College Promise Programs and Alternative Tuition Strategies in Pennsylvania and Beyond

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Abstract:

College "Promise" programs have spread rapidly across the higher education landscape over the past two decades, but there is little consensus about what they are or how they work. This research report introduces these programs, discusses prior research findings about their effects, and conducts empirical analyses using several data sources. At the national level, the study finds a positive effect of Promise programs on enrollment, particularly of first-year students, but not on retention. For one local program this research examines in-depth, Tamaqua's Morgan Success Scholarship, results suggest strong effects both on "democratization" (increasing overall college-going) and "diversion" (routing students from four-year colleges/degrees to two-year colleges/degrees), though the latter fades over time. For the Community College of Philadelphia's 50th Anniversary Scholars Program, the study finds no effect on college-going or on community college enrollment.

Keywords: Financial aid, Promise programs, college access, college completion, place-based scholarships

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Executive Summary

"Promise" programs are state and local higher educational scholarship programs. They are widespread, but there is much confusion about what they are and how they work. In this report, we first provide a working definition, discuss their design, and profile a set of established and cutting-edge "Promise" programs. We thoroughly review prior findings about Promise programs, and then conduct four empirical analyses.

First, we compile a data set of existing state and local Promise programs and identify common program features. We detail the various design elements according to which programs vary and discuss which elements are common. Today, most Promise programs are funded and operated by states and public colleges rather than by private-sector actors. They are designed to achieve maximal apparent cost reduction, while minimizing expenditure through last-dollar awards, guaranteeing tuition but restricting applicability to community colleges, and limiting the pool of eligible students who qualify for funds.

Second, we survey Promise programs regarding designers' reasons for creating the program and choosing design elements. Program staff present their programs as advancing egalitarian goals, and mostly designed to efficiently achieve these goals.

Third, we then use national data to examine the effect of introducing a local Promise program on college enrollment and retention rates. We find that Promise programs boost enrollment but not retention, and that enrollment effects are most robust for first-year students at community colleges.

Fourth, we profile two Promise programs in Pennsylvania and estimate their effects on student educational outcomes. The Morgan Success Scholarship, located in the small industrial town of Tamaqua in rural Schuylkill County, has strong estimated effects on college-going, community college attendance, and associate degree completion, while it temporarily diverts students from four-year colleges and degrees. We do not find any impact of the community college of Philadelphia's 50th Anniversary Scholars Program on college attendance.

We conclude with implications for policy. A statewide Promise program, we conclude, can accomplish several policy goals. We recommend that such a program: 1) be simple in its construction, 2) reduce uncertainty about college costs, 3) produce substantial college cost-reduction for students and families, and 4) fund four- and two-year public college attendance.

Finally, we caution policymakers to be realistic about what such a program is likely to accomplish. A well-designed, comprehensive, and generous state Promise program is likely to modestly boost postsecondary participation and attainment, shift students towards eligible and away from ineligible colleges, and boost enrollment at eligible institutions. We do not expect such a program to appreciably close gaps in educational attainment by race, gender, or socioeconomic background, rapidly increase the college educated share of the workforce, retain college educated workers in state, or revitalize economically struggling areas. However, because many of Pennsylvania's public

postsecondary institutions are in rural communities and are central to the communities' economic well-being, buttressing these institutions' enrollments will contribute to stabilizing these areas.

Table of Contents

College Promise Programs and Alternative Tuition Strategies in Pennsylvania and Beyond 1
Executive Summary 2
Table of Contents 4
Table of Tables 6
Table of Figures 6
Introduction 7
An Introduction to the College Promise Movement 10
What is the Promise Movement? 10
What is a Promise Program? 10
Examples of Promise Programs 11
1. A State Merit Grant: Florida's Bright Futures Scholarship 12
2. A Generous "Place-Based Scholarship": The El Dorado Promise 12
3. A State Community College Promise program: The Tennessee Promise 13
4. A Single-Institution Community College Program: Access to Community College Education (ACCE) at Virginia's New River Community College 13
5. A Workforce Development Grant: WorkReady Kentucky 14
6. An "Adult Promise" Grant: Tennessee Reconnect 14
7. A Single-Institution Four-Year Program: University of Texas at El Paso's PayDirt Promise 14
8. An Innovative, Simple Model: North Carolina Promise 15
9. Universal "Free College": New Mexico's Opportunity Scholarship 15
What Do Promise Programs Accomplish? A Review of Existing Findings 16
Effects on Students 16
Effects on Communities 17
Effects on Colleges 18
Do Promise Programs Reduce Inequality? 19
Delayed Repayment Plans 19
Methodology 20
Data 20
Methods 21

Results 21
1. Existing Programs: Dimensions of Variance 21
Year Created 22
Geographic Concentration 23
Funding and Operation 23
Generosity Variables 24
Applicability Variables 26
Eligibility Variables 27
2. Surveying Promise Programs: Moving Beyond Website Analysis 31
Origins and Funding 31
Design Features 33
Awards and Expenditures 34
Data Collection and Reporting 35
Reception and Future 35
3. How Do Promise Programs Impact Colleges? 35
4. How Do Promise Programs in Pennsylvania Impact Students? 37
Tamaqua's Morgan Success Scholarship 38
Community College of Philadelphia's 50th Anniversary Promise/Octavius Catto Scholarships 48
Discussion and Conclusions 54
Key Takeaways 55
Policy Considerations 57
References 60
Appendix 1: Analysis of Proposed Delayed Payment Plan 65
Appendix 2: Data Sources and Measures 66
2.1. Promise Program Database 66
2.2. Surveying Local Programs 67
2.3. Data on Colleges 68
2.4. Data Collection for Tamaqua and Philadelphia Case Studies 68
Appendix 3: Methods 70
3.1 The Counterfactual Model of Causal Inference 70

3.2. Propensity Score Matching 71
3.3. Differences-in-Differences 72
3.4. Fixed-Effects Regression 73
Appendix 4: Promise Programs in Allentown and Harrisburg 73
4.1. Allentown 73
4.2. Harrisburg 74

Table of Tables

Table 1: Characteristics of Local and State Promise Programs 22
Table 2: Promise Program Goals and Design (Total N=51) 33
Table 3: Effects of Promise Programs on Enrollment and Retention, 2000-2021 36
Table 4: Characteristics of Tamaqua, State, County and Comparison Group High School Seniors 44
Table 5: Effects of MSS on Postsecondary Outcomes 46
Table 6: Effects of 50th Anniversary Scholars Program on College Attendance 54

Table of Figures

Figure 1: Community College Outcomes for Tamaqua PA, 2011-2004 Graduating Classes 41
Figure 2: Postsecondary Attendance for Tamaqua PA, Graduating Classes, Pre- and Post- Morgan Success Scholarship Program 43
Figure 3: Trends in Full-Time Equivalent Enrollment at CCP and All Other PA Community Colleges, 2011-2021 52
Figure 4: Trends in Fall Full-Time Equivalent Enrollment of First Year and Continuing Students At CCP and All Other PA Community Colleges, 2011-2021 53

Introduction

The purpose of this report is to introduce readers to the college Promise movement, which has spread across the postsecondary sector since 2005, and to suggest its relevance for Pennsylvania, with some special attention to rural Pennsylvania. The Promise movement denotes a wave of policy innovation in postsecondary financial aid taking place at the state and local levels. It is occurring amidst increasing concerns that college attendance is unaffordable for most Americans, and about the seeming inability of the federal government to address this situation. Before delving into this movement, it is necessary to first situate ourselves in the present policy moment.

For over a century, the educational attainment of each generation of Americans surpassed that of those prior. Moving forward, this may no longer be the case. We are presently witnessing the greatest retreat from higher education in American history, or at least since reliable statistics have been collected. Postsecondary enrollments have declined 11 percent since 2010 and are just slightly above their absolute level in 2007, before the Great Recession caused a temporary enrollment spike. The enrollment crisis is particularly concentrated in the community college sector, which has seen a 35 percent decline since 2010, and the for-profit sector, where enrollments are down 49 percent. While the four-year sector (excluding proprietary colleges) has experienced absolute enrollment growth,[1] this varies considerably among institutions, with more selective institutions showing absolute growth and less-selective institutions declining at rates similar to community colleges.

Pennsylvania is not immune from these trends. Most of the state's public colleges, in all sectors, lost enrollment over this period. Pennsylvania's community colleges uniformly bled students, often by 40 percent or more. Apart from West Chester University, schools in its state system (PASSHE) all saw a massive enrollment decline. Indiana University, for instance, shed over 1,300 students, declining by 44 percent. Enrollment decline is not isolated to the public sector; most private nonprofit, four-year colleges also lost considerable enrollment, such as Juniata College (down 22 percent), Messiah College (down 23 percent), the University of Scranton (down 15 percent), and York College of Pennsylvania (down 41 percent). The "winners" of this period were mostly highly selective colleges like Swarthmore (up 17 percent), Lehigh University (up 25 percent), Lafayette (up 21 percent), Haverford (up 26 percent) and Drexel (up 3 percent). Selective public colleges, such as Temple University (up 13 percent) and the main campuses of both The Pennsylvania State University (Penn State) and the University of Pittsburgh also did well, but the satellite campuses of the two latter institutions shrank precipitously (Department of Education n.d.b).

[1] Four-year enrollments (as a whole) have *increased* since 2010 (by 16 percent among public and 9 percent among nonprofit colleges). Because of this, community colleges have lost more students than has the entire higher education system. Community colleges account for 124 percent of total enrollment decline, while proprietary colleges account for 49 percent. Figures in this paragraph are from the Digest of Education Statistics (U.S. Department of Education n.d.b).

This situation is of obvious concern for the state. Fewer people attending and graduating from college will result in a less educated, less skilled workforce to meet employers' needs, lowering economic growth and tax revenue. A shortage of skilled workers may increase the wages of the college educated and slow wage growth among less educated workers, expanding inequality. Pennsylvania will have difficulty attracting new businesses, particularly to areas with a scarcity of skilled employees. Given that a more educated population typically reduces crime, lowers health expenditures, and increases civic involvement, the retreat from education should make us concerned about the state's long term civic and fiscal well-being.

But it is of particular concern for rural Pennsylvania, as many of our colleges are in rural areas. This is true of most of the PASSHE schools and most satellite campuses of Penn State and the University of Pittsburgh. Several community colleges are also either located in rural communities or operate branch campuses there. In many of these areas the colleges are leading employers, and further boost local economies with the considerable business they do with local enterprises. The students they attract to their campuses, often from suburban or urban areas, bring further stimulus through their spending. If these colleges were to disappear, the communities in which they are located would suffer greatly.

To see what this has to do with Promise programs, we must first dispel the myth that enrollment decline is the result of a plummeting college-aged population.[2] It is true that the population aged 18-24 fell between 2010 and 2021, but only by 1 percent. The number of students enrolled in high school increased by 3 percent between 2010 and 2021, and those in 12th grade increased by 5.8 percent. But in 2021, just 62 percent of recent high school graduates enrolled directly in college, down from 70 percent in 2009. This is the lowest direct enrollment rate in the United States *since 1990* and is the culmination of 12 straight years of decline. Direct enrollment by males fell even faster, tumbling from 66 percent to 55 percent, compared to a decline from 74 percent to 70 percent among females. In percentage terms, enrollment rates have also declined more rapidly for black students (from 66 percent to 58 percent) than white students (from 70 percent to 63 percent). Postsecondary enrollments have fallen among those aged 25 or older by a whopping 25 percent, accounting for most of the overall enrollment decline, while the population of adults with the highest enrollment propensity (those aged 25-44) increased by 8 percent. It is thus clear that reduced educational participation among all ages, genders, and most racial/ethnic groups is what is driving enrollment decline,[3] not demographic shifts.

At present, scholars do not know what the root cause is of the "enrollment crisis". A strong labor market likely plays a role, since enrollment, particularly at community

[2] The much discussed "demographic cliff" in college enrollments has yet to occur. It will be the result of plummeting fertility since the on-set of the Great Recession in 2008. The smaller resulting cohorts are still largely elementary school aged or younger.

[3] Figures in this paragraph are from the Digest of Education Statistics and the U.S. Census Bureau (n.d.).

colleges, is economically countercyclical. Declining trust in higher educational institutions, particularly among those who identify as politically conservative, may also contribute. But most experts suspect that the major contributor is an increasing perception among the American public that a college education is simply too expensive, and therefore the suspicion that the benefits of attendance are no longer worth the cost, at least in the short-term. Therefore, reversing the present retreat from higher education will likely require a concerted effort to make college more affordable for middle- and working-class Americans.

The high cost of college attendance is compounded by the opacity of college pricing. The price a given student will pay is often much lower than the prices listed by colleges (tuition, fees, room, and board). However, many students and families do not know this, leading them to overestimate college costs. But even if those who do know cannot predict what they will pay with any accuracy, given that costs are often reduced by institutions in idiosyncratic fashion (Cheslock and Riggs 2021). Cost ambiguity is likely to further reduce college attendance when the ambiguous costs are high. Therefore, if policymakers wish to reverse enrollment decline, they will have to lower college costs in a manner that is simple and clear enough to impact public decisions.

As we will detail below, the programs making up the "college Promise movement" often both reduce costs and make these costs simpler to grasp. Many, though not all of them, are "tuition guarantees", programs that promise that qualifying students will not have to pay anything towards their tuition. Such programs are sometimes pitched as "no-loan" programs, directly allaying students' and families' anxiety over entering adulthood with student debt. Therefore, these programs are useful for thinking about how states may begin addressing and reversing the crisis of college enrollment.

This report provides guidance for policymakers on the college Promise movement and the programs that comprise it. The opening section first introduces these matters, establishing what it is people are referring to when they talk about "Promise programs". These programs are a varied lot, and we provide a set of concrete examples of programs, to provide policymakers with a sense of options for designing a statewide Promise program. We conclude this section by reviewing what research has already shown about how Promise programs impact educational and community-level outcomes.

Next, we conduct four sets of empirical analyses. First, we create a detailed dataset of existing Promise programs' characteristics. This allows us to detail how existing programs vary in design. Again, we consider this of value to potential program designers. Second, we survey Promise programs to learn designers' motivation for creating programs and choosing program rules, as well as the numbers of students who apply and are funded. Third, we investigate the impact of Promise programs on enrollment and retention at eligible colleges. Finally, we examine two Promise programs in Pennsylvania in depth, including one in rural Pennsylvania: Tamaqua's Morgan Success Scholarship and the Community College of Philadelphia's 50th Anniversary Scholars.

An Introduction to the College Promise Movement

What is the Promise Movement?

The current century has witnessed a boom in new state and local financial aid programs, many of which are referred to as "Promise" programs. Observers, and those involved, refer to this boom as the "College Promise movement". The movement is also a policy network with its own organizations (such as College Promise) and yearly conferences (PromiseNet).

Those involved agree that the Promise movement began in 2005 with the launch of the Kalamazoo Promise, which fully covers tuition at any in-state public college for any student graduating from public school in Kalamazoo, Michigan. This incredibly generous program is privately funded by anonymous donors. It received extensive coverage in the national media. Shortly afterwards, programs inspired by it began appearing in places like Denver, El Dorado (Arkansas), and Pittsburgh, some of which used the term "Promise" in their title (e.g., the Pittsburgh Promise).

Over time, these programs became more diverse, with some adopting merit or need-based eligibility criteria, providing flat awards rather than guaranteeing tuition coverage, or limiting applicability to community colleges. Many were created by colleges themselves and are usable only at that college. Beginning in 2014, states began creating "Promise programs", the first being the Tennessee Promise. Today, hundreds of local programs and at least a dozen state programs are operating that are connected to this movement.

What is a Promise Program?

As programs have grown very diverse, it has become increasingly difficult to say what a Promise program "is", or what distinguishes it from other sorts of financial aid programs. Even experts offer competing and contradictory definitions. Michelle Miller-Adams (2015) calls them, "place-based scholarship programs" which "seek to transform their communities... expand access to and ensure success in higher education... and support local economic development." Crucially, for her these programs must restrict eligibility to a "place" much smaller than a state, such as a municipality, school district, or county. Laura Perna, on the other hand, defines Promise programs as higher educational scholarships with "some type of place requirement" that can include geographic areas up to a state (Perna and Leigh 2018). For Harris (2013), the defining feature of a Promise program is its provision of "early notification" that financial aid will be available, impacting college planning well before 12th grade. For Martha Kanter and co-authors (2016), a Promise program is, "a pledge to fund one to four years of an undergraduate education for hardworking students."

These definitions are all either too vague or too narrow to capture accurately *what practitioners mean* when they talk about "Promise programs" today. Based on our

survey of both programs and the literature, we assert that by "Promise program" most people mean a program that is:

1) a **monetary grant** or its equivalent (i.e., a tuition waiver). While they may include non-monetary features, the financial award is the centerpiece.

2) a **primary award.** It isn't a supplement to an existing program and can be understood on its own.

3) an **entitlement**. All who meet eligibility criteria receive the award.

4) a **tuition guarantee**. It guarantees that (at least) tuition will be fully covered for qualifying students.

5) **usable at a non-selective public college.** It may *also* be usable at selective public or even private colleges.

6) **available to first-time undergraduates.** It may *also* be available to other categories of students.

7) **usable for any program within eligible colleges**. It doesn't limit receipt to those in certain majors or fields.

These features make the typical Promise program both mass-based and simple. And this is one thing that is "new" about the Promise movement: they are programs that *both* lower costs *and* eliminate uncertainty regarding college affordability for as many students as possible. A Promise-style program is therefore a message as much as an award, an informational intervention as much as a financial one. They are responses to the rising understanding that not only is college too expensive, but that decision-making about enrollment is needlessly complicated, and that both factors are dissuading too many Americans from accessing the education we need them to obtain.

Before proceeding, we need to comment on Promise-type programs applicable only at community colleges. Most are "last dollar" awards, meaning they cover tuition left over after other grants have been applied. Because community college tuition is usually less than a full Pell grant, many lower income students have their tuition fully covered by existing need-based aid. A last dollar Promise program therefore will not provide them any additional money. But by "guaranteeing" that tuition will be fully covered, such a program may nonetheless lead additional students to attend college. Several studies confirm that messaging alone can be sufficient to increase enrollment (Carruthers and Fox 2016; Dynarski et al. 2021; Anderson et al. 2023). However, we suggest increasing enrollment through offering a message that claims to be a scholarship is ethically dubious at best.

Examples of Promise Programs

To make matters more concrete, as well as to provide an idea of policy options available, we profile a set of existing programs. We choose programs which represent several sub-categories of "Promise" programs and include some operating in rural areas, to provide a good overview of the existing types:

1. A State Merit Grant: Florida's Bright Futures Scholarship

FBS is sometimes not considered a "Promise" program since it predates the launch of the Kalamazoo Promise.[4] Launched in 1997, it was modelled after Georgia's HOPE scholarship (1993) but has lasted intact for longer. Like GA HOPE, it is funded primarily through lottery revenue. As a statewide program, FBS serves both rural and non-rural populations.

