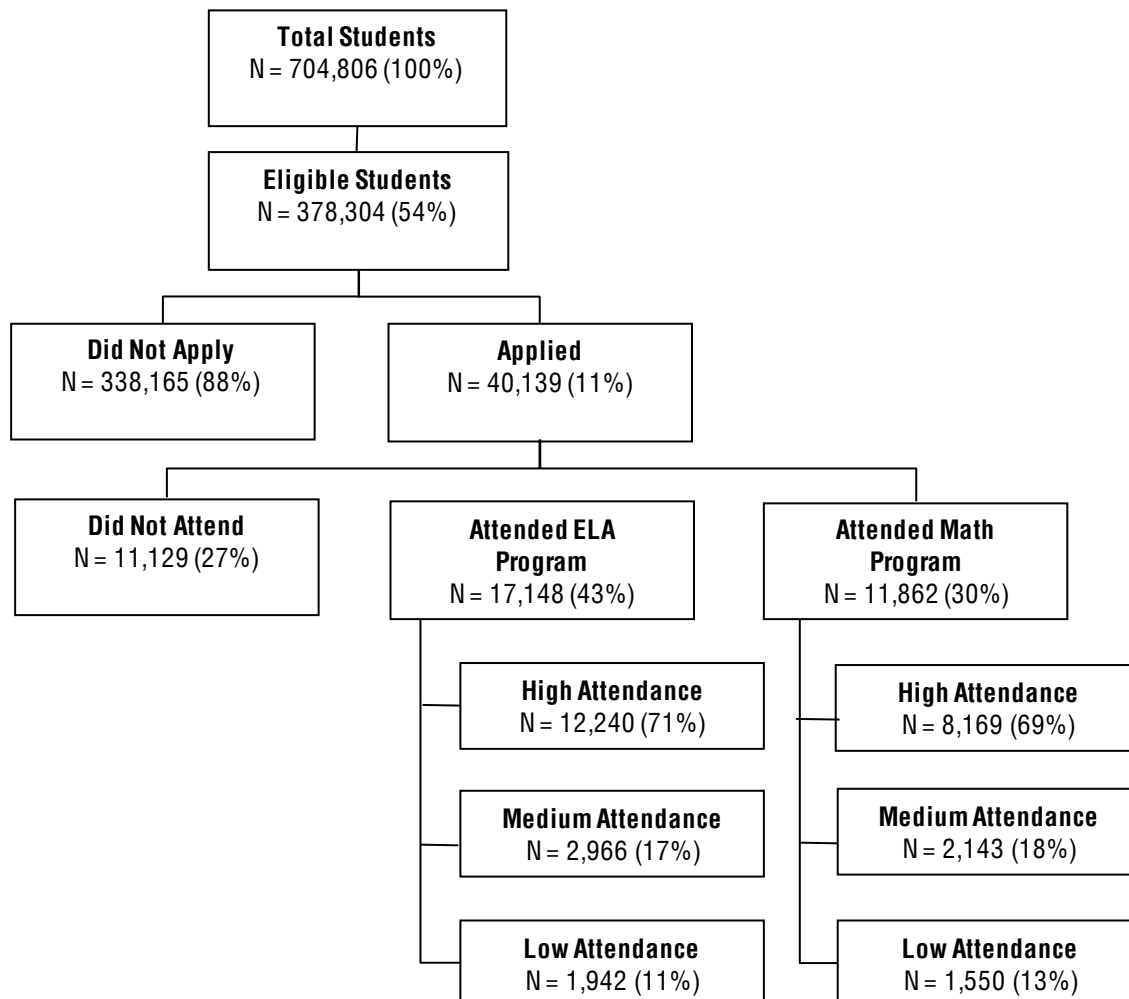
## Availability and Utilization of SES

Since participation in SES is voluntary, it is important to understand who utilizes the services before examining the impact such services may have on test score performance. This section first examines SES utilization for 2007-08, and then puts the current participation rates in historical perspective by exploring the trends in utilization during the six-year history of SES. The section concludes with a discussion of the availability of SES, including the proportion of eligible students that can take part in SES based on the available Title I funding.

### SES Utilization in 2007-08

In 2007-08, over 50% of the District’s 710,000 students were eligible for SES, but less than 8% of them received services. Figure 1 illustrates how many students enrolled in the District were eligible for, applied to, or attended an SES program. Only 11% of eligible LAUSD students applied for SES.

**FIGURE 1**  
**SES Utilization by LAUSD Students, 2007-08**



Notes: Data source is the database maintained by the Beyond the Bell Branch of LAUSD for tracking SES applicants and attendance. Low attendance = 1% to 49% of program hours; medium attendance = 50% to 89% of program hours; high attendance = 90% to 100% of program hours

***Although most eligible students did not apply for SES, the majority of students that did apply received services and attended over 90% of the service hours offered to them.***

Most students that applied for SES received services. For the first time, however, the District received a number of applications that exceeded the actual number of slots. LAUSD received over 40,000 applications for the approximately 31,700 slots that were available for SES based on the District's Title I funding. All applicants were offered an opportunity to attend SES. Over 70% of all 40,000 applicants ultimately attended an SES program: over 40% of them participated in an ELA program and 30% participated in a math program. As a result, over 92% of the District's SES slots were filled in 2007-08.

Participating students did not necessarily receive all the service hours available to them, although the majority of them had high attendance. Among the students who attended a SES program, 12% attended less than half of the program's total hours (low attendance), 18% attended at least half but less than nine-tenths of the program's hours (medium attendance), and 70% attended at least nine-tenths of the program's hours (high attendance).

The fact that many participating students were not exposed to the full SES program has implications for how one interprets the impact analysis in the following section. For example, to explore the impact of a full treatment of an SES program, the average value added should be compared between students with high attendance, i.e., those who attended all or nearly all of the program's hours, and those who did not attend. Conversely, to examine the average impact of a program as it was actually utilized by LAUSD students, the average value added should be compared between students who did not attend and *all* attendees, regardless of their level of participation. In order to address each of these research questions, the results of both comparisons are presented.

***There were no large differences in the student demographics among eligible students, and those who applied or attended SES.***

Although only a small percentage of eligible students actually applied for or attended an SES program, there were no large differences in the student demographics among eligible students, those who applied, and those who attended. Table 1 presents the student characteristics by eligibility, application status, attendance status, and program subject, i.e., ELA or math.

Although they were not large in magnitude, there were nevertheless differences between students eligible for SES in 2007-08, and those that applied for or attended an SES program. In particular, high school students were far less likely to attend an SES program than elementary students. High school students accounted for nearly 30% of the population of eligible students, but less than 15% of students that actually attended. Conversely, elementary students accounted for less than 30% of eligible students, but over 40% of attendees.

In general, historically disadvantaged students have been as likely, if not more likely, to utilize SES. Although African American students were slightly over-represented among SES applicants in 2007-08, they were slightly under-represented among SES attendees. Hispanic students were over-represented in ELA attendance and under-represented in math attendance. The opposite was true for African American students, who were more likely to attend a math than an ELA program. Compared to their peers, English learners were more likely to apply and attend SES and much more likely to attend ELA programs than math programs. Students with disabilities were slightly more likely to apply and attend SES than students without disabilities.

