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Early Impacts of the El Dorado Promise on Enrollment and Achievement

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**EARLY IMPACTS OF THE EL DORADO PROMISE ON ENROLLMENT
AND ACHIEVEMENT**

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EXECUTIVE SUMMARY

What is the El Dorado Promise?

The “Promise” strategy gained prominence with the announcement of the Kalamazoo Promise program in Michigan in November 2005. The program, known as a universal, place-based scholarship initiative, offers full college tuition to any Kalamazoo Public Schools graduate attending a public college in Michigan. In January 2007, El Dorado, Arkansas announced the El Dorado Promise: a new program that guaranteed that high school graduates from the area can afford college thanks to a \$50 million gift from the Murphy Oil Corporation. The El Dorado Promise is modeled after the Kalamazoo program; scholarships are not based on students’ grades in high school or financial need. Through the Promise, Murphy Oil will pay tuition and mandatory fees for up to five years for recipients. To receive the Promise, a student must enroll in a community college or a four-year university – public or private, in Arkansas or out-of-state – and maintain a 2.0 college grade-point average in college.

To be eligible for the program, students must have attended schools in the El Dorado School District for at least four years. The maximum amount payable is up to the highest annual resident tuition and mandatory fees at an Arkansas public university, which is currently \$7,818 per year. When combined with the Arkansas Challenge Lottery Scholarship or other scholarships, it may be used for other college expenses, such as room and board.

There are a variety of outcomes that proponents of Promise programs anticipate, from very broad to very specific outcomes. Indeed, program staff at the El Dorado Promise envision that the program will lead to a revitalized community and school system in general. Since 2010, the Office for Education Policy has worked with the El Dorado School District in completing a comprehensive evaluation of the Promise. This is the first report stemming from this partnership. In this report, we examine two outcomes to determine whether the Promise has had the hypothesized impact on El Dorado schools: district enrollment and student achievement.

Effects on School District Enrollment

As to the question of the impact on student enrollment, it seems clear that the El Dorado Promise had a positive impact on district enrollment patterns. Prior to the announcement of the Promise, the district had experienced a decline of nearly 14% in overall enrollment from the 1990-91 school year through the 2006-2007 school year. Since that time, not only has the steady decline been stopped, but enrollment actually grew by about 3% from that point through the 2011-12 school year. Moreover, the fraction of low-income students in El Dorado has held steady, while it has grown in other districts. This may be a function of increased economic vitality in the El Dorado community, an enhanced desire of middle-class residents to remain in El Dorado, or an influx of middle-class families to El Dorado. It is likely that a combination of these factors have contributed to the relative economic stability of El Dorado; in any event, this appears to be another positive impact of the Promise.

Effects on Student Achievement

Methodology

Perhaps more importantly, we also investigated whether the district's students in grades three through eight have experienced improved academic achievement in the years following the announcement of the Promise. We employ a relatively rigorous analytic strategy in which we create individual **student-level** matches for each student exposed to the El Dorado Promise program. In this way, we can ensure that the comparison students are demographically similar to the El Dorado students and, more importantly, have the same "pre-Promise" level of academic achievement. Therefore, if we find that the El Dorado students outperform their "matched twins" in the years following the 2007 announcement, we can view these differences as estimates of the impact of the El Dorado Promise program.

Overall, the majority of the El Dorado students and their matched twins were from low-income households (58% of the math sample and 57% of the literacy sample were eligible for free or reduced price lunches in 2005-06) and just over half of the students (53%) were African-American. Most importantly, the students from El Dorado and their matched twins performed essentially identically on the state exams in the pre-Promise year. In fact, both groups of students performed just above the state average level in math and just below the state average level in literacy during the Spring 2006 testing administration.

Results

Our first set of results considered more than 2,000 students who attended El Dorado schools in the first Promise school year (2006-07) and for at least one year beyond that point. There are a total of five cohorts: the oldest of these cohorts includes students in grade eight in 2006-07 while the cohort with the greatest level of "exposure" to the Promise were in grade four when the program was announced and spent the next four school years in EL Dorado post-promise. While the results did differ by cohort in mostly predictable ways, the overall findings show that El Dorado Promise students outscored their matched peers by roughly 14% of a standard deviation better in math and by 17% of a standard deviation in literacy. These effects are the equivalent of six to seven percentile points for students starting near the midpoint of the scoring distribution (as our student sample did).

While the overall results are interesting, it is also worth investigating whether the impacts differ by student race, student wealth, or student academic ability. In our interviews with teachers and school leaders, we learned that, after the announcement of the Promise, El Dorado educators redoubled their efforts to ensure that they held high expectations for all students, in light of the fact that all El Dorado students now had the financial means to further their education beyond the boundaries of El Dorado, Arkansas. As a result of the Promise, conversations about college and trips to college campuses became commonplace for all students in the district, regardless of race or class. Given that background, it is certainly possible that the Promise program might have a more pronounced effect on economically-disadvantaged students or African-American students. Moreover, because the program focused to such a large extent on college, it is also possible that the program might have gained more traction for students who viewed themselves (or who were viewed by others) as "college material" in terms of academic ability.

To investigate these possible differential effects, we disaggregated our data by race, wealth, and pre-Promise academic ability. It is possible that the students most affected by this time of intervention would be students of relatively high academic ability (those for whom college is desirable) who might not have viewed college as affordable or attainable due to a relatively disadvantaged background (perhaps either low-income or racial minority students). Here, the results are striking.

On the math exam, African-American and low-income students in the upper half of the ability distribution boasted scores that were significantly and meaningfully greater than the scores of their matched peers. For each group, the effect was in the neighborhood of one-quarter of a standard deviation; in terms of percentile points, the Promise students scored 10 points higher than their matched peers. The results on literacy were even larger: the high-ability African-American students boasted an effect size of nearly one-third of a standard deviation, and the low-income students boasted an effect of 0.26. Table *i* below summarizes the results for both the overall sample and for significant subgroups.