FBS is a statewide scholarship usable to cover tuition and fees on a last-dollar basis at any public two- or four-year college. It has two merit-based tracks. The first, the Florida Academic Scholarship (FAS), fully covers tuition and fees, and requires a 3.5 cumulative GPA and 1330 SAT. The Florida Medallion Scholarship (FMS) covers 75 percent of tuition and fees and requires a 3.0 GPA and 1210 SAT score. Both are usable for four years. Both require completion of a specified high school curriculum and completion of community service or paid work while in high school. Students must begin to use the award within five years of high school graduation. Those convicted of felonies are ineligible, as are undocumented immigrants. GED recipients are eligible but must otherwise meet academic requirements. This program requires an application and FAFSA completion. There are GPA requirements to retain the scholarship: 3.0 for FAS and 2.75 for FMS.

2. A Generous "Place-Based Scholarship": The El Dorado Promise

One of the first programs to follow the Kalamazoo Promise, and the one to do so most faithfully, serves the small industrial town of El Dorado in rural Union County, Arkansas. El Dorado has a population of roughly 19,000 and was, until recently, the headquarters of the Murphy Oil corporation. In 2007, the leaders of Murphy Oil took the lead in creating, and began fully funding, this highly generous universal college scholarship program.

The El Dorado Promise covers up to five years of college tuition and fees on a first-dollar basis to any accredited college in the United States. The maximum amount paid is equal to the maximum tuition and mandatory fees at an in-state public university; students must make up the difference if they go elsewhere. Since the program is "first-dollar", students who receive other grants or scholarships may use Promise funds for other expenses like room and board. Like the Kalamazoo Promise, eligibility is unrestricted by income, citizenship status, or prior academic performance, though it is restricted to regular high school graduates (GED recipients are ineligible). Eligibility is tightly restricted by residence. To receive the full (100 percent) scholarship, one must graduate from El Dorado High School after having attended school in the district since kindergarten. To receive the minimum (65 percent) scholarship, one must have attended for grades 9-12, and the share covered

[4] FBS has been included on one major list of "statewide Promise programs" (Callahan et al. 2019) but not on others (e.g., Jones and Berger 2018). There are no clear analytical grounds for its exclusion from this category.

increases by 5 percent for each additional year of continuous attendance. Eligibility is also restricted temporally; students must enroll for the fall immediately following graduation or forfeit the scholarship. Otherwise, students must apply to the program directly, enroll at full-time status, and maintain full-time enrollment and a 2.0 college GPA.

3. A State Community College Promise program: The Tennessee Promise

The Tennessee Promise is the first explicit "statewide Promise" program, launched in 2014. It was modeled on, and was a statewide expansion of, an existing local program called Knox Achieves (in Knox County, Tennessee). As a statewide program, it is available to both rural and nonrural populations. The Tennessee Promise guarantees full coverage of tuition and fees on a last-dollar basis at any in-state community or technical college for two years. It is available to any Tennessee resident who meets other requirements. These do not include income or academic requirements. GED recipients are eligible if their GED is earned prior to turning 19. Students must apply to the program. The temporal requirement is strict; students must enroll immediately after high school or after earning their GED. They must enroll full-time, maintain continuous enrollment, and meet SAP. They also must complete eight hours of community service each semester and file FAFSA yearly. Only citizens and legal residents are eligible. It is funded through lottery revenues and operated by a state agency.

The Tennessee Promise inaugurated a wave of similar statewide last-dollar community college Promise programs in Oregon, Hawaii, Montana, Nevada, Rhode Island, Maryland, New Jersey, and Connecticut. Many local community college programs are also based on this program, though they tend to be more restrictive in terms of eligibility.

4. A Single-Institution Community College Program: Access to Community College Education (ACCE) at Virginia's New River Community College

Particularly since 2014, many community colleges have taken the initiative to create their own Promise programs. New River Community College (NRCC), located in the small town of Dublin in rural Pulaski County, Virginia, is one example. NRCC launched its program (Access to Community College Education, or ACCE) in 2020. Like many of these, ACCE is a public-private partnership, organized and operated by the college but funded by private donations solicited by the college's foundation.

ACCE is a last-dollar tuition-only scholarship covering two years' attendance. It is available to recent high school graduates residing in the five counties in the college's immediate area. Students must have a 2.5 cumulative high school GPA and enroll in the year following high school graduation. They must apply to the program and complete the FAFSA. To keep the scholarship, they must maintain continuous full-time enrollment and a 2.5 GPA, complete 80 community service hours annually, and

take a college skills class in their first semester. If students do not complete a funded class, they must reimburse the college or lose eligibility.

5. A Workforce Development Grant: WorkReady Kentucky

Several states have, since 2016, created Promise-style programs that are more tightly targeted in terms of programs, and pitched more specifically as initiatives to benefit state economies. The first of these was WorkReady Kentucky, a last-dollar grant covering tuition and fees to earn certifications and associate degrees in state-specified "high-demand" fields such as gas welding and industrial maintenance technology. The program can be used at a set of colleges that includes private and four-year colleges, but the *programs* are all two-year or less. Eligibility is restricted to state residents who are citizens or legal residents and who do not have an associate degree or higher. There are no academic or economic restrictions. Students must apply to the program and complete a FAFSA, and to maintain eligibility they must maintain SAP. There are otherwise no restrictions on enrollment intensity. The student can receive the scholarship for up to nine terms within three academic years. Current high school students can also use the program in dual-enrollment capacity. Unlike workforce programs in Arkansas, Louisiana, and West Virginia, WorkReady Kentucky does not impose requirements on students' behavior after graduation. The program is managed by a state agency and funded by state revenues. As a statewide program, WorkReady Kentucky is available to both rural and nonrural residents.

6. An "Adult Promise" Grant: Tennessee Reconnect

This is the first "adult" Promise program, designed as the nontraditional student version of the Tennessee Promise. Launched in 2017, it (like Tennessee Promise) is open to Tennessee residents, is a last-dollar scholarship covering tuition and fees for two years and is usable only at public two-year colleges. It is also funded through lottery revenue. As a statewide program, TR is available to both rural and nonrural residents. There are no academic or income requirements. What differentiates Tennessee Reconnect is that students must either be 23 years of age or older, or an otherwise independent for financial aid purposes. Students must apply for the grant and for FAFSA and must be US citizens or legal residents. Eligibility expires five years after first receiving the grant, and students can only receive it if they take at least six credits in a semester. They must maintain a 2.0 GPA. Since 2017, Michigan created its own "adult" program (Michigan Reconnect), as have a handful of community colleges (e.g., Milwaukee Area Technical College Promise for Adults).

7. A Single-Institution Four-Year Program: University of Texas at El Paso's PayDirt Promise

Beginning in the years immediately following the launch of the Kalamazoo Promise, several large public universities created their own "Promise" programs. These are similar in principle to "no-loan" policies created contemporaneously at

selective private colleges. The University of Texas at El Paso created such a program, "UTEP Promise $30K", in 2009. It was renamed the PayDirt Promise in 2019, and further expanded in 2022 through the "UT Promise Plus", which funded expansion across the University of Texas system.

The PayDirt Promise guarantees full coverage of tuition and fees for up to five years on a last-dollar basis for Texas residents admitted to the university whose family income is $75,000 or less. To be eligible, students need to only complete the FAFSA (or, if they are undocumented, the TAFSA)[5] and maintain continuous full-time enrollment and SAP. There are no academic requirements for initial eligibility, though one must apply to UTEP. UTEP presently accepts all applicants, which makes the PayDirt Promise more universal than its counterpart (the Texas Advance Commitment) at the University of Texas at Austin (acceptance rate: 29 percent). It is equally available to rural and nonrural Texas residents.

8. An Innovative, Simple Model: North Carolina Promise

Beginning in 2018, North Carolina reduced tuition at three, four-year public colleges (Fayetteville State University, The University of North Carolina at Pembroke, and Western Carolina University) to $500 per semester for all in-state residents, and to $2,500 per semester for out-of-state students, for up to eight semesters. A few years later, it expanded this to Elizabeth City State University. Fees and other costs are unaffected, and the total cost of a semester is around $7,700. The difference between full tuition and the Promise price is met by state appropriations. As a statewide program, it is available to rural and nonrural residents.

9. Universal "Free College": New Mexico's Opportunity Scholarship

Proposed in 2019 and made into law in 2022, New Mexico's Opportunity Scholarship fully covers tuition and fees at public colleges and universities on a last-dollar basis for up to five years. All in-state residents are eligible; the program does not restrict by income, academics, citizenship, prior college experience, or college enrollment intensity. Once they begin receiving the award, students must maintain a 2.5 GPA and continuous enrollment of at least six credits. The program is funded from state general revenues. As a statewide program, it is available to rural and nonrural residents.

To summarize, there are several policy models present within the larger "Promise movement". What they have in common is simplification of college affordability. Most, though not all, Promise-type programs guarantee tuition. But different programs target different demographics of students and are usable at different sorts of colleges.

[5] Texas and several other states have created an alternative to FAFSA for undocumented students.

What Do Promise Programs Accomplish? A Review of Existing Findings

There is a growing body of rigorous scholarship on the impacts of Promise-style programs. Policymakers should carefully consider the implications of numerous studies that are a part of scholarly literature when evaluating Promise-style programs.

We review the findings of this literature, addressing four questions:

1. How do Promise programs impact eligible students' outcomes?
2. How do Promise programs impact the communities in which they are located?
3. How do Promise programs impact the colleges where they may be used?
4. Do Promise programs reduce educational or other disparities by socioeconomic status, race, or gender?

We remind the reader that Promise programs are very heterogeneous, and we shouldn't expect two very different programs to have similar effects. We suspect that it matters a lot whether the program is locally restricted or statewide, and whether it funds attendance at four-year colleges or restricts funding to community colleges. Wherever possible, we make such distinctions in noting program impacts.

Effects on Students

Promise programs have students as their immediate intervention targets. Some expected effects are constant across all types of programs. To the extent that they lower the cost of college, programs are expected to increase college enrollment. Because the financial strain of paying for college plays a role in some students' noncompletion, they are expected to improve college academic performance, and increase both retention and degree completion (though more modestly than they increase enrollment). They may increase wages by increasing students' human capital. And since program funds displace loans, they are expected to reduce borrowing and debt.

Other program effects may depend on design. Promise programs may have positive impacts on high school academic achievement by giving students more incentive to work hard in school. Such effects are likely to be larger for four-year applicable scholarships, as community colleges accept students regardless of prior performance. Programs may also improve high school environments by leading peers to also be more academically focused. Such peer effects are more plausible when programs are generous and locally targeted —that is, with generous local scholarships like the El Dorado Promise.

Promise-style programs' effects on high school outcomes are not well-studied. They are the subject of nineteen studies, but only nine of these are rigorous. Generous statewide four-year programs like Florida's Bright Futures Scholarship have been found to boost GPA and test scores (Henry and Rubenstein 2002), as have generous local four-year programs like the Kalamazoo Promise (e.g., Bartik 2010). However, these effects are mostly small. For instance, the El Dorado Promise increased math achievement on state tests by just 11 percent of a standard deviation (Ash et al. 2021). Community college programs have barely been studied in this regard, but one study finds positive effects on high school completion (Carruthers and Fox 2016).

The impact of Promise programs on college attendance is better researched, and effects are generally positive. Generous, four-year applicable state and local programs seem to boost enrollment by 5-14 percentage points, while the effects of community college programs are 1-5 percentage points (Dynarski 2000; Carruthers and Fox 2016; Swanson and Ritter 2021).

Even more consistent are the effects on college destinations among those who enroll. Programs direct students to colleges where they appear to save students the most money. Programs applicable at four-year colleges direct students to these colleges and away from two-year schools, even if they are also applicable at two-year schools (Dynarski 2000; Castleman et al. 2014; Page et al. 2019). Programs applicable only at community colleges do the opposite (Carruthers and Fox 2016; Muñoz 2016). Programs applicable at in-state four-year public colleges direct students away from private and out-of-state colleges (Long 2021; Gurantz and Odle 2022). Effects on enrollment counts at colleges tell a consistent story (Cornwell et al. 2006; Zhang et al. 2013; Li and Gándara 2020).

Whether Promise programs improve academic performance after enrollment is also well-studied. Most studies suggest that effects of four-year programs are positive, but findings are less consistent and effect sizes are smaller than for college attendance (Page and Iriti 2016). Effects for community college programs are mixed, with some finding small increases (Carruthers et al. 2020; Bell and Gándara 2021), while others find no effect (Jochems et al. 2006) or even negative effects on bachelor's completion (Carruthers et al. 2020). Generous four-year programs more robustly improve performance and attainment (Scott-Clayton 2011; Swanson and Ritter 2021).

There are few studies of longer-term impacts of Promise programs. A study of a local community college Promise program found a modest increase in wages seven years after program uptake (Carruthers et al. 2020), while the much more generous Kalamazoo Promise was not found to have any measurable wage impact (Hershbein et al. 2021). We have too little data at this point to draw any conclusions in this regard.

Effects on Communities

Early on, Promise programs were discussed as economic development strategies as much as scholarships. This is best reflected in the logic of the Kalamazoo Promise. The creation of a locally restricted, broadly available, highly generous scholarship was expected to attract people to the city, reversing long-term population decline. With the increase in population, would come greater economic activity and more jobs. The scholarship was also expected to increase the share of residents holding college degrees and therefore to attract industries which would need such workers. Increases in property values would boost city revenues, and middle-class students would turn around an ailing public school system. In short, the scholarship would create a virtuous cycle to turn Kalamazoo around.

State four-year programs also have something of a developmentalist logic, or at least a developmentalist rationale. Such scholarships are expected to stem the "brain drain" by convincing academically talented students to remain in-state for college and, hopefully, afterwards. This, along with an increased number of degrees earned by state residents, will boost the stock of college-educated labor, which will benefit the state economy.

We have the best stock of research on local four-year programs. Here, there are at least six rigorous studies establishing that locally targeted and generous four-year programs have robust effects on enrollment in the targeted K-12 school system. The Kalamazoo Promise appears to have boosted enrollment in Kalamazoo Public Schools by 58 percent, or over 1,000 students, in its first year, with smaller increases in the next few years (Bartik et al. 2010; Miller 2018). The El Dorado Promise boosted its local district's enrollment by 15 percent, and smaller but positive effects were found in other cities with generous four-year programs (Sohn et al. 2017; LeGower and Walsh 2017; Ritter and Swanson 2020). But most estimates of effects on population, migration decisions, or housing prices are small or nonsignificant (Bartik and Sotherland 2015; Hershbein et al. 2021; LeGower and Walsh 2017; Miller 2018). Despite the generous new scholarships, the populations of both Kalamazoo and El Dorado have continued to fall at much the same rate as before. Thus, there is little support for a local Promise program, even ideally constructed, as an economic development strategy.

Whether state merit scholarships work to boost state college attainment rates, or to reduce "brain drain", is also in question. Only three studies investigate this question. One finds a modest positive impact on the percent of workers with a college degree (Dynarski 2008), and another finds a small positive effect on college graduates remaining in-state after college (Hickman 2009). The third finds that GA HOPE simply delayed college graduates' decision to leave until after college (Sjolquist and Winters 2013). At present there simply isn't enough known about this question to draw conclusions.

Community college Promise programs are not generally expected to produce community economic benefits, except by increasing the educational attainment of residents. However, the only study of this question finds no impact of a Promise program on county educational attainment (Ruiz et al. 2020).

Effects on Colleges

As we discussed above, Promise programs seem to both increase the number of people enrolling in college at all, and direct enrollment to eligible colleges, though the strength of these effects can vary. Consequently, community college (local and state) and state four-year programs seem to strongly boost enrollment at eligible colleges

(Cornwell et al. 2006; Zhang et al. 2013; Li and Gándara 2020), though New York's Excelsior scholarship is an exception (Nguyen 2019).[6]

It would make sense that if Promise programs boosted enrollment, they would also boost revenues. Results show that Pell grant revenue for GA HOPE colleges increased slightly (Singell et al. 2006). Otherwise, revenue effects have been nonsignificant (Delaney and Hemenway 2020). Colleges don't seem to take advantage of Promise programs by raising tuition or fees consistently, though there are indications of small effects (Long 2004; Delaney and Hemenway 2020; Bell 2021). To what extent colleges respond to Promise programs by changing spending patterns is at this point unclear.

Do Promise Programs Reduce Inequality?

Promise programs, and broadly accessible grants in general, are sometimes proposed as means of combatting inequality. However, depending on how they are structured and implemented and on how eligible populations respond, they may exacerbate inequality. Generally, merit-based grants are expected to increase inequality (since academic achievement is correlated with family education and income), while need-based aid is expected to reduce it.

At present, we cannot venture confident conclusions on this score. There has been too little research, and the results have been inconsistent. Do generous four-year local programs reduce racial differences in educational attainment? A few studies say yes, (Bartik et al. 2016; Swanson and Ritter 2021) while others find that white students benefit more (Sohn et al. 2017; Hershbein et al. 2021) and others find mixed or null effects (Bartik et al. 2010; LeGower and Walsh 2017). There are similarly mixed findings across studies for state four-year programs (Dynarski 2000; Cornwell et al. 2006; Zhang et al. 2016), and for studies investigating effects on socioeconomic and gender inequality (Sjolquist and Winters 2015; Zhang et al. 2011; Dynarski 2000; Singell et al. 2006).

Delayed Repayment Plans

Before moving on to the original research, we briefly address delayed repayment plans such as the proposed no-interest loan plan for community college attendance in Pennsylvania. Today, people tend to consider Promise programs to be grants, not loans, and so this plan would not be considered a "Promise program". Nonetheless, it is possible to ask whether such plans exist elsewhere and what, if anything, is known about them.

We found a few examples of such plans already in existence. Massachusetts created its No Interest Loan program in 1992 for low-income students attending college in the state. The minimum initial loan for this plan is $1,000, and the lifetime maximum is

[6] Local four-year programs haven't been investigated in this regard, but we suspect that effects would be small because they distribute increased enrollments too thinly across eligible colleges to make an impact.

$20,000. Recipients have ten years to repay their loans. During the COVID-19 pandemic, the federal government paused repayment and interest on Stafford loans, effectively turning these (temporarily) into zero-interest loans. There are some nonprofit organizations that offer zero-interest loans to students, but these are selective and require students to know about and apply to them.

Similar and more common are loans that convert to grants (forgivable loans) or grants that convert to loans. Both are ways to incentivize specific behaviors after graduation among specific populations of graduates. For example, the federal government offers the Public Service Loan Forgiveness program, which forgives remaining loan balances for people working for governments or nonprofits and who have already paid 120 monthly payments on their debt. The federal Teacher Loan Forgiveness loan program waives up to $17,500 in Stafford loan debt for individuals who teach in low-income schools for five years. There are similar statewide programs for doctors, nurses, teachers, and others. Conversely, New York's Excelsior program is a tuition-guarantee grant that converts to a loan if a student does not reside and work in-state for the same number of years for which they received their loan. Similar loan conversion rules are in effect for some state workforce grants: Louisiana's MJ Foster Promise Program, West Virginia Invests, Arkansas' ArFuture Grant, and South Dakota's Build Dakota program. For our conclusions regarding the likely effectiveness of a proposed plan for Pennsylvania, see Appendix 1.

Methodology

Data

We conducted data collection to address each of our four main empirical questions. To study the characteristics of existing local and state programs, we assembled as comprehensive a dataset of these programs as possible. Details regarding how we identified programs, found information on program design, and coded variable categories can be found in Appendix 2.1.

