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Investing in College Readiness: Societal Benefits and Costs of the El Dorado College Promise Program

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A growing volume of research shows college promise programs increase the likelihood that students enroll in and complete college. Place-based promise programs provide a guaranteed college scholarship for students who attend a specified school district. We examine the societal benefits and costs of a place-based scholarship program in rural Arkansas, the El Dorado Promise. Our cost framework treats tuition payments as a cash transfer that shifts the cost burden of higher education, rather than causing new societal costs. Findings show the program provides societal benefits equal to $4.6 for each dollar invested. Our Monte Carlo simulations show that the program produces benefits to society that exceed costs in 91 percent of scenarios, providing a high likelihood of positive returns.

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Abstract

A growing volume of research shows college promise programs increase the likelihood that students enroll in and complete college. Place-based promise programs provide a guaranteed college scholarship for students who attend a specified school district. We examine the societal benefits and costs of a place-based scholarship program in rural Arkansas, the El Dorado Promise. Our cost framework treats tuition payments as a cash transfer that shifts the cost burden of higher education, rather than causing new societal costs. Findings show the program provides societal benefits equal to $4.6 for each dollar invested. Our Monte Carlo simulations show that the program produces benefits to society that exceed costs in 91 percent of scenarios, providing a high likelihood of positive returns.

Keywords

Benefit-cost analysis, college affordability, college promise programs, college access and success, returns to higher education

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Introduction

While policymakers and researchers recognize the individual and societal benefits of higher education, the U.S. has lagged several countries in terms of college completion rates among younger generations (Perna & Finney, 2014). Disparities in college attainment across racial/ethnic groups and student income are the result of long-standing structural barriers such as inequitably funded K-12 schools and inadequate health and early childhood care access (Baker, 2021; Green et al., 2020; Núñez, 2014). High school reforms have benefited students by increasing their college readiness but sometimes confront the same structural barriers that many students face such as college affordability (Duncheon, 2015, 2021). Even with strong preparation, studies show rising costs of higher education present a significant barrier to equal access (Dynarski et al., 2022). College aid policies can address these issues. Among the various financial aid programs across the nation, policy makers have advanced place-based promise programs, which are college scholarships for students who attend a particular high school or school district (Miller-Adams, 2015, 2021; Perna & Leigh, 2018).

Over the last two decades, these placed-based promise programs have shown the potential to accelerate student achievement and higher education attainment (e.g., Ash et al., 2021; Bell, 2021). While some evidence suggests these educational interventions increase college enrollment and completion (e.g., Bartik et al., 2021; Swanson & Ritter, 2020), investments in promise programs have come largely from private foundations rather than local,

state, or federal governments. Research on societal economic efficiency is thus informative for future public or private investments in these programs (Perna & Smith, 2020; Perna et al., 2020). In other words, more research is needed to analyze the extent to which alternative educational investments – especially those aimed at increasing college completion among students underrepresented in higher education - produce economic benefits that outweigh the costs (Levin et al., 2018; Rossi et al., 2019).

The current literature focuses largely on college promise programs implemented in larger urban locations (e.g., Bueno et al., 2024; Page et al., 2019), but fewer studies exist examining place-based scholarships initiated in more economically challenged communities. The El Dorado Promise seeks to improve educational attainment and employment outcomes in a rural community in Arkansas (Ritter & Ash, 2016). The Promise was designed to develop a college-going culture, to promote higher education attainment, and to boost the economic development in the local community (Swanson & Ritter, 2020). A recent study of the El Dorado Promise finds the program leads to a 14.0 percentage point increase in postsecondary enrollment and an 8.8 percentage point increase in bachelor's degree completion for program participants (Swanson & Ritter, 2020). The current study considers how these and other societal benefits of the El Dorado Promise compare with the program's societal costs.

To estimate the costs of the El Dorado Promise, we draw on secondary data from multiple sources and conduct interviews with program administrators. We note that previous efforts to assess the cost of promise programs did not adopt a societal cost perspective, instead comparing the costs incurred through philanthropic donations to the benefits gained through additional educational attainment (e.g., Bartik et al., 2016). Our approach is unique as we consider the total societal cost of promise programs and treat scholarships and tuition fee waivers

as cash transfers that impact the cost burden of postsecondary education, but not the total cost. Our estimates of program benefits are based on a synthesis of research on the causal impact of the El Dorado Promise on college outcomes, and the causal effects of postsecondary attainment on public and private monetary benefits (Levin & McEwan, 2001; Levin et al, 2018). The results show that the El Dorado Promise is a highly productive investment and easily passes a benefit-cost (BC) test. The BC ratio is about 4.6, implying that each dollar invested produces four point six dollars in return to society. The findings from this analysis are useful to state governments, policymakers, local school districts, and promise program designers, implementers, and funders.

Our analysis contributes to the literature in multiple ways. First, the analysis demonstrates the importance of adopting a societal perspective in benefit-cost analyses of public policy. While prior benefit-cost analyses of college promise programs identify positive returns, those studies do not clarify for whom the positive returns are incurred - the funders of the scholarship, the recipients, the university, or the public at large. Moreover, past benefit-cost analyses of promise programs have included the entire tuition bill, without acknowledging many promise program recipients would have attended college in the absence of the program. As we describe in our methodology, the true societal cost of a promise program is the additional expenditures associated with attending college, but only for those students who were induced to attend college through the promise program. In contrast, the scholarship itself represents a cash transfer, and most promise program scholarship recipients would have attended college anyway. Prior studies also excluded administrative costs of running promise programs, a vital component of successful promise programs. Secondly, few studies of the promise programs examine rural contexts. A goal of the El Dorado Promise program is to retain educated professionals and attract families to the area. Our analyses highlight that such programs may produce especially large

benefits for society relative to cost, as rural students often have less access to postsecondary resources compared to their suburban and urban peers (Hoxby & Avery, 2012).

In the sections below, we provide greater background on the El Dorado Promise program's theory of change, describe our data and methods including the theoretical basis for benefit-cost analysis, and then present findings, discussion and implications, as well as conclusions.

Research Context and Literature Review

The El Dorado Promise and Theory of Change

Over the past two decades, college promise programs have emerged as a new model of college aid policy, offering generous postsecondary tuition subsidies to any high school graduate in a given school district. This place-based scholarship initiative has gained prominence since the inception of the Kalamazoo Promise in Michigan in 2005. Modeled after the Kalamazoo Promise program, a similar privately funded promise program was initiated in Arkansas in 2007, the El Dorado Promise, with initial support from a $50 million gift from the Murphy Oil Corporation, whose original headquarters was in the local area. Like the Kalamazoo Promise, the El Dorado Promise is a universal scholarship program, such that students are eligible for the Promise as long as they graduate from the district's sole high school, El Dorado High School, after having been enrolled since at least ninth grade (Ritter & Ash, 2016).

There are a few more features of the El Dorado Promise also salient for our benefit-cost analysis. The scholarship program is easy to understand and the application process is simple - students are only required to complete a one-page form where they provide contact information, their El Dorado High School attendance history, and the college where they will use the

scholarship. More than 86 percent of El Dorado public school graduates are eligible for the promise program and more than half of them are female and students of color. The promise program is mature - it began with the high school graduating class of 2007 and there are rich data on student outcomes.

Place-based college promise programs have several goals and potential mechanisms for success. A theory of change, shown in Figure 1, is helpful to understand how program costs map onto specific mechanisms and activities of the Promise (Levin & Belfield, 2015). Swanson and Ritter (2020) argue that these programs aim to spur local economic development, foster a college-going culture, and improve educational outcomes in the local community. Under their framework, universal place-based scholarships attract new residents to move to and induce them to stay in a school district, which advances the economic development of the local community. In addition, these programs can improve the quality of education students receive during their K-12 school years since teachers and administrators in the local school district may raise student expectations, which builds a college-going culture. Parents and other volunteers also spend more time supporting the Promise and encouraging and helping students to make pre-college preparations and decisions. Finally, universal scholarships intend to enhance postsecondary outcomes, such as college enrollment and completion, by subsidizing its costs.

Benefit-Cost Studies of College Promise Programs

While a growing number of studies estimate the impact of college promise programs, surprisingly few compare costs and benefits. A few exceptions include Bartik et al. (2016), Page et al. (2019), and Scott-Clayton (2011). In the Bartik et al. (2016) study, the authors investigate the Kalamazoo Promise's benefits and costs overall and by student groups, based on the program effects estimates, scholarship outlays data, and estimated future earnings. The authors base

estimates of the monetary returns of a college degree on the mean difference in earnings between high school and college graduates, using data from the Panel Survey Income Dynamics. To infer the program's earnings benefits, Bartik and colleagues (2016) multiply their estimates of the monetary returns of a college degree by the estimated impact of the Promise on credential completion (Bartik et al., 2021). To estimate the costs of the Kalamazoo Promise, the authors calculate average scholarship expenditures per eligible student for the first six years after high school graduation and discount costs to the year when students graduate from high school, for the six cohorts in their impact study (Bartik et al., 2021). The authors exclude administrative costs in their main analysis and omit the costs of the office space, noting that this resource was donated, and a price estimate was not available. However, the authors conduct sensitivity analyses where tuition subsidies are treated as an income transfer for students who would have attended college anyway (Bartik et al., 2016), assuming that every recipient of the promise program would have attended college.