**TABLE 1**  
**Demographics of LAUSD Students Eligible for SES, 2007-08**

Student Characteristics	All Eligible Students	Application Status		Attendance Status		Attendance by Subject	
		Did Not Apply	Applied	Did Not Attend	Attended	Attended ELA	Attended Math
Number of Students	246,299	218,697	27,602	7,119	20,483	10,595	9,888
School Level (%)							
Elementary	27.1%	25.6%	38.8%	31.9%	41.2%	51.7%	29.9%
Middle	43.7%	43.7%	44.0%	42.9%	44.3%	40.1%	48.9%
Senior High	29.2%	30.7%	17.2%	25.2%	14.5%	8.2%	21.2%
Gender							
Female	48.9%	49.0%	47.4%	48.2%	47.1%	43.5%	51.0%
Male	51.1%	51.0%	52.6%	51.8%	52.9%	56.5%	49.0%
Ethnicity							
African-American	9.0%	8.8%	10.0%	15.5%	8.1%	5.8%	10.6%
Asian/Pacific Islander	3.3%	3.4%	2.6%	3.2%	2.4%	2.7%	2.1%
Hispanic	85.2%	85.2%	85.5%	79.2%	87.6%	90.0%	85.1%
White	2.2%	2.3%	1.6%	1.6%	1.6%	1.3%	1.9%
Other	.3%	.3%	.3%	.5%	.3%	.2%	.3%
Language Status							
English Only	19.9%	19.9%	20.2%	27.7%	17.6%	14.1%	21.4%
Initial Fluent (IFEP)	8.8%	8.8%	8.7%	7.7%	9.1%	9.0%	9.1%
Redesignated (RFEP)	34.5%	35.2%	28.4%	26.4%	29.0%	26.3%	32.0%
English Learner	36.8%	36.1%	42.7%	38.2%	44.3%	50.6%	37.5%
Students with Disabilities (%)	10.7%	10.2%	14.4%	13.9%	14.6%	14.6%	14.5%
GATE (%)	8.9%	9.1%	7.3%	7.3%	7.2%	8.3%	6.1%
Parental Education							
College Degree	14.5%	14.4%	15.8%	17.0%	15.4%	14.6%	16.3%
High School Degree	18.9%	18.8%	19.8%	19.0%	20.1%	19.8%	20.4%
No HS Degree/Unknown	66.6%	66.8%	64.4%	64.0%	64.5%	65.6%	63.3%
2007 CST Proficiency (%)							
ELA	25.1%	25.4%	22.7%	25.3%	23.2%	22.9%	23.5%
Math	23.7%	23.4%	26.4%	23.3%	27.8%	36.1%	18.9%

\*IMPORTANT NOTE: This table includes only those students with valid CST data in the 2007-08 school year. Data sources include the annual CST data provided by the California Department of Education as well as the database maintained by the Beyond the Bell Branch of LAUSD for tracking SES applicants and attendance.

Students who performed better on the prior year's math CST were more likely to attend an ELA program and students who did better on the ELA CST were more likely to attend a math program. This pattern is clear when we look at the percent of students who scored proficient or advanced on the 2007-08 ELA and math CST. Students who scored proficient or advanced on the math CST were over-represented in ELA programs, while the opposite was true for students in the math programs.

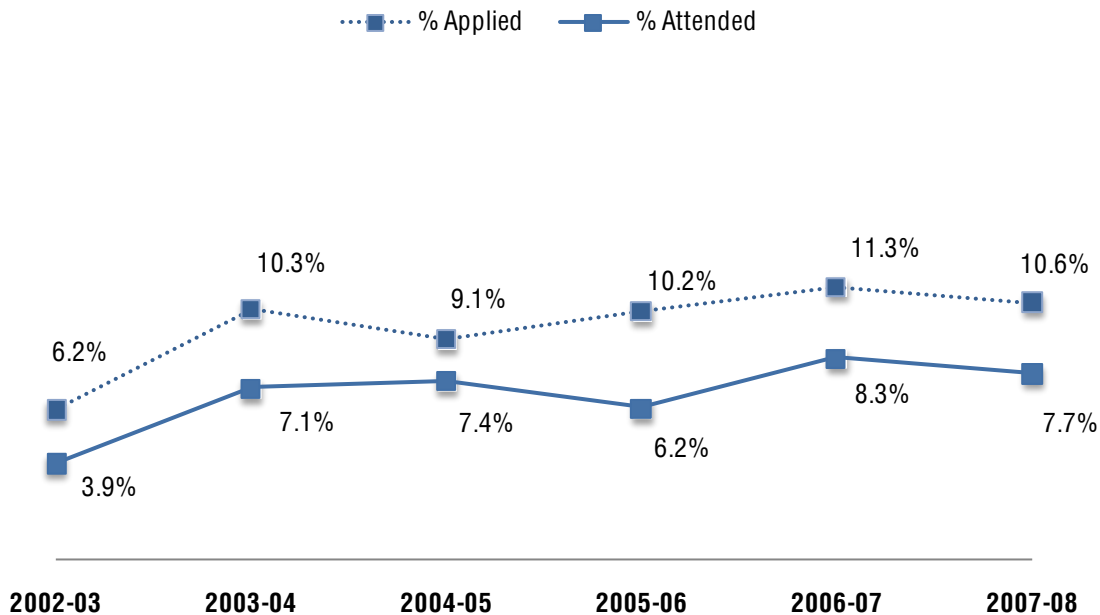
*Value added approach was used to control for differences in student characteristics that may have affected the impact of SES participation.*

It should be noted that the demographics that are described in Table 1 are the same demographics that are controlled for in the value added analysis. One of the main strengths of using a value added approach to analyze SES is that it allows the researcher to “factor out” or control for differences in student performance that are not the result of treatment, but rather are due to student characteristics, characteristics such as gender, ethnicity, language status, and parental education. For more information on the value added analysis used in this report, please see Appendix A.

### **Historical Perspective on SES Utilization**

Since SES were first utilized in 2002-03, only a small percentage of eligible LAUSD students have applied for and participated in SES programs (see Figure 2). Nevertheless, over the course of the past five years, the percentages of students applying for and participating in an SES program have increased dramatically. Specifically, the percentage of eligible students applying for SES has increased by over 50%, from 6% to roughly 11%, and the percentage of eligible students attending an SES program has nearly doubled, from 4% to 8%.

**FIGURE 2**  
**Percent of Eligible Students Who Applied For and Attended SES By Year**



Note: Data source is the database for tracking applicants and attendance for students served maintained by the Beyond the Bell Branch of LAUSD.

***As in LAUSD, low SES participation rates have been reported throughout the U.S.***

A recent study by RAND and the American Institutes for Research reported low participation rates in SES in school districts across the country (U. S. Dept. of Education, 2009). In 2004-05 and 2005-06, 19% of eligible students applied for SES, while 17% actually participated in an SES program. Although the national participation rates were considerably higher than those for LAUSD, both the national and District rates suggest that a small percentage of eligible students ever apply for SES, although those that do apply are likely to receive services.

***The number of hours of services offered by SES providers to LAUSD students has remained constant over the past six years, while the average hours attended by SES participants has steadily increased.***

As shown in Table 2, SES providers have offered LAUSD students an average of 30 hours of service over the course of the past six years. The range in the number of hours of service has narrowed considerably, from 12-95 hours in 2002-03 to 20-52 hours in 2007-08. At the same time, the average number of hours attended by LAUSD students has increased by over 33%, from an average of 18 hours in 2002-03 to 25 hours in 2007-08.

In addition, the number of SES providers reached its peak in 2006-07 with 55 providers. In 2005-06, LAUSD became a Program Improvement (PI) District, and was therefore prohibited from providing SES. In the same year, the number of private service providers increased by two-thirds, from 24 in 2004-05 to 40 in 2005-06. In 2006-07, there was another large increase in the number of private providers, but the number of providers has dropped back to slightly less than its total in 2005-06.