To understand aspects of programs which are not accessible via online sources, we surveyed existing Promise programs. We contacted all programs we were able to identify (i.e., the full sampling frame) by email three times. Details regarding survey development, deployment, and response are provided in Appendix 2.2

To examine the impact of Promise programs on eligible colleges, we mainly drew on publicly available data from the Integrated Postsecondary Education Data System (IPEDS). Details about IPEDS and variable creation are supplied in Appendix 2.3.

Finally, we undertook extensive case studies of two Promise programs in Pennsylvania. We interviewed program staff and stakeholders, gathered publicly available online data, and obtained restricted-access data from the Pennsylvania Department of Education (PDE). Details regarding this data are presented in Appendix 2.4.

Methods

Much of our report is descriptive and analytically intuitive. However, we use several specialized and complex statistical procedures, including propensity score matching, differences-in-differences, and fixed-effects models. These are described in Appendix 3.

Results

1. Existing Programs: Dimensions of Variance

While researchers don't agree on what Promise programs are, they do agree that they vary in terms of four dimensions: *generosity*, *applicability*, *eligibility*, and *funding/operation* (Iriti et al. 2018; Miller-Adams and Smith 2018). Prior research is limited in two ways, however. First, researchers have not understood that *all* scholarships and grant programs vary according to these dimensions, not just Promise programs. Second, they have not understood that each of these dimensions is quite complex, involving several components that may contradict each other.

For this report, we gathered detailed information on over 60 statewide programs and over 300 local programs. Details on data collection appear in Appendix 2.1. This data collection allowed us to flesh out the variables comprising the sub-dimensions of "generosity", "eligibility", and more. Our empirical work consisted not just of collecting data on given variables, but discovering what variables describe the space according to which programs vary in the first place.

We begin with some basic information on local and state grants – when they were created, where they are located. We then move on to funding/operation, generosity, applicability, and eligibility.

Table 1: Characteristics of Local and State Promise Programs

Characteristics	Local programs (%)	State programs (%)
Last-dollar award	93	81
Tuition coverage only	36	21
Maximum award	13	41
Tuition guarantee	85	58
Four-year applicability	39	62
Restricted to certain programs	1	15
Immediate HS enrollment required	22	40
No citizenship restriction	55	31
Citizens and legal residents only	6	47
Income restrictions	32	44
Any academic restriction	46	53
Moral eligibility restriction	5	23
Full-time enrollment required	69	42
GPA above 2.0 to retain	24	38
N	*309*	*62*
Source: Compiled by authors. Columns 2 and 3 represent the percentage of programs with each feature.		

Year Created

The "Promise movement" is typically considered to have begun in 2005 with the Kalamazoo Promise (KP). However, our local program dataset contains seven programs that pre-dated it. This includes two in Pennsylvania: the Morgan Success Scholarship in Tamaqua, and Philadelphia Education Fund's Last Dollar Scholarship. In our state program dataset, 18 programs were created before 2005, though none were thought of at the time as "Promise programs". Many were part of a wave of "state merit scholarship" programs that began with Georgia's HOPE scholarship in 1993. Others, such as California's Board of Governors Fee Waiver, began even earlier.

The Kalamazoo program seems to have led to increased local program creation; 57 programs appeared between 2005-2010.[7] The rate of new program formation fell during 2011-13. Fourteen state programs were created in these years as well, though they were not typically pitched as "Promise programs".

The Promise movement was reinvigorated by the 2014 launch of the Tennessee Promise. Between 2014-2020, 192 local programs emerged, as did 30 new statewide programs. Our data records a drop-off particularly in the last couple of years, although it is possible, we did not locate every new program (see Appendix 2.1).

[7] Since our data only contains existing programs, we are likely missing older programs which have subsequently terminated operations.

Geographic Concentration

The state with the largest number of local Promise programs (97) is California, though 77 of these were created through a state program (see "Funding and Operation", below). After this, the largest concentration is in Texas (37). Michigan has 17, also largely through a statewide program (Michigan Promise Zones) to seed Promise programs. Other states with significant concentrations are North Carolina (15), Wisconsin (14), and Illinois (12).

The west coast states have been particularly active in statewide program creation, with four programs in California, one in Oregon, and two in Washington. Otherwise, there is no region that stands out for having many or few Promise-type programs.

Funding and Operation

Funding and operation variables describe the financial and organizational infrastructure of the scholarship *program*, rather than the scholarship itself. Such information is difficult to obtain because it isn't usually provided on program websites.

The information we collected in this regard was limited to:

1. *Primary funding source*. We defined this as either:
    a. Single private donor (nonprofit foundation, private individuals, business/corporation, etc.). In this case, the donor typically played a major role in conceiving and designing the program, and its funds are the condition for continued operation.
    b. Many private donors. Such programs are privately funded, but it is the fundraising organization (often a college's foundation) which plays an active role in collecting funds. Individual donors play little role in influencing operation.
    c. College/university (i.e., self-funding through existing revenue sources. We put to the side the question of the sources of the college's revenues).
    d. State/local government. We include publicly funded authorities in this category.
2. *Operating organization*. This refers to the organization that manages the program.
    a. Private agency (usually a nonprofit).
    b. College/university (self-managing their own Promise program).
    c. State/local government agency.

Many early and generous Promise programs were funded by local private benefactors. But today, are creatures of public funding. The largest number are funded

through colleges[8] (123, or 40 percent), though many of these are at least partially supported through private fundraising coordinated by college foundations. The next largest number (118, or 38 percent) are funded by state or local governments. Additionally, 77 percent were created through a single legislative act: California's AB19. This allocated state funding for community colleges to create their own Promise programs. Some of the remaining 41 were seeded through Michigan's Promise Zone program, which establishes authorities operated through public-private partnerships and funded through local education tax capture. In 33 cases, programs are funded entirely or largely through a single foundation or other large donor. In the 36 cases, fundraising collected money from many private sources.

Programs are overwhelmingly operated by colleges (241, or 78 percent), even if we factor out the 77 California AB19 programs (164). The next largest category is programs operated by a nonprofit/foundation (49, or 16 percent). Municipal governments and local authorities operate 20 programs.

State programs are all funded and operated by state governments. Much more research is needed to refine understanding of program infrastructure. We should establish funding sources in more detail. Major funder type (foundation, individual, business, etc.), funding mix, funding concentration, and existence of and reliance on endowment should all be investigated. In terms of operation, whether the funder and operator are identical (or linked, in the case of colleges and their foundations) is important. We take up some of these matters in our second empirical study.

Generosity Variables

Generosity refers to the "what" of the scholarship. What, exactly, do recipients receive. Here we only refer to what the financial award covers, excluding possible services to which a student may be entitled. The precise award often varies by student; program rules determine how this calculation is made, not the award quantity (unless it is a fixed award). For this reason, "generosity" is a somewhat misleading term. We use it because it is established in existing literature. It covers:

1. *What expenses are eligible*. On one end are grants that can be used only for tuition. At the other are those which may be used for just about anything—tuition, fees, room and board, supplies, living costs. In between are those that cover "tuition and mandatory fees".
2. Whether the grant *guarantees coverage of tuition* and/or other expenses (fees, housing, books, and supplies).
3. The grant's *relationship with other grants* (e.g., Pell grants). The value of some grants is unaffected by other funds a student receives; these are

[8] We refer to immediate funding entity for the program. It is of course true that public colleges receive revenue from state appropriations, state and federal student grants, and other public sources. If a college funds the scholarship from its revenue, regardless of how this is obtained, we consider it "college funded".

called “first-dollar grants”. Others are reduced on a dollar-for-dollar basis by other grants; these are “last-dollar grants”.

4. The award’s *duration* (e.g., two years, four years, 60 credits, 75 credits, etc.).
5. Whether there is a *maximum award*. Some impose a funding cap, (for example) promising to cover tuition and fees up to $3,000. A fixed award (i.e., where recipients each get $1000) is a first-dollar award with a funding cap.
6. Whether there is a *minimum award* or other financial supplement. If a student’s tuition is fully covered by Pell grants (as is often the case for low-income students at community colleges), a last-dollar award will not provide any money. Some colleges allocate to such students a “minimum award” (e.g., $300). Others provide, in addition to tuition coverage, a flat living stipend or a voucher to the college bookstore.

Local programs are overwhelmingly last-dollar; only 18 first-dollar scholarships appear. What programs cover is more variable. 115 programs (37 percent) are applicable to tuition only, and 140 (45 percent) can be applied to tuition and mandatory fees. For 53 programs, funding can be used on an expense beyond tuition and fees (but *also* cover tuition and fees). Two programs in our list cover additional expenses but do not cover tuition; in both cases tuition is covered by a statewide program. A book voucher is provided by 42 local programs, and 19 guarantee a minimum award.

Not all programs fully cover (or “guarantee”) eligible expenses. Most local programs are tuition guarantees (265, or 85 percent). Of these, 180 (58 percent) are usable only at community colleges, and 72 (23 percent) are usable only at public four-year colleges. Of these programs, 13 guarantee tuition in either sector. No program guarantees tuition coverage at a private college.[9]

A notable number of local programs (44) that do not provide tuition guarantee, specify a maximum award. These caps are more common for first-dollar awards; 11 of the 18 first-dollar awards impose award caps (versus 33 of 292 last-dollar awards). They are also much more common for awards applicable to four-year colleges (24 percent) than those applicable only to community colleges (8 percent). That is, programs are more likely to set a maximum award when eligible expenses are potentially larger.

Most local programs — 160, or 52 percent —provide about two years (or 60 credits) of funding. Another 95 (31 percent) provide four years, 12 programs provide less than two years; 27 provide more than two but less than four, and 16 cover more than four. None of the latter covers graduate school; instead, they seem to cover additional

[9] We are not examining programs usable *only* at private colleges, most of which are created by these colleges themselves. Among the programs we examine, even the most generous (e.g., the El Dorado Promise) will cover private college costs equal to public four-year college tuition. A few programs (e.g., Say Yes to Education Buffalo) have arrangements with some private colleges whereby the college will waive this balance for admitted program students.

semesters or credits attempted in case students experience academic difficulty or change majors.

Among state programs, most are last-dollar scholarships (50, or 81 percent). A slight majority cover tuition and mandatory fees, with 20 percent covering just tuition and 24 percent covering more than tuition and fees. Minimum awards and book vouchers are uncommon (three and five programs respectively).

In contrast, maximum awards are common among state programs – 40 percent of all programs have an award cap, including 48 percent of older programs and 35 percent of recent ones. These caps are more common among first-dollar programs (75 percent) and those applicable to four-year colleges (51 percent).

A total of 33 programs explicitly guarantees full coverage of community college tuition, and fifteen guarantee tuition at a public four-year college. We note a shift in this regard among more recent programs – 60 percent of programs since 2010 guarantee community college tuition compared with 44 percent of earlier programs. By contrast, two-thirds of earlier programs guarantee *four-year* tuition coverage, compared with just 13 percent of more recent programs. This suggests that the "Promise movement" has resulted in more statewide programs, but in programs which are less generous.

Applicability Variables

Applicability is the "where" of the scholarship. At which colleges may the scholarship be used? Since colleges vary so much in cost, particularly across sectors, this dimension is crucial to understanding how much a scholarship provides – that is, its generosity in absolute dollar terms. This is our reason for noting that "generosity" is ill-chosen for the previous dimension. A program that guarantees tuition on a last-dollar basis to attend community college provides far less funding than a fixed $10,000 per year award applicable to a four-year college, even if it may appear to be more generous.

Applicability covers:

1. *Extent*: at how many colleges may the award be used. This varies between a single college and any accredited college nationwide.
2. *Control*: public, private, or both.
3. *Level*: Two-year, four-year, or both.
4. *Program*: Some programs limit applicability to specific programs within eligible colleges.

The overwhelming majority of local programs (253, or 82 percent) are usable at only one college. Among these, 177 are usable at a single community college, and 76 at a single four-year college. In most cases, such programs are operated by the applicable college and are often also funded by that college. Another 28 programs may be used at more than one college, but fewer than all in-state colleges of a given type.[10] A total of

[10] For example, the 4CD scholarship can be used at any of the four community colleges in Contra Costa County, CA.

18 programs are usable at any in-state college (of a given type); 11 of these are privately funded, and 10 permit some out-of-state enrollment.

Local programs tend to target community colleges; (70 percent) are only usable at such institutions. Another 81 can be used only at four-year colleges, with 39 programs available for either two- or four-year colleges. Though we restricted to programs that are applicable within the public sector, 36 programs also permit private sector enrollment, and all but two of these are four-year applicable. Usually, such programs impose a maximum award for those who attend private colleges or pay an amount equal to public college tuition.

Only four local programs restrict applicability to certain programs. All statewide programs, as we define them, are usable at any in-state college (of a given type). There are 23 programs usable only at two-year colleges, six usable only at four-year colleges, and 33 usable at either. As with tuition guarantees, we perceive a shift in statewide policy over time. Whereas 88 percent of programs created before 2010 could be used at four-year colleges, this is true of only 46 percent of more recent programs. Older programs are also more likely to be usable at private colleges (60 percent vs. 38 percent).

Additionally, nine state programs also restrict funding to specific programs or majors; these are usually called "workforce development grants" (i.e., WorkReady Kentucky). All have been launched since 2010.

Eligibility Variables

This is the "who" of the scholarship: who is eligible to receive funding? This is by far the most complex of the dimensions of scholarship design, for there are many ways in which programs can condition eligibility. This can include elements that a designer may see as a service, if taking up the service is a condition of eligibility. Eligibility rules refer to both conditions of *initial* and of *continuing* eligibility. It is important to note, too, that a program's *overall* cost is determined in part through eligibility rules, for such rules create the size of the pool of eligible recipients. Eligibility refers to:

5. *Scope*: how many individuals are awarded? This varies between a single recipient or a small number (a competitive award) and everyone who meets eligibility criteria (an entitlement). In this study, we were largely restricted to entitlements and funds-limited awards, though we permitted competitive scholarships in which a large number of awards are available.
6. *Geographic eligibility*. Programs can restrict by residence, e.g., in a municipality, county, community college district, or state, or to those who attended certain schools.
7. *Temporal eligibility*. Programs may restrict by age, or by a time window after an event (e.g., five years after high school graduation). These restrictions can refer to when one may begin using the grant, or when the grant fully expires.

8. *College experience eligibility*. Programs may restrict to certain classes of students according to their prior attendance in college. Many restrict to first-year students, but others also include transfer students. Current students are least likely to be included.
9. *Cohort eligibility*. Programs may initiate (or twilight) eligibility starting with given high school graduating cohorts.
10. *Economic eligibility*. Programs may restrict by family income, Pell eligibility, expected family contribution, or poverty status.
11. *Academic eligibility*. Programs can restrict by various measures of prior academic performance and behavior: e.g., high school completion type (regular graduation vs. GED), GPA, curriculum, test scores, or attendance.
12. *Attendance intensity eligibility.* Programs may limit initial eligibility to those enrolling at a certain number of credits.
13. *Procedural eligibility*. Programs may require students to complete given bureaucratic procedures: requiring a specific application, filing FAFSA, meeting deadlines, requiring an early commitment pledge, completing community service, etc.
14. *Citizenship eligibility*. Programs may restrict to those of certain citizenship statuses (e.g., only citizens/legal residents).
15. *Moral eligibility*. Programs may restrict according to non-academic statuses, e.g., criminal convictions, arrests, drug/alcohol use, etc.
16. *Graded eligibility*. Any of the above dimensions can be used to provide awards of different value. For instance, some cover different percentages of tuition depending on length of residence, or high school GPA, or family income range. Using one or another dimension above (e.g., high school GPA), percentages or levels of the grant may be awarded to different categories of students.
17. *Continuing eligibility*. Most awards require students to meet academic and other requirements to maintain their grants. These can include college GPA, enrollment intensity, credit completion, residence, or Pell eligibility.
18. *Post-college eligibility*. Some programs impose requirements on post-graduation behavior, such as residing in-state. Violations convert the grant to a loan.

Among local programs, scope was restricted by our sampling frame. We included only 24 awards that are not entitlements. These are mostly funds-limited, but there are a few numerically restricted awards.

A total of 160 local programs (52 percent) set a local residency or school district attendance requirement. All but one of the others is restricted to state residents, but one (University of Wisconsin-Platteville's Pioneer Pledge) is available to residents of a couple of neighboring states. Additionally, 65 programs (21 percent) require residence in the specified area for longer than one year prior to application.

Furthermore, 44 percent of local programs impose some form of temporal restriction, and 22 percent of programs are restricted to first-time freshmen. Four local programs are "adult" Promise programs, restricted to those older than some age (usually 25 or above).

Income restrictions are found in 32 percent of local programs, but in 67 percent of four-year applicable programs. Only 10 percent of community college-only programs are restricted by income. The most common income restriction is to Pell recipients or to an income near the Pell threshold (15 percent), with 30 programs being more restrictive and 20 being less.

Of local programs, 143 of them (46 percent) have some sort of academic criteria for eligibility. The most common academic criterion restricts by the form of high school completion; 40 percent exclude GED-holders and 20 are restricted to "on-time" high school graduates; 26 percent require a GPA above some threshold. Additionally, 17 programs have high school attendance thresholds, and 16 restrict by performance on a standardized test. Six of them impose high school curriculum requirements.

Of local programs, 46 percent restrict based on citizenship, though only 19 explicitly restrict to citizens or legal permanent residents. What is more common, is to require FAFSA completion in a state in which there is no alternative for undocumented students (92 programs, or 30 percent). DACA participants[11] can complete FAFSA, though many students and even educational personnel do not know this. Non-DACA undocumented students cannot complete FAFSA. Another 26 programs (8 percent) effectively exclude all undocumented by requiring Pell-eligibility or an EFC below some threshold, since all undocumented are ineligible for federal grants (DACA students can submit a FAFSA, but it will not be processed, producing an EFC).

Among local programs, some of the most common requirements are procedural. Completing FAFSA (or its equivalent) is required by all but 11 programs (96 percent). Furthermore, 48 percent of programs have their own application process; many administered by colleges qualify eligible students automatically. However, 117 programs (37 percent) have some other procedural requirement, such as attending an orientation or meeting with an advisor.

The next most common condition for local program eligibility is initial full-time college attendance; 217 (70 percent) programs require this. Less common requirements include completing community service prior to enrollment (14 programs), moral/behavioral criteria (15 programs), and applying well before senior year, i.e., "early commitment" (12 programs). An additional 30 programs (9 percent) establish graded eligibility using some criteria like length of residence or high school GPA.

After enrollment, most local programs impose requirements to keep receiving the scholarship. All but 74 programs require students to maintain at least a 2.0 GPA, which is also required for Pell grant eligibility, and 48 programs have a higher GPA threshold.

[11] Delayed Action for Childhood Arrivals.

All but 69 have some enrollment intensity requirement, and 203 (65 percent) require full-time enrollment, and 216 programs (70 percent) require that recipients remain continuously enrolled once they begin, including 185 that also require full-time attendance. Less common continuing eligibility requirements completing community service hours (28 programs) and refiling a program application yearly (16 programs).