Bartik and colleagues (2016) find that the total cost of the program per Promise-eligible student is $17,620, and costs vary across credential types as well as student groups. The summed earnings benefits are $82,083, and this estimate also varies across student groups. The Promise's BC ratio is about 4.66 and the average rate of return is about 11.3%, but results vary substantially across student groups. The BC ratio decreases to 3.88 when Bartik et al. (2016) includes administrative costs and college external subsidies.

A few other studies conduct benefit-cost analysis and provide some estimates, although the authors do not always share details of these calculations or include all possible costs or benefits. For example, by employing a quasi-experimental design, Page and colleagues (2019) find that the Pittsburgh Promise scholarship recipients are about five percentage points more

likely to enroll in college and four to seven percentage points more likely to persist into a second year of higher education. The authors use earnings benefits and scholarship expenditures to estimate how potential increases in students' wages compare to spending on tuition, in some sense capturing whether the donated scholarship funds produced monetary benefits to society that were "worth the investment" (Page et al., 2019, p. 595). Their conservative calculation shows that the BC ratio is about 1.35, suggesting that the Pittsburgh Promise Program yielded private earnings benefits that outweighed donor scholarship investments by a factor of 1.35.

Theoretical Framing, Research Objectives, and Research Questions

Scholars refer to societal benefits and costs as the total monetary benefits and costs associated with a particular policy or program, regardless of who pays for the particular investments (Levin et al., 2018; Perna et al., 2020). In addition to estimating the impact of the El Dorado Promise on postsecondary outcomes and how this effect varies across student groups (Swanson & Ritter, 2020), we conduct a societal benefit-cost analysis of the program, examining the comprehensive set of benefits and costs of the program. Our theoretical approach defines costs as the value of resources used to produce a particular outcome. As we describe in greater detail below, the cost of a promise program under this definition includes the administrative costs to run the program, additional time costs of students and families to participate, and induced costs of additional educational attainment. Because promise programs induce students to receive additional education, cost analyses must account for those induced costs (Levin et al., 2018). While the philanthropic donations that support scholarships make it possible for more students to attend college, those donations do not fundamentally change the cost of college, but rather who pays. Thus, cost analyses of promise programs must also consider that much of the scholarship funds support students who would have attended college anyway. For any

scholarship recipient, the promise program changes who pays for college, but additional societal costs result only from the promise program's impact on college enrollment. Our cost analysis approach thus considers that only a fraction of scholarship recipients would attend college if not for the scholarship.

In alignment with the societal goals for college promise program effectiveness to promote educational equity and efficiency (DesJardins, 2002; Dowd & Shieh, 2013; Perna et al., 2020), the current study aims to address three research questions:

1. Based on extant literature, to what extent does the El Dorado Promise increase postsecondary enrollment and attainment and what are the societal benefits of the program?
2. What are the societal costs of the El Dorado Promise program?
3. How do the societal benefits of the El Dorado Promise compare with its societal costs?

Methodology

In the subsections below, we describe how we identified program impacts, converted impacts to economic benefits, assessed program costs, calculated benefit-cost ratios, and examined the distribution of benefits and costs across stakeholders.

Measuring the Program Impact

We identified program impacts by drawing on extant literature, specifically, a causal impact study conducted by Swanson and Ritter (2020). In that study, the authors use a difference-in-differences framework to estimate the causal effects of the El Dorado Promise program on postsecondary outcomes (e.g., college enrollment, and bachelor's degree completion).

For each cohort of El Dorado students, the authors (Swanson & Ritter, 2020) identify students who are or who would have been eligible for the scholarship, based on when they transfer into El Dorado School District (EDSD) (see Table 1 for more student demographics). All students who have been continuously enrolled in EDSD since at least ninth grade are eligible for the scholarship covering tuition and mandatory fees equal to the highest in-state, public university rate (Ritter & Ash, 2016). Students who attend EDSD from kindergarten through 12th grade receive the full amount of the scholarship and students who have been continuously enrolled in EDSD from the ninth to 12th receive 65% of the maximum amount of it. This eligibility criterion was used to identify the program impact. As described further below, the study finds that for high school cohorts from 2007 to 2012, the El Dorado Promise program increases postsecondary enrollment by 14.0 percentage points and bachelor's degree completion by 8.8 percentage points.

Converting Impact Estimates to Benefits

To convert the college completion outcome to estimated monetary benefits, we relied on ten prior studies which examine the private and public monetary returns of postsecondary education (see Appendix Table A1; figures are inflation-adjusted and represent present value). These rigorous studies have considered the opportunity cost of college attendance in their estimations, including labor market earnings directly after high school. We followed the approaches in Atchison et al. (2021) and similar benefit-cost studies (e.g., McMahon, 2009), and based our estimate of the returns to postsecondary education on causal estimates drawn from extant research. Scholars define the societal benefits of a college promise program as the monetary gains to individuals and the broader public that result from enrolling in higher education. Prior studies define that private benefits include both private monetary returns (i.e.,

increased earnings) and private non-monetary returns such as better individual health, increased longevity, or improved education for an individual's children (Agan, 2013; Hershbein & Kearney, 2014; McMahon, 2009). Public benefits include increased taxes/decreased government spending, democratization, human rights, pollution reduction, reduced inequality, reduced crime and criminal justice activity, and so on (e.g., Carroll & Erkut, 2009; McMahon, 2009; McMahon & Delaney, 2021; Trostel, 2010). To calculate the total societal benefits, scholars include only the public benefits that can be monetized, which increased tax revenues and reduced spending on healthcare and criminal justice (Levin & McEwan, 2007). Estimates of prior benefits adjust for the foregone earnings associated with attending college.

There is a wide range of returns estimated by different studies. One reason for these differences is that scholars use varying amounts of time over which their studies estimate the accrued returns of higher education. To address this concern, Atchison et al. (2021) generate two estimates of monetary returns to higher education: average and conservative estimate. We drew on a similar set of studies, limiting to those based in the U.S. and published within the past 15 years. Following Atchison et al. (2021), we used an average estimate, computed as the exponentiated average of the logged dollar values across the private and public benefits studies. A conservative estimate is the lowest estimate of the monetary returns to postsecondary education across all the referred studies, which presents a lower bound estimate of the benefits of the El Dorado Promise program. We extend Atchison et al.' (2021) approach, selecting the most suitable study (McMahon, 2009) that best matches the context/scope of our study as a sensitivity analysis to our preferred estimate. The other nine studies either use nationally representative survey data (e.g., Kim et al., 2015) or examine one aspect of societal benefits of higher education, such as fiscal benefits (Trostel, 2010) and returns for marginalized students

(Zimmerman, 2014). We select McMahon (2009) also because the study adopts a societal perspective to examine the comprehensive external benefits of higher education, including both private and public benefits, which aligns with our research scope and recommended practices within the benefit-cost analysis literature (Levin et al., 2018).

Estimating Program Costs

We applied the ingredients method to gather and analyze program cost data (Levin et al., 2018). We adopted a "societal perspective," which involves inclusion of all resources regardless of how they are financed or whether they are donated (Belfield & Bowden, 2019; Bowden et al., 2020; Walker et al., 2019). The goal of our cost analysis was to estimate the monetary value of all social resources used to run the program and produce the causal effects identified in Swanson and Ritter (2020). We collected data from four sources, including Promise's scholarship outlays record which records tuition payments made by the private foundation, institution-level expenditures data from the Integrated Postsecondary Education Data System (IPEDS), IRS Tax Form 990 information, and a semi-structured interview with the Program Director. We define the societal costs of a college promise program as the total value of resources used to implement the program that could have been used for other purposes. Societal costs include two broad categories: (a) the program operating and administrative cost; and (b) induced cost of college attendance (e.g., the additional college cost over and above the control group). These so-called "induced cost" results when an intervention causes program recipients to receive additional services, in this case, postsecondary education (Belfield & Bowden, 2019; Levin et al., 2018). Individuals exposed to a promise program are more likely to attend college, which increases societal costs. Whether those costs are lower than or exceed the societal benefits of promise programs is an open question and represents our primary research inquiry.

To estimate the Promise's administrative costs, including the annual costs for personnel, training, facilities, equipment and materials, marketing, volunteers' time, and other administration, for each school year from 2007 to 2012, we primarily drew on our individual interview data. We referred to a cost tool, CostOut from the Center for Benefit-Cost Studies of Education at the University of Pennsylvania Graduate School of Education, to determine personnel salaries, material costs, and facility expenses based on square footage of office space (https://www.cbcse.org/costout). While the IRS Tax Form 990 data provided some additional context into approximate administrative costs (see details in Appendix Figure A1), we were not able to directly align dollar figures from the tax forms with cost estimates derived from our interview data. However, we considered the interview data as providing credible estimates of administrative costs and resource use for the program.