**TABLE 2**  
**Number of Hours of Offered By SES Providers and Attended By LAUSD Students By Year**

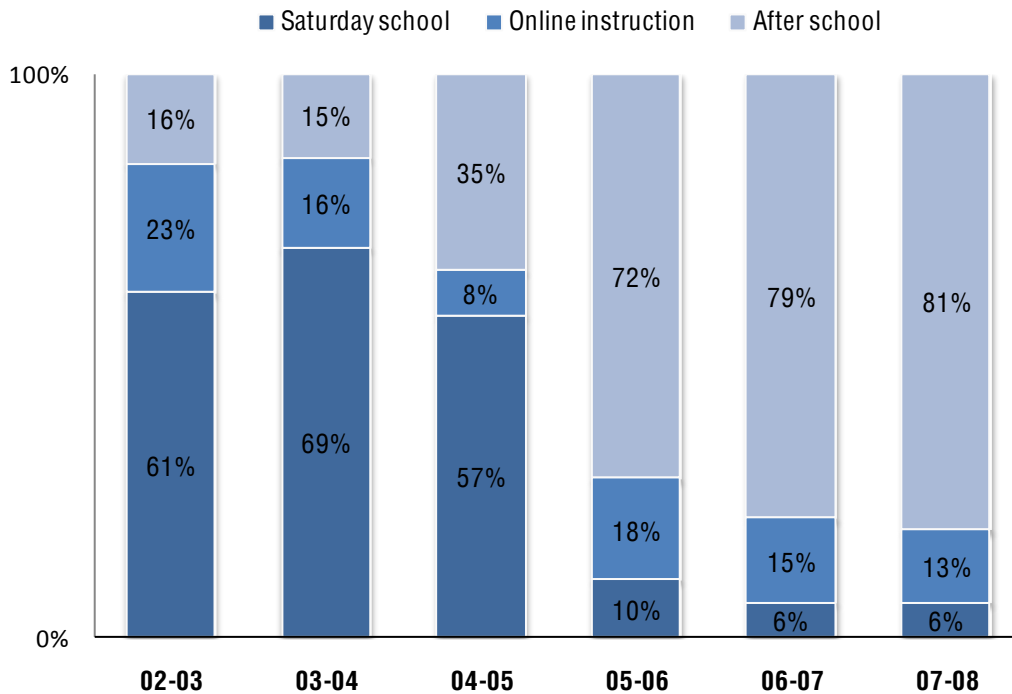
<b>Year</b>	<b>Median (hours offered)</b>	<b>Range of hours offered</b>	<b>Number of SES providers</b>	<b>Average hours attended (Standard deviation)</b>
<b>2002-03</b>	30	12-95	22	18.4 (8.6)
<b>2003-04</b>	30	15-92	26	20.9 (9.3)
<b>2004-05</b>	30	20-95	24	21.4 (9.5)
<b>2005-06</b>	30	20-80	40	23.6 (11.4)
<b>2006-07</b>	30	20-80	55	24.7 (10.5)
<b>2007-08</b>	30	20-52	38	24.6 (8.9)

Notes: Data source is the database for tracking applicants and attendance for students served maintained by the Beyond the Bell Branch of LAUSD. *Standard deviation* is a statistic used to measure the variability of a group of scores around its average value. If a set of scores is very spread out, it will have a higher standard deviation that if the scores are relatively close together. *Median* is used to capture the central tendency for a set of scores that are highly skewed, i.e., scores that are not normally distributed.

***The majority of SES programs take place after school for LAUSD participants.***

As shown in Figure 3, the majority of SES programs were held after school in 2007-08. In the first three years that SES were available, most instruction took place in Saturday school. However, when the District became a PI District in 2005-06, the location of SES shifted markedly. In each of the last two years, only 6% of SES programs were held on Saturdays, while 13-15% were held online and approximately 80% were held after school.

**FIGURE 3**  
**Percent of LAUSD Students Participating in SES By Location of Service and Year**

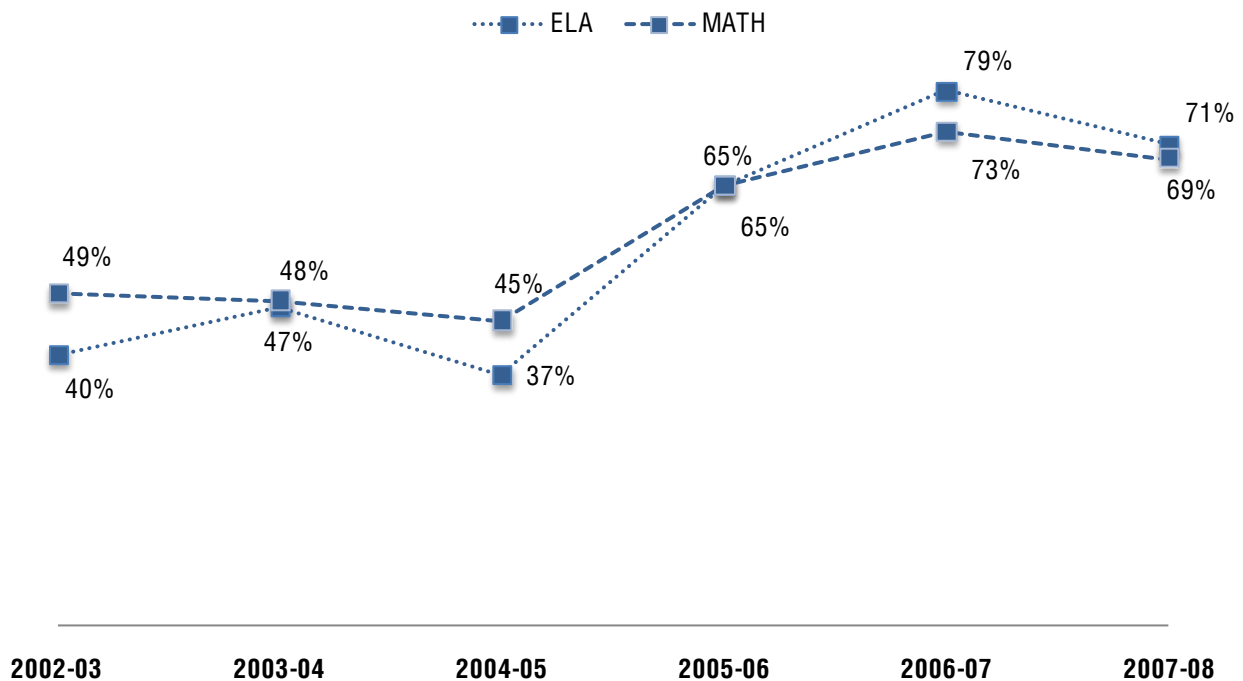


Notes: Data source is the database for tracking applicants and attendance for students served maintained by the Beyond the Bell Branch of LAUSD.

***The six-year history of SES in LAUSD has seen a dramatic increase in the percentage of participants with high attendance.***

As shown in Figure 4, the percentage of participants with high attendance (at least 90% of total hours) in an ELA program nearly doubled from 37% in 2004-05 to 71% in 2007-08. Participation in a math SES program also increased markedly during this time period, from 45% in 2004-05 to 69% in 2007-08. The increase in high attendance rates after 2004-05 may have been influenced by the fact that 2004-05 marked the last year the district was a SES provider. As previously discussed in Figure 3, the location of services shifted from 2004-05, in which most services took place in Saturday school, to 2005-06, in which most services took place after school. The increase in the proportion of students with high attendance may have been due to the fact that after school is a more convenient time for many students and their families. However, the increase may also have been due to other factors, such as the District’s attempts to increase SES attendance rates during this period. Ultimately, the increase in attendance is may be due to several factors, although it is clear that the majority of students are now participating in nearly all of the hours of service offered to them.

**FIGURE 4**  
**Percent of LAUSD Students With High Attendance in SES, By Year**



Notes: Data source is the database for tracking applicants and attendance for students served maintained by the Beyond the Bell Branch of LAUSD.