State programs typically require completing FAFSA or its equivalent (87 percent). Just under half (44 percent) have an income restriction. Most restrict by citizenship (69 percent), with 47 percent restricted explicitly to citizens and legal permanent residents. State awards nearly all require in-state residence, but do not scale awards by residence length. Some (18, or 29 percent) do offer different amounts based on college attended. Four programs pay different amounts depending on student level (first-year, second, etc.), presumably to incentivize completion.

Of state programs, 53 percent restrict using merit criteria, but here we observed a distinct difference among programs created before 2010 and afterwards. As many older programs were explicitly designed as "state merit scholarships", 84 percent of them have merit criteria, compared with 32 percent of newer programs. But recall, also, that older programs are more likely to be applicable to more expensive four-year colleges, whereas newer programs are more likely to be community college tuition guarantees. Merit criteria appear, then, as a cost-control strategy that targets aid to "meritorious" students, though these tend to be from more affluent households. The commonest requirement among older programs is a GPA threshold (80 percent vs. 24 percent in newer programs). Also common are high school graduation requirements (52 percent older vs. 16 percent newer) and test score thresholds (48 percent older vs. 14 percent newer). Of older programs, 44 percent also specified a curriculum required to qualify; this is found in only three (8 percent) newer programs.

The shift in state higher education policymaking towards less restrictive, but less generous programs extend beyond merit criteria. Older programs also impose more temporal restrictions – 72 percent require students to enroll directly after high school graduation (compared with 19 percent of recent programs). Seven older programs (28 percent) and only two newer programs (5 percent) require that students be first-time freshmen. New in the recent period are so-called "adult Promise" scholarships (Tennessee Reconnect and Michigan Reconnect) focusing on older, returning students. Older programs are more likely to require full-time enrollment (52 percent vs. 32 percent). Prior to 2010, there were a few "early commitment" scholarships focused on needy students. No such programs have appeared since 2010. Nine earlier programs (36 percent) imposed "moral" or behavioral restrictions (e.g., no felony convictions), compared with five (14 percent) of newer programs.

Older state programs also impose more stringent criteria for maintaining aid. While requiring students to maintain SAP[12] is near-universal, 52 percent of older programs and 30 percent of newer ones require a GPA higher than a 2.0. Older programs are more likely to require full-time attendance (44 percent vs. 30 percent) and continuous enrollment (56 percent vs. 32 percent).

Much remains to be learned by studying program variance at the state and local level. How has local program design shifted over time? What are the relationships that prevail among different aspects of program design? How is program funding and operation related to scholarship design? What else impacts program design choices at the local and state level? We hope to address such questions in future research.

2. Surveying Promise Programs: Moving Beyond Website Analysis

The data and analyses above tell us a lot about existing programs. But publicly available data can't always tell us everything of interest. For instance, why were programs created in the first place? And why were certain design elements (last-dollar awards, eligibility rules, etc.) selected rather than others? How many students per year receive funds, and how much do they receive on average? Such elementary information not only isn't available on most program websites, and researchers have generally not tried to answer such questions. To remedy this lack of information, we surveyed organizations operating Promise programs. Details regarding this survey appear in Appendix 2.2, and results are summarized below. Some results appear in Table 2.

Origins and Funding

Programs we surveyed were proposed by a variety of actors. The Community Scholarship Program at West Kentucky Community and Technical College was discussed by business leaders and members of the Paducah Rotary Club. Advantage Shelby County was the creation of local city government in conversation with the local school superintendent. About 32 percent of programs originated in the private sector (business, nonprofits, and community leaders), and another 11 percent were developed by local governments or school districts. Most local Promise programs (57 percent) were proposed by postsecondary organizations and leaders, while 80 percent of programs are operated by colleges, 16 percent by nonprofits, and 4 percent by government agencies.

We asked respondents for the initial motivations for creating the program. The most common reason given was increasing educational attainment among constituents. The next commonest reason given (72 percent) was reducing racial or other disparities in educational attainment. We ask the reader to recall that evidence regarding whether Promise programs successfully accomplish this goal is mixed. After this, respondents

[12] Satisfactory Academic Progress is a requirement for maintaining Pell eligibility and is secured by completing two-thirds of attempted credits and maintaining a 2.0 cumulative GPA, though colleges have some flexibility regarding initial cumulative GPA.

said their programs were motivated by the goal of making college more affordable (65 percent). Economic development is an avowed goal of many early programs, and 45 percent of programs claimed this goal. Additionally, one-third of programs claimed the goal of increasing enrollments at applicable colleges.

The programs we surveyed portrayed themselves as well-funded. Almost half (48 percent) said that their yearly funding was $500,000, with 21 percent confirming their funding was below that. A notable portion (31 percent) of surveyed programs did not respond to this question.

Indeed, noncompletion was quite common when it came to matters of funding. This may be because the person completing the survey didn't know and didn't want to guess (and completers' responses may, too, be guesses). Or it may be that some programs have little funding and do not want this fact known. About 45 percent of programs didn't complete the question about public funding and 49 percent about private funding.

Additionally, 41 percent of programs said that they received some public funding, more than half of which put the public share at 75 percent or greater,[13] while 15 percent of programs claimed no public funding. Only 34 percent of programs claimed any private funding, half of which said that the private share was less than 25 percent. Only 8 percent claimed 100 percent private funding, and 17 percent claimed no private funding. We remind readers of the high noncompletion rates on these questions, and that colleges often self-finance Promise programs either totally or in part.

[13] Public colleges most likely only counted as "public funding" additional funds earmarked for the scholarship program, not the share of their operating revenues that derive from state appropriations (or, for that matter, from state and federal student grants).

Table 2: Promise Program Goals and Design (Total N=51)

Promise Program Goals	Share of all programs (%)
Motive: Economic development	45
Motive: Reducing disparities	73
Motive: Reduce college cost	65
Motive: Increase education	79
Motive: Increase enrollment	34
Last-dollar: Control costs	54
Last-dollar: Standard practice	28
Merit: Target deserving	67
Merit: Target successful	43
Need: Target deserving	44
Need: Target needy	84
Citizen Req: Law	67
No citizen: Law	15
Citizen Req: Program values	0
No citizen: Program values	46

Just under a quarter of programs said that they had an endowment. Most programs said that the source was from "many small gifts". Half of the programs claiming endowments valued it at $1 million or more; 30 percent claimed less, and 20 percent didn't answer this question.

Design Features

Most programs we surveyed reported being last-dollar scholarships (72 percent), though the most common reasons cited for this design were 1) limiting costs (55 percent) and 2) because doing so is standard practice (28 percent). Furthermore, 20 percent said that the last-dollar design would make students invest in their own success. Many respondents said their program was modelled after another program; Kalamazoo, El Dorado, and Tennessee were mentioned by multiple respondents.

Next, 37 percent of respondents said their programs have merit criteria; they tended to overlook high school graduation requirements as constituting merit requirements. Merit features were accounted for as ways to target funds to "deserving" students (67 students) and to students most likely to succeed in college (43 percent). However, 42 percent of respondents accounted for merit requirements as targeting aid to needy students, despite the well-established correlation between family income and academic performance; 32 percent said it was to ensure funds were used efficiently, 15 percent to control costs, and 13 percent to prevent fraud or abuse.

Need-based criteria were reported by 37 percent of respondents. These criteria were explained as targeting to the neediest students (83 percent). Other reasons given were targeting to deserving students (44 percent), efficiency (32 percent), and reducing costs

(16 percent). Few respondents explained need restrictions as preventing fraud (3 percent) or targeting to those likely to succeed (7 percent).

Additionally, 40 percent of programs did not restrict eligibility by citizenship, while 36 percent had some form of restriction (and roughly 15 percent didn't answer this question). Among programs that do restrict, the most common reason was compliance with law (67 percent). The only other slightly common reason was cost reduction (18 percent). Programs that are not restricted by citizenship said that this policy was in accordance with program values (46 percent) or goals (37 percent). Many respondents provided no reason for their policies.

Awards and Expenditures

As with funding, noncompletion was common with questions about numbers of applicants, recipients, and expenditures. We speculate that these questions may have been left blank more often because 1) they came later in the survey, 2) the person responding didn't know the answer and wasn't inclined to find out, and/or 3) the person responding didn't want to answer the question as it would reflect poorly on the organization.

Although, 40 percent of respondents didn't answer the question about how many applicants they had or said they did not know; 21 percent said that between 100-499 students applied (the questions asked about the prior year's applicants), 17 percent said between 500-999 students applied, and 11 percent said that it was between 1000-1999. Other ranges of applicants received small numbers of responses.

Not all students who apply are eligible or receive funds; 41 percent of programs reported that at least 75 percent of applicants are eligible, and 8 percent reported fewer than half of applicants being eligible. Next, 41 percent of programs didn't answer this question or said they didn't know. For raw numbers of recipients, 19 percent of programs reported having more than 1000 recipients in the prior year, and 18 percent said they had between 500 and 999; 24 percent said they had fewer than 200. Another 34 percent of respondents did not answer the question.

The largest category for median award (24 percent) was between $1000-1999. Another 21 percent said the median award was between $2000-4999, and 10 percent said it was more than $5000. No program said that their median award was less than $500, but 35 percent of programs didn't answer the question. The largest category for total expenditure on scholarships ranged from 38 percent of programs claiming more than $500,000 in awards per year. Roughly 15 percent of programs said they awarded less than $200,000. Furthermore, 39 percent of programs didn't complete this question or said they didn't know.

Beyond awards, programs do not report spending much money; 53 percent of programs said they spend less than $50,000 on advertising; 47 percent didn't answer the question or said they didn't know; 29 percent of programs reported operating costs less

than $100,000 per year, and 13 percent reported costs greater than $500,000. Nearly 40 percent didn't answer this question or didn't know.

Data Collection and Reporting

Most programs (64 percent) say that they collect data on outcomes, and among these programs the outcomes most collected are retention (95 percent), grades or GPA (91 percent), degree completion (95 percent) and credit accumulation (66 percent). Only 16 percent of programs report collecting data on debt, and 24 percent collect data on employment outcomes. Only eight out of 41 responding programs say that they do not evaluate these outcomes. About an equal number use a benchmark or goal to evaluate outcomes as use the outcomes of a comparison group. Outcomes are most often reported to funders (24 programs), and nineteen programs make outcomes public.

Among programs that collect outcomes, 39 percent claim to evaluate them relative to a control group, and 3 percent claim to do so relative to a benchmark, while 46 percent of programs didn't answer the question or said there was no evaluation strategy. Programs were most likely to report data to funders. This is true regarding outcomes (39 percent), scholarships (37 percent), and expenditures (34 percent). Some programs said they made such data available to the public: outcomes (33 percent), scholarships (28 percent), and expenditures (23 percent). It is unclear *how* such data is made available; it certainly is rarely posted on program websites.

Reception and Future

Most programs report a positive or very positive reception of their programs by stakeholders – the media, politicians, local businesses, local educators, and students and families. The percentages rating such reception "very positive" or "positive" ranged from 61 percent for media to 74 percent for students' families. Most respondents (54 percent) also reported expecting the program to continue operating into the foreseeable future.

3. How Do Promise Programs Impact Colleges?

The empirical analysis above revealed that most Promise programs are single-institution affairs funded and operated by the relevant colleges themselves. How these Promise programs impact the colleges to which they are applicable is the question we now address.

Given that Promise programs reduce the real or perceived price of attendance at the relevant college, we expect enrollment to respond positively to program creation. And as we discussed above, prior research has already found this to be the case. Since some students leave college because of financial stressors, we expect Promise-eligible cohorts to have higher retention rates than ineligible cohorts. The second has only been previously investigated at the student level, not the college level, (student persistence,

not a college's retention rate)[14] and mostly only for four-year applicable state or local programs. Impacts of state community college Promise programs on retention are inconsistent (Hodara and Childress 2021; Bell 2021); impacts have not been investigated for local community college programs.

We compiled yearly data on colleges available through IPEDS (2000-2021) and integrated it with our own dataset of Promise programs, which identified the first cohort eligible for the program. The long study window is adopted because local programs began appearing as early as 2003 (e.g., Tamaqua's Morgan Success Scholarship discussed below), though it is true that most programs did not appear until after 2014. The method we use can easily accommodate examining 21 years of data. Details regarding IPEDS data appear in Appendix 2.3, and methodological details appear in Appendix 3 (see "fixed-effects regression").

We investigate the effect of a program's launch on enrollment and on first-year student retention. We limited our investigation to Promise programs that are narrowly applicable – usable at most at a handful of colleges. Programs like the Pittsburgh Promise, which can be used at any in-state public college, are excluded here, because their effects are likely to be diffused across many colleges and thus small at each one. Our independent variable of interest is an indicator for whether a college has a Promise program operating at it in that year. We identified the year of program onset using program databases where possible, and supplementing with web searches (e.g., for newspaper articles announcing the program's creation) where necessary. Effects on two- and four-year colleges are examined both together and disaggregated since these sorts of programs are often quite different.

Table 3: Effects of Promise Programs on Enrollment and Retention, 2000-2021

Enrollment	**All colleges**	**Community colleges**	**Public four-year**
Total	0.081***	-0.006	0.102*
First-year	0.265***	0.12***	0.094
Pell recipients	0.073***	0.013	0.095
Retention	**All colleges**	**Community colleges**	**Public four-year**
	1.059	-1.38**	-2.45

Note: Numbers in the first three rows represent percentage changes in the enrollment of identified types of students following adoption of a Promise program. The numbers for retention reflect changes in retention rates occurring with the adoption of a Promise program. Source: IPEDS; *p<0.05, **p<0.01, **p<0.001 (asterisks refer to statistical significance).

[14] In higher education, *retention* refers to a student's continued enrollment at a specific college. *Persistence* refers to continued enrollment at any college.

Results appear in Table 3. We begin by examining enrollment.[15] For all colleges, enrollment effects are uniformly positive. The impact[16] on first-year enrollment (a 25 percent increase) is much larger than that on overall enrollment (an 8 percent increase). This reflects the fact that many Promise programs are only available for first-year students. Pell enrollment also increased by 7 percent.

At community colleges, the impact of a Promise program on total enrollment is roughly zero, while the impact on first-year enrollment is to increase it by 12 percent. This is explained by the fact that first-year students typically make up just 10-15 percent of a community college's enrollment. Impacts at four-year public colleges are roughly 10 percent, but this is statistically significant only for overall enrollment. Programs at four-year colleges may do less to entice new students than to retain those who enroll, given that these colleges typically are selective and may elect to not expand their enrollments.

Next, we turn to retention rates. For all colleges, the average effect of the introduction of a Promise program on retention is small and nonsignificant. At community colleges, the impact is negative and significant, though small: a 1.3 percentage point reduction in the retention rate (e.g., from 50 percent to 48.7 percent). This isn't entirely surprising. If a Promise program particularly increases enrollment among academically or economically struggling students, it may slightly reduce the retention rate if many of these students subsequently drop out. That is, such programs may alter the composition of the entering class, increasing the share of students with lower propensity to persist. This doesn't mean that these students drop out *because they were provided additional money*. As we have noted repeatedly, community college Promise programs often provide little additional funding to students. The net effect is still likely to be that more students obtain more education, since the positive impact on enrollment is larger than the negative impact on retention rates.

From these analyses, we conclude that Promise programs can be effective at increasing first-year enrollments, particularly at community colleges. Our estimates on enrollments at four-year colleges are less consistent (in terms of statistical significance; point estimates are quite similar), though they may increase enrollments by roughly 10 percent. Our estimates of impacts on retention are also less consistent, though point estimates are negative for all analyses.

4. How Do Promise Programs in Pennsylvania Impact Students?

Using lists of Promise programs compiled by the W.E. Upjohn Institute and the University of Pennsylvania Graduate School of Education, we initially identified and

[15] We measure full-time equivalent enrollment, which is the number of full-time enrollees plus one-third the number of part-time enrollees.

[16] Numbers in cells represent coefficients from regression models. Logging enrollment results in coefficients which are percent changes in enrollment associated with the onset of a program.

proposed to study four Promise programs in Pennsylvania. Subsequent investigation revealed that only two had been established with any degree of permanence: Tamaqua's Morgan Success Scholarship and the Community College of Philadelphia's 50th Anniversary Scholars program. We discuss these below and emphasize that Tamaqua is a small borough in a rural county. Details regarding our investigation into the Allentown School District Promise scholarship and the Harrisburg Promise appear in Appendix 4.

Tamaqua's Morgan Success Scholarship

Tamaqua, Pennsylvania, is a small borough in rural Schuylkill County, about 40 miles northwest of Allentown. In many ways, Tamaqua is like many industrial small towns in rural Pennsylvania. It attained its population peak of 13,000 in the 1930s and declined since along with the local coal industry. Its population today, just under 7,000, is 82.5 percent non-Hispanic white, 12.8 percent Latino, and 9 percent multiracial. Tamaqua's 2021 median household income of $46,423 is low for both its county ($57,785) and state ($67,587), and accordingly its poverty rate (20 percent) is higher (13 percent for the county and 12 percent for the state). Just 17.8 percent of Tamaqua's adults have a bachelor's degree (similar to the county and half that of the state).

What makes Tamaqua distinctive is that graduates of the local high school can attend community college without paying a dime in tuition. This is because Tamaqua is the site of one of America's oldest "Promise" programs: the Morgan Success Scholarship (MSS). In fact, MSS predates the Kalamazoo Promise, and so was not initially conceptualized as a "Promise program" as that term hadn't been created when it was launched. But since it is like other "Promise" programs, it is now included in Promise lists.

MSS has been available to graduates of Tamaqua Area High School since 2003. It is a last-dollar tuition guarantee applicable to Lehigh Carbon Community College (LCCC; the main campus of which is about 25 miles southeast in Schnecksville). MSS covers up to full-time tuition only. Eligibility is restricted principally by residence; one must graduate from Tamaqua Area High School after attending there since at least 11th grade. It is unrestricted by income, and the only merit criterion is the requirement of regular high school graduation. Temporal restrictions are tight. MSS is only available for the first four semesters immediately following high school graduation; students who take the first semester off forfeit that semester's funding, although they may receive funding for the next three. This also effectively restricts eligibility by age. Procedurally, students are required to apply to the program and file FAFSA annually. To maintain eligibility a student must make satisfactory academic progress (SAP) and complete nine credits per semester. MSS is funded by a philanthropy (the John E. Morgan Foundation) and managed by LCCC.

For several decades in the mid-20th century, one of the area's largest employers was Morgan Knitting Mills in nearby Hometown, famous for a popular brand of thermal

underwear. Its founder, John E. Morgan, was a Tamaqua native who passed away in 2001; the textile factory was shuttered in the following year. MSS was launched as part of Morgan's philanthropic mission to boost educational opportunity in Tamaqua. Prior to his death, Morgan had been in conversations with other local leaders about bringing a branch campus of LCCC[17] to Tamaqua. The potential location was Tamaqua's old junior high school building, which was sitting empty just blocks from the high school.

After Morgan's death the J.E. Morgan Foundation brought the idea to fruition in the early 2000s, but some worried about the branch campus's viability. This was the context for the scholarship's creation:

> "There were concerns about whether enough students would attend the Tamaqua campus (when) it opened... The idea was that if Tamaqua seniors were given the opportunity to attend (LCCC) for free, that it would help them... And it would also make sure that there was a flow of students into the Tamaqua branch... The scholarship was wrapped up in the idea of locating the branch campus there and rehabbing the junior high for that purpose. The foundation ended up contributing, I believe, $5 million towards the rehabilitation of the facility, and the state I believe matched that money," said a J.E. Morgan board member.

