

# Project SOS (Supporting Optimal Scholarship) Evaluation

## Final Impact Report

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## **Executive Summary**

The Austin Independent School District (AISD) received a grant from the U.S. Department of Education to develop an Advanced Placement (AP) incentive program aimed at improving the participation and performance of low-income high school students in AP courses and on AP exams. AISD contracted with the Ray Marshall Center for the Study of Human Resources (RMC) to conduct an independent impact evaluation of the initiative, which was titled Supporting Optimal Scholarship, or Project SOS.

### **Description of Project SOS Demonstration**

Project SOS began its operation in the spring 2004 semester and continued offering services through the 2005-06 school year. The project took place at the five AISD high schools with the highest concentrations of low-income students (Akins, Johnston, Lanier, Reagan and Travis). The Austin Independent School District (AISD) Office of Advanced Academic Services implemented and supervised the operation of Project SOS.

This demonstration sought to identify and eliminate many of the key variables that prevent high ability, low-income students from enrolling in Pre-AP/AP courses at the secondary level and performing successfully on Advanced Placement exams. Types of activities were limited to those amenable to school intervention.

Strategies used in this project sought to influence students, parents, teachers, and the overall school community. Key features included:

- A series of meetings and trainings designed to educate the overall school communities regarding how to adapt pre-AP and AP classes and the overall school culture to make advanced classes more accessible to low-income students
- Creation of campus action teams on each campus involved in this project
- Parent advocacy and education forums and the creation of a Parent Advisory Committee for the entire period of the project
- Teacher training on developing AP syllabi and increasing teacher awareness of how classes can be altered to make them more accessible to low-income students
- A redesign of Pre-AP and AP courses in which teachers and students participated.
- Online support for students for each AP course in which they were enrolled
- Peer study groups.

## **Research Questions**

The research questions addressed by the impact evaluation are:

1. To what extent does Project SOS increase the percentage of low-income students enrolling in AP courses?
2. To what extent does Project SOS increase the percentage of low-income students passing AP courses (of those enrolled)?
3. To what extent does Project SOS increase the percentage of low-income students taking AP exams?
4. To what extent does Project SOS increase the percentage of low-income students scoring three or higher on AP exams (of those taking AP exams)?
5. To what extent does Project SOS increase the average scores of low-income students who take AP exams?

## **Research Methods**

The evaluation utilized a quasi-experimental approach to select a set of comparison Texas schools that match the study schools along key demographic, programmatic and other significant dimensions. By comparing key outcomes for these comparison schools (or an aggregation of them) against those obtained by the schools participating in Project SOS, RMC researchers estimated the impact of Project SOS on improving the enrollment and performance of low-income students in Advanced Placement classes. A similar approach measured differences in outcomes for low-income students in Project SOS schools against similar low-income students in other AISD schools. Subject to data availability constraints, each question was answered at both the school-level and the student-level.

## **Summary of Findings**

The students in Project SOS schools increased their enrollment in AP courses, improved their grades in these courses and took a greater number of AP exams compared to the baseline period prior to Project SOS. However, improvement in these measures also occurred for the comparison schools across Texas and the comparison students in other AISD schools during the study period. No significant differences between Project SOS schools or students and their comparison groups were observed for any of these measures.

In both the Project SOS schools and their comparison schools, actual passing rates on AP exams dropped as of the end of the 2004-05 school year from the baseline period (data were not available for 2005-06) but the differences in passing rates between the two groups were not statistically significant. However, comparison students within other AISD schools improved their AP exam performance (though the 2005-06 school year) while the test performance of Project SOS students fell slightly. This pattern was observed both for AP passing rates and average AP test scores and the differences between the two groups were statistically significant for both measures. Thus, even after controlling for differences in student characteristics and many teacher and campus factors, low-income students in other AISD schools outperformed those in Project SOS schools on these measures.

### **Discussion of Findings**

Several possible reasons could explain these findings:

1. The design or the implementation of the Project SOS initiative may have been flawed.
2. Other initiatives designed to improve the AP performance of low-income students may have influenced the performance of comparison schools or students and diluted the effects of Project SOS.
3. More time was needed after the project's implementation to observe improvement in AP test performance for the larger groups of students who enrolled in AP classes and participated in AP exams.
4. Even though the quasi-experimental comparison group design controlled for as many factors as possible, some differences between the Project SOS schools and students and their comparison groups may not have been properly measured, either due to data limitations or actual differences in school or community environments.

The authors also offer recommendations for evaluating future initiatives of this type.

## **I. Introduction**

The Austin Independent School District (AISD) contracted with the Ray Marshall Center for the Study of Human Resources (RMC) to conduct an independent impact evaluation of the AISD Advanced Placement Incentive Program entitled Supporting Optimal Scholarship, or Project SOS. The evaluation utilized a quasi-experimental approach to select a set of comparison Texas schools that match the study schools along key demographic, programmatic and other significant dimensions. By comparing key outcomes for these comparison schools (or an aggregation of them) against those obtained by the schools participating in Project SOS, RMC researchers estimated the impact of Project SOS on improving the enrollment and performance of low-income students in Advanced Placement classes. A similar approach measured differences in outcomes for low-income students in Project SOS schools against similar low-income students in other AISD schools.

This report briefly summarizes the Project SOS initiative, describes the outcomes measured by this evaluation along with the processes used to obtain these outcomes, and reports on the net impacts on enrollment in AP classes and performance on AP exams for the 2004-05 and 2005-06 school years.

### **Structure of the Final Report**

This report is organized into six sections and two appendices. This section provides an introduction to Project SOS and RMC's role in its evaluation. Section II offers a review of the literature relevant to AP incentive programs and Project SOS in particular. Section III discusses the Project SOS demonstration project in more detail. Section IV lists the research questions and summarizes the research methods and data used to evaluate Project SOS. Section V reports the impact evaluation findings for Project SOS. The last section of the report discusses the meaning of these findings and their implications for development of future initiatives. Two appendices provide additional details on the procedures used to develop comparison groups and compare the characteristics of the Project SOS schools and students with those in the comparison groups.

## **II. Overview of the Advanced Placement Program and Initiatives to Improve Low-Income Student Participation**

### **History of the AP Program**

The Advanced Placement (AP) program allows high school students to complete college-level coursework. The AP program was created in 1952 as a pilot project of the Ford Foundation; in 1954, the College Board assumed control of the program that it directs today (Journal of Blacks in Higher Education, 1996). The first official AP examinations were offered in 1956 (TEA, 1995). As of April 2007, the AP program offered 35 courses in 20 subject areas (College Board, 2007). Depending on the AP exam score and the policy of the postsecondary institution chosen, students may earn advanced placement, college credit, or both. During the 2006-2007 school year, the College Board instituted an audit of all AP courses for the first time in order to ensure consistent elements of AP courses in all schools. The results of the audit will create a ledger of schools officially allowed to label courses as “AP” during the 2007-2008 school year (College Board, 2007).

### **New Initiatives to Improve College Preparedness among Low Income Students**

In the past decade, concern has emerged that the increase in AP participation and indeed preparation for college in general has not been proportional across all demographic groups. A panel of research examining the lack of access and pathways to college for minorities and low-income students has emerged. Clifford Adelman’s Department of Education report, “Answers in the Tool Box: Academic Intensity, Attendance Patterns, and Bachelor's Degree Attainment” (1999) was a seminal work in this area. A follow-up report, “The Toolbox Revisited: Paths to Degree Completion from High School through College,” was published in 2006. Several nationwide initiatives have been created to address the issue, including the American Diploma Project and the New Commission on the Skills of the American Workforce (ADPN, 2007; NCEE, 2007).<sup>1</sup>

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<sup>1</sup> A more complete literature review on the topic of improving postsecondary success in Texas can be found in the LBJ School of Public Affairs Policy Research Project: “Beyond the Numbers: Improving Postsecondary Success Through a Central Texas High School Data Center”(2005) and in RMC’s “Central Texas High School Graduate Data Center Year One Final Report” (Schexnayder et al, 2006).