### ***Availability of SES***

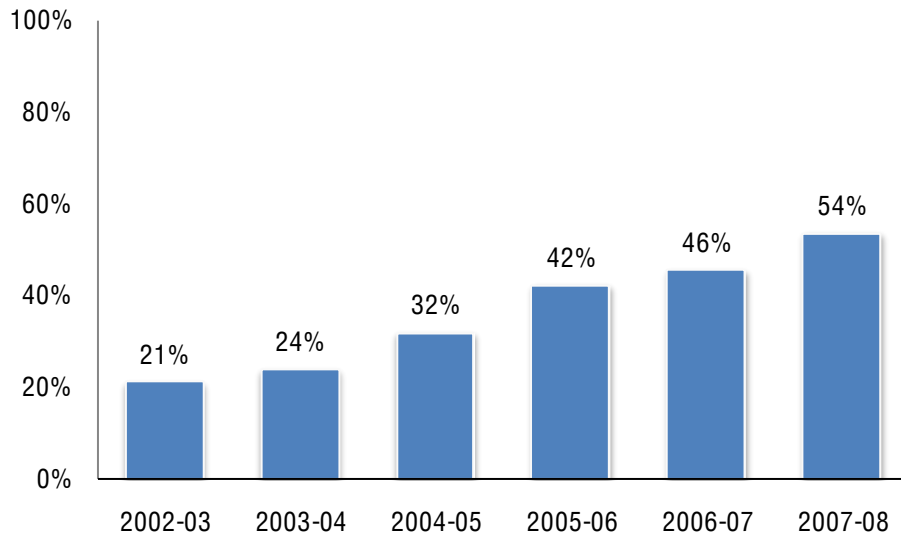
Although the percentage of eligible students applying for SES has been below 20%, both nationally and within LAUSD, the dramatic increase in the number of LAUSD students eligible for SES has implications for the proportion of students that can actually be served within a given year.

***There has been a dramatic increase in the number of LAUSD students eligible for SES over the course of the past six years.***

The percentage of students eligible for SES has increased dramatically during the past six years, both nationally and within LAUSD. The U.S. Dept of Education (2009) recently reported that the percentage of U.S. students eligible for SES has increased six-fold, from 2% in 2002-03 to 13% in 2007-08. The percentage of students eligible for SES in urban districts is generally higher than average, as is the case in LAUSD. As shown in Figure 5, the percentage of LAUSD students eligible for SES has more than doubled, increasing from 21% in 2002-03 to 54% in 2007-08.

**FIGURE 5**  
**Percent of LAUSD Students Eligible for SES By Year**

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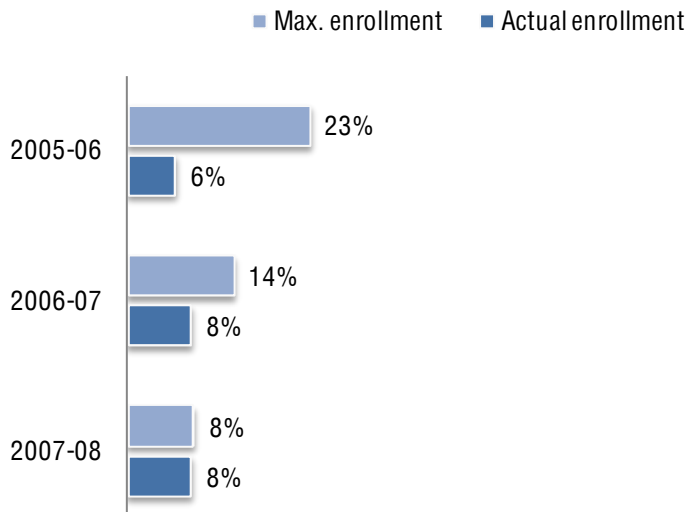
Note: Data source is the database for tracking applicants and attendance for students served maintained by the Beyond the Bell Branch of LAUSD.

***LAUSD has sufficient Title I funding to provide SES to only a small proportion of eligible students.***

As discussed in the Introduction, school districts are required to allocate 20% of their Title I funds to finance school choice options and SES. In 2006-07, there were over 300,000 students eligible for SES, although less than \$100 million of the District's Title I funding could be spent on both SES and school choice options. Given that the District's maximum payment to an SES provider was set at approximately \$1,500, there was sufficient funding for only a small percentage (approximately 10-15%) of eligible students. As shown in Figure 3, the maximum percentage of eligible students that could participate in SES decreased markedly between 2005-06 and 2007-08; in 2005-06, the District could have funded SES for 23% of eligible students, but by 2007-08, the percentage had dropped to less than 10%. As the percentage of students eligible for SES increases, the disparity between the number of students eligible for services and the number that the District can fund is likely to increase.

**FIGURE 6**  
**Percent of Eligible Students That Can Be Funded for SES Through LAUSD's Available Title I Funding**

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Note: Data source is the database for tracking applicants and attendance for students served maintained by the Beyond the Bell Branch of LAUSD.

This section details the analysis of the SES impact on student performance by describing the value added results for students eligible for SES and the estimated impact of SES participation during the 2007-08 school year.

The designed self-selection process of the SES policy allows for a comparison of test performance for those who received the services and those who did not, but makes it difficult to isolate the impact of SES from other factors influencing attendance and performance, such as motivation. The value added approach allows us to measure how much an individual student's test performance differed from the average student in the district with similar previous test performance and other measurable student characteristics. A positive value added means the student did better than expected and a negative value added means the student did worse than expected. We can estimate the impact of SES participation as the difference between average value added for the participating group and the average value added for the non-participating comparison group. See Appendix A for a more detailed discussion of the value added method.

### ***Impact of SES in 2007-08***

We calculated value added estimates for each level of SES utilization in 2007-08 (see Figure 7). Eligible students who did not apply for SES services performed slightly lower than average, on the ELA and math CST (with a value added of -0.01 and -0.02, respectively). Those who applied but did not attend also did about as well as expected, on average, with a value added of -0.02 and -0.01 on the ELA and math CST, respectively. Since neither of these groups was exposed to a SES program, we would expect their value added to be at or close to zero. For the group of students that attended an ELA program, their value added for the ELA CST was slightly higher (0.03). Similarly, the students who attended a math program had a slightly higher value added score for the math CST (0.03). Throughout the analysis we only examine ELA CST performance for ELA program participants and math CST performance for math program participants.<sup>1</sup>

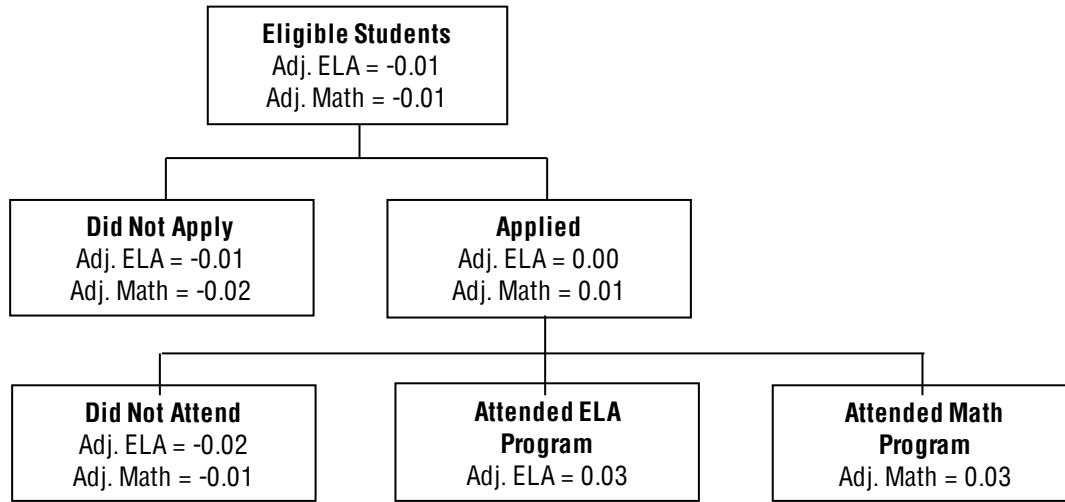
***There were statistically significant differences in the average value added between students who applied but did not attend and those participating in SES ELA or Math programs, but the effects were very small.***

Given these value added results, we estimated the average impact of the SES policy to be 0.05 for ELA programs and .04 for math programs—using the applied but did not attend group as the primary comparison group. The size of this impact represents a statistically significant difference, but is substantively small—an effect size of about 0.08 to 0.10, or about four scale score points.

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<sup>1</sup> This may seem like an obvious analytic approach, but other studies on SES effectiveness did not identify which subject participants received tutoring in, and thus examine ELA and math performance for all participants (Zimmer et al, 2007).