Despite MSS's historical novelty, a board member we spoke with minimized the innovation involved. "It's fairly straightforward," he said. "We didn't have be geniuses to come up with this, but I don't think we looked at any other models." MSS's design reflected the balancing of a few concerns. "It was a combination of what we thought was financially feasible and what we thought was responsible in terms of enticing students to take advantage of higher education, but not giving them an open wallet so they could do whatever they wanted," said the board member. Temporal restrictions were, "making sure that students were serious about (the scholarship)" and incentivized to make progress toward a degree. It was also a means of controlling costs. "While this program is not huge in terms of the foundation's overall budget, it makes a difference," the Board member explained. "We can't afford to just put an endless supply of money into it. So, there was also cost control (that) was part of the two-year limitation." The two-year Tamaqua High School attendance requirement was devised to prevent people from moving to Tamaqua right before graduation to take advantage of the scholarship, though the Board member joked that now this suspicion seemed "a bit paranoid". The program opted against income and merit requirements because "a central motivator behind the program (was) wanting to make sure the school was full" and such criteria undermine this goal. Universality was also motivated by a desire to expand educational opportunity. "We did not want cost to be a reason why any student from Tamaqua was

[17] The MSS permits eligible students to attend at any LCCC campus, not just the Tamaqua branch.

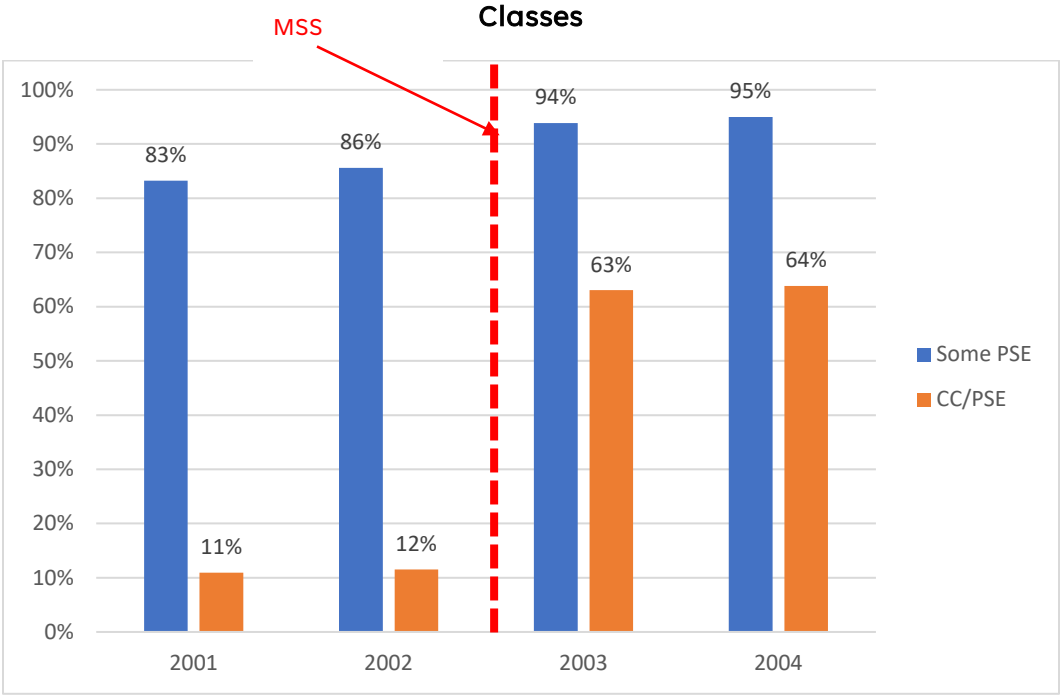
not at least able to try higher education and see if it was for them," explained the board member.

Despite this universality, the program is of manageable cost for the foundation because of the small eligible population and LCCC's low in-district tuition (about $4,500). Tamaqua high school graduates about 150 students per year. If they all took advantage of MSS for two years, and none received other aid, the program would cost about $1.4 million yearly. Since program take-up, retention, and net tuition are considerably lower, the foundation member estimated recent yearly expenditures to be roughly $200,000.[18]

Tamaqua officials were kind enough to share records they had kept of the postsecondary decisions of graduates immediately prior to and after MSS's introduction. This is wonderful data to have in this case because Pennsylvania didn't begin collecting college destination data on high school students until 2013, a full decade after MSS went into effect. Examining behavior immediately before and after a policy's introduction is a much more robust way of identifying its causal impact. This data will provide an important supplement to our analysis using PDE's data.

[18] It should also be noted that the J.E. Morgan Foundation has other programs to benefit Tamaqua residents educationally, including a scholarship open for those who transfer from LCCC to four-year colleges.

Figure 1: Community College Outcomes for Tamaqua PA, 2011-2004 Graduating Classes



The Morgan Success Scholarship was first available for the 2003 cohort. The purpose of this figure is to this graph is to depict the program's impact during the years surrounding its launch (PSE=Postsecondary Education; CC=Community College) (Source: Tamaqua Area School District).

We examine these records in Figures 1 and 2. In Figure 1, the blue bars display, by year, the share of Tamaqua graduates who enrolled in *any* postsecondary education. Prior to the program's launch, roughly 85 percent of graduated enrolled somewhere. After the program's launch, that rate jumps by eight percentage points, to 94 percent, and stays there the following year. The orange bars show the share of postsecondary enrollers who went to community college (i.e., the number of community college enrollers divided by the number of any postsecondary enrollers). Prior to MSS, just 11 percent or 12 percent of college-bound Tamaqua graduates went to a community college. In 2003, the year MSS went into effect, this share leapt a whopping *51 percentage points*, from 12 percent to 63 percent. Additionally, since the LCCC branch campus didn't open until 2004, the "effect" seems driven by the MSS and not the shorter commute.

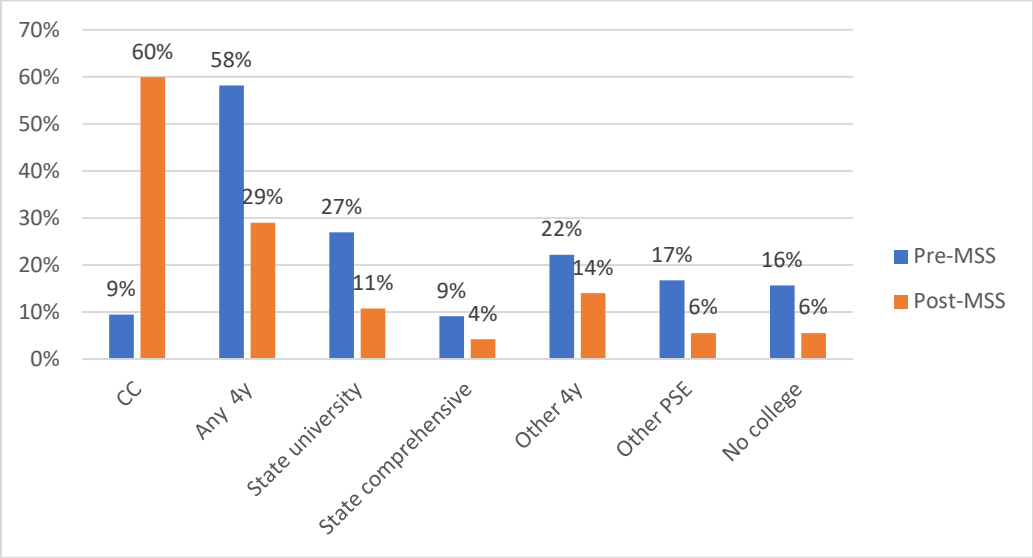
In Figure 2, we examine the postsecondary destinations of 2001-04 Tamaqua graduates in more detail. In this graph, blue bars show the share of graduates choosing different paths after high school in the two years (2001-2) prior to MSS, and the orange bars show the same quantities for the two years immediately afterwards (2003-4). The program shifted the share of graduates enrolling in community college from just 9

percent to 60 percent.[19] The rest of the graph reveals that this shift towards community college drew students from every other post-high school pathway. Direct four-year enrollment dropped by nearly 30 percentage points, from 58 percent to 29 percent. Two-thirds of that drop came from the public four-year sector, with the share of students enrolling in state universities falling from 27 percent to 11 percent (-16 percentage points) and that enrolling in state comprehensives (PASSHE schools) falling from 9 percent to 4 percent (-5 percentage points). The share enrolling in other four-year colleges (either private or out-of-state public) fell 8 percentage points, from 22 percent to 14 percent. Enrollment in nondegree or credential programs (labelled "other PSE") dropped by 11 percentage points, from 17 percent to 6 percent. And the share of graduates not enrolling in any postsecondary education fell by 10 percentage points, from 16 percent to 6 percent. Overall, 42 percent of the shift in college was "upward" or "democratization" (i.e., redirection from non-college or less than two-year destinations), and 58 percent was "downward" or "diversion" (away from four-year colleges). Diversion may be temporary if community college enrollees transfer in large numbers to four-year colleges.

In our main analysis, we use state Department of Education data to compare Tamaqua students' outcomes with those of similar students elsewhere in the state. To begin this, we examine how Tamaqua may be distinctive (other than that it has a Promise program) in ways that might also improve its students' outcomes. In Table 4, we provide demographic and academic summary statistics for Tamaqua 12th graders and compare them to others in Pennsylvania and in other Schuylkill County school districts. Tamaqua students are considerably more white than the state, and their rate of eligibility for free and reduced lunch (a means-tested program) is slightly lower. That few Tamaqua students (compared with the state) are in classes as English language learners suggests that Tamaqua has few immigrant students. Tamaqua students score similarly with others in the state, and higher than those in their county, on Keystone standardized tests. These educational and demographic differences lead us to expect a slightly higher rate of college-going among Tamaqua students. That is, a raw comparison would produce a slightly upwardly biased estimate of MSS's impact by attributing to the program the effects of slight socio-demographic advantages (relative to state and county comparison groups) already enjoyed by Tamaqua students.

[19] Note that here the denominator is all graduates, whereas in Figure 1 the denominator is all graduates who enrolled in any postsecondary education.

Figure 2: Postsecondary Attendance for Tamaqua PA, Graduating Classes, Pre- and Post- Morgan Success Scholarship Program



Note: Pre-MSS years are 2001-2002; post-MSS years include 2003-2004. Source: Tamaqua Area School District.

To minimize this bias, we used a methodology (propensity score matching; see Appendix 3.2) to create a synthetic comparison group that is as similar as possible to Tamaqua students in terms of relevant covariates. Descriptive statistics for this comparison group appear in the final column of Table 4. The reader will note that this comparison group is much more like Tamaqua students than are Pennsylvania or Schuylkill County students on average. This synthetic group will permit us to make more of an "apples to apples" comparison, and therefore to better identify the causal effects of the Morgan Success Scholarship more precisely.

Table 4: Characteristics of Tamaqua, State, County and Comparison Group High School Seniors

Characteristics	Pennsylvania	Schuylkill County	Tamaqua	Matched Comparison
Black	0.12	0.025	0.017	0.02
Latinx	0.084	0.042	0.031	0.013
White	0.73	0.913	0.94	0.942
Asian	0.038	0.008	0.001	0.012
Free/reduced lunch	0.394	0.405	0.369	0.399
Special education	0.138	0.149	0.181	0.174
English language learner	0.018	0.005	0.004	0.002
Transfer student	0.094	0.084	0.089	0.077
Average attendance rate	0.918	0.911	0.919	0.925
Keystone Algebra	0.051	-0.067	0.057	0.008
Keystone Biology	0.039	-0.101	-0.01	-0.064
Keystone Literature	0.039	-0.07	0.02	-0.012
12th grade cohort size	1689	724	624	956

Source: Pennsylvania Department of Education (PDE). Keystone numeric scores are normalized to have a mean of 1 and standard deviation of 0.

We present results from this analysis in Table 4, beginning with immediate (i.e., the fall following graduation) outcomes in the first column. Tamaqua high schoolers were 17 percentage points more likely to enroll immediately in college (69.5 percent vs. 52.7 percent). The difference in community college enrollment is a whopping 28 percentage points; and is larger than that of any college enrollment. This means that MSS both increased any college-going and diverted some students away from other sectors. This next row down, showing a negative 10 percentage point impact on four-year enrollment, confirms this and shows that MSS diverted students mostly from bachelor's granting schools. However, the immediate "democratization" effect (boosting immediate college access) is considerably larger than the diversion effect. When, in the second column, we expand the enrollment window to the first year following graduation, the gain in community college attendance grows by another four percentage points, while the negative impact on four-year attendance also expands slightly.[20]

We begin to address durable impacts and degree completion by proceeding, in the third column, to three-year outcomes. By this point, nearly half of Tamaqua graduates had attended a community college compared with 14.2 percent of comparison students,

[20] These numbers no longer add up precisely because outcomes, e.g., "any community college attendance within (time period)", are not mutually exclusive. A student who first enrolls in a four-year college and then transfers to LCCC ("reverse transfer") will contribute to both any four-year and any community college enrollment.

a difference of over 35 percentage points. That the rate of four-year enrollment is nearly identical (shown by the near-zero treatment effect) suggests a considerable rate of transfer among Tamaqua graduates within three years. After three years, 12 percent of Tamaqua graduates and 6 percent of comparison graduates had earned some form of credential; in both groups this is mostly associate degrees. This represents a doubling of the three-year degree attainment rate. This is achieved entirely through associate's attainment and is thus a function of Tamaqua graduates' much higher rate of attendance at community colleges, where degrees are possible within three years. In fact, the completion rate *among students who enrolled in community college* is considerably higher for comparison students (6.4/14.2=45.5 percent) than for Tamaqua students (12.2/49.5=24.6 percent).[21] We speculate that MSS encourages both more initial community college enrollment leading to transfer without enroute associate degree and more "experimental" enrollment leading to noncompletion.

[21] After three years, 12.2 percent of Tamaqua student had earned an associate degree, compared with just 6.4 of comparison students. But to earn an associate degree, one typically must enroll at community college. 49.5 percent of Tamaqua graduates did so, compared with just 14.2 percent of comparison students. Dividing associate degree rates by community college attendance rates (e.g., for Tamaqua, 12.2/49.5) gives us the probability of completing an associate degree given community college enrollment. This is much higher for comparison students (6.4/14.2=45.5 percent) than for Tamaqua students (12.2/49.5=24.6 percent).

Table 5: Effects of MSS on Postsecondary Outcomes

Post-Secondary Outcomes	Immediate	One-year	Three-years	Four-years	Six-years	Eight-years
Any college	0.17***	0.16***	0.16***	0.13***	0.13***	0.19***
Community college	0.28***	0.32***	0.35***	0.35***	0.35***	0.40***
Four-year college	-0.10***	-0.11***	-0.01	-0.07	-0.06	-0.02
Any degree			0.06***	0.03	0.01	0.073
Associate			0.06***	0.09**	0.09**	0.12**
Bachelor's				-0.04	-0.05	-0.017
Graduate degree					-0.004	-0.01
Time to Outcomes	**Immediate**	**One-year**	**Three-years**	**Four years**	**Six-years**	**Eight-years**
First enrollment			-0.16***			
First CC enrollment			-0.66***			
First four-year enrollment			0.44***			
First degree			-0.22**			
First certificate			0.509			
First associate			-0.31**			
First bachelor's			0.14			

Note: Quantities reflect percentage point differences between Tamaqua and synthetic comparison-group graduates in shares of graduates exhibiting each outcome. Columns provide different time-windows after graduation for achieving these outcomes. Time-to-enrollment outcomes are measured in years, and therefore numbers reflect differences in the number of years to achieve outcomes between Tamaqua and matched comparison students. Source: PDE; *p<0.05, **p<0.01, **p<0.001. Asterisks reflect statistical significance.

Four years after twelfth grade[22] (fourth column), on-time bachelor's completion is possible. Our point estimate for the impact of MSS on bachelor's completion is -4 percentage points but is nonsignificant. That the point estimate for four-year attendance is also negative (though nonsignificant) suggests that diversion is not wholly attenuated by transfer. However, MSS's expansion of access is also durable; Tamaqua residents

[22] Results will not be strictly compatible across years as we must make use of different sets of cohorts for these analyses; see Appendix 1.4.

remain 13 percentage points more likely to have attended any college and nine percentage points more likely to have earned an associate degree. The point estimate for any degree attained is nonsignificant but consistent with our other results suggesting access expansion. Since many individuals take more than four years to complete a bachelor's degree, we investigate both six- and eight-year outcomes (last two columns). Doing so shows the durability of outcome differences already seen at four years. There are no large shifts in point estimates for attendance or completion measures.

In the second panel of Table 5, we estimate differences in time-to-enrollment and time-to-degree among those who ever enrolled or attained a degree in the category in question.[23] These results are congruent with our attendance and completion estimates above. Tamaqua students proceed more rapidly to college (by about 0.16 years, or 2 months, on average) and to community college (by about 8 months) than do comparison students. They earn any degree and an associate degree more quickly (by 2.6 and 3.8 months respectively). Tamaqua graduates take longer to enroll at a four-year college (by 5.3 months). They also take longer to earn certificates (by six months, nonsignificant) and bachelor's degrees (1.7 months, nonsignificant).

The resulting picture of program effects for the Morgan Success Scholarship is consistent with prior research. By providing a time-limited opportunity for tuition-free community college, the Morgan Success Scholarship induces large increases in postsecondary attendance and speeds up college attendance among those who ever attend. It also boosts degree attainment and hastens degree completion among completers. These are "democratization" effects. MSS's restriction to community college also has "diversion" effects. Increases in attendance and attainment occur entirely within the community college sector, and MSS initially diverts some students away from four-year colleges to the community college sector.

What remains insufficiently clear is the permanence of this diversion effect. On the one hand, every point estimate of program effects on four-year attendance and attainment is negative. On the other hand, these estimates, after the first year, are small (always less than 10 percentage points) and statistically nonsignificant at $p<0.05$.[24] The evidence thus suggests a small, highly variable diversion effect. *Some* students are probably permanently diverted away from the four-year sector by MSS. But this probably doesn't amount to a large share of Tamaqua graduates in any given year.

Our analysis suggests that MSS is a very well-established, stable, highly impactful program. It should be considered a model for "place-based" community college Promise scholarships.

[23] We measure, e.g., differences in average time to bachelor's degree among those who ever earned a bachelor's degree, and time to community college enrollment among those who ever enrolled at a community college.

[24] One should be wary of overinterpreting the importance of statistical non-significance. Significance is drive by both effect sizes and sample sizes, and the latter are small here because Tamaqua is small.

Community College of Philadelphia's 50th Anniversary Promise/Octavius Catto Scholarships

The Community College of Philadelphia (CCP)[25] hosts two Promise programs: the 50th Anniversary Scholars Program and the Octavius Catto Promise Scholarship. We will discuss each in turn.