To estimate induced cost of college attendance, we drew on IPEDS data and the Promise program's scholarship outlays record. We note that tuition payments made by the private foundation on behalf of students represent cash transfers (rather than societal costs), but we tracked these expenditures as part of our analysis. We used the scholarship outlays record to identify what higher education institutions most of the scholarship recipients attended and calculated the costs of attendance by using IPEDS data on the core expenses per FTE enrollment, produced annually by National Center for Educational Statistics (NCES). We used six consecutive years of IPEDS expenditure and tuition data to calculate a student's costs of attendance to complete a bachelor's degree (using five years and four years as sensitivity analyses). Then we multiplied this result by 0.14 since scholarship recipients are 14 percentage points more likely to enroll in college (Swanson & Ritter, 2020), thus representing the induced cost of the program resulting from a greater number of individuals attending college.

Our approach to estimating the induced cost of college attendance assumes that the Promise program increases enrollment at higher education institutions. Specifically, students exposed to the Promise program are 14 percentage points more likely to attend college, resulting in a relatively small enrollment increase at each university. This small increase is unlikely to influence fixed costs, such as the need for additional buildings or infrastructure. Therefore, our approach assumes that all institutional costs are variable, and no additional fixed costs are incurred as a result of increased enrollment. For program participants attending college through the scholarship program, we assume a 14 percentage point increase in enrollment, and institutional costs are calculated to reflect the additional college-going triggered by the Promise program. This methodology treats all institutional costs as variable, with no fixed costs expended regardless of the number of enrolled students.

Our cost estimates are specifically based on the present value cost of the El Dorado Promise program during the school years 2006-07 to 2011-12 because those are the school years from which the impact study is based. We also aligned our estimates of the cost of attending college with the same school years in which promise program students from the impact study attended college (and therefore the school years upon which our benefits estimates are based). All costs and benefits estimates are based on their 2011-12 present value (aligning with the data used in the impact study) (using a 5% discount rate), but dollar values are converted to 2022 dollars (adjusting for inflation). In addition, when calculating the “induced” costs associated with more students attending (but not necessarily finishing) college, we need to make an assumption about how many years those students attend college before they either drop out or graduate. To be conservative, we assume any student for whom the Promise program induces to enroll in college will attend college (and induce societal costs) for six years. This figure might overstate

the induced costs associated with more students attending but not finishing college. At the same time, the estimated impact on BA degree completion is based on the increased likelihood of completing college within six years of finishing high school. That is, Swanson and Ritter (2020) examine the increased likelihood of college completion within six years, suggesting that some college graduates may have attended college for up to six years prior to graduating. In our revised manuscript, we test the sensitivity of this assumption by examining how results change if we assume that students who are induced to enroll in college through the Promise Program, attend college for only five years and only four years, on average.

We note that while some prior studies have categorized tuition expenditures as a societal cost, this approach may overstate actual program costs. Many of the students who received tuition subsidies were likely to attend college in the absence of the program. Their receipt of tuition subsidies is important but does not necessarily alter the total societal costs of the promise program in the same way as administrative or induced costs.

Finally, to help place our findings in a broader policy context, we calculate the administrative cost for each Arkansas school district, as a proportion of local revenues for which school districts have some flexibility to invest in programs like the El Dorado Promise. Under the Arkansas public school finance system, districts are required to levy a local property tax rate of 2.5% as part of the uniform rate of tax, the revenues from which are contributed to their foundation aid amount (Arkansas Department of Education, 2022). Districts receive flexible funds called “excess debt service” for local revenues generated beyond the initial 2.5% required uniform rate of tax, and beyond any debt service payments made to pay of existing loans for capital investments (Hernandez & Saunders, n.d.). While Arkansas’s finance model includes some categorical funds, districts maintain autonomy over most local spending decisions (Camp,

Zamarro, & McGee, 2024) and could use excess debt service funds to support a promise program.

Our district-by-district analysis shows the cost feasibility for each district in Arkansas to implement the Promise Program, if they incurred all annual administrative costs, but all scholarship-related costs were paid by the state. We calculate the administrative costs as a proportion of local per-pupil excess debt revenues as the Promise Program administrative costs, divided by each district's total excess debt service, divided by the number enrolled in grades 9 to 12. We examine how the administrative costs to local districts vary by neighborhood poverty rate, drawing on the U.S. Census Small Area Income and Poverty Estimates. For Arkansas finance data, we use the State Foundation Funding and Bonded Debt Assistance data from the Arkansas Department of Education. We use the per-pupil local excess debt revenue variable, adjusting for geographic differences in cost (Cornman et al, 2019), passthrough payments (Kelly & Farrie, 2023), and inflation, using 2021-22 dollars (Shores & Candelaria, 2020).

Comparing Program Costs and Benefits

After program benefits and costs data were gathered, we combined them into two metrics: net present value (NPV) and benefit-cost (BC) ratio (Levin et al., 2018). The NPV is calculated as the estimated costs subtracted from the estimated benefits. Second, we calculated the benefit-cost ratio by dividing the benefits by costs. We preferred to estimate the NPV and the BC ratio by using the average estimate of benefits and the midpoint estimate of costs. We also used the conservative estimate of benefits and the midpoint estimate of costs to calculate more conservative estimates of the NPV and BC ratio.

Modeling Uncertainty

When analyzing the costs and benefits of a policy/program, it is important to consider uncertainties to understand the risks involved (Boardman et al., 2018). This helps decision-makers make better choices based on potential outcomes and risks. Factoring in uncertainties also allows for sensitivity analyses, which highlight the main factors affecting costs and benefits. This process promotes transparency by showing the possible outcomes and underlying assumptions, leading to a more thorough evaluation of programs or policies (Levin et al., 2018).

We performed Monte Carlo simulations to model uncertainty. Three factors could potentially bias benefit-cost calculations: the estimation of the causal effects of the program, the estimation of the program benefits, and the estimation of the program costs (Atchison et al., 2021). We generated a distribution of estimates of the program effects, benefits of higher education attainment, and the costs of the El Dorado Promise, based on measures of variance for each of these metrics. Then, we estimated the benefits attributable to the Promise by multiplying the randomly selected program effect results with the randomly selected benefits of higher education attainment. Next, we estimated the NPV by examining the difference between the randomly selected costs and benefits based on an assumed normal distribution and we also estimated the BC ratio by examining how the benefits compare to the costs. Lastly, we replicated this exercise 5,000 times and got 5,000 different NPV estimates and BC ratio estimates, and we analyzed how those NPVs and BC ratios were distributed to understand the likelihood that the program benefits exceed its societal costs.

Distribution of Societal Benefits and Costs

As a final step in our analysis, we considered how the El Dorado Promise program's benefits and costs were distributed across stakeholders. Here we built on prior work (e.g., Bartik

et al., 2016) but took a different approach from some prior studies in examining how different groups were impacted by promise programs. First, we highlighted that from a societal perspective, tuition payments were not costs but represented important cash transfers that shifted the burden of costs, in this case from students and families to a private foundation. Second, we acknowledged that some stakeholders, such as the school district and volunteers, incurred costs even if they did not result in new expenditures. These costs were not accounted for in prior studies. By analyzing the distribution of benefits and costs, we showed how tuition payments and other investments shifted the cost burden without necessarily altering the total amount of societal costs required to run a promise program, since some of the student beneficiaries were likely to attend college in the absence of the program.

Results

We first present the impact results, followed by program benefits and costs estimates, the benefits to costs of the Promise, and the distributional concerns.

Program Impact Estimates

The estimated impact of the El Dorado Promise on postsecondary enrollment and bachelor's degree completion within six years of high school graduation is presented in Appendix Tables A2 and A3. Applying a difference-in-differences framework, Swanson and Ritter (2020) find that, overall, scholarship recipients are 14.0 percentage points more likely to enroll in a postsecondary institution. In addition, this estimate varies across student groups. Female recipients are about four percentage points more likely to enroll than their male counterparts. The Promise increases college enrollment rates by 15.0 percentage points on average for students of color and by 12.7 percentage points for white students. Scholarship-eligible students with above-average high school GPAs and below-average high school GPAs are

10.8 and 15.5 percentage points, respectively, more likely to enroll in college than those who are not eligible.

The El Dorado Promise also leads to positive increases in bachelor's degree completion both overall and across various demographic characteristics. Swanson and Ritter (2020) find that the Promise leads to an 8.8 percentage point increase in bachelor's degree attainment rates within six years of high school graduation. The effect is statistically significant at the 90% confidence level. The scholarship is associated with an 8.8 percentage point increase in bachelor's degree completion among both students of color and white students. Although the impact for eligible white students is statistically significant, neither the impact on students of color nor the impact on white students is statistically different from the overall impact. In addition, relative to students with below-average high school GPAs, students with above-average high school GPAs experience an increase in degree completion of 11.1 percentage points, benefiting the most from the scholarship program.