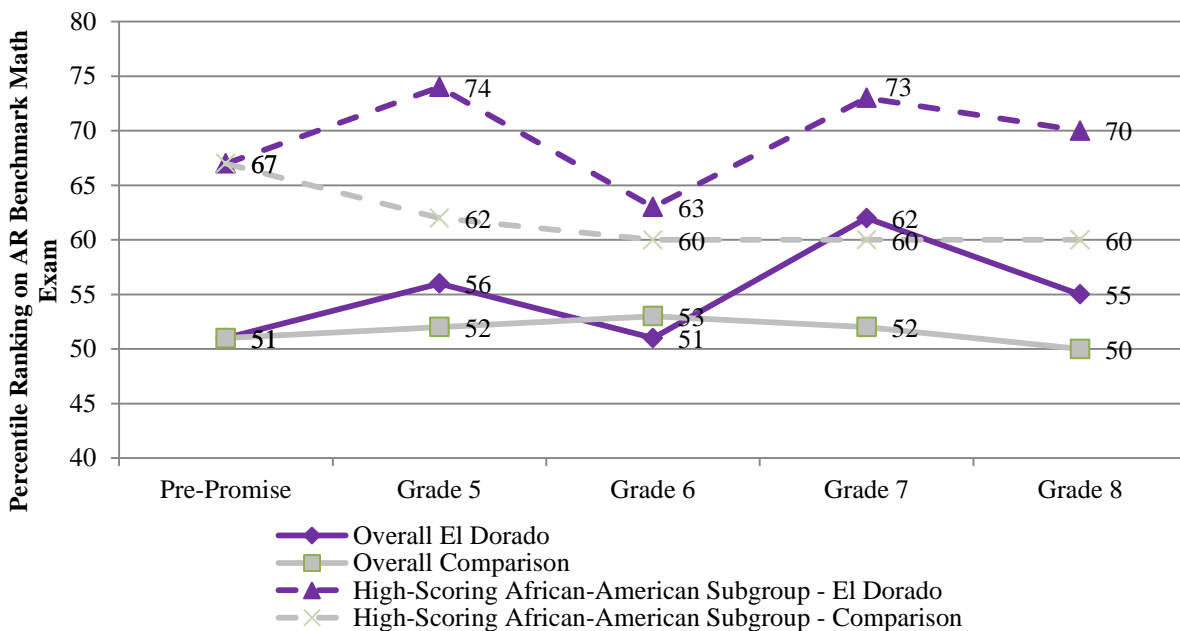
Table i: Summary of effects by subgroup

	8th Grade Math z-scores	8th Grade Literacy z-scores
Overall	0.14***	0.17***
N	2286	2402
Highest-Scoring Half, African-American	0.25***	0.32***
N	367	393
Highest-Scoring Half, Low-income	0.25***	0.26***
N	419	453

*** p<0.01, ** p<0.05, * p<0.1

Finally, to illustrate these effects in a more user-friendly manner, we present grade-by-grade percentile scores for El Dorado students and their matched peers in Figure *i* below. The overall results are represented by the solid line below, and a subgroup result is represented by the dotted line below. For the sake of simplicity and clarity, we only show results for the high-scoring African-American subgroup here. Additional results and the literacy results (which follow the same pattern) can be found in the results and conclusion sections of the full document.

Figure i: Percentile rankings on AR Benchmark **Math** Exam for El Dorado students and matched comparison students, 2005-06 to 2011-12



As Figure i indicates, the overall sample of both El Dorado students and their matched peers scored at roughly the 50th percentile in 2006 prior to the implementation of the Promise program. Over time, those students exposed to the El Dorado Promise improved relative to their matched peers by roughly 5 percentile points in math, thus ending in the 55th percentile at the end of their 8th grade year. The figure also illustrates the achievement for the high-scoring African-American subgroup, which started at the 67th percentile and improved relative to their matched peers by roughly 10 percentile points, thus ending in the 70th percentile.

The fact that the largest impacts are seen for high-achieving students from traditionally disadvantaged groups comes as no surprise, as this group is comprised of students with high academic ability, but who have traditionally faced challenges in attaining post-secondary education.

The best illustration of these changing expectations for all students came from a teacher describing the difference in student participation in high-level courses post-Promise: “Our AP classes went from country club to parks and rec.” The inference we drew from this wry and clever comment was both that more students began to view themselves as college-bound and teachers began to hold them to that expectation. Whether it is seen in the diverse enrollment in AP classes or in the numbers displayed in this report, the evidence is mounting that El Dorado is living up to its “Promise.”

I. INTRODUCTION

According to the College Board¹, increases in college tuition costs have easily outpaced inflation over the past decade, and there appears to be no letting up in this trend. Clearly, the increasing costs of post-secondary education serve as a barrier to students, particularly to those from low-income families. While the availability of loans for college attendance has also increased, the application process is complicated, and the idea of taking on such debt may well be intimidating.

Moreover, although numerous channels exist for low-income students to access loans or even grants to attend college, many students are not aware of these opportunities by the time they reach college age and are definitely not aware of them as they move through middle and junior high school. Thus, despite the existence of the available programs, many low-income students simply view college as financially unattainable.² So-called “Promise” programs have been advanced as strategy to reduce financial uncertainty and to create aspirations for college among students in economically-challenged communities. Indeed, these programs are also intended to revitalize the schools and communities.

The “Promise” strategy gained prominence with the Kalamazoo Promise program announced in Michigan in November 2005. The program, known as a universal, place-based scholarship initiative, offers full college tuition to any Kalamazoo Public Schools graduate attending a public college in Michigan. There are no requirements – except for prior attendance in Kalamazoo Public Schools – attached to the scholarships. Since 2005, many communities have followed suit and developed Promise programs of their own. Some of the best known subsequent programs are housed in Pittsburgh, PA and New Haven, CT. While the particular details of each program are unique (e.g. some provide full tuition, some specify which colleges can be attended, some have entry requirements, etc.), one underlying principle is that Promise programs have the potential to revitalize communities by reducing the barriers for college attendance.³

These programs are not the same as state-wide merit-based scholarships, such as the Georgia HOPE (Helping Outstanding Pupils Educationally) scholarships. Promise programs are generally created and subsidized by community-based institutions and/or philanthropists and are typically connected to more comprehensive economic development strategies. The objective is to provide greater educational opportunities so that those who benefit might remain in or one day return to the region after college to enhance the community.⁴

Of course, these programs are relatively new and the evidence base on the effectiveness is similarly sparse. In this paper, we hope to add to the evidence base by presenting the results of

¹ College Board. (2012). Trends in College Pricing 2012. New York, NY: The College Board. Retrieved from <http://trends.collegeboard.org>

² College Board. (2008). Fulfilling the Commitment: Recommendations for Reforming Federal Student Aid. New York, NY: The College Board. Retrieved from <http://collegeboard.org/rethinkingstudentaid>

³ PromiseNet 2013. (2013) About Promise Net. Retrieved from <http://www.wmich.edu/conferencemanagement/promisenet2013/about.html>

⁴ Pittsburgh Promise. (2012). Vision, Purpose, Goals, Values. Retrieved from http://pittsburghpromise.org/about_vision.php

our assessment of the changes in district-wide academic achievement in El Dorado, Arkansas following the announcement and implementation of the El Dorado Promise in 2007.

In Section II that follows, we present a review of the evidence to date on the effectiveness of so-called Promise Programs. Then, to set the stage for this evaluation, in Section III, we describe the El Dorado School District along with the evolution of the El Dorado Promise program. In Section IV, we describe our analytic strategy to assess the impact of the Promise on district-wide enrollment and achievement in El Dorado and present our results in Section V. We end with a discussion of ongoing evaluation questions and the implications of our findings thus far.

II. LITERATURE ON PROMISE PROGRAMS

Though the number of Promise scholarship programs has increased greatly since the initial Promise program in Kalamazoo was announced in 2005, only the Kalamazoo and the Pittsburgh Promise programs have been evaluated. Since the design of the El Dorado Promise was based on the Kalamazoo Promise and the two programs are consequently very similar, Kalamazoo results could have implications for El Dorado Promise. By contrast, the Pittsburgh Promise is not a universal scholarship but a merit-based program, with eligibility requirements including a 2.5 GPA and 90% attendance rate in addition to continuous enrollment since 9th grade or earlier.