The College Board has recently identified the achievement gap as a major focus, and has issued an official equity statement: “The College Board encourages the elimination of barriers that restrict access to AP courses for students from ethnic, racial, and socioeconomic groups that have been traditionally underrepresented in the AP Program. Schools should make every effort to ensure that their AP classes reflect the diversity of their student population” (2007). In the 2007 Advanced Placement Report to the Nation, the College Board highlighted recent Arkansas legislation that requires all Arkansas public schools to make AP courses available to all students, and provides funding for teachers to gain professional development to teach the courses (College Board, 2007).

Many strategies other than AP have also been introduced to promote college preparation for disadvantaged students. Among the most well-known are International Baccalaureate (IB), AVID, GEAR UP, and dual enrollment programs.

### ***National Efforts***

The federal government, through the U.S. Department of Education, is promoting underrepresented student participation in AP courses. The AP Incentive Grants Program began in 2001 in order to enable schools to increase the participation of low-income students in both pre-AP and AP courses and tests. The program makes 3-year competitive awards to state and local educational agencies and national nonprofit educational entities. The grants must be used to expand access for low-income individuals to Advanced Placement programs. AISD received a grant in the first year of the grant cycle that provided funding for Project SOS (USDE, 2007).

### ***Texas***

Texas has likewise sponsored efforts to make AP and college more accessible to all students. The O’Donnell Foundation has been a major proponent of Advanced Placement in Texas. Starting in the early 1990’s in nine Dallas Independent School District schools, students passing math, science and English AP exams received \$100 for each exam, and AP teachers received \$150 for each passing score made by his or her students. In 2000, the foundation established a separate non-profit organization, AP Strategies, to expand the program and link schools with financial donors (O’Donnell Foundation, 2007).

In large part due to the success of the Dallas initiative, in 1995 the 74<sup>th</sup> Texas Legislature passed the Advanced Placement/ International Baccalaureate (AP/IB) Incentive Program to expand AP programs in Texas public school schools by subsidizing \$30 of the \$82 cost of AP exams for almost all students taking AP exams, and offering deeper reductions for qualified low-income students<sup>2</sup> (Barnes, 2006). By 2005, over 208,000 AP/IB exams were taken by Texas students, and the number of exams taken by low-income students increased from less than 3,000 in 1994 to over 50,000 in 2005 (Barnes, 2006).

Since 1995, statewide efforts to promote the AP program have increased dramatically. The AP/IB incentive program has evolved into a public/private/non-profit partnership linking foundations, non-profit organizations and the Texas Education Agency (TEA) together to promote participation in AP courses. Based on the O'Donnell Foundation model, school districts can apply to participate in one component of the program which provides awards to schools of up to \$100 for each student who scores three or higher on an AP exam or four or higher on an IB exam (TEA, 2007). The program also allows school districts to apply for reimbursement of up to \$450 per teacher for approved Advanced Placement and International Baccalaureate training (TEA, 2007).

The state has also continued to focus on the larger picture of minority and low-income participation in college. The Texas Higher Education Coordinating Board's report, "Closing the Gaps: The Texas Higher Education Plan" unveiled a plan to attract 500,000 more minority students in Texas to higher education by 2015 (THECB, 2001). In 2005, the 79<sup>th</sup> Legislature passed House Bill 1 which primarily instituted school finance reform but also mandated a universal policy of four years of math and science courses starting in 2006, called the "4x4" graduation plan (HB1, 2006; TEA, 2006).

### ***AISD***

The Austin Area Research Organization white paper, "Closing the Higher Education Enrollment Gap in Central Texas" sets a goal of 50,000 additional Central Texas students enrolled in higher education by 2015 (AARO, 2007). Like Texas, the Austin Independent School District increased the number of students taking AP exams since 1995 but prior to the

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<sup>2</sup> Most low-income students pay a subsidized cost of \$5 for each AP exam.

initiation of Project SOS (AISD, 2003). During the operation of Project SOS, AISD offered many initiatives to promote college preparation for disadvantaged students, including IB, AVID, GEAR UP and dual enrollment programs. Beginning in the 2005-06 school year with Johnston High School, AISD has also been involved with the Texas High School Project, a public-private partnership to redesign high school into smaller learning communities on the Bill and Melinda Gates Foundation model (TEA, 2007).

### **Research on the Effectiveness of AP Incentive Programs**

Incentive programs targeted at promoting Advanced Placement among minority and low-income students have emerged as a major means of promoting equity in college preparation efforts in recent years. While promoting enrollment in AP courses is an important first step, several studies have indicated that students who take *and* pass AP exams have the highest levels of college achievement. In a study of 81,445 freshmen entering the University of California between 1998 and 2001, Geiser & Santelices (2004) found that while strong student performance on AP exams is highly correlated with success in college, merely taking AP or other honors-level courses in high school was not associated with improved college performance. Likewise, a longitudinal study of 67,412 students who enrolled in a Texas public college or university from 1994 to 2003 signified that the proportion of students who take and pass AP exams is the best indicator of whether a school prepares its students to graduate from college (Dougherty et al, 2006). A new study of 2001 Texas public high school graduates indicates that students who take the AP test and receive a score of at least 2 generally perform better in college than students who earn an AP test grade of 1, took AP courses but no exam, or took dual enrollment or other non-AP courses (Hargrove et al, 2007).

However, Klopfenstein (2006) found no evidence that the average student derives a positive benefit from AP experience beyond the benefits offered by a non-AP curriculum strong in math and science, and indicated that previous studies finding positive AP effects do so because of omitted variable bias. Another study indicated that due to the rapid expansion and possible dilution of the AP program in the 1990's, AP students are no more likely than non-AP students to achieve measures of college success (Klopfenstein, 2005). Klopfenstein's research employs data from the Texas Schools Microdata Panel (TSMP) focusing on Texas

public high school graduates. While no consensus has emerged from the research conducted to-date, most studies indicate that promoting AP enrollment and especially taking the AP examinations may be an effective means of promoting college for all students, and especially for disadvantaged groups.

Kristin Klopfenstein and the Texas Schools Project have performed the bulk of the research on the impact of Advanced Placement programs on low-income and minority schools and students. In “Advanced Placement: Do Minorities Have Equal Opportunity?” (2003) Klopfenstein finds that students’ low-income status is the single most important factor behind the minority AP participation gap. Klopfenstein has also identified underlying factors such as the lack of qualified AP teachers and courses in schools with high proportions of low-income students and weak academic preparation as evidence for the continued achievement gap in AP course enrollment or test performance (2004). Overall, however, there are very few studies focusing on the effects of AP incentive programs on underserved students and schools, and little if any research using anything other than econometric (non-experimental) quantitative models.

The Project SOS evaluation is significant to the existing literature on AP incentive programs because there have been few if any reliable studies conducted on the effectiveness of AP intervention programs using random experiment or quasi-experimental techniques. Thus, the quasi-experimental method used in this evaluation begins to move the literature from statistical correlation to causation. Unlike earlier studies, this report will attempt to determine the *differential* impact of Project SOS on increasing low-income students’ access to and performance in AP courses and exams. One major challenge is to determine if other programs might target the same population as Project SOS and thus influence the outcomes of those students in AP courses and enrollment. Without this knowledge, these programs might have obscured the effect of Project SOS. Two such programs, GEAR UP and AVID, exist at each of the study schools and a number of the selected comparison schools. Other local, state and nationally funded programs that may target the same population may be present but were not accounted for at both the treatment and comparison schools.