CCP celebrated its 50th institutional birthday in 2015 by launching the 50th Anniversary Scholars Program. Available to that year's graduating class, this program is a last-dollar tuition and fee guarantee usable only at CCP for up to six semesters. Eligibility is restricted as follows:

- **Residence:** Reside in Philadelphia *and* graduate from a Philadelphia high school (does not specify public).
- **Temporal:** Enroll in college immediately following high school graduation; funding available for three years (if full-time) or six years (if part-time) after first enrollment.
- **Prior college experience:** First-time student (de facto given temporal restriction),
- **Income**: Pell grant eligibility.
- **Merit:** High school graduation (excludes GED completers); place into college-level math and English at CCP (meet high school GPA thresholds or exceed threshold scores on ACCUPLACER).
- **Citizenship:** U.S. Citizens and Legal Permanent Residents only.
- **Procedural:** File FAFSA; meet FAFSA deadline; enroll in degree program.
- **Enrollment intensity:** Minimum six credits for initial eligibility.
- **Continuing eligibility:** minimum 6 credit enrollment; continuous enrollment; maintain 2.5 cumulative GPA and meet SAP; complete 12 credits (part-time) or 24 credits (full-time) in 1st year; meet with assigned counselor; file FAFSA; remain Pell-eligible; maintain Philadelphia residency.

These eligibility rules are consistent with cost-minimization. Roughly 70 percent of CCP students receive federal Pell grants each year, and its in-district tuition and fees (around $4,500 per year) are well below the maximum Pell grant ($7,395 for 2023-24). Since CCP restricts eligibility to in-district, Pell-eligible students, most qualifiers' tuition, and fees will be fully or mostly covered by other need-based aid. Program costs for such students will be close to $0. Restriction to US Citizens and legal residents denies funding to undocumented students, who are ineligible for federal or state grants. The requirement to test into college-level math and English excludes students needing remedial courses, which Pell grants often will not cover.

CCP's 50th Anniversary scholarship likely funds a very small number of students per year at minimal cost to CCP. Most CCP students are Pell-eligible, and a fair number likely meet the academic requirements. However, given the correlation of income and academic achievement, far fewer students will meet *both* income and merit

[25] Despite numerous inquiries, and despite promises to do so, CCP staff would not complete interviews with us. We therefore must rely on public sources of information.

requirements. Of these, undocumented students (who are expensive) are excluded, and most of the remainder will have nearly all their tuition covered by need-based aid. Continuing eligibility requirements—particularly continuous enrollment—are likely to further reduce the number of funded qualifiers in later semesters.[26]

CCP's desire to control spending is understandable. The college seems to be funding the program through private donations, and to have announced it prior to beginning fundraising and only five months before the first eligible cohort's arrival. Given the uncertainty of raising this funding, and probable lack of cash reserves, limiting financial exposure makes sense.

The local press gave CCP laudatory coverage of its program. The Philadelphia Sun (2015), a newspaper targeting an African American readership, quoted CCP's president in placing the new program in the context of the Civil Rights Movement. The scholarship is, he says, "expanding opportunity in a meaningful way for a new generation of Philadelphians." The Philadelphia Tribune quoted the president saying that the program would boost the local economy by raising the number of graduates (Shamlin 2016). CCP received favorable coverage on public radio (Benshoff 2015) and in the Philadelphia Inquirer (Avelund 2019), as well as some national press coverage (Johnson Hess 2017).

In the local press, CCP provided questionable estimates of program impact. The Tribune quoted CCP's president as attributing an 18 percent increase in first-year students to the program and claimed that the program "reached about 200 students" (the meaning of "reaching" is unclear). The Sun said that the college projected costs at over $800,000 for the first three years, but the Tribute reported that just $70,000 was to be provided to the first cohort's scholars. According to the Tribune, CCP raised over $270,000 for the scholarship in its first year, including $100,000 from a local African American church (according to Philadelphia Magazine (n.d.), and the Sun reported plans to raise a $10 million endowment for the scholarship.

It is also likely that many more students think they are receiving the scholarship than are truly funded. In a promotional video made by CCP, two of the three featured students say that the scholarship is, in the words of one of them, "helping me by paying for books." The 50th Anniversary Scholars Program doesn't cover books, but it is common for community colleges to automatically apply need-based grants left over after tuition and fees to books. It is likely that these students are not receiving a dime from the 50th Anniversary Scholars program, and that their tuition and fees were covered by Pell grants. Similarly, the Philadelphia Tribune quoted a student who attributed his college-going to the program's ability to save him "thousands in tuition".

[26] The program initially limited eligibility to full-time students (Philadelphia Sun 2015; Shamlin 2016). This expansion probably increased the number of recipients. Part-time students are, however, cheaper on a per-semester basis.

In 2021, a new scholarship for CCP students was launched, this time with funding from the City of Philadelphia. The Octavius Catto Scholarship is more generous than the 50th Anniversary Promise Scholars program. In addition to covering tuition and fees, it provides a $1,500 per-semester stipend for books, supplies and living expenses, and it is available for up to three years. Catto is also less restrictive than the earlier program in all ways but enrollment intensity.

Eligibility for the Catto Scholarship is restricted by:

- **Residence:** Residence in Philadelphia for 12 months prior to application.
- **Temporal:** No restrictions.
- **Prior college experience:** First-time student OR transfer student with 30 or fewer credits OR former CCP student in good academic standing (i.e., excludes current students).
- **Need**: EFC $8,000 or less.[27]
- **Merit:** Qualify for at most one level below "college ready" in math and English.
- **Citizenship:** No restrictions.
- **Procedural:** File FAFSA (provision made for undocumented).
- **Enrollment intensity:** at least 12 credits.
- **Continuing eligibility:** minimum 12 credits enrollment; continuous enrollment; maintain 2.0 cumulative GPA; complete 20 credits in first year and 42 by end of second; file FAFSA; maintain Philadelphia residency.

The program was initially restricted to graduates of Philadelphia high schools (this was eliminated), and to first-time college students. These requirements were relaxed for the 2022 academic year.

Catto is funded by the City of Philadelphia, which promised to invest more than $42 million dollars in the program – over and above the city's existing support for CCP – over its first five years, funding over 4,000 students. The Octavius Catto scholarship is named after a Philadelphia-based African American minister, educator, and anti-slavery and civil rights activist. It is explicitly characterized as an antipoverty program and part of Mayor Jim Kenney's anti-poverty agenda. The college's website says that it, "will address obstacles like tuition and fees as well as burdens that hit many Philadelphians—especially those living in poverty—particularly hard, including costs associated with food, transportation and books."

The program has received glowing coverage in local press, including in the Philadelphia Inquirer, local CBS and Fox affiliates, and the Philadelphia Business Journal. "For many students, this scholarship was a lifeline," reported the local CBS affiliate (Shuler 2023). He continued, without which, "they may not have been able tuition or

[27] Since the EFC threshold for Pell eligibility is usually around $6,500, this is less restrictive than the prior program.

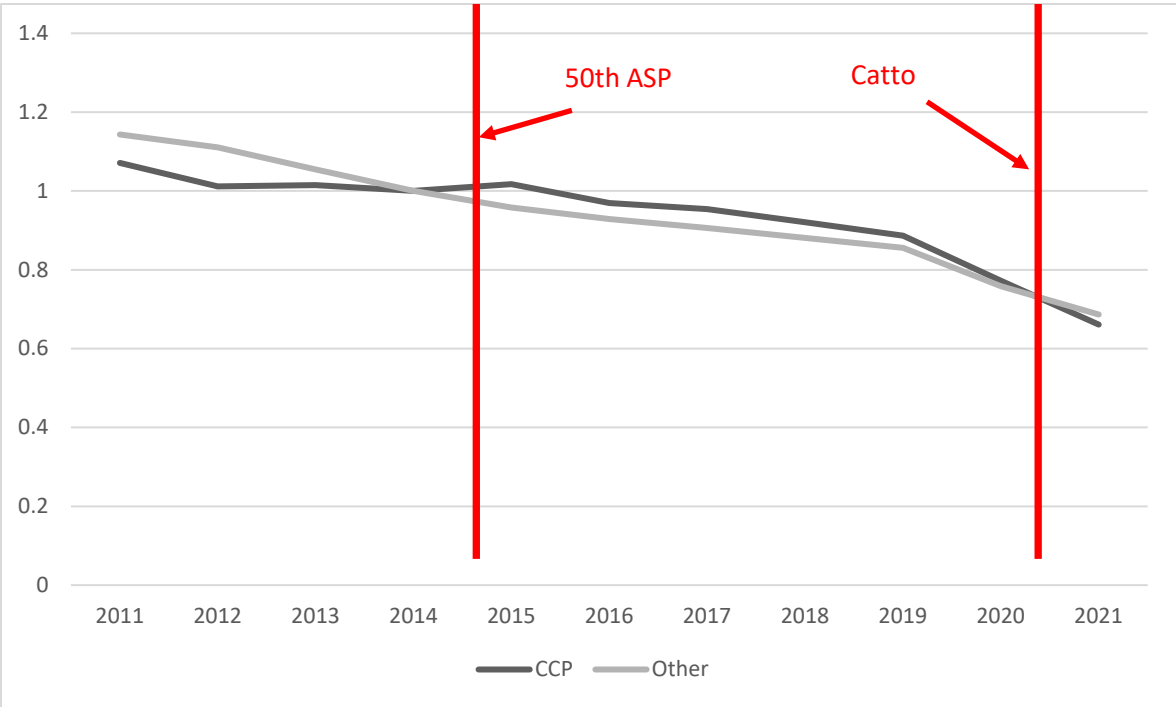
other expenses." Articles and news spots feature students discussing the program's impact. One reported that:

> "It lifted off a huge amount of financial pressure from me and my family... It is one of the best things that has ever happened and could ever happen. I don't think I'll ever get tired of talking about it."

What impact(s) have these programs had? Since it is so new, we can produce only descriptive evidence (using IPEDS) about impacts of Catto, but we'll be able to produce more robust estimates for the 50th Anniversary Scholars program.

In Figure 3 we chart enrollment at CCP and at all other Pennsylvania community colleges over the period in which the two programs were introduced. Since enrollments at other colleges collectively dwarf those at CCP, we divide yearly enrollments by enrollment in 2014 to put them on the same scale. Since only CCP had Promise programs introduced over this period, we expect trend-lines to sharply jump for CCP but not for the other colleges at program onsets. Visual inspection suggests the possibility of a small increase after the introduction of the 50th Anniversary Scholars program, but amazingly no impact from the Catto Scholarship. The increase for the earlier program was slight – 166 students, or 1.7%, far lower than CCP's public statements suggested. But it was an increase, while the rest of the system lost 2,745 full-time enrolled students—a 4.2% decline. However, enrollment also increased at LCCC (+0.5%) and Butler County Community College (+0.6%). Therefore, it isn't clear that the enrollment increase was due to the scholarship.

Figure 3: Trends in Full-Time Equivalent Enrollment at CCP and All Other PA Community Colleges, 2011-2021

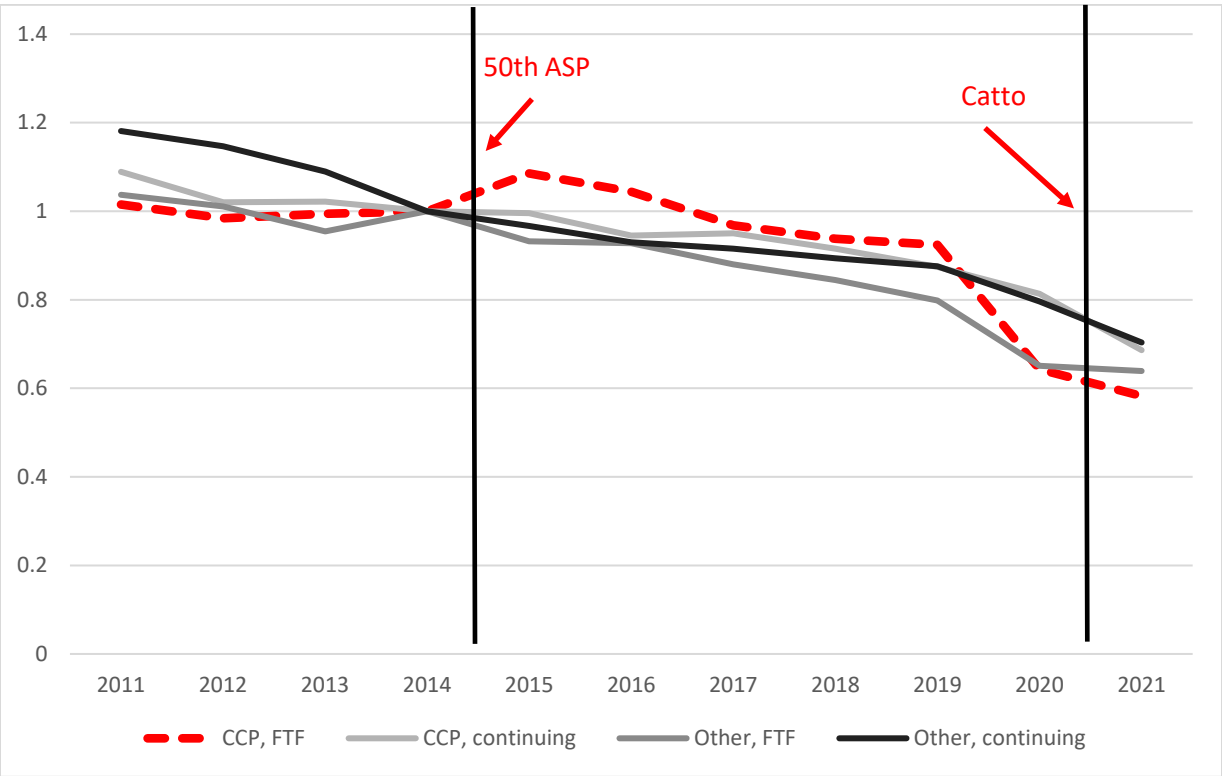


Note: The X axis presents years. The Y axis measures yearly enrollment as a share of 2014 enrollment. This is necessary to put CCP's enrollment on the same scale as the enrollment of the rest of PA's community college system. (CCP=Community College of Philadelphia; 50th ASP=50th Anniversary Scholars Program; Catto=Octavius Catto Scholarship). Source: IPEDS.

In Figure 4, we examine this matter in more detail. The 50th Anniversary Scholars program (as well as Catto in its first year) was available only to new CCP first-time freshmen. Therefore, its introduction should result in enrollment increases only among first-year students, with continuing students unaffected until the following year (if at all). At other colleges, enrollment should not be affected among first-time or continuing students. Between 2014 and 2015, First-year enrollments increased at CCP by 8.5 percent while continuing enrollment fell by 6.7 percent. Enrollment declined at other PA community colleges for FY and continuing students by 0.4 percent and 3.3 percent, respectively. This seems to signal a small but clear enrollment effect. But consider that FY enrollment also increased by 14 percent at Reading Area Community College by 14 percent in the same year. Looking at the whole window (2011 to 2021) of year-to-year enrollment changes gives us 139 institution-years. While most show year-on-year percentage declines in enrollment, we also see increases of close to or larger than 8.5 percent in 18 other cases (12 percent of the total). CCP's FY enrollment also increased in two other years (2013 and 2014), though these increases were both around 1 percent. We can't rule out that 8.5 percent FY enrollment gain at CCP was attributable to

something other than the Promise program and would have occurred in its absence. Again, the impact of Catto is clearly nonexistent.

Figure 4: Trends in Fall Full-Time Equivalent Enrollment of First Year and Continuing Students At CCP and All Other PA Community Colleges, 2011-2021



Note: The X axis presents years. The Y axis measures yearly enrollment as a share of 2014 enrollment. This is necessary to put CCP's enrollment on the same scale as the enrollment of the rest of PA's community college system. (CCP=Community College of Philadelphia; 50th ASP=50th Anniversary Scholars Program; Catto=Octavius Catto Scholarship; FTF=first-time freshmen). Source: IPEDS.

We can also examine whether the 50th Anniversary program increased college enrollment among eligible students using PDE data (details for this analysis' methodology appear in Appendix 3). Results from this analysis are presented in Table 6. Our main estimates leverage all students in Pennsylvania outside of Philadelphia as a "control" group.

In the first cell of the first row, our estimate suggests that the introduction of the 50th Anniversary Scholars program had no impact on college enrollment. That is, enrollment among Philadelphia students didn't increase differently from 2014 to 2015 than did enrollment in the rest of Pennsylvania. The point estimate for the impact of the program on community college enrollment (first column, second row) is positive but tiny and nonsignificant (about 0.3 percentage points). Moving onward, we find only small and mostly nonsignificant estimates for this sample on higher education outcomes within one

year. The only estimate that reaches statistical significance at $p<0.05$ is a negative estimate for four-year enrollment. Without a corresponding increase in two-year enrollment, we can't interpret this as a "diversion" effect. Lacking a good explanation, we suspect this has nothing to do with the program.[28]

Table 6: Effects of 50th Anniversary Scholars Program on College Attendance

Enrollment	All students	All graduates	Low-income, high-minoritized	Propensity-matched
Immediate enrollment	-0.001	0.01**	0.0061	0.03***
Immediate community college	0.003	0.013	0.0077	0.007
Immediate four-year	-0.003	-0.002	0.0001	0.02**
Enroll within one year	-0.019	-0.007	-0.0051	0.008
Enroll CC within one year	-0.02***	-0.004	0.0002	0.007
Enroll 4y within one year	-0.008	-0.008	-0.0051	0.011

Note: Numbers reflect percentage changes in enrollment attributable to the program. (.03=3 percent change). Source: PDE; *p<0.05, **p<0.01, **p<0.001. Asterisks denote statistical significance.

For robustness, we re-estimated program effects using several additional comparison groups (columns 2 through 4), but none of these analyses produced consistent, sizeable, and well-estimated effects on any outcome. We conclude that the 50th Anniversary Scholars program had negligible effects on the college-going behavior of Philadelphia students.

Lacking good qualitative data, we can do no better than speculate as to why CCP's programs did so little. Our suspicion is that the programs were not effectively communicated to students through the public high schools. The first author's prior research on a similar program suggested that students learn about the program primarily from high school teachers and counselors, as well as from the college's recruiters. If the college does not conduct a coordinated, pervasive campaign fully tapping these institutional agents' connections to students, such programs are unlikely to shift behavior.

Discussion and Conclusions

In this report, we provided an up-to-date introduction to college Promise programs. In this final section we review what came previously and offer policy recommendations, with special emphasis on rural Pennsylvania.

[28] Since a *p*-value of 0.05 corresponds to a 5% chance of finding a non-zero effect by chance, we always have the possibility of falsely attributing to the treatment what is in fact the result of random processes.

Key Takeaways

First, we provided an overview of what Promise programs "are", and we think that this is a considerable improvement over the existing literature. Because Promise programs have been created by scores of independent actors, they are exceedingly varied. Nonetheless, there is enough of a common understanding of what they are that people are able to talk about them. We listed seven characteristics that, taken individually, characterize most Promise programs. To review, they are postsecondary grant programs which guarantee at least tuition coverage for all eligible students, are usable by first-time college students and applicable to nonselective colleges.

The key logic underlying them is simplicity; "Promise" programs are as much about eliminating ambiguity and uncertainty about college pricing as they are about reducing college costs. In this, they reflect a growing understanding that the complexity of college pricing is itself an obstacle to participation. Ideally, a Promise program is as universal as possible—which requires applicability to nonselective institutions—so that they advance the notion that everyone can afford college.