**FIGURE 7**  
**Value-Added Results Across SES Utilization Groups, 2007-08**



Notes: VA=value added. Data source is the database for tracking applicants and attendance for students served maintained by the Beyond the Bell Branch of LAUSD.

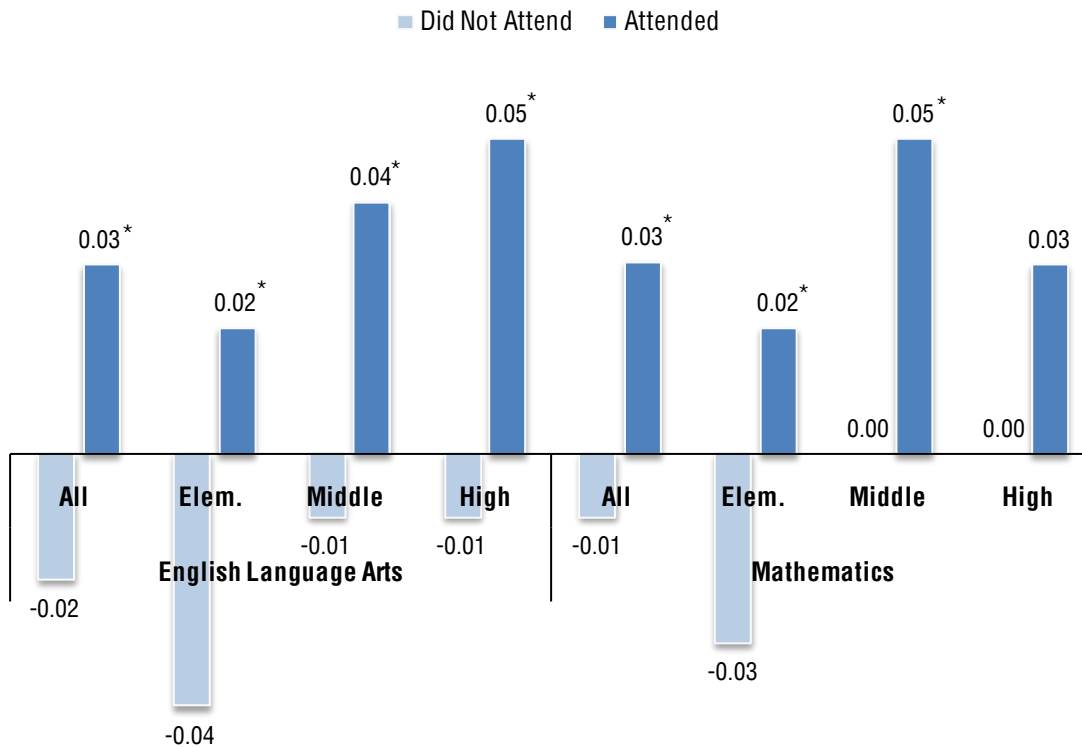
Given the disproportionate participation patterns across schooling levels described in the previous section, it makes sense to examine the SES effects by grade. Prior studies of SES found a greater impact on student performance for elementary grade students than middle or high school students (Chicago Public Schools, 2007; Rickles & White, 2006; Rickles & Barnhart, 2007). For 2007-08, this was not found to be the case.

***Average value added was higher at all three grade levels for ELA, and at elementary and middle school for math.***

Figure 8 shows the estimated impact of SES by schooling level. The difference in ELA value added between students who attended an ELA SES program and those who did not attend a program was statistically different at all three grade levels. The size of the ELA impact was similar for both elementary and middle school students (a value added difference of about 0.06 points). For math, there was a statistically significant impact among both elementary and middle school students (a value added difference of about 0.05 points).

While the focus of this report is on the overall SES policy impact and not specific program effects, examining variation in effects across providers creates additional insights into the overall effectiveness of SES. Average student value added scores did, in fact, differ by provider (see Figures B1 and B2 in Appendix B). However, only a few statistically significant differences existed, with two providers having a statistically significant and positive impact on ELA performance and another three having a statistically significant impact on math performance.

**FIGURE 8**  
**SES Value-Added Results Across Grade Levels, 2007-08**



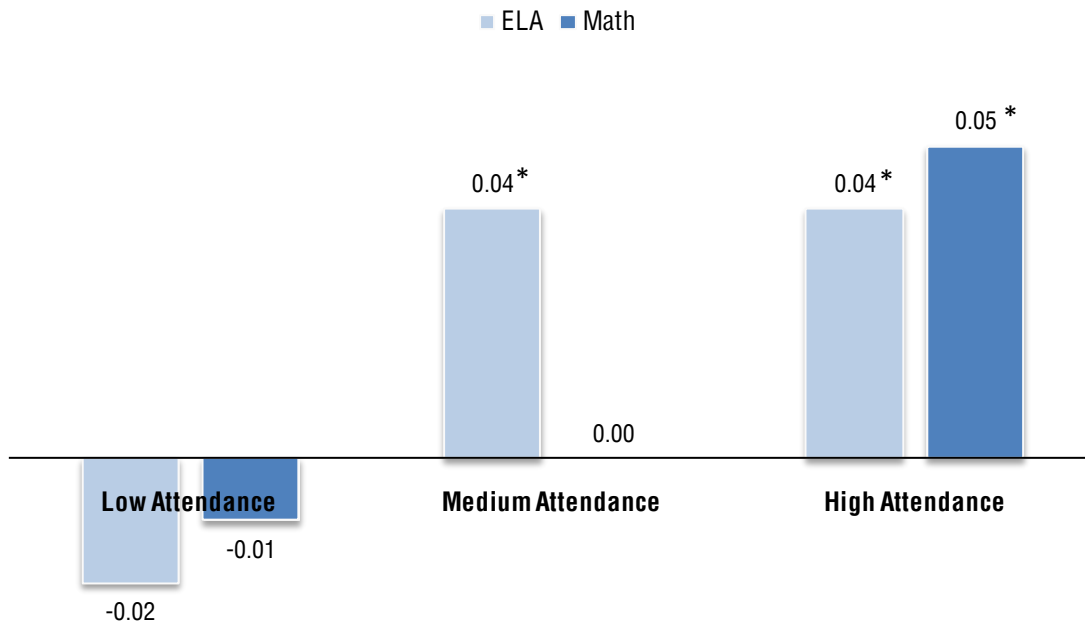
\* Designates that there was a statistically significant difference compared to "did not attend" group ( $p < 0.05$ ).

***Students that attended at least 50% of the program hours had higher value added in ELA, and those attending all or nearly all of the program hours had higher value added in math.***

The attendance level data in Figure 9 shows that students with medium attendance rates in ELA and math SES programs performed, on average, better than those with low attendance rates and students with high attendance rates performed better than both the low and medium groups. The only difference between low and medium or high attendance groups that was not statistically significant was the difference between low and medium attendance for math. This finding may suggest that in order to receive the benefits of a math SES program, a student must participate in all or nearly all of the program hours.

**FIGURE 9**  
**SES Value-Added Results Across Attendance Levels, 2007-08**

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\* statistically significant difference ( $p < 0.05$ ) from low attendance group.

Low attendance = 1% to 49% of program hours; medium attendance = 50% to 89% of program hours; high attendance = 90% to 100% of program hours

## Discussion of Findings

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Based on the results presented in Chapters 1 and 2, this final chapter includes a brief set of recommendations for LAUSD staff as well as policymakers regarding SES programs. It should be emphasized that some or all of these recommendations may already have been taken up. They are offered as suggestions for improving the quality of participation in SES.

***Recommendation #1: Conduct a study of the cost-effectiveness of all LAUSD programs funded through Title I.***

Any comprehensive analysis of SES, or NCLB more broadly, needs to consider the policy's cost-effectiveness. In 2007, the state-determined maximum per pupil cost of SES was about \$1,500 in California. Does raising student test scores an average of less than ten score points justify allocating approximately \$1,500 per student from Title I funds? To address this crucial question one needs to know the alternative ways in which Title I funds are spent and their impact on student performance. LAUSD could make more efficient decisions regarding the allocation of Title I funds through a cost-effectiveness study of all the programs funded through Title I funds. At the very least, findings regarding the impact of SES need to be juxtaposed with data on the impact of the school choice programs that also comprise the NCLB-required 20% allocation of Title I funding.