### **III. Project SOS Demonstration**

The Project SOS: Supporting Optimal Scholarship demonstration was designed to improve the participation and performance of low-income high school students in Pre-AP/AP courses, and on AP exams<sup>3</sup>. Over the three-year period of this initiative, the goals of the project were to increase the proportion of low-income students enrolled in AP classes and to increase the proportion of low-income students who take and score 3 or higher on the AP exams. The Austin Independent School District (AISD) Office of Advanced Academic Services implemented and supervised the operation of Project SOS.

Project SOS began its operation in the spring 2004 semester and continued offering services through the 2005-06 school year. The project took place at the five AISD high schools with the highest concentrations of low-income students (Akins, Johnston, Lanier, Reagan and Travis).

This demonstration sought to identify and eliminate many of the key variables that prevent high ability, low-income students from enrolling in Pre-AP/AP courses at the secondary level and performing successfully on Advanced Placement exams. Types of activities were limited to those amenable to school intervention.

Strategies used in this project applied to each of the following groups: students, parents, teachers, and the overall school community. Key features included:

- A series of meetings and trainings designed to educate the overall school communities regarding how to adapt pre-AP and AP classes and the overall school culture to make advanced classes more accessible to low-income students
- Creation of campus action teams on each campus involved in this project
- Parent advocacy and education forums and the creation of a Parent Advisory Committee for the entire period of the project
- Teacher training on developing AP syllabi and increasing teacher awareness of how classes can be altered to make them more accessible to low-income students
- A redesign of Pre-AP and AP courses in which both teachers and students participated.

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<sup>3</sup> The terms 'low-income' and 'economically disadvantaged' are used interchangeably. TEA defines economically disadvantaged students as those eligible for free or reduced-price lunch or other public assistance.

- Online support for students for each AP course in which they were enrolled
- Peer study groups

As a feature of the U.S. Department of Education grant that funded this initiative, Project SOS include both a qualitative evaluation by AISD Internal Process Evaluator Ernesto Bernal that documented the implementation of Project SOS components and this impact evaluation that measured the effectiveness of Project SOS on student outcomes. These two evaluations should be viewed as complementary to one another in terms of providing both statistical and qualitative information on the performance of the Project SOS model.

## IV. Research Questions and Methods

### Research Questions

The research questions addressed by the Ray Marshall Center’s impact evaluation of Project SOS focus on whether low-income students in the five target high schools become *more engaged* in the AP program, and whether they *perform better* in AP classes and exams. The questions are as follows:

1. To what extent does Project SOS increase the percentage of low-income students enrolling in AP courses?
2. To what extent does Project SOS increase the percentage of low-income students passing AP courses (of those enrolled)?
3. To what extent does Project SOS increase the percentage of low-income students taking AP exams?
4. To what extent does Project SOS increase the percentage of low-income students scoring three or higher on AP exams (of those taking AP exams)?
5. To what extent does Project SOS increase the average scores of low-income students who take AP exams?

Subject to data availability constraints, each question was answered at both the school-level and the student-level by first comparing outcomes of low-income students at Project SOS high schools against low-income students from comparison high schools selected from across the state, and then against outcomes of selected low-income students in other AISD high schools. Some questions were not answerable at one or the other level due to constraints of the data available for this evaluation.<sup>4</sup>

### Research Methods

Comparison schools and students were selected using the ‘nearest-neighbor’ matching technique. Nearest-neighbor matching is an iterative computational process, done

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<sup>4</sup> For example, due to masking procedures employed to protect confidentiality of students, the data from high schools in other districts made available by the Texas Education Agency do not permit completion rates of AP courses to be calculated, nor average scores on AP exams. Due to the unavailability of these data, analysis of AP performance for this report is limited to the percent of low-income students receiving a score of three or more on an AP exam (a grade which provides college credit and is thus considered “passing”).

for one SOS participant (or target, whether a school or student) at a time, as follows. For example, in a student-level match, the universe of potential neighbors for the target participant is first restricted to those with an exact match on important categorical dimensions, such as low-income status, race, or gender, for which ‘distance’ is difficult to quantify. Next, the target participant is compared against every remaining potential neighbor on all-important near-continuous dimensions, with total distances measured across multivariate space. When all potential neighbors have been compared to the target, the one with the shortest distance, or the person most like the target in multivariate space, is selected as the nearest neighbor. This neighbor is retained for the comparison group, then removed from further matching consideration, and the process is repeated for the remaining SOS participants until the selection of the comparison group is complete.

A variation of the matching procedure allows more than one comparator to be chosen for each target member. In this case, all those within a specified multivariate distance of the target are chosen, and their aggregate outcomes are compared against those of the target. This approach was performed for the school-level comparison because it allowed selection of a more equivalent comparison group. However, it was not feasible for the student-level comparison due to much smaller numbers of available student comparators.

### ***Comparison Group Selection***

#### **School-level match**

For the school-level analysis, due to the lack of readily available data in important areas, the selection was performed in two stages. The first stage, completed in the spring of 2005, selected a number of nearest-neighbor schools as potential comparators for each of the target high schools. This subset of schools was then surveyed, and additional administrative data measures sought from the Texas Education Agency in order to collect the additional information needed to refine the first match. This information was then added to the original measures and utilized in a second-stage match procedure to arrive at a final group of comparison schools. Between 20 and 30 comparison schools for each target school were chosen in the first phase, which were then reduced to between 15 and 25 schools per target school in the final match. Because of data availability problems that resulted from TEA data-masking procedures, and in order to maximize the comparability of the comparison groups,

two separate groups of comparison schools were selected. One comparison group was utilized in assessing impacts of SOS on AP course enrollment, and a second comparison group for estimating impacts on AP testing. Because of the unique nature of changes that occurred at Johnston High School during the course of the Project SOS initiative, no suitable comparison school could be selected for that high school; thus, it was removed from the impact evaluation. More details on the matching procedure used to select comparison schools are discussed in Appendix A.

Subsequent to the match, an analysis comparing rates of low income student enrollment in AP classes and their performance on AP exams found no significant differences between SOS and comparison schools during the baseline period ( $p > .60$ ). Hence, the two-stage matching process produced two groups of comparison schools with nearly identical outcomes to those of SOS schools on the primary variables of interest. On the other matching dimensions, results of the school-level matches were somewhat less successful. The comparison group selected for computation of AP enrollment outcomes had slightly higher attendance rates of low-income students than was true at SOS schools. The schools also tended to be slightly older than SOS schools. The comparison group selected for computation of AP testing outcomes also had slightly better attendance among low-income students and slightly greater district expenditures on support services for students. In order to control for these differences in the estimated effects of SOS, these variables were included as covariates in all school-level outcome analyses.

### **Student-level match**

The student level match was conducted entirely within AISD, and initially included all low-income students at the four SOS schools in the treatment group, as well as all low-income students in the remaining AISD high schools within the district as potential comparison group members (excluding Johnston students from both groups). Students were matched using their characteristics and history as of the semester in which they first enrolled in English 3, which was intended as a rough approximation of the point at which they became eligible to enroll in AP coursework.

For each low-income student, all records prior to his or her English 3 enrollment date were considered baseline measures, and all records from this and subsequent semesters were

considered outcome measures. English 3 dates in the available records ranged from Spring semester 2002 through Spring 2006. Prior to the match, any students who transferred from an SOS school to any other AISD high school, or vice versa, subsequent to their English 3 date were excluded from further consideration. Those with no records prior to their English 3 date, who likely transferred in from another district, were also excluded. The potential comparison group for any given student was restricted to those with the same English 3 date. Due to the relatively small numbers of potential comparison group members and the need to have enough potential comparators to ensure decent quality matches, low-income students at SOS schools were randomly selected for retention in the study at a rate that guaranteed at least two potential comparison group members for each SOS student at any given English 3 date. The fractions of SOS students randomly sampled and retained for the study thus ranged from a low of 33% in the Fall of 2002, to a high of 86% in the Spring of 2004. Ultimately, 1181 low-income students from SOS schools were available to the match procedure, and 2369 potential comparison students, for a total of 3550 students.