The Societal Benefits of the Promise

We generated monetary returns of higher education by referring to results from ten previous studies (e.g., McMahon, 2009). The lowest estimate of private benefits is from Agan (2013), where the monetary returns of earnings of obtaining a bachelor's degree, earning an associate degree, and attending college but not completing a degree are $209,654, $144,884, and $73,143, respectively ($253,786, $175,382, and $88,540 in 2022 dollars). The lowest estimate of the public monetary returns to postsecondary education across studies is from Carroll and Erkut (2009)'s report where public benefits of obtaining a bachelor's degree is $186,911 ($226,094 in 2022 dollars). In addition, we followed Atchison et al. (2021) and assumed that public benefits of attending college but not completing a degree are half the returns of completing an associate

degree. To generate the average estimates, we followed Atchison et al. (2021) and combined all estimates across studies into an average estimate for individuals who attend college but do not complete a degree, who obtain an associate degree, and who complete a bachelor's degree. Following their approach, we defined the average estimates as the average across these ten studies and the conservative estimate as the lowest of the estimated benefits, which considers tuition and time costs but does not consider any monetary benefits from attending some college. These figures are summarized in Table 2, inflation-adjusted in 2022 dollars (see Shores and Candelaria, 2020).

Table 3 presents the benefits attributable to participating in the scholarship program. These are the returns to bachelor's degree completion multiplied by the estimated effects of the El Dorado Promise. The average estimate of lifetime benefits of participating in the scholarship program amounts to $98,707, with $58,094 per recipient in private benefits and $40,613 per recipient in public benefits, inflation-adjusted and representing present value (details about the conversion of benefits to present value please see Appendix Table A4). The conservative estimates of lifetime benefits of participating in the scholarship program are $47,855, with $25,300 per recipient in private benefits and $22,555 per recipient in public benefits, inflation-adjusted and representing present value.

The Societal Costs of the Promise

Tables 4 and 5 show the detailed costs of implementing the El Dorado Promise. Program costs are broken down into two components: program administrative costs and induced costs related to increased college costs. Administrative costs include personnel time, training, equipment and materials, facilities (e.g., building space), and volunteers' time (see Table 4).

Administering the El Dorado Promise involves personnel time of the Program Director, parent volunteers, school district staff, paid consultants, and hired services such as public relations and marketing. The Program Director holds a full-time job administering the program and oversees many activities, including communicating with students and parents, collecting scholarship applications, interviewing senior high school students, doing weekly school visits, and organizing a variety of Promise outreach activities. The Program Director corresponds with the universities and colleges on various occasions, such as reaching out to colleges to inform them what students are Promise-eligible, receiving tuition and fees invoices from colleges, receiving transcripts to determine whether a recipient is eligible for continuation of the scholarship, and surveying in-state public colleges to determine the highest tuition and mandatory fees.

The Promise program receives substantial support from the local community. There are two college career coaches who help set up a FAFSA Night four times a year, two in the fall and two in the spring. One president and one assistant director from the El Dorado Education Foundation often volunteer in several program activities, such as Kindergarten Day, Promise Week, Academic Signing Day, and College Fair. A local bank donates hundreds of backpacks for kindergarteners every year to help promote the Promise program. One media marketing person from the school district advocates for the Promise through the school website and a Twitter account, and they also help on Academic Signing Day, mailing invitations and updating and printing handouts and brochures. Also, there is a Global Communications staff from the Murphy Oil Corporation who is responsible for accounting and Promise anniversary reports. During the first year of the program, one person at the city's Chamber of Commerce was

specifically assigned to promote the Promise program as a Public Relations staff. The El Dorado Promise also hired a PR firm out of Little Rock.

The Program Director also noted an annual discretionary budget of 2,000 dollars from the school district, covering their professional development, school visits, office supplies, travels, and student file cases. The Program Director also has an office in the El Dorado High School. Annual program administrative costs per eligible student exposed in the program while in college is $203, which is the cost difference between students eligible for the scholarship and those who were not eligible. Using a 5% discount rate, we estimated the program's administrative costs over six years to be $1,377 (please see Table 5).

The other major component of the program costs relates to the induced cost of college attendance. First, we used the Promise scholarship outlays record to identify the specific higher education institutions most scholarship recipients attended, the most common of which included University of Central Arkansas and Henderson State University. Then we used IPEDS longitudinal data of ten mostly attended universities, the core expenses per FTE enrollment, to estimate the annual cost of serving an additional higher education student at each institution. We used expenditure data from the same school years in which promise program students from the impact study (upon which benefits estimates are based) attended college (2006-07 to 2011-12). IPEDS data aligned with the year of the impact study, to calculate undiscounted tuition expenditures per student as an estimate of the total societal costs for one student to complete six years of college (e.g., 150% of the time for a bachelor's degree), which is $125,626, in 2022 dollars ($107,189 for five years and $87,943 for four years).

Then we multiplied these results with 0.14 since scholarship recipients are 14 percentage points more likely to enroll in college (Swanson & Ritter, 2020), resulting in additional induced

costs of $17,588 per eligible student ($15,007 for five years and $12,312 for four years). Discounted induced cost of college attendance for six, five and four years is $20,090, $17,149 and $14,079, respectively (details about the conversion of costs that take place over multiple years to present value please see Appendix Table A5). The total cost per eligible student of the program is the induced college cost of $20,090 plus the administrative cost of $1,377, a total of $21,467, over six years (please see Table 5) ($16,913 for five years and $12,840 for four years) (please see Table 6).

The Benefits to Costs of the Promise

We compared several sets of benefits and costs (see Table 6). As previously explained, we preferred to estimate the NPV and the BC ratio by using the average estimate of benefits and the midpoint estimate of costs. We also used the conservative estimate of benefits and the midpoint estimate of costs to calculate NPV and BC ratio. In addition, we used five years and four years of college attendance to estimate the program costs. Finally, we used the study whose research scope best matches ours. We first simply subtracted the costs from the benefits, resulting in a difference which is the NPV. The NPV of the average estimates is $77,240, while the NPV of the conservative estimates is $26,388. These estimated figures are higher when five years and four years of college attendance are used to assess the costs (please see Table 6). Also, the NPV also becomes higher when we only rely on McMahon (2009) since the benefit estimate is larger while the cost estimates remain the same.

Second, we calculated the benefit-cost ratio by dividing the benefits by costs. The BC ratio of the average estimate is 4.6, while the BC ratio of the conservative estimate is 2.23. These estimates imply that for each dollar invested the El Dorado Promise program produces benefits of four point six dollars in return, with a lower bound estimate of $2.23. The variations between

these two sets of values are relatively large simply because the average estimates of benefits of receiving higher education are larger than the conservative estimates. These BC ratios are larger when five years and four years of college attendance are used to estimate the cost since program cost decreases and benefits increase due to one- and two-years' additional earnings. When referring to McMahon (2009) only, the BC ratio becomes even larger since its higher estimate of both public and private returns to higher education.

Break-Even Analysis

A break-even analysis can be employed as a method to understand the degree of uncertainty involved in estimating parameters and determine upper and lower bounds that result in positive societal returns (Boardman et al., 2011). In our primary analysis, we assumed an individual completing a BA degree results in public and private benefits over that person's lifetime of approximately one million. The Promise program's positive impact on BA degree completion rates of 8.8 percentage points produces societal monetary benefits of $98,707, which is four point six times higher than present value costs. How much smaller could the benefits of a BA degree be to maintain a benefit-cost ratio above one, where monetary benefits meet or exceed the program costs of $21,467. The results of our break-even analysis are displayed in Figure 2. Panel A shows the benefit-cost ratio increases as the monetary benefits resulting from a BA degree increase, as indicated by the upward sloping line, reaching the break-even point where a BA degree produces $243,943 (implying monetary benefits of the El Dorado Promise of $21,467).

We also estimated how the BC ratios would change if we let the estimate of program impact on BA degree completion vary from its preferred estimate of 8.8 percentage points. Based on the standard error of the estimate of program impact from Swanson and Ritter (2020), our

results show the El Dorado Promise program produces positive benefits to society within a probability of about 81 percent, providing relatively high likelihood of positive returns. The upward sloping line in Panel B of Figure 2 shows how the benefit-cost ratio changes as the estimated impact increases. The lower-bound impact estimate of 0.8 percentage points creates monetary benefits of $8,973, which falls below the estimated costs (the break-even impact estimate is 2.17 percentage points, requiring a t-statistic of 1.29, and a confidence interval of 95 percent). The upper-bound impact estimate of 16.8 percentage points creates monetary benefits of $188,441, which exceed costs by a factor of $8.32.