The evaluation of the Kalamazoo Promise focuses on secondary outcomes and uses a difference-in-differences methodology to compare students who were eligible for scholarship to those who were not based on length of enrollment in the district.⁵ The authors found that Kalamazoo Promise recipients were more likely to earn high school credits and were less likely to be suspended (one less suspension day per year) than non-Promise recipients. Additionally, they found GPA increases for African-American students.

The Pittsburgh Promise also used a difference-in-differences design, comparing students who met eligibility requirements pre-Promise to eligible students post-Promise, but examined higher education rather than secondary outcomes. They found that Promise-eligible students post-Promise had the same overall likelihood of attending college as Promise-eligible students pre-Promise.⁶ They found some evidence that Promise recipients were more likely to persist in college than non-recipients, but a subgroup analysis revealed that these positive impacts were only observed for more advantaged white and non-FRL students.

The evidence from Kalamazoo suggests that a universal program like the El Dorado Promise has the potential to positively impact secondary outcomes, although the outcomes examined in that study, GPA, course credits, and suspensions, are ones that can be more directly controlled by student effort than can standardized test scores. The Pittsburgh Promise results indicate that Promise programs may not be particularly effective at improving postsecondary outcomes for disadvantaged students, though it is important to note that the Pittsburgh Promise is a merit-based program, which typically benefit more advantaged over less advantaged students.⁷

⁵ Bartik, T. and Lachowska, M. (2014). The Kalamazoo Promise Scholarship. *Education Next*, Spring 2014, Vol. 14(2). Retrieved from <http://educationnext.org/the-kalamazoo-promise-scholarship/>

⁶ Gonzalez, G., Bozick, R., Tharp-Taylor, S., and Phillips, A. 2011. Fulfilling the Pittsburgh Promise: Early Progress of Pittsburgh's Postsecondary Scholarship Program. Santa Monica: RAND Corporation.

⁷ Bangs, R., Davis, L.E., Ness, E., Elliott, W., and Henry, C. 2011. Place-Based College Scholarships: An Analysis of Merit Aid and Universal Programs. Pittsburgh, PA: Center on Race and Social Problems. Retrieved from <http://www.crsp.pitt.edu/Downloads/PghPromise%20Report2011.pdf>

III. THE EL DORADO PROMISE

In the mid-2000s, El Dorado, Arkansas was typical of many economically-depressed communities in the southern United States. For nearly half a century the city of approximately 20,000 (sitting just north of the Louisiana border) had been losing population, students in the schools, and jobs in the community. However, in January 2007, El Dorado made national news by announcing the new program that guaranteed that high school graduates from the area can afford college thanks to a \$50 million gift from the Murphy Oil Corporation⁸.

The El Dorado Promise is not based on students' grades in high school or financial need. Through the Promise, Murphy Oil will pay tuition and mandatory fees for up to five years to recipients. To receive the Promise, a student must enroll in a community college or a four-year university -- public or private, in Arkansas or out-of-state – and maintain a 2.0 college grade-point average in college.

To be eligible for the program, students must graduate from El Dorado High School and must have attended schools in the El Dorado School District for at least four years. The maximum amount payable is up to the highest annual resident tuition and mandatory fees at an Arkansas public university, which is currently \$7,818 per year. When combined with the Arkansas Challenge Lottery Scholarship or other scholarships, it may be used for other college expenses, such as room and board.

The amount of the scholarship a student is eligible for depends on length of enrollment in the El Dorado School District (EDSD). Students who have been continuously enrolled in EDSD since Kindergarten are eligible for 100% of the scholarship value, but the amount decreases by 5% for initially enrolling in each subsequent grade level until 9th grade, when students are eligible for 65% of the scholarship value. Students who enrolled in EDSD in 10th grade or later are not eligible for the Promise.

While the Promise is primarily a scholarship program for students, it is intended to have a broad impact on the community and the school district, and we hypothesize that the Promise could impact the school districts' practices as well as the students'. We may expect students to become more motivated to work harder to prepare for college; they may choose to enroll in more rigorous coursework or simply become more invested in school and exert more effort. The Promise could also work by changing the El Dorado School District and its personnel; for example, the district may start new programs in order to boost students' college-readiness, and teachers may work harder to reach students. Likely, it would work through a combination of both student and school district changes. In this analysis, we do not attempt to disentangle whether it is student or school district inputs that are driving any potential impacts, and instead treat the El Dorado School District in the post-Promise period as the intervention. All students included in the analyses are potentially eligible for a scholarship and were enrolled in the El Dorado School District before the Promise was announced.

⁸ Moreno, S. (2007, January 31). College Scholarships For All No Myth in El Dorado. The Washington Post. Retrieved from <http://www.washingtonpost.com/wp-dyn/content/article/2007/01/3>

IV. RESEARCH QUESTIONS AND METHODS

There are a variety of outcomes that proponents of Promise programs anticipate, from very broad to very specific outcomes. Indeed, program staff at the El Dorado Promise envision that the program will lead to a revitalized community and school system in general. In this report, we examine two outcomes to determine whether the Promise has had the hypothesized impact on El Dorado schools: district enrollment and student achievement.

A. Enrollment

One of the primary goals of the El Dorado Promise is to boost economic development in the geographic region. Because the Promise creates an additional amenity for families (in the form of subsidized college tuition) and a more attractive region for businesses (in the form of a potentially better educated workforce), we would expect the trend in student enrollment to be more positive after the announcement of the Promise than before.

To study this issue, we used enrollment data from the Common Core of Data to establish a “Pre-Promise” trend that would help us understand how the intervention of the El Dorado Promise has affected the area. We collected enrollment data back to the 1990-1991 school year to best establish a trend line for three groups: the El Dorado School District, other school districts within the boundaries of Union County, and a set of comparison school districts. Other Union County school districts were considered in order to see the effect of the El Dorado Promise on the surrounding community. In addition, a set of comparison districts was considered. This group was built by considering other large south Arkansas school districts that had a similar pre-Promise enrollment trend. Using this additional comparison allows us to identify any regional changes to the economy or population that might have influenced the enrollment in El Dorado; doing this allows us to distinguish the influence of the El Dorado Promise from broader economic or demographic trends. Using these separate groups, we compare the trend before the El Dorado Promise was announced in early 2007 to the post-Promise trend in enrollment.

A similar analysis concerning the percentage of student who are eligible for Free and Reduced Lunch (FRL) was conducted to serve as an indicator for the direction of the economic situation of families within the city of El Dorado. Using the same comparison groups (El Dorado, Union County, and Comparison Districts), as well as the state of Arkansas as a whole, pre-Promise FRL statistics can be compared to those after the announcement. As with enrollment, comparing these numbers can help to disentangle the effect of the El Dorado Promise from other outside influences. While we would expect similar trends across all groups, any derivations from the trend can at least partially be attributed to the new program.