Our review of the extant literature summarized the various impacts that Promise programs can, and do, have. Promise programs impact students' educational behavior most directly by reducing costs or appearing to do so. Their strongest, most consistent, best-established impacts are on *whether* students go to college and *where* they attend. Promise programs can 1) increase college-going, and 2) shift students to the highest-value eligible institutions. If programs fund both four- and two-year colleges, they shift enrollment to the former. If they fund only two-year colleges, they shift to these. Two other impacts have been consistently found, but for more specific classes of programs. These are 3) *single-institution* and *state* programs that can shift enrollment from ineligible to eligible colleges (a direct corollary of 2); and 4) generous *local* programs can increase enrollment at targeted K-12 schools. These impacts are larger to the extent that programs are a) generous (including covering four-year tuition), b) simple, and c) well-communicated to target populations.

We think that there are clear implications of these findings for rural Pennsylvania. First, we do not find strong evidence that Promise programs are effective and efficient development tools. There is no reason to think that a statewide Promise program would counteract rural depopulation or spur job creation in these areas. There is good evidence that local programs can boost K-12 enrollments in targeted districts, but such a program must be exceedingly generous to have noticeable effect. To date, only privately funded programs (e.g., the Kalamazoo Promise and El Dorado Promise) have been sufficiently generous and locally targeted.

Michigan's Promise Zones policy is relevant in this regard. Following the Kalamazoo Promise, Michigan passed legislation to create "Promise Zones" in specified economically struggling communities. In such zones, public authorities would be created that could capture state education taxes and use them to fund a Promise-style program

for residents. A total of 13 such zones, were eventually established in cities like Detroit, Lansing, and Grand Rapids, but also in rural areas like Baldwin, Newaygo, and Benton Harbor. But the public funds granted were not sufficient to create programs anywhere near as generous as Kalamazoo's. Except for Detroit's program (where funding has been buttressed by the Chamber of Commerce), Michigan's Promise Zones only fund local community college attendance. Accordingly, research has found little impact from these programs on the surrounding communities (Billings 2020).

A statewide Promise program is likely to have two beneficial impacts on rural areas and residents. First, it is likely to (slowly) increase educational attainment of eligible cohorts of students about what would otherwise have been seen. Whether this impacts the educational attainment of local workforces is dependent on where graduates choose to settle. Second, a well-designed Promise program is likely to increase enrollments at eligible colleges above what would have been seen otherwise. Both impacts will be larger if the program funds attendance at four-year public colleges as well as at community colleges. We conducted four empirical studies:

In the first, fleshed out the four dimensions of variance previously established by scholars—generosity, applicability, eligibility, and funding/operation—providing a much more detailed map of how each set of considerations can manifest. The proliferation of state and local grant programs in recent decades (i.e., the "Promise" movement) has explored this potential space empirically to a very great extent, providing in effect a large set of policy experiments. Using the variables, we created to study existing programs, several lessons emerge. First, Promise programs may have begun in the private sector, but they have largely migrated to the public sector, with most directed by states or colleges themselves. Second, they seek to maximize effectiveness in the context of restricted funding, controlling costs through using last-dollar awards, restricting tuition-guarantees to the community college sector, and restricting eligibility to fewer and cheaper students. At the extreme, Promise programs become virtually all message and very little true cost-reduction: the last-dollar community college tuition guarantee restricted to poor students (whose tuition is already met by federal grants) will fund very few people.

In our second study, we reviewed evidence from a survey or programs we developed. Program staff portrayed their programs as advancing egalitarian goals: reducing racial disparities, reducing college costs, and boosting local educational attainment. They mostly portrayed program features as efficient and connected to central goals. The exception was the last-dollar design, which they described as introduced to control costs and because other programs do it. They also tended to describe programs as well-funded, delivering large awards to lots of students, well-received by the public, and securely established.

Third, we estimated the effects of Promise programs on eligible colleges. We restricted our investigation to programs usable at one or a handful of colleges to ensure the concentration of effects necessary to be observable. We found that Promise

programs increase enrollment, particularly among first-year students at community colleges. We find no strong evidence of Promise program effects on retention rates.

Fourth, we studied local last-dollar community college programs in Pennsylvania. Our focus was on two of them: Tamaqua's Morgan Success Scholarship and the Community College of Philadelphia's 50th Anniversary Scholars Program (with brief discussion of the more recent Catto Scholarship). Because of cooperation by informants in the former case but not in the latter, we could provide more detail regarding MSS's origins. By all accounts, MSS is a very well-established program, deeply institutionalized within the local community, and we found very strong evidence that it profoundly influences eligible students' college-going behavior. It increases college-going overall and directs much more enrollment immediately into the community college sector. The concern here is that the program might inadvertently reduce overall bachelor's attainment. The evidence on this score isn't clear-cut; it suggests that the program mostly *delays* four-year enrollment and completion, but that it probably also slightly reduces it. CCP's programs, by contrast, seem to have minimal to no effect on enrollment at the college or on the college-going behavior of eligible students. We cannot say why this is with confidence, but we suspect that the programs have not been effectively communicated to their potential targets.

Policy Considerations

We assume that policymakers wish to increase the educational attainment of the state population in a manner that efficiently uses scarce tax revenue. That is, the goal is to effectively and efficiently encourage people to invest more of their time and effort in gaining education. Research on Promise programs has lessons for those who share this goal.

People respond not to economic incentives, but to *information*, including that regarding economic incentives. If a scholarship is created and nobody hears of it, or if it is too complicated to understand, it will not influence behavior. Therefore, policymakers wishing to increase college-going should reduce not just monetary costs, but also cognitive costs involved in comprehending these monetary costs. This is a simple lesson, but one too often overlooked.

1. To change behavior, a program should be easy to understand, like a rule of thumb. Ideally, its substance should be reducible to a few if-then statements. Additional complications will reduce efficacy (Rosinger et al. 2021). Providing many options leads people not to optimize their outcomes but to choose the (often non-optimal) default, a phenomenon cognitive scientists call choice overload (Chernev et al. 2015).

One corollary of this is that procedural requirements reduce program reach, so these should be minimized. Even requiring a program application or FAFSA completion will reduce uptake. Community service requirements reduce uptake, and mandatory advising reduces uptake. The point is not that we must eliminate all procedural requirements, but

that they should be adopted only when necessary. Unless the positive effect of a procedural requirement (e.g., requiring advising) on compliers is large enough to exceed the depressive impact of additional complexity and effort, its net effect will be to reduce efficacy.

Another corollary is that there is a tradeoff between targeting and uptake. Targeting a program makes sense for conserving scarce dollars. But targeting is accomplished through adding program rules, and each additional rule increases complexity and reduces uptake among the *targeted* population. The most effective, though not necessarily the most efficient, programs are simple and universal.

The conclusion here is that *mass-based scholarships should be as simple as possible.*

2. To change behavior, eliminate uncertainty. Another lesson of cognitive science research is that people are averse to ambiguity (Machina and Siniscalchi 2014). College pricing is highly ambiguous. Listed tuition often diverges radically and unpredictably from out-of-pocket costs. To the extent that people know this (and most don't), this likely reduces college-going in and of itself.

For this reason, flat dollar-amount scholarships will have less impact on behavior than tuition guarantees, even if the flat amount is larger than the money provided through the guarantee. If you give a student a $3,000 a semester scholarship, it is likely still unclear how much college will cost even if $3,000 will cover their tuition. It is more impactful to tell a student that tuition will be free. It is even better to tell them that tuition will be set at $500, as does the North Carolina Promise.

The lesson is that *mass-based scholarships should make clear guarantees to students***.**

3. Policymakers should resist the urge to create a symbolic tuition guarantee. This is ethical, rather than practical advice. But it is rooted in this research. Since real cost-reduction is less important than apparent cost reduction, a policymaker may be tempted to leverage the disjuncture between knowledge and reality to create a maximally effective but minimally costly program. That would be a tremendous ethical failure. First, there is only so much wiggle-room provided by this disjuncture. When it comes to college cost reduction, symbolic awards are probably only possible for low-income students at community colleges. Otherwise, real costs tend to make themselves known through the appearance of bills. Getting more low-income students to take advantage of existing Pell grants to go to community college is fine. But it would be best to make this happen without deliberately misleading low-income students and families.

The takeaway is that *a program should be as transparent and forthright as possible*.

4. Money is still important. What people *know* is that "college is expensive" and that "community college is cheaper". They also know that a bachelor's degree pays off better than a community college degree. Scholarships applicable to four-year colleges will have a larger impact on behavior than those restricted to community colleges.

Community colleges are not an equivalent route to a bachelor's degree, and students are aware of this. But four-year college tuition is more expensive.

The question is whether policymakers want to really reduce college costs or whether they want to appear to do so. If the former, *the program should facilitate two- and four-year college-going, at least at public colleges.*

5. Finally, be realistic about what the program can achieve. Education is strongly negatively associated with being in poverty, and college graduates are particularly unlikely to be poor. Still, a mass-based college scholarship isn't an efficient or effective anti-poverty policy. In the long run, it may have an impact, but direct transfers to families are more effective. Longer-term, investments in *early childhood education* are much more efficient and effective.

A large, mass-based scholarship will increase college-going in the applicable sectors, and its effects will be larger the more generous the program is and the more it clarifies college costs. It will also have larger effects if it is well communicated. We think that *policymakers should be confident that a well-designed, generous mass-scholarship will have measurable impacts.*

But impacts are nearly always smaller than their most optimistic proponents believe they will be. We want to enter a word of caution here. Money matters when it comes to educational outcomes, but it is not the most important influence. Prior educational experiences and the capacities developed thereby are much more impactful. By 12th grade, a student has internalized an academic identity, including academic self-efficacy. Some students have come to believe that they can "do school". Others believe this much less so. These other students may gravitate towards other arenas of potential valorization no matter how cheap college becomes. And there are many other influences on the college-going decision beyond apparent price.

A mass-based scholarship program may be impactful, and it may be the right thing to do (we believe so, but we acknowledge that many disagree). But it won't rapidly produce educational equality. Several European countries provide college to all citizens free of charge or nearly so, and still have large socioeconomic disparities in college enrollment and completion. Still, there is reason to believe that a generous, well-designed, well-communicated scholarship program can raise college-going rates and increase enrollment in our public colleges.

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Appendix 1: Analysis of Proposed Delayed Payment Plan

Our familiarity with the literature on financial aid leads us to conclude that a proposed Delayed Payment Plan program for Pennsylvania would do little to benefit the Commonwealth or Pennsylvanians, and specifically would make little progress towards the following identified goals: increasing educational attainment and college enrollment, reducing student debt, filling positions requiring specific skills, or increasing the share of the workforce with postsecondary education. We clarify our claim with four points.

First, federal Stafford loans are already available to Pennsylvanians who attend community college. These are zero-interest loans until six months after the end of college attendance. Subsequently, they do charge interest, though the rate is fixed and set lower than private market rates. Borrowers may enter income-based repayment plans (there are four in existence) which limit monthly payment to a percentage of discretionary income (usually 10 percent) and forgive remaining balances after a given period (usually 20 years). Borrowers may apply for deferment to pause loan payment, during which (for subsidized loans) interest usually does not accrue. In making this point, we are not arguing that Pennsylvanians already have access to everything they need to make college affordable. We are suggesting that the specific proposed plan is not a considerable improvement upon the status quo. The new plan would only reduce the cost to students and families by the total *in interest* that an eligible community college borrower would pay on a subsidized loan over the first ten-year period, given use of income-based repayment and of deferment when necessary. The plan would be improved if the proposed loans could be used to attend public four-year colleges, if payments were income-based, and if loans were forgiven after a given number of years or payments.

Second, we suspect that few Pennsylvanians would receive funds from this program, and even fewer with incomes at or below the federal median. The proposed program would only cover tuition at state community colleges, and in-state community college tuition in Pennsylvania is already less than a full Pell grant. Lower-income students who complete FAFSA already have all or much of their tuition covered by existing federal and state need-based grants. For middle-income students, unmet costs will be larger but still often covered partially by existing aid. Therefore, a no-interest loan that can only be used to cover tuition would find few eligible students from lower-income or even middle-income households. It would deliver savings mostly to students from households with incomes above the median, who rarely attend community college and who can afford to pay their tuition. The plan would be improved if the loan covered the full cost of community college attendance,[29] if it could cover tuition at four-year public colleges,

[29] For instance, at Harrisburg Area Community College, in-district tuition for 30 credits was $5,737. The maximum Pell grant was $6,895. Total estimated expenses to attend HACC (including housing and living expenses) was $13,665 for those living with family and $22,022 for those living independently.

and if it was made available to undocumented students, who are ineligible for federal and state aid, including loans.

Third, while loans facilitate college-going, they do so much less effectively than grants (Dynarski and Scott-Clayton 2013). This is in part because many individuals, particularly those from lower- and middle-income households, are debt averse and therefore loan averse (Boatman et al. 2017). There is no research suggesting that changes in loan interest rates are sufficient to overcome this aversion. We therefore suspect that this plan would do little to change college-going behavior. An income-targeted zero-tuition policy would be more effective, and even more were it applicable to both four- and two-year colleges.

Fourth, a no-interest loan plan would not appreciably simplify calculations around college affordability. Under the proposed plan, initial costs to students (i.e., tuition, fees and other expenses, minus grant aid) would be unaffected. This cost would remain ambiguous, and a student would remain just as likely to overestimate it. Moreover, the program might add another layer of procedure for the student to negotiate. If the program was accessed in any way other than automatically through FAFSA, uptake would be limited. If it were managed other than through existing loan services, this would add cognitive labor during and after enrollment and increase the likelihood of default simply through error.

We conclude that a no-interest community college loan would do little to increase college enrollment, nor would it reduce college costs for more than a handful of Pennsylvanians.

Appendix 2: Data Sources and Measures

2.1. Promise Program Database

The number of “College Promise” programs in the United States depends on one’s definition of “Promise program”, and there is no single definitive registry or list of these programs. To date three lists of these programs have been compiled by 1) the W.E. Upjohn Institute, 2) Pennsylvania Alliance for Higher Education and Democracy (PennAHEAD, at the University of Pennsylvania), and 3) College Promise (a nonprofit led by former Obama Undersecretary of Education Martha Kanter). College Promise and Upjohn revise their lists; PennAHEAD doesn’t appear to have altered their list since first gathering it in 2018. We obtained and merged databases from Upjohn and PennAHEAD and supplemented them with programs from College Promise’s catalogue. We also added a list of Promise programs in California maintained by WestEd (n.d.). We located additional programs through web searches (using “promise program” and “free college” together with names of each state).

We retained programs which met certain criteria. First, the program had to have a working website which provided sufficient information about the program’s generosity, applicability, and eligibility rules. We supplemented website data with other online

information (e.g., newspaper coverage, legislation) where necessary and possible. Second, we included only programs which met certain criteria. These criteria accord well, but not precisely, with the seven common characteristics of Promise programs in the main body of the report.

- The program had to provide a monetary grant award (or tuition/fee waiver). (Consistent with characteristic 1 above).
- The program had to be a primary award (not a supplement to an existing grant). (Consistent with characteristic 2 above).
- The program could not be a competitive grant issued to a very small number of students (i.e., a traditional private scholarship). (In contrast to characteristic 3 above, we included funds-limited programs and competitive grants with over 100 grantees).
- If the program had a maximum award, it had to be at least $1,000. (In contrast with characteristic 4, we do not limit tuition guarantees).
- The program had to be usable at some public college (i.e., no single-institution private college programs). (In contrast with characteristic 5, we include programs usable only at selective public four-year colleges).

We relaxed characteristics 6 and 7 to include some broad based "completion grants" and adult scholarships restricted to students previously enrolled in college, as well as programs limited to certain fields of study (e.g., state, and local workforce grants).

This produced a list of 309 local and 62 state programs. We gathered extensive information about program features – generosity, applicability, and eligibility rules, as well as governance and funding. When specific characteristics weren't explicitly addressed, we established category defaults (e.g., a community college program would be coded as duration=2 years if other information was not provided). This is necessary because programs do not discuss eligibility requirements they don't use (e.g., programs don't say that they don't condition eligibility on high school attendance rates).

2.2. Surveying Local Programs

We created a survey to be administered through Qualtrics that was sent to all the Promise programs we identified through the process described in 2.1 above. The survey inquired into matters not answerable through online material: reasons for creating programs, funding sources and amounts, rationales for decisions regarding eligibility and generosity rules, and expected program future. We carried out three rounds of surveying, though given our iterative creation of the program database, not all programs were contacted three times. We emailed surveys to listed contact addresses for programs, for financial aid departments, or to specific financial aid officers. When possible, we targeted 3-4 email addresses at each program. We received sufficiently complete responses from 50 programs, for a response rate of 16 percent.

Among contacted programs, response was not random relative to program characteristics we were interested in. Therefore, unadjusted survey estimates are biased. To reduce bias, we modeled survey response using our full list of 309 local programs and used the inverse of the predicted probability of response as a survey weight. Doing so assigns larger weights to responding programs like those that did not respond, and smaller weights to programs dissimilar to nonresponding programs. All quantities reported in Results section 2 are weighted in this fashion.

2.3. Data on Colleges

IPEDS is a publicly available warehouse of data on American colleges. Every year, every higher educational organization eligible for Title IV funds (federal student financial aid) must submit extensive reporting to the federal Department of Education. Reporting concerns a broad set of concerns, including enrollment, staffing, expenditures and revenues, completions and retention, and financial aid. The Department of Education makes the resulting data available online through IPEDS. IPEDS is therefore college-level, not individual-level data. Through it, annual data on colleges is available for each year reaching back into the early 1980s, though in earlier years much less extensive reporting was required. IPEDS is not a single dataset, but many separate datasets, each generated yearly. We gathered, reshaped, and coded most datasets in every year from 2000-2020.

For the purposes of this study, we made use of data on fall enrollments for first-time and continuing students. We combined full-and part-time enrollment to create full time equivalent enrollment using the U.S. Department of Education's formula (full time enrollment plus one-third part time enrollment). We also created a retention rate that weighed full- and part-time retention rates by these groups' shares of the student population in the prior year's entering class. Retention rates are only calculated and reported for first-year students entering in the fall, and the retention rate each year reflects the rate of fall re-enrollment of the prior fall's first-year students. We combined the resulting data with information about program creation derived from online sources and with time-varying control variables such as tuition.

2.4. Data Collection for Tamaqua and Philadelphia Case Studies

For our in-depth studies of two existing Promise programs in Pennsylvania—Tamaqua's Morgan Success Scholarship and Community College of Philadelphia's 50th Anniversary Promise/Octavius Catto Scholarship—we conducted in-depth interviews with several stakeholders. We were able to gain coverage most extensively with the Tamaqua's Morgan Success Scholarship. We interviewed the President and VP of Enrollment Management of Lehigh Carbon Community College (LCCC) (which administers the program), the superintendent, high school principal, and a high school counselor from Tamaqua School District, and a board member of the John E. Morgan

Foundation (which initiated and funds the scholarship). We were only able to speak with one stakeholder regarding the Philadelphia programs: a school counselor at a Philadelphia public high school. CCP officials repeatedly committed to be interviewed and then failed to respond, insisted on my negotiating their Institutional Review Board process, then declined to respond to emails once I had completed this process.