Student level variables utilized in the match procedure included gender; ethnicity; AVID and GEAR UP status; economically disadvantaged, special education, and limited English proficiency status; prior experience with AP and other advanced coursework; grade average, percent passing, and total number of prior classes; TAKS reading, math, social studies, and science scores; and average years of experience of teachers in prior courses taken. To the extent that these varied over time, average values from prior to the individuals' English 3 dates were used. Additional details from the matching process are in Appendix A.

Results of the student-level match were moderately successful, producing a comparison group that differed significantly from the group of SOS students on only a handful of these match dimensions. SOS students were more likely to be limited-English proficient (34%, vs. 29% for comparison group members), slightly more likely to have prior AP course experience (0.56%, vs. 0.30% for comparison group), and had slightly less experienced teachers (8.1 years vs. 8.5 years for comparison group). In order to control for these differences, these three variables were included as covariates in all student-level analyses to follow, and were thus controlled for in the estimated effects of SOS.

## *Data Sources*

Table 1 summarizes the types of administrative data files used to select school-level and student-level comparison groups and to compute impacts in this evaluation, as well as the dates and sources of files used for these purposes.

**Table 1. Administrative Data Needed to Compute Project SOS Impacts**

<b>Purpose</b>	<b>Data Type</b>	<b>Data Source</b>	<b>School Years</b>
<b>Match</b>	AP Enrollment	TEA	2000-04
	AP Exam Performance	TEA	2000-04
	AISD Student Level Data	AISD	2001-04
<b>Impacts</b>	AP Enrollment	TEA	2004-06
	AP Exam Performance	TEA	2004-05
	AISD Student Level Data	AISD	2005-06

The Ray Marshall Center used TEA data on the AP class enrollment and AP test performance of economically disadvantaged students in the Project SOS schools and potential matching schools to develop comparison groups. This same data source was used to measure enrollment of low income students in AP courses for the impact analysis through the 2006 school year; however, due to the lag time needed to obtain AP exam performance data from TEA, impacts relying on that data source could only be completed through the 2005 school year. One limitation of the analysis occurred due to TEA privacy restrictions that forced researchers to accept aggregate AP enrollment and performance data at the school level rather than individual or class level.

AISD provided detailed historical student records for all high school students for the 2000-2001 school years through the 2005-06 school years. These records included student demographic characteristics, courses taken, course grades, enrollment and performance on TAKS and AP tests. RMC researchers used these files to select the student-level comparison group and to measure student-level impacts.

## V. Impact Findings

### AP Enrollment

#### *AP Course Enrollment*

The question of whether Project SOS increased enrollment of low-income students in Advanced Placement courses was addressed in both the school-level and student-level analyses. As shown in Table 2, AP course enrollment rates of low-income students increased for both the Project SOS schools and nearest-neighbor comparison schools during the Project SOS grant period. Within AISD, enrollment increased for both Project SOS students and selected comparison students at other AISD high schools. The AP enrollment rate increased substantially for the Project SOS schools; however, AP enrollment rates in non-project comparison schools have also been increasing over that same time period. The *net* increase in enrollment of low-income students in AP courses was not significantly higher for Project SOS schools than for non-SOS comparison schools, even though the pattern of means does suggest a slight tendency toward higher enrollment rates in the Project SOS schools (see Table 2). A similar pattern was observed for the student comparison.

**Table 2. AP Course Enrollment of Low-Income Students<sup>5</sup>**

	School comparison			Student comparison		
	Baseline period	Outcome period	Net effect (SOS X time)	Baseline period	Outcome period	Net effect (SOS X time)
<b>Non Project SOS Schools</b>	45.0%	56.4%		4.7%	19.3%	
<b>Project SOS Schools</b>	58.0%	75.0%	5.6%	8.9%	26.0%	2.5%

Note: Means displayed in these outcome tables have been adjusted for select covariates, as discussed in the description of the match, above, and further detailed in Appendix A.

<sup>5</sup> The AP course enrollment of low-income students appears to be higher at the school level (which used TEA data) compared to the student level (which used AISD data) because different ratios were reported: the ratio of low-income students taking AP exams to all students taking AP exams was reported for the school-level comparison, but the denominator was total low-income students in the student-level comparison.

## *AP Course Grades*

Among low-income students enrolled in AP courses, the question of their performance, in terms of percent passing the class, could only be assessed at the student level due to a lack of appropriate school-level data. As the pattern of means in Table 3 indicates, AP course passing rates increased over time for both SOS and comparison students. Once again, the pattern tended toward a greater increase among students at SOS schools, but the difference was not statistically significant.

**Table 3. AP Course Passing Rate of Low-Income Students**

	School comparison			Student comparison		
	Baseline period	Outcome period	Net effect (SOS X time)	Baseline period	Outcome period	Net effect (SOS X time)
<b>Non Project SOS Schools</b>	-	-		80.3%	87.8%	
<b>Project SOS Schools</b>	-	-	-	67.4%	90.1%	15.2%

Note: Means displayed in these outcome tables have been adjusted for select covariates, as discussed in the description of the match, above, and further detailed in Appendix A.

## **AP Testing**

### *AP Exam-taking*

The question to what extent low-income students took AP exams was addressed in both the school-level and student-level comparisons, albeit using slightly different methods. In the student-level comparison, the percent of those taking AP exams was estimated by dividing the number taking any AP exams by the number of those who enrolled in any AP course in the same school year. In the school-level comparison, due to lack of an estimator of the denominator (number of students enrolled in AP courses) in the data provided by TEA, the number of students taking AP exams was analyzed instead.

The number of students in Project SOS schools who took AP exams increased during the demonstration while the number of students in the comparison schools decreased slightly. Test-taking among both the sampled Project SOS students and their comparison students within AISD tended to increase over time, as indicated by the pattern of means in Table 4. However, neither the school-level nor the student-level analyses indicated a significantly greater increase in taking AP tests at SOS schools, relative to comparison schools or students.

**Table 4. AP Test Taking among Low-Income Students**

	School comparison: Number taking AP exams			Student comparison: Percent taking AP exams		
	Baseline period	Outcome period	Net effect (SOS X time)	Baseline period	Outcome period	Net effect (SOS X time)
<b>Non Project SOS Schools</b>	77	71		12.6%	38.0%	
<b>Project SOS Schools</b>	94	102	15	15.9%	39.7%	-1.6%

Note: Means displayed in these outcome tables have been adjusted for select covariates, as discussed in the description of the match, above, and further detailed in Appendix A.

***AP Exam-passing***

The question of receiving AP credit by scoring 3 or higher on AP exams was addressed using both school-level and student-level comparisons. In the school-level comparison, the percent of those passing AP exams declined significantly over time for both the Project SOS and comparison schools. Although the pattern of means suggests a greater decline among SOS schools, this trend was not significantly greater than among comparison schools. In the student-level comparison, the AP exam passing rate among low-income students in SOS schools declined while the passing rate for comparison students at other AISD schools increased, even with more students taking exams in the study period. The difference in AP passing rates for the student-level comparison was statistically significant. See Table 5 for details.

**Table 5. AP Exam Passing Rate among Low-Income Students**

	School comparison: Percent scoring 3 or higher on AP exams			Student comparison: Percent scoring 3 or higher on AP exams		
	Baseline period	Outcome period	Net effect (SOS X time)	Baseline period	Outcome period	Net effect (SOS X time)
<b>Non Project SOS Schools</b>	33.5%	26.5%		33.2%	52.0%	
<b>Project SOS Schools</b>	45.5%	26.9%	-11.6% <sup>1</sup>	52.6%	45.3%	-26.1% **

Notes: Means displayed in these outcome tables have been adjusted for select covariates, as discussed in the description of the match, above, and further detailed in Appendix A.