Results of Monte Carlo Simulations

We also performed Monte Carlo Simulations to model uncertainty, which demonstrated how the benefit-cost estimates varied when we replicated the analysis 5,000 times. We used the total (private and public) benefits and the median simulated average NPV was around $73,105. In addition, the simulated estimates of the program benefits were in excess of the costs in about 91 percent of the simulations. Approximately 96 percent of the simulated BC ratio estimates were positive and about 91 percent of them were bigger than one. These big percentages result from a relatively strong t-statistic in the estimated impacts on college enrollment and completion from Swanson and Ritter (2020) and a relatively narrow range of plausible administrative costs of implementing the El Dorado Promise program. These exercises in modeling uncertainty indicate a strong likelihood that the societal benefits of the El Dorado Promise exceed the program costs.

Distribution of the Societal Benefits and Costs

The primary feature of a Promise program is not necessarily to alter the societal costs of college, but to shift who pays (thereby encouraging more students to consider college). Table 7

shows how the program's societal benefits and costs were distributed across stakeholders. Row one shows the benefits and costs for students, who experienced reduced costs for college and increased benefits from attending college. As noted earlier, students receive a monetary benefit of $58,094. The cost to students is ambiguous because some are induced to attend college, but do not finish, while others may not be induced to attend college as a result of the program. The school district may benefit from more motivated students who improve academic performance in schools (Ash et al., 2021), and we list these benefits as positive quantifying a monetary value (and these monetary benefits are captured in college attainment benefits when we calculate societal costs and benefits).

Districts also provide some staff time, resulting in a cost of $255 per eligible student. Because El Dorado Promise increases postsecondary enrollment, state and federal governments incur costs from increased state and federal student aid, resulting in positive costs; however, the specific amount depends on student characteristics. Benefits and costs for the university are ambiguous because it receives additional tuition revenue and state per-pupil funding, but incurs costs of educating new students, which could be above or below the amount of additional revenues (we assume these are equal though our results are not sensitive to this assumption). The private foundation, The Murphy Oil Corporation, incurs the same dollar value in tuition and fees for students, about $35,000. And other stakeholders also incur costs, for example, private donors and parent volunteers allocate time and donate materials to support and promote the Promise program. In addition, the local economic development will be promoted thanks to an improved future workforce and more immediate migration effects (e.g., Bartik et al., 2016; Bartik et al., 2021).

Discussion and Implications

Our analysis of program costs revealed personnel investments potentially overlooked in prior studies. In particular, implementing the program requires a full-time administrator, as well as parent volunteers, district personnel time, and various paid services, and the El Dorado Promise program is relatively small scale compared to some others (Perna et al., 2021). The program also requires physical resources and office space, as well as travel costs and other miscellaneous expenses. Previous studies of the costs of promise programs emphasize extra resources to support students, but omit analysis of other administrative costs (e.g., Page et al., 2019). The Program Director emphasized during the interview that some specific costs are not covered by their office and instead covered by the local school district, parent organization, or local donors. Our conservative estimate of the administrative cost per student during the program is $1,377, which is about 6.4 percent of the total program costs. This value is much higher than that of the Kalamazoo Promise, which is 3.6 percent of annual scholarship costs, based on a summary estimate provided by the program director (Bartik et al., 2016). Interestingly, our analysis of the IRS Tax 990 forms for the El Dorado Promise revealed a similarly small estimate of about eight percent of the total expenditures. We argue that deeply exploring program ingredients through document review and interviews can provide a better understanding of the costs of implementing an educational program, compared to relying solely on program budgetary documents (Levin et al., 2018).

Another key distinction of our analysis from prior work on the costs and benefits of college promise programs is the treatment of tuition and college costs. While some prior studies have categorized tuition fees that foundations pay to universities as a societal cost of a promise program, we defined these payments as a cash transfer. Our framework compares the overall

societal costs and benefits, where societal costs are the value of all resources used to produce the identified program outcomes. The resources include program administrative costs and the costs of college attendance. The cost of college attendance is not the price charged to a given family, nor tuition paid by a foundation, but the value of the resources required to provide a postsecondary education. To estimate the cost of college resources, we use per-pupil expenditures as a proxy for cost, acknowledging that cost and expenditure represent different but related constructs. Lastly, our approach acknowledges that many individuals in the control group also attend college, so assigning the entire tuition cost of the treatment group is unreasonable. Specifically, the program's effect on enrollment of 14 percentage points for treatment group students is educationally significant but suggests that most of the roughly 60 percent of treatment group students who went to college would have done so anyway. The costs of the program (and the benefits) should only include the costs (and benefits) that result from participation in the program. For this reason, we include only the induced costs of college, multiplying the total costs of attendance by 14 percentages points.

Turning to benefits, the literature has not reached consensus on how to measure the benefits of receiving/completing postsecondary education. Scholars tend to calculate these based on projected future earnings over an individual's lifetime. However, there are other nonmarket returns to higher education, especially the external social benefits, some of which are not easy, or not even possible, to monetize (McMahon & Delaney, 2021). Even for the earnings estimates, scholars have different measures to examine the causal effects of higher education on earnings and find their estimates vary across groups (e.g., Doyle & Skinner, 2016). In addition, the amount of time over which studies measure the accrued benefits varies (e.g., Hershbein & Kearney, 2014). These issues could possibly change the results of a benefit-cost analysis.

Future research on the benefits and costs of college promise programs could examine how costs and benefits vary across program design features (Perna & Smith, 2020). College promise programs are designed in a variety of different ways: some are first-dollar scholarships while others are last-dollar; some provide FAFSA completion counseling and academic tutoring while others do not; some are funded by private foundations while others by the public or through a blend of both. Studies could compare the cost analysis results of promise programs with different requirements and supports. More specifically, researchers should pay more attention to and consider the costs of program features which might require additional supports and resources, but which make greater impact on postsecondary outcomes and yield more societal benefits (Perna & Smith, 2020).

Also, place-based scholarships differ in sources of funding, so more research is needed to better understand how the distribution of program benefits and costs varies across stakeholders and how the BC estimates of these programs vary across student groups (Bartik et al., 2016; Perna & Smith, 2020). We were not able to examine how BC estimates vary across student groups due to a lack of cost data even though Swanson and Ritter (2020) find the Promise program has a greater effect on enrollment of students of color than white students; the authors do not find program impact on enrollment varies across gender. Since the literature shows that economic returns to a BA degree vary across race and gender: white students and male students earn higher than their counterparts (e.g., Bartik et al., 2016), we speculate that, for the El Dorado Promise, the BC ratios can be higher for white students and male students.

In line with past studies, this paper demonstrates that college promise programs generate societal benefits that far exceed their costs. As discussed above, we recommend that state and federal governments support the continuation and expansion of promise programs, rather than

relying on private or philanthropic donations or local school district revenues. Administrative costs play a crucial role in program implementation. While dividing costs by local revenue is an inadequate approach, a funding model in which state and federal governments cover tuition payments while local districts address administrative costs (with state support) could be effective. Specifically, we propose that tuition payments be funded at the state and federal levels.

The capacity of local districts to successfully operate the program remains a key consideration. Despite the lack of disparities in excess debt revenue across poverty levels in Arkansas (see Appendix Figure A2), most districts could feasibly afford the Promise Program by allocating approximately 40% of their local surplus revenues, thereby promoting educational equity. However, high-poverty districts, such as West Memphis, may require higher administrative costs. These findings highlight the importance of state and federal funding to support the administration and expansion of promise programs, particularly in high-need areas.

Conclusion

When local or state policymakers consider promise programs, they typically consider their own benefits and costs. Yet educational systems are most effective and efficient when designed to maximize societal benefits and minimize societal costs. In addition to enhancing educational justice through reducing barriers to postsecondary education, this analysis demonstrates that expansion of college promise programs is likely warranted on economic grounds from a societal perspective.