B. Achievement

While enhanced college attendance is a reasonable long-term goal, we hypothesize that the entire school community (teachers, parents, and students) may enhance their focus on academic achievement for all students because of the increased stakes attached to school performance. In fact, if the general culture of the district shifts to one that is more achievement-oriented and more focused on preparation for higher education, we would expect to see improvements in academic performance in younger students.

Interviews and focus groups with district personnel, administrators, and teachers conducted in January 2014 indicated that such a culture change had indeed taken place since the initiation of the Promise. From these interviews, we identified three key factors that had changed: high expectations for all students, increased overall and disadvantaged student enrollment in college preparatory coursework, and the initiation of efforts to increase college awareness at a young age. In this paper, we empirically test whether the observed culture change in El Dorado resulted in academic performance gains.

More succinctly, in this study, we focus on one central research question:

What is the impact of the El Dorado Promise program on student achievement throughout elementary, middle, and junior high school, culminating in the students' performance on the Arkansas Benchmark exam in the eighth grade?

Using rich student-level achievement and demographic data for all students across the state of Arkansas, we employ a matching design to create a comparison group to approximate the academic performance levels we would have expected El Dorado students to achieve in the absence of the El Dorado Promise.

1. Analytic Sample – Cohorts of El Dorado Students

For this analysis, we examine five cohorts of students. Table 1 below highlights the cohorts, which are named after their expected high school graduation years. We report both pooled estimates and estimates by cohort, since cohorts are exposed to different dosages of the treatment. For example, the oldest cohort (2011) is exposed to only three months of the Promise before taking 8th grade achievement tests while the youngest cohort (2015) is exposed to four years of the Promise by their 8th grade year.

2. Instruments Used – Standardized Assessments

For the analysis, we evaluated student performance on the criterion-referenced Arkansas Benchmark examination. Questions include open-response items and multiple-choice questions for both the literacy and math exams. Both literacy and math tests are administered in the spring (typically in April), with results generally returned in the summer. In addition to scaled scores, student performance on the Arkansas Benchmark is reported in four categorical levels of performance: Below Basic, Basic, Proficient, and Advanced. Scores are generally reported to the schools and general public as the percent of students scoring at the proficient and advanced levels on the exam.

For the current analyses, we standardize scale scores against the population of all Arkansas students by converting them to a z-score with a mean of 0 and a standard deviation of 1. As such, we can report student performance in terms of how distant an individual score is from the mean (0), the average Arkansas student. For example, a student with Benchmark math performance z-score of +0.75 scored three-quarters of a standard deviation above the mean of all students in Arkansas. Likewise, a Benchmark literacy z-score of -0.33 is one third standard deviation below the mean of all students in Arkansas.

Table 1: Description of cohorts in the El Dorado Promise, 2005-06 to 2014-15

Cohort Name (Expected HS Graduation Year)	2015	2014	2013	2012	2011
YEAR	GRADE				
2005-2006	3	4	5	6	7
<i>January 2007- Promise announced</i>					
2006-2007	4	5	6	7	8
2007-2008	5	6	7	8	9
2008-2009	6	7	8	9	10
2009-2010	7	8	9	10	11
2010-2011	8	9	10	11	12
2011-2012	9	10	11	12	
2012-2013	10	11	12	—	
2013-2014*	11	12	—	—	
2014-2015*	12	—	—	—	
<i>Years of Exposure to Promise by 8th Grade**</i>	4	3	2	1	0***

■ indicates 8th grade test score

*Data not available for these years.

**Full school years

***3 months

3. Analytic Strategy – District- and Student-Level Matching

To conduct the evaluation, we employ a two-level matching design:

- 1) District-level: matching El Dorado to similar districts to create a “population” of individual students from which we draw individual student matches
- 2) Student-level: matching El Dorado students to similar students (“virtual twins”) within comparison districts

The **district-level matching** serves to minimize potential bias occurring from differences in the districts. There are two potential differences that we attempt to control for: differences in the composition of the student population and difference in the districts’ performance. Drawing from the literature on peer effects for students, which suggests that students’ achievement is affected by the level of advantage of their peers, we match districts on demographic characteristics, such as percent free/reduced lunch-eligible and percent white, and median income of the area served by the district. We also match on percent proficient or above on Benchmark exams (grades 3-8) on math and literacy for two years prior to the Promise for district performance. Finally, we match on economic indicators such as median income of the area served by the district, percent population change over the past ten years, and district enrollment.

Eight comparison districts were identified: Magnolia, Stuttgart, Warren, Ashdown, Nashville, Newport, Jonesboro, and Malvern. The matching criteria are displayed in Table 2. For district-level indicators, districts must be closely matched (+/- ten percentage points) on two years of prior achievement and the prior year's percent of free/reduced lunch-eligible population. Greater ranges were permitted for racial composition (percent white) and enrollment. Community-level variables, percent population change and median income, had to be matched within 20 percentage points and \$10,000, respectively.

Table 2: District matching criteria

Indicator	Range
2004-05 % Prof./Adv. Benchmarks (grades 3-8)	+/- 10 % (20 %)
2005-06 % Prof./Adv. Benchmarks (grades 3-8)	+/- 10 % (20 %)
% FRL (05-06)	+/- 10 % (20 %)
% White (05-06)	+/- 25 % (50 %)
% Population Change (1990-2000)	+/- 20 % (40%)
Median Income (1999)	+/- \$5,000 (\$10,000)
Enrollment (05-06)	Between 1,000 and 8,000

As would be expected considering the matching criteria, the differences between El Dorado and the comparison district averages on prior achievement and the free/reduced lunch-eligible population are small, between 0 and 2 percentage points (Table 3). Matches between districts on the economic indicators, population change and median income, are also fairly close. Where sizeable differences appear is between El Dorado and the comparison districts on racial composition and enrollment. To some extent, the El Dorado is unique, and it is difficult to find a sufficient number of districts that match closely on all characteristics. Still, we are confident that, given the possibilities, we have created the best possible district match set.

Table 3: El Dorado and comparison districts

Indicator	El Dorado	Comparison District Average[^]
2004-05 Math	41%	41%
2004-05 Literacy	47%	48%
2005-06 Math	50%	50%
2005-06 Literacy	53%	52%
% FRL	58%	60%
% White	42%	56%
% Pop. Change	-5	2
Median Income	\$29,266	28,483
Enrollment*	4,577	Total: 18,613 Simple Avg.: 2,327

[^]Weighted average by enrollment, rounded to nearest integer.

*Figures in *italics* were not matched upon and are displayed for descriptive purposes only

The strength of our analytic strategy relies on our ability to create individual **student-level** matches for each student exposed to the El Dorado Promise program. Because we match each El Dorado student with a peer student from a similar district, we can ensure that the comparison students are demographically similar to the El Dorado students and, more importantly, have the same “pre-Promise” level of academic achievement. Therefore, the performance of the comparison students represents a very reasonable estimate of what we might expect from the El Dorado students from 2007 onward. If we find that the El Dorado students outperform their “matched twins”, we can view these differences as estimates of the impact of the El Dorado Promise program.