***Recommendation #2: Inform parents and students of the need to attend all of the hours offered by SES providers, especially for math programs.***

The results of this study suggest that while many program participants benefitted from attending at least 50% of the hours offered in an ELA SES program, students in math programs did not have significantly higher average value added scores unless than had attended at least 90% of the program hours. This finding should be emphasized to potential SES participants and their families, to make them better aware of the need to participate fully in the program in order to see improvements in their CST math scores due to their participation.

***Recommendation #3: Inform parents on what it means for a school to be in Program Improvement (PI) status.***

As reported in this study, the percent of eligible students that actually apply for services is very low, at approximately 11%. A recent study by the U.S. Dept. of Education (2009) identified several barriers to participation in SES. First, the study found that less than one-quarter of parents of elementary students were aware that their child's school was in Program Improvement (PI) status, and many claimed to have not received information that their child was eligible for SES. These two findings may go hand-in-hand; if parents do not understand what it means for a school to be in PI status, then they may not fully understand or pay attention to any notices sent by the school that their child is eligible for SES services. In communicating to parents that their child is eligible for SES services, the District may wish to pay careful attention to the language that they use to explain what it means for a school to be in PI status, to increase the likelihood that they will understand what services they are being offered and *why*.

***Recommendation #4: Conduct follow-up communication with the California Department of Education, to make them aware of the latest findings in LAUSD and encourage them to make public any available evidence on the effectiveness of SES providers.***

Last year, LAUSD sent the results of the analysis of SES to the California Department of Education. This year, the results should again be forwarded to the State, with an appeal that they make carefully consider the included information on the effectiveness of SES providers in deciding which providers to approve within the State.

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## Appendix A: Data and Methodology

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Ultimately, the available data on SES shaped our analysis. LAUSD began keeping records of eligible and participating students in the 2002-03 school year, which was the first year the district was required to offer SES. These records contain the following information on students eligible for SES in each school year from 2003 to 2008:<sup>2</sup>

- whether the student applied for SES services
- whether the student attended a SES program
- which provider each student applied to and/or received services from
- whether the attending student received services for English/language arts (ELA) or mathematics
- how many hours of services the student received
- how many hours of services were possible for a given provider and subject

Data on SES participation was linked with student-level demographic characteristics as well as performance data on the California Standards Test (CST). We linked the data on SES participation with two additional sources of student-level information: (1) demographic characteristics from the district's Student Information System (SIS), which includes data such as gender, ethnicity, participation in special education, and eligibility for free and reduced price meals; and (2) annual test scores on the CSTs for students in grades 2-11. We used the combined database to assess the impact of SES participation on changes in CST performance for ELA and math. One might argue that the CST is a blunt tool for measuring SES program effectiveness in a given year. However, because eligibility for SES is based on students' collective performance on statewide assessments, the CST is a relevant tool for measuring the policy effect of SES.

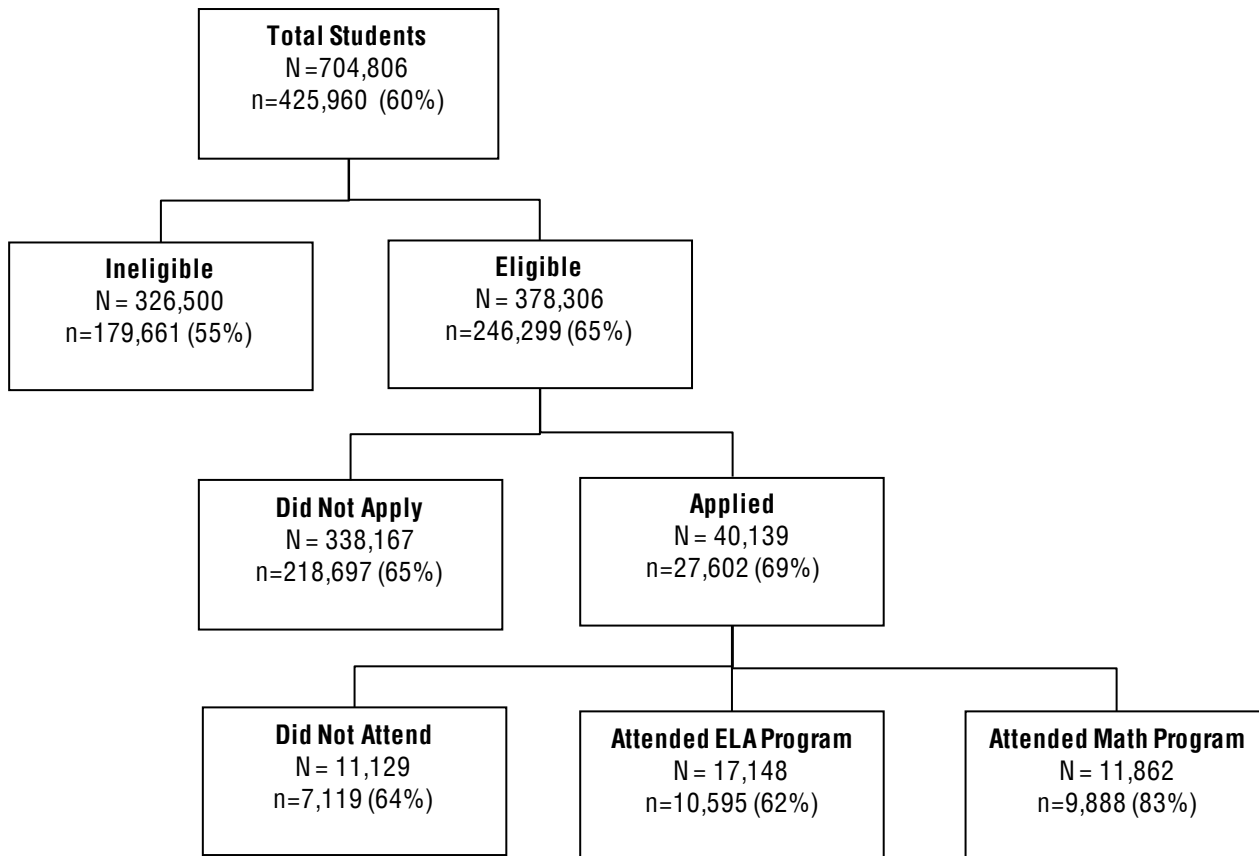
These data allowed us to describe the trends in SES participation for eligible students and to construct comparison groups for estimating the impact of SES attendance on CST performance. Eligible students were included in our analyses only if they were present in the SIS records for a given year.<sup>3</sup> Included students were subsequently categorized by whether they applied for SES, and if so, whether they actually attended. To get a sense of how many students were in our database for the 2007-08 academic year and how they were categorized, Figure A1 displays the total number of students contained within each category (N) and the number of students that had complete CST and demographic data (n). The main discrepancy between the total number of students in a category and those with complete data is the fact that students in California are only tested in grades 2-11 and our analysis of student performance requires two years of CST data. Our analysis of SES utilization was based on the entire population of eligible SES students (N), but our analysis of student performance was restricted to students in grades 3-11 with at least two years of CST data (n).

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<sup>2</sup> For simplicity we use the end-year to denote the school year. For example, we use 2003 instead of 2002-03 and 2008 instead of 2007-08.

<sup>3</sup> Approximately 9% of students on the original eligibility list were excluded from our analyses because they did not have demographic data in SIS. In order to be included in the SIS data file, students must have been enrolled in the district for at least one semester. This stipulation provided us with a somewhat more stable eligible population, and was the main reason that students had incomplete demographic data. In addition, the main reason that students had incomplete CST data is that they were missing a CST score for the current year (e.g., students in grades K-1 and grade 12 are not tested) or previous year (e.g., grade 2 students or any student new to the district).