Only measured through the 2004-05 school year

\*\* denotes that the net effect was statistically significant at the .01 level.

### *AP Exam Scores*

Due to the form in which the school-level AP exam data were provided by TEA, the question of average scores of low-income students taking AP exams could only be addressed at the student-level. Similar to the findings for AP exam passing rates noted above, average AP exam scores among low-income students in SOS schools was found to decline while those for comparison students at other AISD schools increased. The differences were statistically significant.

**Table 6. Average AP Exam Scores among Low-Income Students**

	School comparison: AP e xam scores			Student comparison: AP exam scores		
	Baseline period	Outcome period	Net effect (SOS X time)	Baseline period	Outcome period	Net effect (SOS X time)
<b>Non Project SOS Schools</b>	-	-		2.1	2.6	
<b>Project SOS Schools</b>	-	-	-	2.6	2.5	-0.5*

Note: Means displayed in these outcome tables have been adjusted for select covariates, as discussed in the description of the match, above, and further detailed in Appendix A.

\* denotes that the net effect was statistically significant at the .05 level.

## **VI. Discussion of Findings and Recommendations**

### **Summary and Discussion of Findings**

The students in Project SOS schools increased their enrollment in AP courses, improved their grades in these courses and took a greater number of AP exams compared to the baseline period prior to Project SOS. However, improvement in these measures also occurred for the comparison schools across Texas and the comparison students in other AISD schools during the study period. No significant differences between Project SOS schools or students and their comparison groups were observed for any of these measures.

In both the Project SOS schools and their comparison schools, actual passing rates on AP exams dropped as of the end of the 2004-05 school year from the baseline period (data were not available for 2005-06) but the differences in passing rates between the two groups were not statistically significant. However, comparison students within other AISD schools improved their AP exam performance (though the 2005-06 school year) while the test performance of Project SOS students fell slightly. This pattern was observed both for AP passing rates and average AP test scores and the differences between the two groups were statistically significant for both measures. Thus, even after controlling for differences in student characteristics and many teacher and campus factors, low-income students in other AISD schools outperformed those in Project SOS schools on these measures.

Several possible reasons could explain these findings:

1. The design or the implementation of the Project SOS initiative may have been flawed. The process evaluation documents the conditions at each Project SOS high school that affected the implementation of this initiative.
2. Other initiatives designed to improve the AP performance of low-income students may have influenced the performance of comparison schools or students and diluted the effects of Project SOS. As noted in the literature review, a number of other initiatives that occurred during the study period were also attempting to improve the AP participation and performance of low-income students. Although some of these initiatives were controlled for in selecting the comparison schools, data were not available to control for all of these programs. Also, the overall improvements that were occurring in these programs (particularly in class participation and test-taking) diluted the positive gains in Project SOS to a large enough degree that the larger Project SOS gains were not statistically significant.

3. More time was needed after the project's implementation to observe improvement in AP test performance for the larger groups of students who enrolled in AP classes and participated in AP exams. Generally, it takes longer to influence the exam performance of students who have not traditionally participated in AP courses than it does to actually increase their rates of participation. This is due to many factors, including the need to train both teachers and students to adequately meet the higher expectations of AP courses and exams. As noted above, the initial AP test performance for both Project SOS schools and their comparison schools declined after the 2004-05 school year. The smaller decline for the student-level impacts measured through the 2005-06 school year implies that the AP test performance of Project SOS students improved substantially following the second full year of the initiative. A longer observation period would be needed to determine if this trend continues with subsequent classes.
4. Even though the quasi-experimental comparison group design controlled for as many factors as possible, some differences between the Project SOS schools and students and their comparison groups may not have been properly measured, either due to data limitations or actual differences in school or community environments. Many variables in the TEA data used to select the comparison schools were masked in such a way that it was difficult to accurately identify differences among schools to the desired level of specificity. This could have introduced some measurement error that affected which schools were ultimately selected as members of the school-level comparison groups. Although the student comparison groups did not suffer from this type of data problem, the measurement of teacher experience did not differentiate between overall years of teacher experience and experience teaching AP courses, which weakened the effectiveness of the statistical adjustment used to account for differences in teacher experience between the two groups. It also was not possible to control for environmental differences between low-income students in Project SOS schools and other Austin high schools, including peer or neighborhood effects that vary by the level of concentration of low-income students in a school or the differential effects of AISD policies that allow students who reside in low-income neighborhoods to receive transportation to attend schools in other parts of the district.

### **Recommendations for Evaluation of Future Initiatives**

Although the net impacts of the Project SOS initiatives were either not significant or negative, the overall positive direction of movement on many of the key outcome measures hold promise for future initiatives of this type. It may never be possible to truly measure the net impact of such an initiative without a randomized evaluation design that strictly controls the types of services available to both the treatment and control groups. Because it is quite difficult and expensive to implement such evaluations, the quasi-experimental comparison

group design used in this evaluation is the best available method for truly measuring the impact of a new initiative.

In designing future evaluations of initiatives such as these, the evaluators recommend the following changes in the evaluation research design:

1. Use unmasked or detailed administrative data instead of summarized data for use in selecting comparison groups. If it is determined that more detailed information needs to be collected for key measures than can be obtained from existing data, allow sufficient financial resources and planning time to collect information on such measures for both the treatment and comparison groups.
2. Allow sufficient time after the implementation phase of the initiative to measure certain outcomes that may take years to produce.

## Bibliography

- Adelman, Clifford. "Answers in the Tool Box: Academic Intensity, Attendance Patterns, and Bachelor's Degree Attainment." edited by U.S. Department of Education: U.S. Department of Education, Washington DC, 1999.
- . "The Toolbox Revisited: Paths to Degree Completion from High School through College." edited by U.S. Department of Education: U.S. Department of Education, Washington DC, 2006.
- American Diploma Project Network. *American Diploma Project Network 2007* [cited. Available from <http://www.achieve.org/node/604>.
- Austin Area Research Organization. *Closing the Higher Education Enrollment Gap in Central Texas 2007* [cited 4-23-07 2007]. Available from <http://www.aaroregion.com/documents.html>.
- Austin Independent School District. "Project SOS: Supporting Optimal Scholarship." Austin Independent School District: U.S. Department of Education Advanced Placement Incentive Program, 2003.
- Barnes, Susan, Associate Commissioner for Standards and Programs, Texas Education Agency. Correspondence, January 13, 2006.
- "Beyond the Numbers: Improving Postsecondary Success through a Central Texas High School Data Center." In *Policy Research Project Report #148*: Lyndon B. Johnson School of Public Affairs, The University of Texas at Austin, 2005.
- College Board. "Advanced Placement Report to the Nation." 2007.
- . *Ap Central, Ap Course Audit Information 2007* [cited 4-23-07 2007]. Available from [http://apcentral.collegeboard.com/apc/public/courses/teachers\\_corner/46361.html](http://apcentral.collegeboard.com/apc/public/courses/teachers_corner/46361.html).
- . *Ap Central, the Courses 2007* [cited 4-23-07 2007]. Available from <http://apcentral.collegeboard.com/apc/public/courses/index.html>.
- Dougherty, Chrys, Lynn Mellor, and Shuling Jian. "The Relationship between Advanced Placement and College Graduation." In *2005 AP Study Series, Report 1*, 35: National Center for Educational Accountability, 2006.
- Geiser, Saul and Veronica Santelices. "The Role of Advanced Placement and Honors Courses in College Admissions." In *University of California, Berkeley, Center for Studies in Higher Education*, , 2004.
- Hargrove, Linda, Donn Godin and Barbara Dodd. "College Outcomes and the Ap Experience: Does the Ap Grade "2" Matter?" In *Annual Meeting of the American Educational Research Association*. Chicago, 2007.
- "Hb 1: Relating to Public School Finance, Property Tax Relief, Public School Accountability and Programs, and Related Matters; Making an Appropriation." 2006.