We identify the group of El Dorado Promise eligible students (or the treatment group) based on their enrollment in the school district in the 2006-07 school year (the year that the Promise was announced). Tables 4 and 5 illustrate the pre-Promise (2005-06) similarity between the El Dorado Promise students and the comparison group of “matched twins”. This pre-Promise equivalence is, of course, central to the strength of our study design. These tables show that the majority of the El Dorado students and their matched twins were from low-income households (58% of the math sample and 57% of the literacy sample were eligible for free or reduced price lunches in 2005-06) and just over half of the students (53%) were African-American. Most importantly, the students in our study performed right around the state average level in both math (z-score = +.02, or the 51st percentile in the state) and literacy (z-score = -.02, or the 49th percentile in the state).

*Table 4: Pre-Promise equivalence on **math** (Full sample)*

	El Dorado Promise Students	Comparison Students	Difference	p
Baseline Math z-score (2006)	0.02	0.02	0.00	0.98
Free/Reduced Lunch	58%	58%	0%	1.00
African-American	53%	53%	0%	1.00
Hispanic	1%	1%	0%	1.00
Other Race	0%	0%	0%	1.00
Female	50%	50%	0%	1.00
N	1143	1143		

*** p<0.01, ** p<0.05, * p<0.1

Table 5: Pre-Promise equivalence on *literacy* (Full sample)

	El Dorado Promise Students	Comparison Students	Difference	p
Baseline Literacy z-score (2006)	-0.02	-0.02	0.00	0.96
Free/Reduced Lunch	57%	57%	0%	1.00
African-American	53%	53%	0%	1.00
Hispanic	1%	1%	0%	1.00
Other Race	0%	0%	0%	1.00
Female	50%	50%	0%	1.00
N	1201	1201		

*** p<0.01, ** p<0.05, * p<0.1

To obtain program estimates, we simply run an ordinary least squares (OLS) regression on the following model for all students in the sample:

$$8^{\text{th}} \text{ grade score} = f(\text{El Dorado Indicator, pre-score 2006, free/reduced lunch eligibility, race, gender})$$

Finally, it is important to highlight that our analytic strategy is conservative as we follow the academic achievement of all students identified as members of the Promise treatment group in 2006-07, whether or not these students continued on at El Dorado through grade eight. This is commonly known as an intent-to-treat analysis and does not bias the results in favor of the treatment group by limiting the sample to the subset of students who remain in the program throughout the entire time period. Thus, the results here might be viewed as a lower-bound estimate of the impacts of attending school in an El Dorado Promise School.

V. RESULTS

There are many facets of such a comprehensive program. As a straightforward financial assistance program for postsecondary attendance, the El Dorado Promise program has the potential to increase high school achievement and college attendance. From our observations, however, the El Dorado Promise program appears to be more than that. Similar to the Kalamazoo Promise, the El Dorado program seems to have breathed life into the entire community and school system. In this evaluation, we attempt to measure improvements in both of these broad areas. First of all, a key objective of the Promise is to increase school enrollment, or at least stabilize enrollment in light of years of gradual decreases in student enrollment. Second, due to the enhanced access to higher education for all students in the district thanks to the Promise, we might expect that families and students would take academic achievement more seriously than before the Promise. At the same time, school leaders and educators in the district might become even more intent on pushing their students academically because of the knowledge that, due to the Promise, literally every student in the district will be able to afford college as long as each student is sufficiently academically prepared.

In this evaluation, therefore, we test the above hypotheses by assessing changes in student enrollment post-Promise and then by examining the academic achievement (on state standardized assessments) of elementary, middle, and junior high students after the Promise was announced in January 2007.

A. Enrollment

As described above, we would not want to judge the impact of the Promise on total student enrollment simply by looking at overall enrollment numbers in the years before and after the Promise. This is due to the fact that El Dorado and other districts in this region of Arkansas have been experiencing steady declines in enrollment for many years prior to the January 2007 announcement of the El Dorado Promise. Thus, in this section, we present the changes in enrollment trends for the El Dorado School District, the other school districts in Union County (El Dorado's home county), and a comparison group of similar districts across Southern Arkansas. For all three groups, the trend before the 2007 announcement was a steady decline – approximately 5% of the students left the student rolls in each comparison group from 1990-91 to 2005-06. El Dorado itself experienced roughly a 10% decline in enrollment during that time period. As seen in Figure 1, the dotted trend lines for each group show what would be expected to happen had these trends continued.

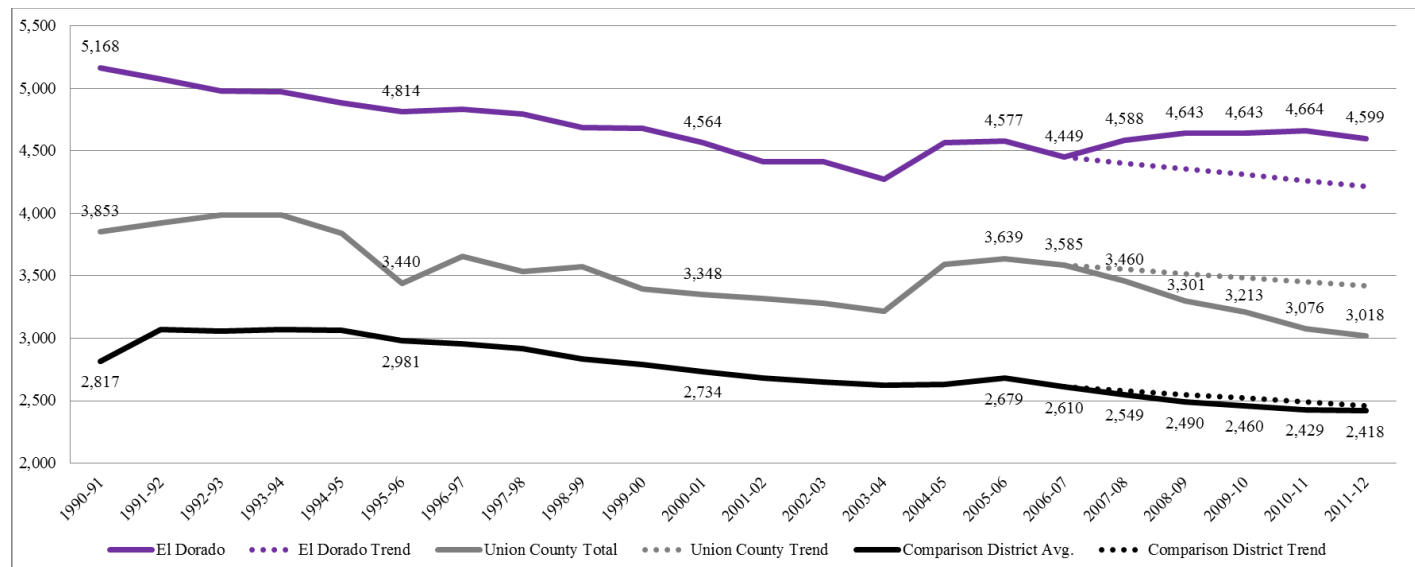
After the announcement of the Promise in January 2007, El Dorado student enrollment turned a corner. Compared to the expected student enrollment, El Dorado has experienced a 9% increase in enrollment above expectations (representing nearly 400 students in the district that served nearly 4,600 students in 2011-12). At the same time, the two comparison groups' enrollment fell well below the projections. For the comparison districts, this shortfall was very small – about 2% below expectations. That is, the comparison districts essentially continued on the same downward trend. However, for the rest of Union County, the drop was more substantial. The roll was 400 students lower than previous trends would have predicted. Thus, the other Union

County districts actually experienced greater enrollment declines than expected, resulting in student numbers that were 12% lesser than expected as of 2011-12.