**FIGURE A1**  
**Number of Students in the SES Population, 2007-08**



### ***Describing SES Participation***

We had two main objectives in describing SES participation over the course of its five-year history in LAUSD. Since consumer demand may be the ultimate gauge of success for a consumer choice policy such as SES, our first goal was to determine the extent to which families actually took up the option of free tutoring services by characterizing the different levels of participation among the eligible student population. Our second goal was to provide important context for understanding and interpreting the causal analysis of the SES impact on student achievement. To achieve these objectives, we present information on two different levels of SES utilization within a given year:

1. Participation levels—the percent of eligible students who apply for and consequently have some level of participation in an SES program (i.e., they attended); and
2. Attendance levels—the percent of SES participants that attended at least 90% of an SES program’s possible hours (i.e., students who received the full level of services for that specific program);

We then take a longitudinal look at participation levels across the five-year period to examine trends in SES utilization. In Chapter 3 we examine exposure levels, or the overall amount of service hours received by SES participants as it relates to student performance.

## **A Value Added Approach for Estimating the SES Effect**

For this study, we sought to build off of the value added work currently used for research and program evaluation within LAUSD (see Daley & Valdés, 2006). The main benefit of this model is that it enables us to control for potential selection bias in estimating the effect of SES participation. With this value added approach we created a two-staged method for estimating the impact of SES. In the first stage, we predicted each student's CST score in a given year ( $\hat{Y}_{it}$ ), based on CST performance in the previous year and student demographics. To calculate the predicted score for every student with valid ELA and mathematics CST data, we estimated separate OLS regression models for each combination of year, test subject (ELA and math), and grade level progression (or test-taking sequence for high school mathematics).<sup>4</sup> The regression model for any given year-subject-grade took the following form:

$$\hat{Y}_{it} = \mu + \beta_1 Y_{it-1}^{ELA} + \beta_2 Y_{it-1}^{Math} + \beta_i X_i + \beta_s Z_s$$

In the above equation,  $Y_{it-1}^{ELA}$  represents the previous year's ELA CST score for student  $i$ , and  $Y_{it-1}^{Math}$  represents the previous year's mathematics CST score for student  $i$ . The prior year ELA and math CST scores were included in the models for both subjects because exploratory analysis of the SES selection process suggested that students with higher prior math CST scores, controlling for ELA performance, were more likely to choose an ELA SES program and vice versa. To improve comparability across grade levels, subject areas, and years, we converted all CST scale scores to standardized scores based on the district mean and standard deviation for each test and year.

As mentioned earlier, we included in the value added model a set of student demographics,  $X_i$ , to control for potential differences in student performance that result from pre-existing student characteristics. This set of student demographics included dichotomous variables for the following: gender, ethnicity, English language classification, student with disabilities, gifted and talented student (GATE), and level of parental education. To account for possible differences in performance and SES participation across schools and regions of the district, we also controlled for school-level proportions of the student demographics,  $Z_s$ , and the local district of attendance for each student.<sup>5</sup>

Deviations in a student's predicted CST score ( $\hat{Y}_{it}$ ) and actual CST score ( $Y_{it}$ ) that are unaccounted for by the regression model covariates are symbolized by  $\varepsilon_{it}$ , i.e., the random residual. In a value added framework, the residual can function as the estimated "value added" for the factor of interest, assuming the model controls for all other confounding factors. In the second stage of our design, we compared the average residual for one group (e.g., participants) to the average residual for another group (e.g., non-participants).

Table A1 reports the summary statistics for the overall measures that comprised the design. For the entire population of district students, the CST scale scores ranged from 150 to 600 with a standard deviation of 56 and 75 in ELA and math, respectively. The population means and standard deviations were used to calculate standardized CST scores (with a mean of zero and standard deviation of one) and the standardized scores were used in the regression model to calculate predicted and residual scores.

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<sup>4</sup> For example, separate regressions were used to predict the performance of a student going from Algebra 1 to Algebra 2 and a student going from Algebra 1 to Geometry. Similarly, different regressions were ran for a student taking a 4th grade ELA test two years in a row (presumably due to grade retention) and a student taking the 3rd grade then 4th grade tests.

<sup>5</sup> It is important to acknowledge the fact that students are nested within schools and, perhaps more relevant to this study, students are nested within providers. We are aware that standard errors may be inflated if such clustering is not taken into account, and address this limitation in the concluding section of the report.

**TABLE A1**  
**Summary Statistics for Student Achievement Measures**

	<b>N</b>	<b>Mean</b>	<b>Std Dev</b>	<b>Minimum</b>	<b>Maximum</b>
<b>All Students in 2008</b>					
ELA CST Scale Score	507,649	323.75	63.57	150.00	600.00
Standardized ELA CST Score	507,649	0.00	1.00	-3.28	5.88
Std. Predicted ELA CST Score	415,733	0.00	0.84	-2.51	4.41
Std. Residual ELA CST Score	415,733	0.00	0.54	-4.14	5.05
Math CST Scale Score	492,663	325.42	84.49	150.00	600.00
Standardized Math CST Score	492,663	0.00	1.00	-3.18	7.96
Std. Predicted Math CST Score	402,669	0.00	0.78	-2.31	4.63
Std. Residual Math CST Score	402,669	0.00	0.63	-3.96	5.62
<b>SES Eligible Students in 2008</b>					
ELA CST Scale Score	240,892	316.00	50.50	150.00	600.00
Standardized ELA CST Score	240,892	-0.19	0.92	-3.18	5.12
Std. Predicted ELA CST Score	238,619	-0.18	0.76	-2.51	3.79
Std. Residual ELA CST Score	238,619	-0.01	0.52	-3.91	4.34
Math CST Scale Score	233,902	301.72	67.40	150.00	600.00
Standardized Math CST Score	233,902	-0.17	0.92	-3.18	6.23
Std. Predicted Math CST Score	197,318	-0.15	0.70	-2.31	3.88
Std. Residual Math CST Score	197,318	-0.01	0.61	-3.96	4.30