- Journal of Blacks in Higher Education. "College-Bound Black Students Are Slowly Advancing in Advanced Placement Tests." *The Journal of Blacks in Higher Education*, no. 11 (1996): 6-9.
- Klopfenstein, K. "The Advanced Placement Expansion of the 1990s: How Did Traditionally Underserved Students Fare?" *Education Policy Analysis Archives* 12, no. 68 (2004): 15.
- . "Advanced Placement: Do Minorities Have Equal Opportunity?" *Economics of Education Review* 23, no. 2 (2004): 115-31.
- Klopfenstein, K., and M. Kathleen Thomas. "The Advanced Placement Performance Advantage: Fact or Fiction?" 2005.
- Klopfenstein, K. and M. Kathleen Thomas. "The Link between Advanced Placement Experience and Early College Success." In *Texas Schools Project*, 2005.
- National Center on Education and the Economy. "Tough Choices or Tough Times: The Report of the New Commission on the Skills of the American Workforce." Washington DC: National Center on Education and the Economy, 2007.
- O'Donnell Foundation. *O'Donnell Foundation, Devoted to Excellence in Education, Advanced Placement Incentive Program 2007* [cited 2007]. Available from <http://www.odf.org/>.
- Schexnayder, Deanna et al. "Central Texas High School Graduate Data Center: Year One Final Report." Ray Marshall Center for the Study of Human Resources, 2006.
- Texas Education Agency. "Reporting Texas Ap Examination Performance: Promoting a Head Start on the Transition to College." edited by Office of Policy Planning and Research Department of Programs and Instruction, Research and Evaluation Division, , 25: Texas Education Agency, 1995.
- . "State Board of Education Gives Final Approval to Upgraded High School Graduation Plans." Austin, 2006.
- . *Texas Education Agency, Curriculum, Advanced Academics, Advanced Placement/International Baccalaureate (Ap/Ib) Incentives*, 2007 [cited 4/23/07]. Available from [http://www.tea.state.tx.us/gted/AP\\_IB.html](http://www.tea.state.tx.us/gted/AP_IB.html).
- . *Texas Education Agency, Secondary Initiatives, Texas High School Project 2007* [cited 2007]. Available from [http://www.tea.state.tx.us/ed\\_init/sec/thsp/](http://www.tea.state.tx.us/ed_init/sec/thsp/).
- Texas Higher Education Coordinating Board. "Closing the Gaps: The Texas Higher Education Plan." Texas Higher Education Coordinating Board, 2001.
- U.S Department of Education, Office of Elementary and Secondary Education, *Advanced Placement Incentive Program Grants 2007* [cited 4/23/07]. Available from <http://www.ed.gov/programs/apincent/index.html>.

## **Appendix A: Match Characteristics**

Information directly related those tasks completed and discussed in prior progress reports is included in Part I, below; Part II discusses those tasks completed most recently by RMC researchers in refining the school-level match, the outcome of that process, and details on the student-level match.

### **Part I**

The Texas Education Agency (TEA) collects much of the information used to select other Texas schools similar to those in Project SOS as part of its student and school performance measurement system during the first stage matching process. These variables include:

- student demographic characteristics defined at the school level, including proportions of low-income students enrolled, proportions in various ethnic groups, shares that are limited English proficient (LEP), shares in special educational programs, etc.;
- teacher characteristics such as average education experience and tenure levels, average base salary, teacher-student ratios, etc.;
- proportions of low-income and all students enrolling in AP classes, taking AP exams, and their associated AP class grades and test passing rates;
- overall performance indicators at the school level such as TAKS performance, broken out by low-income status whenever possible;
- other characteristics of schools, such as grade span, overall performance rating, size of campus, graduation and retention rates, mobility rates, etc.;

Also important for inclusion in the match is the relative ranking of each campus within its district on relevant dimensions (e.g., percent low-income students). All else being equal, this allowed selection of comparison schools that, like the five target schools, represent a biased subset of schools within their respective districts.

In addition to these campus-level measures, a number of characteristics of school districts were included among the matching dimensions. These included district size, urban,

suburban or rural location, financing status, etc. Other district-level measures, including community and economic environment, were obtained from readily available published sources of economic and community data. A summary of the comparison of these characteristics from the first stage match between Project SOS schools and the 20-30 closest matching schools can be found in Appendix A. However, additional information, not contained within TEA data sets, but reflective of school capability, was gathered through a campus survey.

Though administrative data provide consistent and accurate information regarding schools and their academic achievements, other factors not included in these databases may impact the success of an AP program on a campus. In the fall of 2004, researchers composed a list of such factors that might characterize the culture of a school or impact the enrollment and performance of students in AP courses. A survey instrument was developed to measure these factors at the school level and quantify them to enable researchers to incorporate this important data into the comparison group selection process.

Researchers initially identified 120 schools in the spring of 2005 as potential matching schools based on a number of these characteristics [Appendix A]. An individualized letter was sent to each of these schools, along with a copy of the survey instrument and a self-addressed stamped envelope, in March of 2005. Thirty-nine responses to this initial survey were received. In the early summer of 2005, all schools that possessed a readily available e-mail address were sent an electronic copy of the letter and the survey; follow-up phone calls were also made to this group. Schools without a readily available e-mail address were contacted by phone and those with whom direct contact could be made were either faxed or emailed a copy of the letter and the survey. Thirteen additional responses were added due to this effort. Finally, in October of 2005, another effort was made to contact schools to encourage them to fill out the survey; schools targeted included those that, in previous conversations indicated an interest in filling out the survey, but for whom no response was received. From this effort an additional five schools submitted their information for a total of 57 surveys returned, of which 55 of them maintain an AP program. The number and percent of responses to the survey by the study school is included in the chart below.

**Table A-1. Matched Schools and Survey Response Rate**

<b>Schools</b>	<b>Surveys Returned</b>	<b>Percent of Surveys Returned</b>
Johnston	15	50
Lanier	11	55
Reagan	9	45
Travis	7	35
Akins	12	40

Since such a small number of schools responded to the survey, the average results on each question may not be representative of the entire group surveyed. Furthermore, survey information from two of the study schools was not available, limiting the ability to compare the survey responses to their potential matching schools in Project SOS. However, understanding this context, the survey may provide some insight into the factors that could influence the success of an AP program at these schools. Additionally, this information may indicate whether the methodological concerns about the influence of other factors in general on programs in schools were reasonable and whether these survey questions were an appropriate attempt to capture these factors.

All the summaries below are for those schools that responded to the survey. Percentages relating directly to the AP program are out of the total number of schools reporting an AP program at their school (55).

***School Characteristics:***

Twenty-five schools had a district-imposed floor or ceiling on the number of students required to have:

- any academic class (the floor was 13 students and the ceiling was 31 students)
- any AP class (the floor was 11 students and the ceiling was 32 students)

Thirty-nine schools indicated a school-level formal or informal maximum or minimum number of students required to have:

- Any academic class (the floor was 16 students and the ceiling was 30 students)
- Any AP class (the floor was 14 students and the ceiling was 29 students)

Forty-nine percent of schools surveyed said they had experienced a significant change in the number of students enrolled (percents reporting each change and the reason listed below):

- 10 percent (change in the income composition of their students)
- 17 percent (change in the ethnic/racial composition of their students)
- 4 percent and 3 percent (changes in high school or middle school boundaries respectively)

Schools reported a total estimated amount of non-TEA-reported funds for the year ending in May 2004 of \$3,743,353 or an average of \$65,572 per school. The sources of at least a part of these funds are provided:

- 29 percent received at least part of these funds from Grants
- 2 percent received at least part of these funds from adopt-a-school programs
- 7 percent received at least part of these funds from their PTA
- 9 percent received at least part of these funds from other sources, including Title I, vending machines and the GEAR UP program.
- Of the funds reported, more than 11 percent of them were reported by the three study schools, though they made up only 5 percent of the total number of returned surveys.