It is also worth examining the characteristics of the students in each set of districts before and after the El Dorado Promise announcement. Prior to January 2007, the school district of El Dorado served a substantially higher proportion of low-income students (as measured by eligibility for free or reduced price lunches) than the surrounding Union County, and a roughly equivalent rate to the comparison districts. Furthermore, the district served a greater proportion of low-income students than did the state of Arkansas overall.

As we now know, the 2008 financial crisis was beginning to boil, thus increasing the fragility of the economy. Over the next few years, across the state, the percentage of low-income students in the state would shoot up from 54% in 2006-07 to 61% today. Union County, save the El Dorado district, experienced a similar increase, from 47% in the baseline year of 2006-07 to 59% today. Similarly, the low-income student population in the set of comparison districts in the southern Arkansas grew from 59% to 65%. During this same time period, the proportion of low-income students in El Dorado essentially held steady, moving from 62% in 2006-07 to 63% today. These figures suggest that the Promise has either supported the economy of the area, attracted some more affluent families to the area, or has at least reduced the exodus of middle-income or high-income families from El Dorado.

Figure 1: Enrollment of El Dorado, Union County, and comparison districts, 1990-91 to 2011-12



B. Achievement

1. Full Sample Results

The first step in the analysis is to determine the impact estimates of the El Dorado Promise program on the sample as a whole for 8th grade math and literacy. While the El Dorado students are matched with “twins” from similar non-Promise districts, we enhance the power of the analysis by estimating regression models predicting grade eight Arkansas state exam scores in math and literacy. Thus, our initial analysis below presents the results of the regression models and highlights the mean treatment impact with controls for the 2006 (pre-Promise) test score, free/reduced lunch eligibility, race, and gender (Tables 6-7).

Table 6: Regression results on 8th grade scores (Full sample)

	8 th Grade Math z-scores	8 th Grade Literacy z-scores
El Dorado Promise Students	0.139*** (0.0240)	0.172*** (0.0239)
Baseline z-score (2006)	0.858*** (0.0155)	0.728*** (0.0150)
Free/Reduced Lunch	-0.103*** (0.0350)	-0.0597* (0.0356)
African-American	-0.126*** (0.0351)	-0.149*** (0.0345)
Hispanic	-0.0816 (0.119)	0.0110 (0.134)
Other Race	0.486 (0.586)	0.0917 (0.0810)
Female	0.0696*** (0.0245)	0.139*** (0.0249)
Grade 4	0.0821* (0.0435)	-0.0444 (0.0425)
Grade 5	0.0787* (0.0445)	-0.0893** (0.0431)
Grade 6	-0.105** (0.0417)	-0.0971** (0.0396)
Grade 7	-0.0329 (0.0424)	-0.125*** (0.0403)
Constant	0.0698* (0.0405)	0.0760* (0.0407)
Observations	2,286	2,402
R-squared	0.673	0.631

Bootstrapped standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

The indicator of interest in Table 6 is the bold coefficient on El Dorado Promise Student variable (0.139 for math z-score and 0.172 for literacy z-score). These can be viewed as effect sizes; in other words, El Dorado Promise students boasted test scores that were roughly 14% of a standard deviation better than their matched peers in math and 17% of a standard deviation better in literacy. These effects are the equivalent of 5 to 7 percentile points for students starting near the midpoint of the scoring distribution (as our student sample did).

The results presented in Table 6 represent the overall program impacts; we also examined the scores of El Dorado students in the years leading up to grade eight. We find smaller and somewhat inconsistent impacts in grades five and six, but the results appear to stabilize in the positive direction in grades seven and eight. Interestingly, the grade seven results are the largest, with effect sizes on the order of one-quarter of a standard deviation.

2. Grade-Level Results

The results presented in Tables 7-8 suggest that the El Dorado Promise program has a positive impact on student achievement in literacy and math scores in the 8th grade.

Table 7: Summary of effects by grade level

	Math effects	Literacy effects
Overall	0.14***	0.17***
N	2286	2402
8 th grade	0.14***	0.17***
N	2286	2402
7 th grade	0.25***	0.28***
N	1866	1774
6 th grade	-0.05*	0.05*
N	1266	1346
5 th grade	0.10***	0.01
N	850	916

*** p<0.01, ** p<0.05, * p<0.1

3. Subgroup Results

While the overall results are interesting, it is also worth investigating the results for particular subgroups of students. In this section, we investigate whether the impacts differ by student race, wealth, or academic ability. In our interviews with teachers and school leaders, we learned that, after the announcement of the Promise, El Dorado educators redoubled their efforts to ensure that they held high expectations for all students, in light of the fact that all El Dorado students now had the financial means to further their education beyond the boundaries of El Dorado, Arkansas. As a result of the Promise, conversations about college and trips to college campuses became commonplace for all students in the district, regardless of race or class.

Given that background, it is certainly possible that the Promise program might have a more pronounced effect on economically-disadvantaged students or African-American students. Moreover, because the program focused to such a large extent on college, it is also possible that the program might have gained more traction for students who viewed themselves (or who were viewed by others) as “college material” in terms of academic ability. To investigate these possible differential effects, we disaggregated our data by race, wealth, and pre-Promise academic ability. The results of these analyses are presented in Table 8. In rows 2 and 3, program effects are shown for both African-American students and for low-income students (as measured by free and reduced price lunch eligibility). The impact of the Promise for both of these groups is slightly larger than it is for the entire student sample in both math and literacy. In the next three rows, we also see that the Promise impact is generally higher in the top-third or the middle-third of the class (with respect to pre-Promise test scores). These patterns are interesting and prompted one final set of analyses highlighted in Table 9.