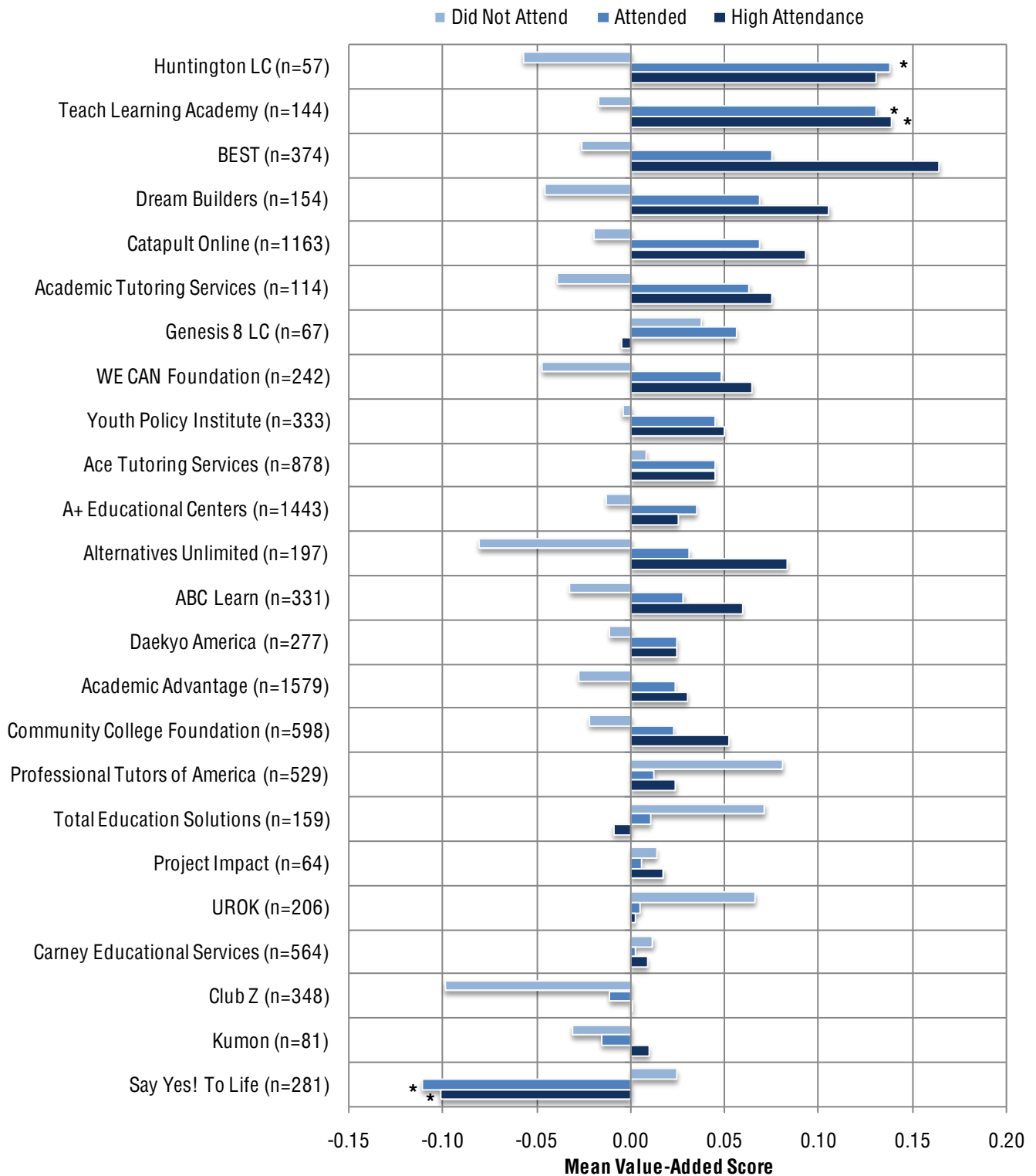
Unlike the use of a simple change score in test performance, the use of predicted and value added scores improves our ability to make causal inferences in two important ways. First, the predicted scores help equate participant and non-participant groups, since the regression model controls for differences in prior test performance and pre-existing student characteristics. Similarly, the residuals provide a comparative measure of student performance within a given year, such that the values are relative to all other students enrolled in the district that are in the same test-taking sequence (grade level), and that possess similar prior test performance, demographics, and are in schools with similar student compositions.<sup>6</sup>

Second, since we generate a residual score for all students, we have the flexibility to calculate average value added scores for different sub-classifications of SES participation and make comparisons to different non-participant groups. In doing so, we can conduct different comparisons within the same general research design and model. This flexibility has particular relevance to our study given that we examine cross-sectional annual effects during the five year history of SES and longitudinal, multiyear effects.

<sup>6</sup> This approach helps equate groups but unlike with a randomized experimental design, unobservable differences still pose a potential threat to validity. It is important to recognize this limitation. A situation in which eligible participants were randomly assigned to providers, or where assignment was based on a known, continuous, variable such as previous year's CST score, would allow for an experimental design or regression discontinuity design. These designs would likely produce less biased estimates of the effect than the design utilized for this study. Unfortunately, the conditions of SES implementation did not allow us to use either an experimental or regression discontinuity design. If in future years more students apply for SES than available funding can support, the opportunity exists to allocate limited slots based on random assignment or a specific cut-off score on the previous year's test.

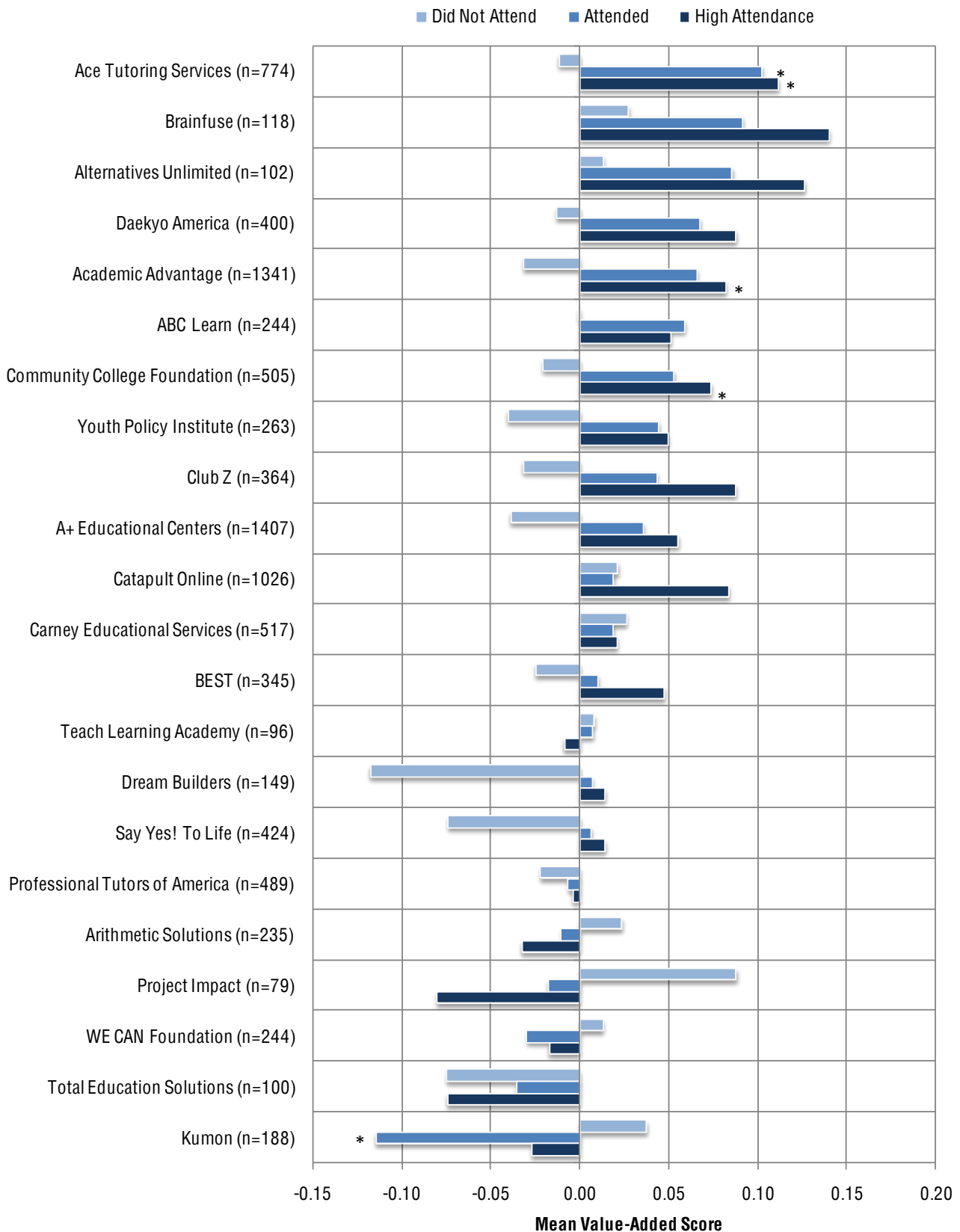
## Appendix B: Supplemental Tables and Figures

**FIGURE B1**  
**Average ELA Value Added Scores By Provider, 2007-08**



Note: Restricted to providers with at least 50 students attending the program. Reported n reflects number of students who attended that provider's program. Scores are conditional on prior student performance and student characteristics.  
 \* statistically significant difference compared to "did not attend" group (p<0.05)

**FIGURE B2**  
**Average Math Value Added Scores By Provider, 2007-08**



Note: Restricted to providers with at least 50 students attending the program. Reported n reflects number of students who attended that provider's program. Scores are conditional on prior student performance and student characteristics. \* statistically significant difference compared to "did not attend" group ( $p < 0.05$ )