***School AP Characteristics:***

How do schools identify students to take AP courses? At least in part...

- 53 percent identified them using PSAT scores
- 84 percent using teacher recommendations
- 69 percent using student grade history
- 56 percent using prior enrollment in gifted classes
- 47 percent using enrollment in honors classes
- 27 percent using other means, including parental and/or student selection and TAKS scores.

Twenty-three of the schools offered some incentive to students to take and/or do well on the AP exam: either by providing cash, a grade incentive, or some other incentive. Only two schools did not offer some method outside of the classroom to help prepare students for the AP exam. The methods mentioned are listed below:

- 11 schools offered some type of on-line review
- 36 schools offered some type of before or after school tutorials
- 15 schools encouraged students to engage in independent study
- 12 schools used other methods such as district-level Saturday tutorials, outside of class teaching sessions, and College Board-taught sessions.

One of the primary reasons for using the survey instrument was to determine if there were other programs that might target the same population as Project SOS, and thus influence the outcomes of those students in AP courses and enrollment. Without this knowledge, the effect of Project SOS might have been obscured by these programs. Two of these programs, GEAR UP and AVID, also exist at each of the study schools; however, there may be other local, state and nationally-funded programs targeting the same population.

***GEAR UP and AVID:***

- The eight schools with AVID programs had operated these programs for an average of 3.5 years; on average, these programs enrolled approximately 87 students each.
- GEAR UP programs were present in ten schools, had been on campus an average of three years and currently had an average of 513 students in the program per school
- Only five schools had both AVID and GEAR UP programs.

***Other Programs:***

- Seven schools indicated that they had other programs targeting low-income students for AP or prerequisite classes. These included credit recovery, Talent Search, ADVANCE, and AP Potential among others.
- Thirteen schools had programs other than AVID and GEAR UP that targeted Limited English proficient students for AP courses or prerequisites.
- Six schools had programs that specifically targeted ethnic/racial minorities for AP courses or prerequisites.

- In all, six schools had various programs in place that targeted all of these groups, while an additional seven schools had programs that specifically targeted, LEP students.

Due to a lower than desired survey response rate, using the entirety of each survey as part of the effort to refine the first match proved infeasible. However, since a subset of the information from the survey included information regarding programs and incentives that might target low-income students, and whether or not the school possessed an AP program, elimination of the survey instrument could impact the results of the match and hence, the measurement of Project SOS impacts. Hence, schools whose survey answers were the same or similar to a Project SOS school were considered “closer” to the project school than a school who either did not respond to the survey or whose survey answers were dissimilar to the Project SOS school. Thus, the survey was effectively used, along with additional administrative data, to refine the first stage match.

One direct impact on the evaluation process stemming from the execution of the survey was the decision to eliminate Johnston High School as one of the schools in the evaluation portion of the study. Discussions with Johnston teachers and staff, along with the survey responses, indicated the unique nature of the high school. Until the fall of 2002, Johnston housed one of the two high school academic magnet programs in the school district, the Liberal Arts Academy. In that year, Johnston’s magnet program was combined with the science and math magnet program at Lyndon Baines Johnson High School. Recently, an international high school was placed on the Johnston campus to serve students who have recently entered the U.S. Starting in the fall of 2005, Johnston was broken into three separate high schools under a high school redesign initiative in AISD, adding both to the difficulty of finding matching schools and making it harder to ascertain if any AP impacts generated by Project SOS are attributable to the initiative itself rather than to the radical change it has already experienced or the school may undergo in the near future. This unique school history made Johnston a difficult school for which to find a comparable school for our statistical analysis. Since the goal of using the quasi-experimental method for evaluation is to find a set of comparable schools that are essentially the same as the school in question, the statewide uniqueness of Johnston High School prevented its inclusion in the analysis of Project SOS’s results. This is not meant to imply that Project SOS had no impact on the low-income

student enrollment in AP courses or performance on AP exams at Johnston; rather, the impacts that the program may have had on Johnston, distinct from its restructuring and other programs, cannot be statistically determined without a set of appropriate comparison schools.

## **Part II**

### ***School-level match***

While the first stage matching process was conducted using publicly available data, second stage matching added data from TEA containing AP enrollment and performance data for the baseline years, as well as information from the survey instrument, using those schools identified as matches in the first stage.

One of the goals of engaging in the matching process is to ensure that, prior to the program, the target and comparison schools produce the same outcomes on the variables of interest. Here, since the outcome variables are the AP enrollment of low-income students and their success on AP exams, examining the difference between the Project SOS schools and their matching schools before Project SOS began should show that these variables are the same. Hence, both sets of schools are beginning at the same point, and any divergence in future results may be attributed to Project SOS.<sup>6</sup>

Further complicating the matching process was the fact that, although low-income AP course enrollment data from TEA were available for all of the 120 first-stage-match schools, due to the need to maintain confidentiality of student records in the presence of small numbers of low-income students taking AP exams, AP test data were only available for 70 of the schools. Thus, in order to maximize the comparability of the comparison groups, two separate groups of comparison schools were selected. The first comparison group, to be utilized in assessing impacts of SOS on AP course enrollment, consisted of 25 nearest neighbors for each of the four SOS schools (not including Johnston, as discussed above), for

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<sup>6</sup> Since random fluctuations in performance and enrollment may occur in any single year-to-year comparison, and since, due to confidentiality agreements, data were generally not available for all schools for any single year, a baseline period of three years was used to determine the average percentages represented in Table 3, weighted heaviest for the year just prior to the first implementation year.

a total of 100 schools. The second comparison group, for estimating impacts on AP testing, consisted of 15 schools for each SOS school, for a total of 60 schools.

**Table A-2. School-Level, First Stage Match**

Variable Category and Label	SOS Schools	20-30 most similar comparison schools	All senior high schools statewide
Number of schools	5	120	1590
<b>Student and School Measures</b>			
Total Students, Enrollment Count	1587	1364	709
Students in Bilingual Education Programs, Percent	17%	12%	4%
Economically Disadvantaged Students, Percent	60%	63%	42%
LEP Students, Percent	20%	14%	5%
Black Students, Percent	20%	15%	12%
Hispanic Students, Percent	68%	65%	37%
Native American Students, Percent	.2%	.2%	.3%
Asian/Pacific Islander Students, Percent	1.4%	1.1%	1.4%
Campus Accountability Rating: Low Performing	20%	7%	1%
Age of campus in years, log transformed	2.1	2.3	2.1
Mobility Percent	31%	26%	37%
<b>Testing and academics, economically disadvantaged students</b>			
Completion Rate 2003, Graduated, Econ. Disadv. Students	70%	77%	80%
Completion Rate 2003, Received GED, Econ. Disadv. Students	2.3%	2.3%	3.6%
Dropout Rate, 2002, Economically Disadvantaged Students	1.3%	1.5%	1.0%
Recommended High School Program, 2003, Economically Disadvantaged Students	49%	65%	49%
Attendance Rate, 2003, Economically Disadvantaged Students	87%	92%	93%
Advanced Courses, Percent Taking, 2003, Economically Disadvantaged Students	8%	13%	11%
Percent of Econ. Disadvantaged Students Tested in 2003	78%	84%	85%
TAKS Grade 9, 2003, Economically Disadvantaged Students (Met Standard)	47%	51%	65%
TAKS Grade 10, 2003, Economically Disadvantaged Students (Met Standard)	49%	54%	66%
TAAS/TASP Equivalency, 2002, Economically Disadvantaged Students	41%	47%	56%
End of Course Exams, Passing Rate, 2002, Econ. Disadv. Students	45%	46%	57%