Table 8: Summary of effects by subgroup

	8th Grade Math z-scores	8th Grade Literacy z-scores
Overall	0.14***	0.17***
N	2286	2402
African-American	0.15***	0.20***
N	1218	1264
Free/Reduced Lunch	0.16***	0.19***
N	1318	1370
Highest-Scoring 1/3 of Class	0.25***	0.17***
N	713	832
Middle 1/3 of Class	0.08*	0.22***
N	786	761
Lowest-Scoring 1/3 of Class	0.10**	0.13***
N	787	809

*** p<0.01, ** p<0.05, * p<0.1

Table 9: Summary of effects by subgroup

	8th Grade Math z-scores	8th Grade Literacy z-scores
Overall	0.14***	0.17***
N	2286	2402
Highest-Scoring Half, African-American	0.25***	0.32***
N	367	393
Highest-Scoring Half, Low-income	0.25***	0.26***
N	419	453
Highest-Scoring Half, White	0.17***	0.14***
N	756	714
Highest-Scoring Half, Non-low-income	0.16***	0.16***
N	714	773

*** p<0.01, ** p<0.05, * p<0.1

It is possible that the students most affected by this time of intervention would be students of relatively high academic ability (those for whom college is desirable) who might not have viewed college as affordable or attainable due to a relatively disadvantaged background (perhaps either low-income or racial minority students). Thus, in this final set of analyses, we consider the impact of the Promise on two interesting subsets of students: (1) African-American students in the upper half of academic ability in the El Dorado student population and (2) low-income students in the upper half of academic ability in the El Dorado student population.

Here, the results are striking. On the math exam, African-American and low-income students in the upper half of the ability distribution boasted scores that were significantly and meaningfully greater than the scores of their matched peers. For each group, the effect was in the neighborhood of one-quarter of a standard deviation; in terms of percentile points, the Promise students scored 10 points higher than their matched peers. The results on literacy were even larger: the high-ability African-American students boasted an effect size of nearly one-third of a standard deviation and the low-income students boasted an effect of 0.26.

VI. CONCLUSION

The El Dorado Promise was established in 2007 with the goal of spurring economic development and improving education in El Dorado. In this study, we undertook the task of evaluating whether the Promise has led to community-wide and school district-wide improvements by estimating the impact of the Promise on district enrollment and student achievement.

First of all, the enrollment data quite clearly indicate that the historical trend of enrollment decline in El Dorado has been stemmed by the announcement and implementation of the El Dorado Promise. From 1990 through 2005, the district experienced a 10% drop in enrollment. Since the Promise was announced in 2007, the district has grown 9% above its projected enrollment, while neighboring districts and similar districts have continued to experience declines.

With regard to student achievement, the overall effects are significant but somewhat modest. Students in El Dorado who scored at the 51st percentile in math before the Promise scored at the 55th percentile by the 8th grade, while comparison students' scores slightly decreased to the 50th percentile. In literacy, El Dorado students scored at the 49th percentile and grew to the 55th percentile, while comparison students' achievement declined slightly to the 48th percentile, representing a 7 percentile point impact of the Promise.

Figure 2: Percentile rankings on AR Benchmark Math Exam for El Dorado students and matched comparison students, 2005-06 to 2011-12

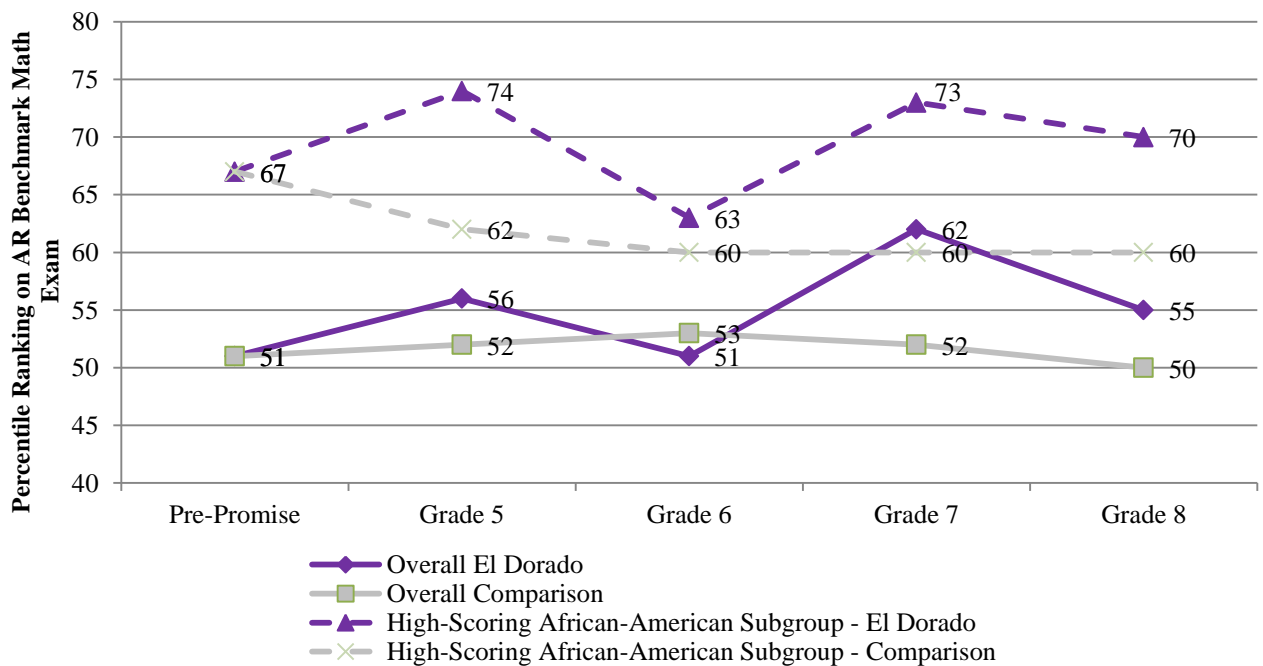
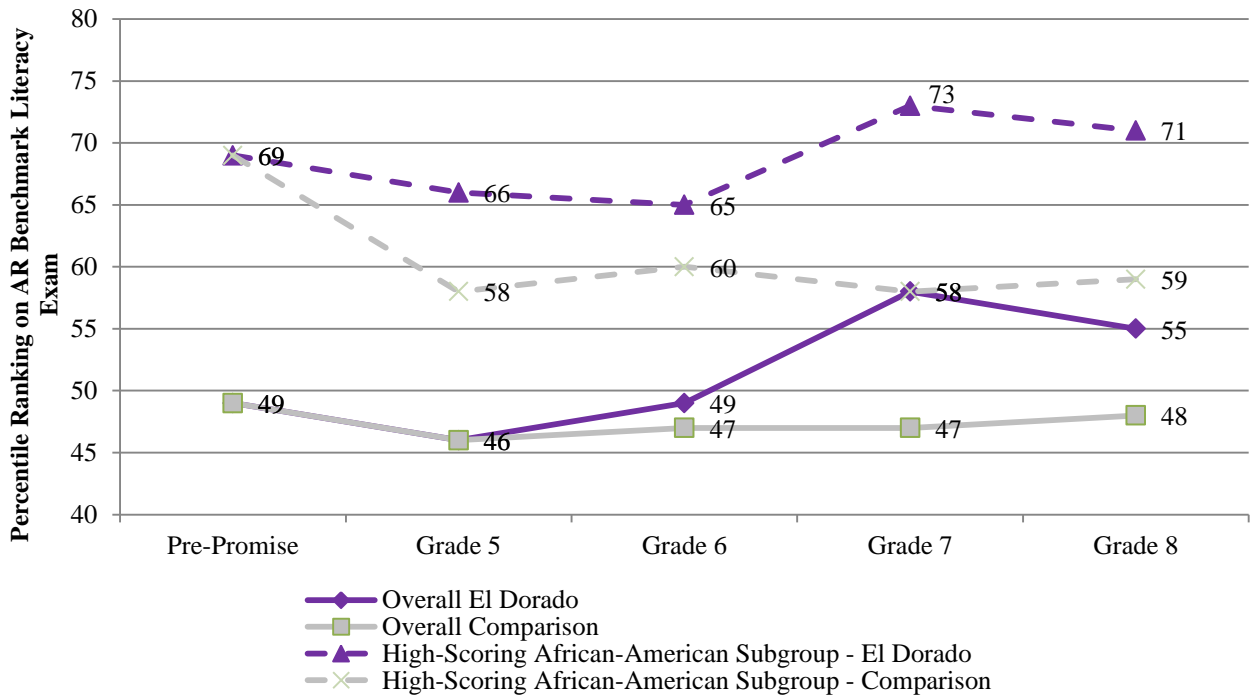