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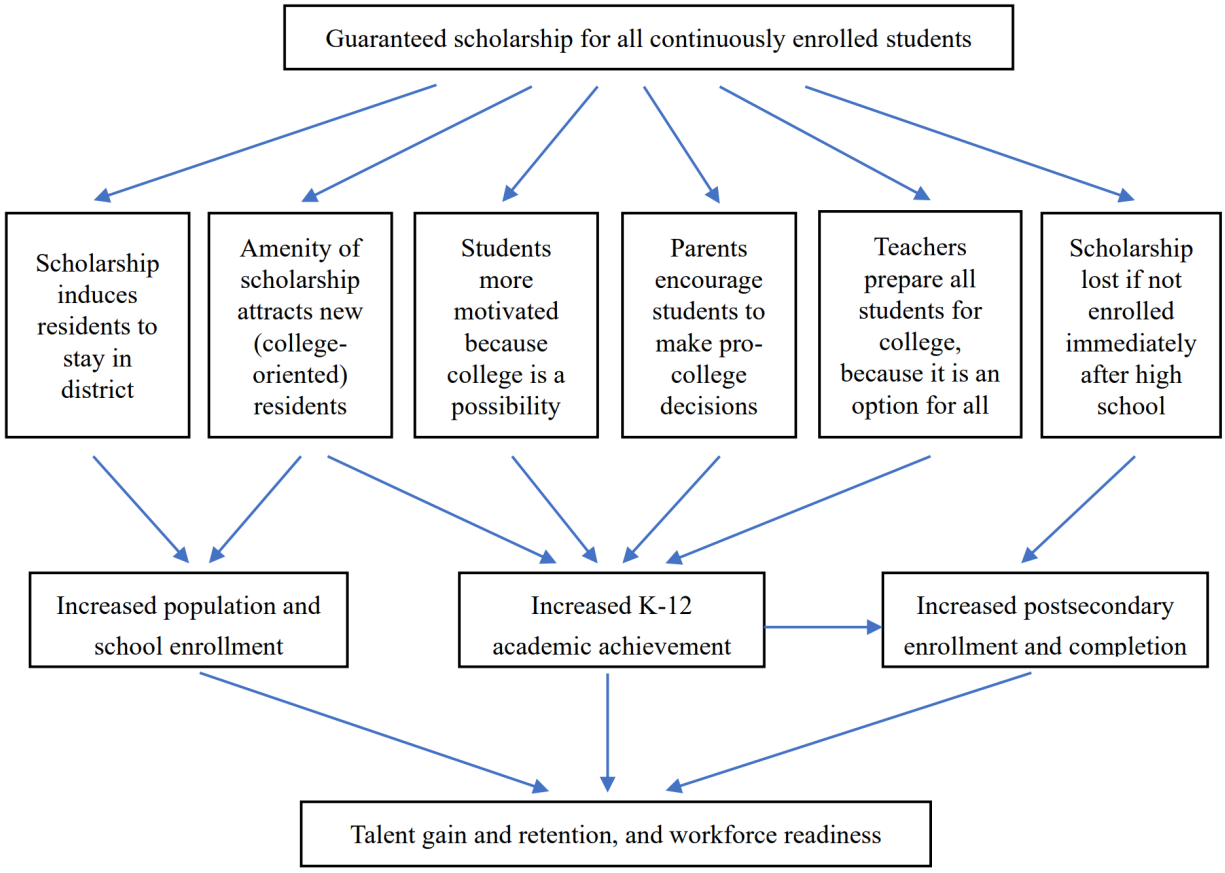


FIGURE 1. *Theory of change for place-based college promise programs.*

Note. This figure is adapted from Swanson and Ritter (2020).

TABLE 1

Student Characteristics by Promise Period

Demographics	All El Dorado Sch. Dist. Graduates	All Eligible Students	All Ineligible Students	Pre-Promise Students	Post-Promise Students
N	3,727	3,220	507	691	3,036
Female	52.4%	52.7%	52.4%	54.8%	51.9%
Students of color	52.7%	53.0%	51.2%	49.8%	53.4%
Black students	48.3%	48.9%	44.0%	48.5%	48.2%
Latino/a students	2.7%	2.5%	3.7%	1.0%	3.1%
Other race students	1.3%	1.1%	2.5%	0.3%	1.5%
White students	47.3%	47.0%	48.8%	50.2%	46.6%
Mean GPA	2.77	2.79	2.61	2.72	2.78

Note. This table is taken directly from Swanson and Ritter (2020), where it appears as Table 1.

TABLE 2

Applied Average and Conservative Estimates of Private and Public Returns of Postsecondary Education by Education Level

Level of Educational Attainment	Average Estimates			Conservative Estimates		
	Private Benefits	Public Benefits	Total	Private Benefits	Public Benefits	Total
Some College/ No Degree	$136,203	$89,014	$225,217	$88,540	$56,564	$145,104
Associate Deg./ No Bachelor's	$271,089	$178,029	$449,118	$175,382	$113,128	$288,511
Bachelor's Degree	$582,333	$356,060	$938,394	$253,786	$226,256	$480,042

Note. We adapted this table from Atchison et al. (2021). Figures are adjusted for inflation to 2021-22 school year dollars (Shores & Candelaria, 2020).

TABLE 3

Average and Conservative Estimates of Private and Public Benefits Attributable to College Promise Participation

	Average Estimates	Conservative Estimates
Private Benefits	$58,094	$25,300
Public Benefits	$40,613	$22,555
Total	$98,707	$47,855

Note. Dollars are present value and inflation adjusted using CPI to represent 2022 dollars. Estimated benefits are the product of the estimated program impact on BA attainment and the estimated return to bachelor's degrees.

TABLE 4

Annual Administrative Costs of the El Dorado Promise, 2011-12 School Year (2022 dollars)

	Unit cost	Num. of inputs		Yearly cost
1. Personnel time	*Salary*	*Hours*	*FTE*	
Program Director	$67,000	2,080	1	$67,000
Prog. dir. (non-work hrs.)	$67,000	312	0.15	$10,050
College & career coach A	$62,400	52	0.025	$1,560
College & career coach B	$62,400	52	0.025	$1,560
El Dor. Ed. Found. (Pres.)	$102,740	312	0.15	$15,411
El Dor. Ed. Found. (Dir.)	$72,881	312	0.15	$10,932
Contact person at Murphy	$103,681	520	0.25	$25,920
Ch. of Comm. at Murphy	$156,884	312	0.15	$23,533
PR firm/agency	$370,173	312	0.15	$55,526
Media marketing person	$148,872	624	0.3	$44,662
2. Start-up PD	*Unit cost*		*Unit*	
PD for Program Director	$200		2	$400
3. Materials, equip., travel	*Unit cost*		*Units*	
Printed materials	$1		266	$266
Student file cases	$1		266	$266
Office equipment/supplies	$50		10	$500
Program director travel	$184		2	$368
Promise backpacks	$30		266	$7,980
4. Equipment	*Annualized total cost*		*Units*	
Printer	$75		1	$75
Desktop computer	$125		1	$125
5. Facilities, build. space	*Unit cost*		*Units*	
Program office	$320		10	$3,200
Total and Per-Pupil Amounts				
Sum of admin. cost				$269,334
Average number of students served annually				1,330
Annual administrative cost per eligible student (per year that student is in college, undiscounted)				$203

Note. This table shows the total annual administrative cost of $203 per eligible student attending college, in 2021-22 dollars. These costs are undiscounted and are incurred every year a student attends college. Our preferred estimates assume each student attends college for six years, and we examine how results change assuming students spend five or four years in college.

TABLE 5

Conversion of Costs that Take Place over Multiple Years to Present Value in School Year 2011-12

Year of implementation	School year	Undiscounted inflation-adjusted costs ($2022)		Discounted inflation-adjusted costs	
		Admin. costs	Induced costs	Admin. costs	Induced costs
5	2006-07	$203	$3,366	$258	$4,295
4	2007-08	$203	$3,149	$246	$3,827
3	2008-09	$203	$2,986	$234	$3,457
2	2009-10	$203	$2,812	$223	$3,100
1	2010-11	$203	$2,694	$213	$2,829
0	2011-12	$203	$2,581	$203	$2,581
	Total	$1,215	$17,588	$1,377	$20,090

Note. Figures are displayed in real, 2021-22 dollars. The sum of administrative and induced costs is $21,467.