<b>Variable Category and Label</b>	<b>SOS Schools</b>	<b>20-30 most similar comparison schools</b>	<b>All senior high schools statewide</b>
<b>School finance and staff</b>			
Total Per Pupil Expenditures	\$5566	\$5704	\$8289
District Expenditures by Function: Instruction Percent	56%	56%	56%
District Expenditures by Function: Support Services for Students Percent	4%	5%	4%
Average Years Experience of Teachers	11	13	13
Typical teacher salary (experience effects removed)	\$39,777	\$38,972	\$37,234
Secondary Class Size Average	26	23	18
Percent of Minority Staff	37%	47%	23%
<b>School relative to its district</b>			
Fraction of district, Total Students, Enrollment Count	2%	11%	16%
Relative to district, Economically Disadvantaged Students, Percent	7%	-7%	-10%
Relative to district, Advanced Courses, Percent Taking, 2003, Economically Disadvantaged Students	-1.3%	-.6%	-.7%
Relative to district, Attendance Rate, 2003, Economically Disadvantaged Students	-7%	-3%	-3%
Relative to district, Dropout Rate, 2002, Economically Disadvantaged Students	.2%	.5%	.3%
Relative to district, Recommended High School Program, 2003, Economically Disadvantaged Students	1.6%	-.1%	-1.9%
Ratio to district, Expenditures: Total Per Pupil	76%	81%	114%
Ratio to district, Average Years Experience of Teachers	95%	108%	106%
Relative to district, Percent of Minority Staff	-8%	-11%	-8%
<b>County in which school located</b>			
County commutes to large metro area	0%	9%	19%
County is core of small metro area	0%	23%	19%
County commutes to small metro area	0%	2%	5%
County is micropolitan	0%	7%	12%
County is rural	0%	7%	20%

**Table A-3: School-Level, Second Stage Match**

Variable Category and Label	SOS schools	Comparison Group for AP enrollment	Comparison Group for AP testing
Number of schools	4	100	
<b>Student and School Measures</b>			
Total Students, Enrollment Count	1736	1526	
Students in Bilingual Education Programs, Percent	17%	12%	
Economically Disadvantaged Students, Percent	59%	63%	
LEP Students, Percent	20%	14%	
Black Students, Percent	20%	16%	
Hispanic Students, Percent	65%	65%	
Native American Students, Percent	.2%	.2%	
Asian/Pacific Islander Students, Percent	1.7%	1.3%	
Campus Accountability Rating: Low Performing	0%	4%	
Age of campus in years, log transformed	2.0	2.3	
Mobility Percent	31%	25%	
<b>Testing and academics, economically disadvantaged students</b>			
Overall AP enrollment, low-income students in pre-study period	46%	47%	
Overall AP passing rate, low-income students in pre-study period	36%	32%	33%
Completion Rate 2003, Graduated, Econ. Disadv. Students	70%	78%	78%
Completion Rate 2003, Received GED, Econ. Disadv. Students	2.6%	2.3%	2.1%
Dropout Rate, 2002, Economically Disadvantaged Students	1.5%	1.5%	1.5%
Recommended High School Program, 2003, Economically Disadvantaged Students	51%	66%	70%
Attendance Rate, 2003, Economically Disadvantaged Students	87%	92%	92%
Advanced Courses, Percent Taking, 2003, Economically Disadvantaged Students	9%	13%	14%
Percent of Econ. Disadvantaged Students Tested in 2003	80%	84%	85%
TAKS Grade 9, 2003, Economically Disadvantaged Students (Met Standard)	45%	52%	53%
TAKS Grade 10, 2003, Economically Disadvantaged Students (Met Standard)	49%	55%	57%
TAAS/TASP Equivalency, 2002, Economically Disadvantaged Students	42%	47%	47%
End of Course Exams, Passing Rate, 2002, Econ. Disadv. Students	44%	46%	60
<b>School finance and staff</b>			
Total Per Pupil Expenditures	\$5074	\$5371	1661
District Expenditures by Function: Instruction Percent	56%	56%	15%
District Expenditures by Function: Support Services for Students Percent	4%	5%	68%

Variable Category and Label	SOS schools	Comparison Group for AP enrollment	Comparison Group for AP testing
Average Years Experience of Teachers	11	13	18%
Typical teacher salary (experience effects removed)	\$39,737	\$39,261	11%
Secondary Class Size Average	28	24	75%
Percent of Minority Staff	34%	47%	.2%
<b>School relative to its district</b>			1.4%
Fraction of district, Total Students, Enrollment Count	2%	10%	2%
Relative to district, Economically Disadvantaged Students, Percent	6%	-7%	2.3
Relative to district, Advanced Courses, Percent Taking, 2003, Economically Disadvantaged Students	-1.1%	-2%	25%
Relative to district, Attendance Rate, 2003, Economically Disadvantaged Students	-7%	-3%	
Relative to district, Dropout Rate, 2002, Economically Disadvantaged Students	.4%	.5%	54%
Relative to district, Recommended High School Program, 2003, Economically Disadvantaged Students	3.5%	.3%	.4%
Ratio to district, Expenditures: Total Per Pupil	69%	76%	75%
Ratio to district, Average Years Experience of Teachers	96%	108%	107%
Relative to district, Percent of Minority Staff	-11%	-11%	-14%
<b>County in which school located</b>			
County commutes to large metro area	0%	6%	2%
County is core of small metro area	0%	22%	20%
County is micropolitan	0%	7%	5%
County is rural	0%	3%	2%
<b>School survey responses</b>			
Number of AP organizations involved in campus	2.5	1.1	1.3
Is AVID on your campus?	100%	22%	27%
Is GEAR UP on your campus?	100%	24%	23%
Programs on campus targeting AP? Low-Income	50%	9%	8%
Programs on campus targeting AP? LEP or minority	50%	24%	27%
Number of areas in which AP incentives offered	.5	.5	.4
Number of AP organizations involved in campus	2.5	1.1	1.3

Note: Highlighted cells indicate statistically significant differences between SOS and the noted comparison group, at  $p < .01$ . These were included as covariates in the outcome analysis.

**Table A-4: Student-Level Match**

Variable Category and Label	SOS students	Comparison Group	All Low-Income Students
Number of Students	1120	1120	3550
<b>Student Demographics</b>			
Female	51%	50%	50%
Black	16%	18%	23%
Hispanic	77%	76%	65%
White	5.2%	5.5%	10.6%
Economically disadvantaged <sup>7</sup>	92%	93%	92%
Special education student	14%	15%	19%
Limited English proficient	34%	29%	23%
<b>Coursework prior to English 3 semester</b>			
Number of classes	28.5	28.1	27.3
Grade average	78%	77%	77%
Percent passing grades	79%	79%	79%
AP coursework	.6%	.3%	.5%
Other advanced coursework	10%	10%	12%
Teachers' experience, years	8.1	8.5	8.7
<b>Testing prior to English 3 semester<sup>8</sup></b>			
TAKS reading, met minimum	49%	53%	53%
TAKS math, met minimum	35%	39%	39%
TAKS social studies, met minimum	58%	62%	61%
TAKS science, met minimum	32%	37%	37%
<b>Program participation</b>			
AVID	3%	3%	4%
GEAR UP	25%	23%	19%

Note: Highlighted cells indicate statistically significant differences between SOS and comparison group, at  $p < .01$ . These were included as covariates in the outcome analysis.

<sup>7</sup> All students were economically disadvantaged at the time they took English 3, as a condition of eligibility for the study, but they varied in the extent to which they had previously been in this status over time.

<sup>8</sup> The more continuous TAKS scale scores were used in matching procedure. The percent meeting minimum standards is displayed here for ease of interpretation.