Figure 3: Percentile rankings on AR Benchmark **Literacy** Exam for El Dorado students and matched comparison students, 2005-06 to 2010-11



While all of this is good news for El Dorado, our most interesting and compelling story occurs in our subgroup analyses. When examining the scores for African-American students in the upper half of the El Dorado ability distribution, we found a ten percentile point impact in math and a twelve percentile point impact in literacy. In both areas, the El Dorado students were able to continue at their high achieving pace and even grow through the tough years of middle school and junior high, while the high scorers in the matched comparison group were not able to continue on with these excellent results in middle school.

The fact that the largest impacts are seen for high-achieving students from traditionally disadvantaged groups comes as no surprise. Interviews with teachers, administrators, and counselors in the El Dorado School District yielded story after story about how all parties have worked to make sure that all students, regardless of background, are prepared to benefit from the Promise. The best illustration of the expansion of high expectations to all students came from a high school teacher, who wryly observed: “Our AP classes went from country club to parks and rec.” Whether it is seen in the diverse enrollment in AP classes or in the numbers displayed in this report, the evidence is mounting that El Dorado is living up to its “Promise.”

APPENDIX

The Appendix includes detailed information about the characteristics of comparison districts and regression results at the cohort-level for math and reading.

Table a: El Dorado and comparison districts, Achievement and demographic data

	El Dorado	Comparison District Average[^]	Mag- nolia	Stutt- gart	Warren	Ash- down	Nash- ville	Newport	Jones- boro	Mal- vern
2004-05 Math	41%	41%	42%	33%	33%	36%	44%	36%	46%	43%
2004-05 Lit	47%	48%	46%	44%	45%	41%	50%	47%	53%	46%
2005-06 Math	50%	50%	51%	43%	42%	44%	56%	47%	53%	57%
2005-06 Lit	53%	52%	51%	49%	48%	48%	55%	48%		51%
% Pop. Change	-5	2	1	-7	2	-4	8	-2	5	3
Median Income	\$29,266	\$28,483	\$28,435	\$32,026	\$24,983	\$30,271	\$28,661	\$24,696	\$28,154	\$29,940
Enroll*	4,577	Total: 18,613 Simple Avg.: 2,327	2,899	1,977	1,627	1,669	1,846	1,618	4,774	2,203
Region	SW		SW	SE	SE	SW	SW	NE	NE	CN
% FRL	58%	60%	57%	61%	67%	50%	57%	68%	60%	59%
% White	42%	56%	48%	49%	47%	65%	61%	62%	57%	62%
% Afr. Amer.	55%	38%	50%	49%	39%	33%	25%	34%	35%	35%
% Hisp.	3%	5%	1%	1%	14%	1%	12%	2%	6%	2%
% Other	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%

*Figures in *italics* were not matched upon and are displayed for descriptive purposes only

Table b: Regression Results on 8th Grade Cohort Math Scores

	Cohort 2011	Cohort 2012	Cohort 2013	Cohort 2014	Cohort 2015
Grade at Baseline	7	6	5	4	3
Years of Exposure to Promise	0	1	2	3	4
El Dorado Promise Students	0.143*** (0.0526)	0.0498 (0.0454)	0.129*** (0.0499)	0.250*** (0.0540)	0.131* (0.0680)
Baseline Math z-score (2006)	1.017*** (0.0356)	0.855*** (0.0286)	0.822*** (0.0389)	0.833*** (0.0380)	0.796*** (0.0415)
Free/Reduced Lunch	0.0465 (0.0598)	-0.0761 (0.0637)	-0.256*** (0.0809)	-0.113 (0.0957)	-0.126 (0.101)
African-American	-0.125** (0.0598)	-0.161** (0.0675)	0.00768 (0.0848)	-0.203** (0.0943)	-0.112 (0.0993)
Hispanic		-0.121 (0.139)	-0.0526 (0.372)	-0.439 (0.474)	0.211 (0.309)
Other Race					0.570 (0.572)
Female	0.0920* (0.0508)	-0.0258 (0.0450)	0.122** (0.0519)	0.0474 (0.0544)	0.152** (0.0705)
Constant	-0.0388 (0.0497)	0.0637 (0.0489)	0.145** (0.0625)	0.162** (0.0653)	0.0400 (0.0708)
Observations	512	508	416	458	392
R-squared	0.674	0.727	0.707	0.655	0.612

Bootstrapped standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table c: Regression Results on 8th Grade Literacy Scores

	Cohort 2011	Cohort 2012	Cohort 2013	Cohort 2014	Cohort 2015
Grade at Baseline	7	6	5	4	3
Years of Exposure to Promise	0	1	2	3	4
El Dorado Promise Students	0.0697 (0.0476)	0.132*** (0.0451)	0.291*** (0.0545)	0.222*** (0.0546)	0.170*** (0.0643)
Baseline Literacy z-score (2006)	0.834*** (0.0286)	0.744*** (0.0316)	0.741*** (0.0348)	0.690*** (0.0344)	0.598*** (0.0432)
Free/Reduced Lunch	-0.163** (0.0755)	0.0867 (0.0654)	-0.0805 (0.0839)	-0.117 (0.0819)	-0.0304 (0.0900)
African-American	-0.0467 (0.0674)	-0.303*** (0.0705)	-0.120 (0.0914)	-0.0735 (0.0796)	-0.205** (0.0900)
Hispanic		-0.230 (0.165)	-0.370 (0.537)	0.111 (0.196)	0.422*** (0.110)
Other Race	-0.241*** (0.0610)				0.349*** (0.100)
Female	0.00742 (0.0487)	0.101** (0.0441)	0.153*** (0.0565)	0.243*** (0.0562)	0.220*** (0.0637)
Constant	0.0756 (0.0536)	0.0222 (0.0507)	-0.0808 (0.0617)	-0.0614 (0.0629)	0.0351 (0.0702)
Observations	536	520	430	482	434
R-squared	0.705	0.682	0.658	0.616	0.502

Bootstrapped standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1