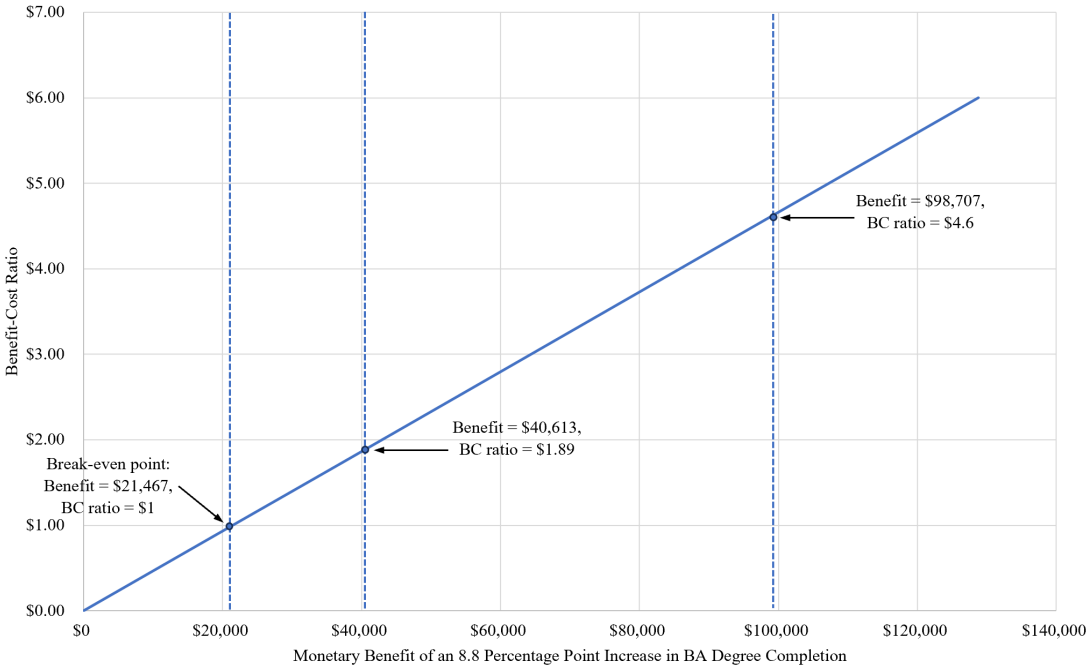
TABLE 6

Comparison of Benefit and Cost Estimates of the El Dorado Promise

	Average estimates of monetary societal returns to higher education			Conservative estimates of monetary societal returns to higher education		
	6 years college/ finish BA	5 years college/ finish BA	4 years college/ finish BA	6 years college/ finish BA	5 years college/ finish BA	4 years college/ finish BA
Benefits ($)	$98,707	$103,197	$107,687	$47,855	$56,835	$65,815
Costs ($) per year	$21,467	$16,913	$12,840	$21,467	$16,913	$12,840
Benefits/costs	4.60	6.10	8.39	2.23	3.36	5.13
Benefits minus costs	$77,240	$86,284	$94,847	$26,388	$39,922	$52,975

Note. Our preferred estimates assume students who complete a bachelor's degree take 6 years to do so, given our impact estimates are based on the probability of BA completion six years after high school graduation. We also assume students who are induced to attend college as a result of the El Dorado Promise Program but do not finish attend college for six years. Both of these assumptions are relatively conservative; however, adjusting this assumption to five or four years does not substantially alter our results.

Panel A: Varying Program Benefit Estimates and BC Ratios



Panel B: Varying Program Effect Estimates and BC Ratios

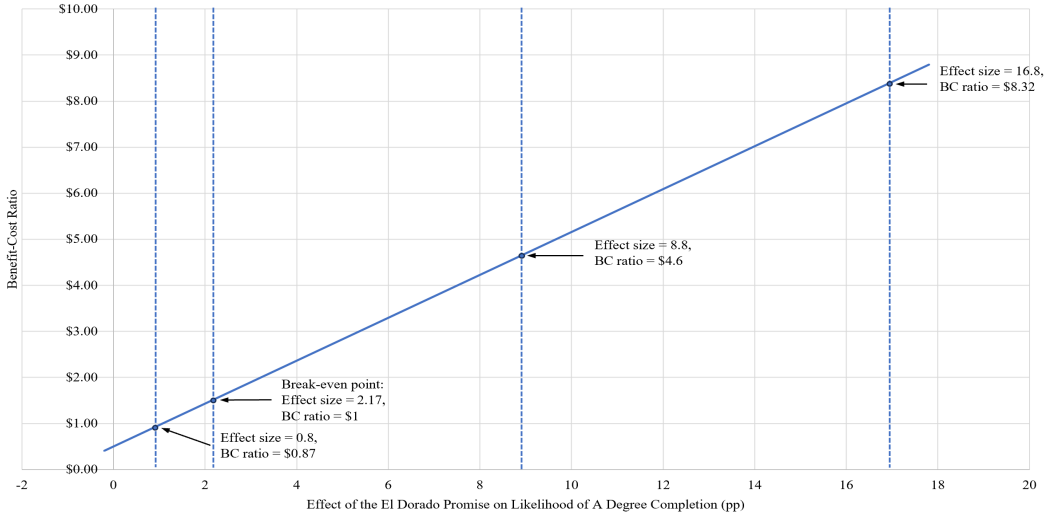


FIGURE 2. *Results of Break-Even Analysis.*

Note. In Panel A, the upward-slopping solid line shows the relationship between the benefit estimates and the benefit-cost ratios of the Promise program. In Panel B, the upward-sloping solid line shows the relationship between the program effect estimates and the benefit-cost ratios of the El Dorado Promise.

TABLE 7

Distribution of Per-Pupil Total Benefits and Costs for the El Dorado Promise

Stakeholder	How specific stakeholder is impacted	Benefits	Costs
Student participants	Reduced tuition costs among "compliers"; increased benefits from college-going	$58,094	Ambiguous
School district	Personnel time investment	Positive benefits	$255
State and federal government	Increased state and federal student aid from increased enrollment	Positive benefits	Positive costs
University	Increased enrollment	Ambiguous	Ambiguous
Private Foundation	Tuition expenses	$0	$34,696
Private donor	Donate materials	$0	$41
Volunteers	Provide volunteer time	$0	$135
Local economy	Improved workforce and increased population	Positive benefits	$0
All (Society)	N/A	$98,707	$21,467

Note. As shown in Table 3, the overall benefits of $98,707 and costs of $21,467 produce a benefit-cost ratio of $4.6.

Appendix A

TABLE A1
Estimated Private and Public Monetary Returns of Postsecondary Education Attainment by Education Level from Ten Studies

	Some college/No degree	Some college	Associate's degree	Bachelor's degree
	Studies of private monetary returns			
Agan (2013)	$88,476		$175,257	$253,605
Avery & Turner (2012)				$578,290
Hershbein & Kearney (2014)	$174,860		$349,719	$761,889
Kim et al (2015)				$415,699
McMahon (2009)				$806,801
Tamborini et al (2015)				$381,162
Zimmerman (2014)				$878,888
Average				$582,333
Average, PV				$660,164
	Studies of public monetary returns			
Carroll & Erkut (2009)		$75,913		$226,094
McMahon (2009)				$717,561
Trostel (2010)			$138,820	$277,642
Average				$407,099
Average, PV				$461,509
Total, PV				$1,121,672

Note. Dollars are present value and inflation adjusted.

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Form **990-PF**

Department of the Treasury
Internal Revenue Service

Return of Private Foundation

or Section 4947(a)(1) Trust Treated as Private Foundation

▶ Do not enter social security numbers on this form as it may be made public.
▶ Go to *www.irs.gov/Form990PF* for instructions and the latest information.

OMB No 1545-0052

2018

Open to Public Inspection

For calendar year 2018 or tax year beginning , 2018, and ending , 20

Name of foundation
EL DORADO PROMISE, INC.

A Employer identification number
20-8303418

Number and street (or P O box number if mail is not delivered to street address)
300 EAST PEACH STREET

Room/suite

B Telephone number (see instructions)
870-862-6411

City or town, state or province, country, and ZIP or foreign postal code
EL DORADO AR 71730

C If exemption application is pending, check here ▶ ☐

G Check all that apply ☐ Initial return ☐ Initial return of a former public charity ☐ Final return ☐ Amended return ☐ Address change ☐ Name change

D 1 Foreign organizations, check here ▶ ☐

2 Foreign organizations meeting the 85% test, check here and attach computation ▶ ☐

H Check type of organization ☒ Section 501(c)(3) exempt private foundation ☐ Section 4947(a)(1) nonexempt charitable trust ☐ Other taxable private foundation

E If private foundation status was terminated under section 507(b)(1)(A), check here ▶ ☐

I Fair market value of all assets at end of year (from Part II, col (c), line 16) ▶ $ 36,114,398

J Accounting method ☐ Cash ☒ Accrual ☐ Other (specify) .....
(Part I, column (d) must be on cash basis)

F If the foundation is in a 60-month termination under section 507(b)(1)(B), check here ▶ ☐

Part I Analysis of Revenue and Expenses (The total of amounts in columns (b), (c), and (d) may not necessarily equal the amounts in column (a) (see instructions))

			(a) Revenue and expenses per books	(b) Net investment income	(c) Adjusted net income	(d) Disbursements for charitable purposes (cash basis only)
Revenue	1	Contributions, gifts, grants, etc , received (attach schedule)	2,800,000			
	2	Check ▶ ☐ if the foundation is not required to attach Sch B				
	3	Interest on savings and temporary cash investments	187,970	187,970		
	4	Dividends and interest from securities	583,681	583,681		
	5a	Gross rents				
	b	Net rental income or (loss)				
	6a	Net gain or (loss) from sale of assets not on line 10				
	b	Gross sales price for all assets on line 6a				
	7	Capital gain net income (from Part IV, line 2)		0		
	8	Net short-term capital gain				
	9	Income modifications				
	10a	Gross sales less returns and allowances				
	b	Less Cost of goods sold				
	c	Gross profit or (loss) (attach schedule)	0			
	11	Other income (attach schedule) Trust Income	(11,016	(11,016		
	12	**Total.** Add lines 1 through 11	3,560,635	760,635	0	
Operating and Administrative Expenses	13	Compensation of officers, directors, trustees, etc				
	14	Other employee salaries and wages				
	15	Pension plans, employee benefits				
	16a	Legal fees (attach schedule)				
	b	Accounting fees (attach schedule)				
	c	Other professional fees (attach schedule)				
	17	Interest				
	18	Taxes (attach schedule) (see instructions)	11,115	11,115		
	19	Depreciation (attach schedule) and depletion				
	20	Occupancy				
	21	Travel, conferences, and meetings				
	22	Printing and publications				
	23	Other expenses (attach schedule) Service Fee	214,850	214,850		
	24	**Total operating and administrative expenses.** Add lines 13 through 23	225,965	225,965	0	0
	25	Contributions, gifts, grants paid	3,479,156			3,479,156
	26	**Total expenses and disbursements.** Add lines 24 and 25	3,705,121	225,965	0	3,479,156
	27	Subtract line 26 from line 12				
	a	**Excess of revenue over expenses and disbursements**	(144,486			
	b	**Net investment income** (if negative, enter -0-)		534,670		
	c	**Adjusted net income** (if negative, enter -0-)			0	

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Form **990-PF** (2018)

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Figure A1. *IRS Tax Form 990 for the El Dorado Promise in 2018.*

TABLE A2

Estimated Effects of the El Dorado Promise on Postsecondary Enrollment within 6 Years of High School Graduation

	(1) Overall effect	(2) Effect by race	(3) Effect by GPA
Elig*Post	0.140*** (0.046)		
Elig*Post*Of Color		0.150*** (0.048)	
Elig*Post*White		0.127*** (0.049)	
Elig*Post*Top 50% GPA			0.108** (0.051)
Elig*Post*Bottom 50% GPA			0.155*** (0.049)
Promise Eligible	0.064 (0.039)	0.065 (0.039)	
Post Promise Announcement	0.058 (0.058)	0.056 (0.058)	
Cumulative High School GPA	0.185*** (0.010)	0.185*** (0.010)	
Top 50% GPA			0.244*** (0.026)
Female	0.041*** (0.015)	0.040*** (0.015)	0.064*** (0.015)
Student of Color	-0.011 (0.016)	-0.027 (0.026)	-0.050*** (0.016)
Observations	3,502	3,499	3,502

Note. *p < 0.10, **p < .05, ***p < .01. This table is taken directly from Swanson and Ritter (2020), where it appears as Table 4.

TABLE A3

Estimated Effects of the El Dorado Promise on BA Completion within 6 Years of High School Graduation

	(1) Overall effect	(2) Effect by race	(3) Effect by GPA
Elig*Post	0.088* (0.052)		
Elig*Post*Of Color		0.088 (0.056)	
Elig*Post*White		0.088* (0.053)	
Elig*Post*Top 50% GPA			0.111** (0.052)
Elig*Post*Bottom 50% GPA			0.042 (0.058)
Promise Eligible	0.005 (0.039)	0.005 (0.039)	
Post Promise Announcement	-0.055 (0.053)	-0.055 (0.053)	
Cumulative High School GPA	0.266*** (0.010)	0.266*** (0.010)	
Top 50% GPA			0.281*** (0.027)
Female	-0.006 (0.016)	-0.006 (0.016)	0.025 (0.016)
Student of Color	-0.046*** (0.017)	-0.046*** (0.028)	-0.100*** (0.016)
Observations	2,219	2,219	2,219

Note. *p < 0.10, **p < .05, ***p < .01. This table is taken directly from Swanson and Ritter (2020), where it appears as Table 5.

TABLE A4

Conversion of Benefits to Present Value

Year of implementation	School year	Total benefits of bachelor's degree		Benefits resulting from the El Dorado Promise	
		Undiscounted	Discounted	Undiscounted	Discounted
5	2006-07	$989,432	$1,262,794	$87,070	$111,126
4	2007-08	$989,432	$1,202,661	$87,070	$105,834
3	2008-09	$989,432	$1,145,392	$87,070	$100,794
2	2009-10	$989,432	$1,090,849	$87,070	$95,995
1	2010-11	$989,432	$1,038,904	$87,070	$91,424
0	2011-12	$989,432	$989,432	$87,070	$87,070
	Average	$989,432	$1,121,672	$87,070	$98,707

Note. This table shows the process for discounting benefits to the 2011-12 school year, which is necessary because all costs are calculated in their 2011-12 present value. Our preferred estimate of $98,707 is based on lifetime public and private benefits, calculated to present value, where benefits occur for students across six cohorts of the El Dorado Promise program.

TABLE A5

Induced Cost of College Attendance under Different Assumptions (PV and Inflation-Adjusted)

Cohort from the impact study (Swenson & Ritter, 2018)	Undiscounted tuition expenditures			Discounted tuition expenditures		
	Assuming 6 years of college	Assuming 5 years of college	Assuming 4 years of college	Assuming 6 years of college (preferred)	Assuming 5 years of college	Assuming 4 years of college
2006-07 cohort	$144,236	$124,362	$103,057	$184,086	$158,721	$131,530
2007-08 cohort	$134,936	$115,413	$95,540	$164,016	$140,285	$116,129
2008-09 cohort	$127,975	$109,324	$89,801	$148,147	$126,556	$103,956
2009-10 cohort	$120,512	$102,040	$83,389	$132,864	$112,499	$91,936
2010-11 cohort	$115,478	$97,825	$79,352	$121,252	$102,716	$83,320
2011-12 cohort	$110,619	$94,172	$76,519	$110,619	$94,172	$76,519
Average annual tuition expend. over six cohorts	$125,626	$107,189	$87,943	$143,497	$122,492	$100,565
Induced cost (based on impact on enrollment of 0.14 pp)	$17,588	$15,007	$12,312	$20,090	$17,149	$14,079

Note. Undiscounted tuition expenditures for each cohort are based on the sum of tuition expenditures for the six years those students attend college, starting with the year of their cohort, adjusted for inflation and discounted to present value.

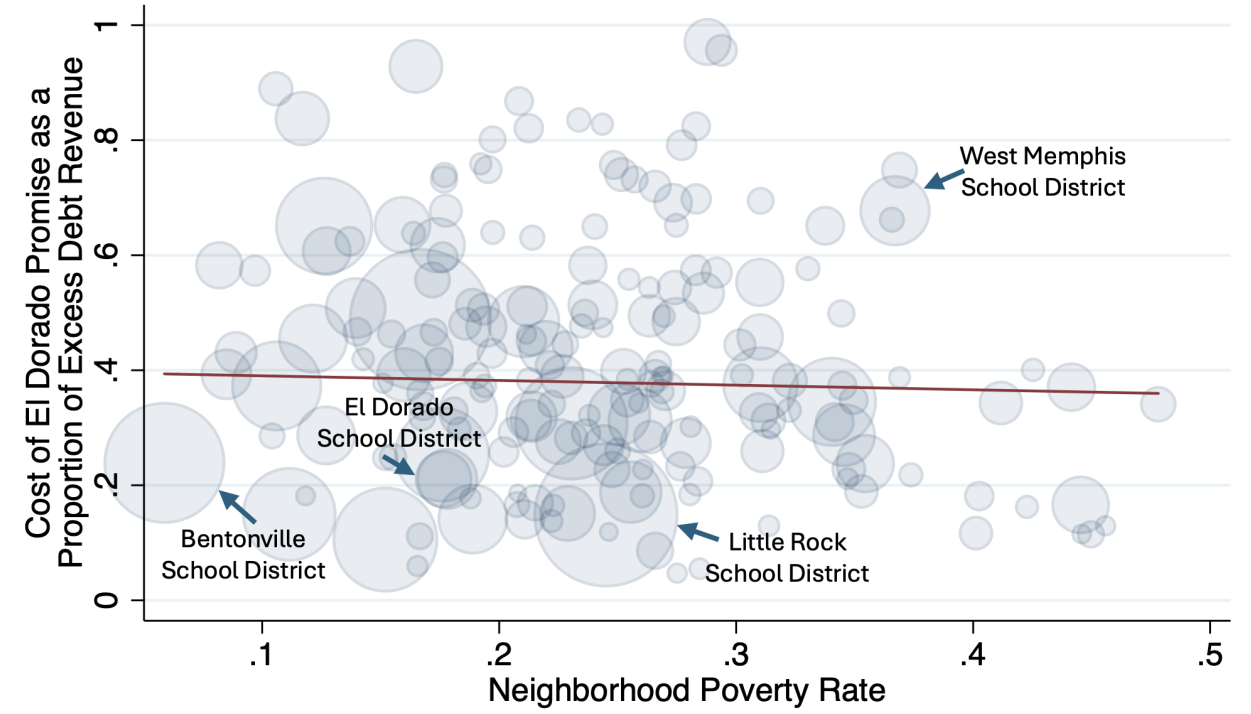

Figure A2. *School district neighborhood poverty rate and the cost of the El Dorado Promise program as a proportion of local excess debt revenues for each district in Arkansas, 2021-22 school year.*