Student-level quantitative data comes from PDE's Pennsylvania Information Management System (PIMS). This data is highly restricted, as it presents individualized information on every student in the commonwealth, in public and private K-12 schools. PDE has this data available beginning with the 2010-2011 academic year through (at this point) the 2020-21 academic year. We requested and received access to data on student demographic and other characteristics, test scores (Keystone and PSSA), course-taking, and disciplinary incidents. Additionally, PDE has contracted with NSC to obtain individual-level data on college-going beginning with the spring 2013 graduating class. This provides access to semester-by-semester enrollment, degree completion, and colleges attended for all Pennsylvania graduates from the classes of 2013-2020, with enrollment data covering all years through AY 2020-21.

PDE data has strengths and limitations. Its strength is its comprehensiveness. Its chief drawbacks are what it doesn't collect. In educational research, the two most powerful categories of predictors of college-going behavior are prior academic performance and family socioeconomic resources. PDE's data is limited regarding both. PDE does not gather data on high school GPA. It gathers data on course-taking, but not on performance in these classes or credits earned. Academic performance can be measured through high school graduation and through performance on state-mandated skills tests[30]. Family resources are ideally measured through income and parental education, neither of which is recorded by PDE. The measures available are binary indicators for economic disadvantage and free/reduced lunch eligibility.

During the period for which we received data, Pennsylvania changed the standardized test it uses to gauge competency from the PSSA to the Keystone test. As a result, there are no such measures for certain cohorts. Additionally, the Keystone was not performed in the 2019-20 academic year due to the COVID-19 pandemic's disruption of learning. Because of this, high school performance tests are only available for the graduating classes of 2013 (PSSA) and 2016-2020.

Depending on the graduating cohort, we had access to between eight and one year of postsecondary enrollment data. Therefore, of necessity different we used different samples to estimate different college-going outcomes. That is, we had "enroll within one year" data for nine cohorts, but "enroll within eight years" for only one (2013 graduates). For this reason, estimates for outcomes within different sets of years are not strictly compatible with each other. However, the estimates are valid when taken separately.

[30] Skills tests present their own complications which I discuss on p. XX.

Appendix 3: Methods

3.1 The Counterfactual Model of Causal Inference

The goal in much policy analysis is to determine what the "causal effect" of the program or policy might be. For contemporary statisticians and econometricians, causality is conceptualized through the *counterfactual model for causal inference*. Briefly, the ideal for determining the causal effect of a treatment *t* on individual *i* would require observing *i* given both exposure to the treatment (*t*=1) and non-exposure to the treatment (*t*=0). The causal effect of *t* for individual *i* on outcome *y* would then be $(y_i|t=1)-(y_i|t=0)$. We should emphasize that y is observed at exactly the same point in time in both the treated and untreated conditions; we are supposing two parallel worlds: one in which the individual was exposed and one in which they were not. That is, we need to be able to observe the individual in both the actual and *counterfactual* condition. This is clearly impossible, and that is known as the fundamental problem of causal inference.

In the real world, people mostly select themselves and/or are selected into "treatment" conditions. They obtain college degrees or don't, are incarcerated or aren't, receive a vaccine or don't. Various factors about themselves and their environments lead some individuals to receive or not receive these treatments, and so "treated" and "untreated" people will vary systematically from each other in many ways. Naïve comparisons between these groups capture *both* the effects of the treatments as well as these pre-existing differences that lead to treatment exposure. Researchers call this "selection bias", and generally hold that estimated causal effects of policies based on naïve comparisons between participants and nonparticipants are invalid for this reason.

Valid inferences require us to find a valid comparison group, one that varies from the treated group only in terms of treatment exposure. The ideal would be the individuals themselves in their counterfactual condition. This being impossible, the best alternative is groups produced by randomization. Randomization breaks any link between pre-existing characteristics and treatment exposure, and the groups produced by randomization are likely to be similar in terms of pre-existing characteristics on average. Therefore, randomized experiments (often called randomized control trials, or RCTs) are the "gold standard" for inferring causality in any context, including policy evaluation.

But randomization is often not possible. Usually policies are introduced universally, with no RCT pilot ahead of time. Or we may want to know the effects of something that it would be infeasible or immoral to randomize. In these cases, we have only observational data, but there are some circumstances that nonetheless allow for the recovery of valid causal estimates, given some assumptions. These are called "quasi-experimental methods", and I use three of them below.

3.2. Propensity Score Matching

Consider that one may have a group of people who were exposed to some policy or condition of interest. And then we have another, larger group that was not exposed to the treatment. Comparing these two groups would be invalid. But perhaps there was a way that we could find a subset of individuals from the larger group that was highly similar on attributes of interest to the exposed group. This "matched comparison" group would permit us to make much a more valid estimate of the effects of treatment.

Medical researchers perform this sort of procedure with "case-control" studies, finding similar non-treated cases for each treated case. Propensity score matching (PSM) takes this logic further. With PSM, we model, statistically, the probability of being exposed to the treatment given a large set of confounding variables. This produces a one-number summary of the underlying propensity to be treated: the propensity score. We then, for each treated case, find one or more untreated cases with as similar a propensity score as possible. This produces treatment and control groups which are as similar as possible in terms of measured characteristics. If we assume that all factors relevant to treatment uptake are measured and included in our model (the *conditional independence assumption*), PSM can produce valid causal estimates. Of course, we can never know if we have measured all relevant confounders, so residual selection bias may remain.

We make use of PSM when estimating the effect of Tamaqua's program. We do this out of necessity because I do not have data from prior to the program's introduction, so other methods (like differences-in-differences, discussed immediately below) are not possible. There are two reasons why we are reasonably confident in the reliability of PSM in this instance. First, PDE data provides a rich set of data on student and school attributes. We are missing direct measures of student family income and education, and we are missing measures of course success (e.g., GPA); both family resources and high school academic performance are strong predictors of postsecondary outcomes. But we do have some measures of household resources (free/reduced lunch eligibility and an "economically disadvantaged status" indicator), and some measures of academic preparation (attendance rate and standardized test scores). School-level attributes (e.g., percentage free-lunch eligible; disciplinary incidents per capita) are likely to be correlated with individual social and academic resources. Second, and much more importantly, my comparison pool is enormous compared with my treatment pool. We have the entire state of Pennsylvania[31] to use to find matches for a couple of thousand Tamaqua 12th graders. And Tamaqua is not a particularly distinctive community. We are quite confident that reasonable counterfactuals for Tamaqua students abound in the PDE data.

[31] I removed Philadelphia and Pittsburgh students from the potential comparison pool, since both were also exposed to a Promise program (CCP's 50th Anniversary Promise/Catto Scholarship and the Pittsburgh Promise, respectively).

We used a variant of propensity score matching called "three nearest neighbors". In this, we chose, for each Tamaqua student, three students from elsewhere in the state whose overall statistical likelihood of being from Tamaqua is closest given a set of covariates. We excluded both Philadelphia and Pittsburgh students from the pool of potential matches because they both had Promise programs operating in their districts during at least part of the study window.

3.3. Differences-in-Differences

Sometimes we have data on the introduction of a program, and so we have pre- and post-treatment observations for treated cases. We can measure some outcome (a cognitive test, say, or blood pressure) both before and after the treatment for these individuals. However, using this difference to make causal claims is invalid, because how do we know that the measured change wouldn't have occurred in the absence of the treatment? After all, everyone got the treatment, and we have no real comparison group.

Now let's say we also have data from another group observed over the same time periods (before and after the other group got treated). We can use this other group to make the needed comparison. But we don't use the comparison group's post-treatment measure in comparison, but the *difference* between their pre- and post-treatment measured. That is, we have four measures: two of the group that gets treated and two not, and two prior to "treatment" and two after it. We take the difference between the two groups' pre/post differences: the "differences-in-differences" (DiD).

Formally, we have some outcome *y* (the mean of which is indicated with a bar over Y), treatment status *x* (1 for treatment group, 0 for comparison), and time status *t* (0 for the first time point, when neither group has been exposed; 1 for the second time point, when the treatment group only has been exposed). The causal effect is then:

$$\left(\bar{Y}_{x=1,t=0} - \bar{Y}_{x=1,t=1}\right) - (\bar{Y}_{x=0,t=0} - \bar{Y}_{x=,t=1})$$

DiD is appealing because the comparison group doesn't have to be particularly like the treatment group to be usable in this context; such differences are mathematically "differenced out". DiD instead requires us to assume that in the absence of treatment, the *trend* in the outcome for the treated group would have been parallel to that in the control group(s). This is called the "parallel trends assumption", and it is not fully testable. We also must assume that there was no other event or policy introduced concurrently with the treatment that impacted treated and control groups differently. This assumption is not testable.

We use DiD when estimating the effect of CCP's 50th anniversary scholarship. Since the program was introduced for the graduating class of 2016, we have college outcome data from both pre- and post-policy cohorts. And eligibility for the scholarship was

restricted to Philadelphia public school students. This gives us my comparison groups: the rest of Pennsylvania (removing Tamaqua and Pittsburgh), suburban Philadelphia school districts, and selected other urban school districts in Pennsylvania.

3.4. Fixed-Effects Regression

When one has panel data (i.e., multiple observations per case), one can leverage statistical techniques to produce reasonably robust causal estimates. It we have several observations per case, we can control for all case-level characteristics which do not change over time (time-invariant) by including, for each case, an indicator variable equal to 1 only if the observation is for that case and 0 otherwise. This is called a "case fixed effect". We can also include a separate indicator variable for each observation period (a "period fixed effect"). This controls all time-invariant case attributes as well as for all things about specific periods which would affect cases similarly. A great deal of causally relevant variance is therefore absorbed through this method. The number of parameters in a multiple fixed-effect model is potentially very large but estimating them is well within the capacities of standard statistical software.

We make use of fixed-effects models when investigating the effect of introducing a Promise program on a college's enrollment. Since these programs are introduced by different colleges at different times, DiD isn't feasible. But our IPEDS data has eleven observations per college. The validity of the resulting estimated presumes that something else doesn't typically change at individual colleges at the same time they introduce a Promise program.

Appendix 4: Promise Programs in Allentown and Harrisburg

When applying for this grant, we relied on existing Promise databases to identify Promise programs in Pennsylvania. Other than the Pittsburgh Promise, which is well-known and well-studied, these databases listed four such programs that met my criteria (from P. 48). These included MSS, CCP's 50th Anniversary Scholarship (the Catto Scholarship is too new to be on these databases), the "Harrisburg Promise" and the "Allentown Promise". We made inquiries into both of the latter, the results of which we detail here.

4.1. Allentown

The Allentown Promise Scholarship can be dealt with quickly. We are quite certain that not only doesn't it exist, but we are relatively certain that it never existed. We spoke first with the director of the Allentown School District Foundation (a nonprofit that raises funds for Allentown public schools). She had been at her job for over a year and had served on the Allentown school board from 2006-12. She told us that while no program had ever existed, one had been proposed "somewhere around 2010" by the then superintendent, Gerald Zarorchak. "The idea he was pitching," she recalled, "was

modelled after Kalamazoo, Michigan, was that you could attract middle-class residents to stay within your district rather than flee for the suburbs if you make college affordable for them." She recalled that when the superintendent departed, the program idea fizzled. Currently, there is a program called the Century Promise that helps connect Allentown graduates with local employers but has nothing to do with college tuition-reduction. The president of LCCC discussed the Century Foundation as also funding an extensive dual-enrollment program for Allentown students to earn credits at LCCC. We were able to interview Dr. Zahorchak as well LCCC's President and VP of Enrollment Management, and all our interview sources concurred about these characterizations.

There are, however, some other documents online that give the impression that something existed in around 2016 or 2017 called the "Allentown School District Promise". Other researchers came to list this program. There is a link off of LCCC's website to an application to the "Allentown School District Promise Scholarship" for graduates in 2016. It is also referenced in a planning document by the Lehigh Valley Community Schools Consortium. It received brief mention on WHYY radio in 2016. There is also some indication of a small privately funded "Promise scholarship program" that existed for a few years around 2017 and that paid $1,000 each for up to 25 Allentown students to attend LCCC to study specific programs. When we checked back in with LCCC administrators, we were told that there was a "pilot program" that operated in Allentown for one year and was then discontinued. We did not obtain any more information about this program.

4.2. Harrisburg

The Harrisburg Promise is much more complicated. It has an existence via the Harrisburg Area Community College website. It is described as "providing a pathway to postsecondary education for youth in Harrisburg" and as involving "early intervention that will reduce barriers" to college-going. A promotional video says that it is a joint venture between the Harrisburg Housing Authority, HACC, and the City of Harrisburg (specifically, the mayor's office), and in it, Housing Authority President Senghor Manns calls it "an adventure... that will change lives."

"Harrisburg Promise is important... because we recognize that education is the key to ending generational poverty," says HACC official Vic Rodgers in the video. It will provide recipients, "an education that they thought would not be attainable," says HACC President John Sygielski. The video features parents and students holding signs that say, "I just won $500 to help pay for my tuition and fees at HACC." The program received some positive local press coverage.

"Other fundraising materials discuss the program as beginning with 7th graders" and "exposing them to different aspects of college life... things that they would not ordinarily be exposed to – career options, academic preparation and readiness." There are references to life skills workshops for students, trips to campus, trips to the firefighting academy. According to a HACC presentation available online, to remain eligible,

students had to maintain a 2.5 GPA, refrain from using drugs, alcohol, or tobacco and from becoming parents. By the time this presentation was created (AY 2017-18), any student regardless of income level who was enrolled in either Harrisburg or Steelton-Highspire school districts was eligible. Earlier, eligibility had been limited to residents of Harrisburg Housing Authority properties. It lists 40 students enrolled in the program in this academic year—19, 7th graders and 21, 8th graders—and says that HACC planned to raise $150,000 by 2020 to fund the scholarship.

However, its "schedule of events" currently only contains dates during the 2018-19 academic year. This suggested to us that this program existed at some point – probably between 2016 and 2019 – but is likely no longer existent.

We were able to speak with six people about the Harrisburg Promise: two HACC administrators, the current Steelton-Highspire superintendent, the former Steelton-Highspire superintendent, a high school counselor in Steelton, and a community activist from Steelton-Highspire.[32] The story we reconstructed is this. The program was conceived of by three people – the President of HACC, the head of HHA, and the Mayor of Harrisburg. It initially was only to involve HHA residents, and it was to involve both college guidance beginning in middle school and extending through high school and eventual financial support once students enrolled in college. These two were linked: to obtain funding, a student had to stay in the program for at least five years. The program would have monthly events to bring the students to campus to learn about college and career opportunities.

The restriction to HHA residents appears to be a function of the three institutions that launched the program. One of the HACC respondents mentioned "racial disparities" and wanting to serve the "neediest communities", but this makes little sense given that HHA houses the majority of neither African Americans nor poor people in Harrisburg, and arguably its residents are residentially better-off compared with similar people living in privately-owned rental housing (Desmond 2016). There was also mention of transportation to HACC (for after-school programs) being facilitated by the residential concentration of HHA residents, but transport would be even better-centralized by picking up students directly at middle and high schools (this is what eventually happened at Steelton). On the other hand, Harrisburg School District wasn't an institutional partner, while HHA was. However, this feature would make the Harrisburg Promise one of the most restrictive Promise programs, residentially, in the United States, severely limiting the pool of potential beneficiaries.

However, there were "difficulties" in recruiting participants in Harrisburg, according to one of our HACC interviewees. They described extensive efforts to recruit participants by going door-to-door in HHA housing, attending events, setting up informational tables. HHA "was struggling to recruit students" as well. They tried to branch out

[32] We reached out multiple times to other current and former HACC officials, to HHA, and to the former mayor of Harrisburg. None responded to our emails.

through other local organizations – YMCA branches, a local private school. After a time, eligibility was opened to any student from Harrisburg School District, but still recruitment didn't pick up. HACC officials said that "we had many meetings with different Harrisburg School District administrators and were just never able to get that right connection within the school to be able to recruit in the schools" effectively. As to why, the official mentioned that HSD is under receivership by the state and that its administration "had a total overhaul" recently. Ultimately, only "one lone young man" (according to a HACC source, confirmed by a Steelton source) from Harrisburg remained in the program by the time of the interview.

But then "another school district came on board" – Steelton-Highspire – and "the majority of the students in our program are actually from Steel High." It seems that Steelton students became involved in the 2017-18 academic year. HACC officials didn't provide information for how Harrisburg Promise program came to essentially relocate to a much smaller neighboring city and school district. They mentioned that Steelton-Highspire also has a high rate of students eligible for free or reduced lunch. The former Steelton superintendent told us that HACC approached Steelton about expanding the program. The Steelton activist said that he heard about the program and asked HACC to expand it to Steelton, and that HACC agreed. The current Steelton superintendent said that the activist, who was at the time on HACC's board, suggested the expansion and that HACC then approached Steelton's superintendent.

Steelton appears to have presented something that Harrisburg schools didn't: an effective institutional partner. Steelton schools took responsibility for regularly recruiting students in 6th grade, as well as interfacing with parents. They provided transportation to HACC, staff members to take the students to HACC, and assigned a counselor to work on the program. And there was a community activist, an older Steelton alum, who was highly engaged. "He was really passionate about the program" reported the former superintendent, and "would really push the program with kids and families." The counselor concurs: "he was really the boots on the ground. He was the little soldier that ran back and forth and did everything he possibly could to keep this program going." The program, with this local support, was able to recruit enough participants at Steelton-Highspire and to keep them involved. For a few years, they organized activities about once a month for participants.

As initially designed, the Harrisburg Promise was absurdly limited. It was available only to residents of Harrisburg Housing Authority. The best information we can find is that there are 1,324 units managed by HHA. In Harrisburg, roughly 30 percent of households have children under 13. If we assume that HHA is similar, we get 397 households with children. If divide this number into twelve equally sized age cohorts (corresponding to grades in school), we get 33 eligible children per year. This is likely an underestimate, but it is probably not too far off. Even if 100 percent of eligible students signed up initially, HACC was creating a program for between 30-70 students yearly. Harrisburg school district, on the other hand, has roughly 6,500 students – about 500

students per grade. Steelton, according to its superintendent, has just 540 students in their combined junior-senior high school, or roughly 90 students per grade. But, due to attrition, graduating classes are closer to 60, according to Steelton's current superintendent. Of these, about 20 percent enroll in HACC.

The Harrisburg Promise was also absurdly arduous, particularly considering its profoundly disadvantaged target population. The program required students to sign up for it five or six years in advance, and then to faithfully participate in activities for those five or six years. It also required students to maintain a 2.5 GPA for this entire period (though at least one interviewee suggested that probationary periods were introduced, with additional mandatory tutoring, for students who lapsed in this regard).

There were moral criteria: refrain from using drugs, alcohol, or tobacco, and don't become a teen parent. This latter requirement eventually caused controversy. A Steelton source said that "(HACC's) DEI coordinator came in and said, you can't put these types of stipulations, (because) you're essentially discriminating against a certain population of kids." In any event, one would expect a fairly high attrition rate from this program given the extent and intensity of procedural eligibility criteria it imposed.

Additionally, one would additionally expect positive academic selection *into* program participation. A Steelton source suggested that students who got involved were "kids who were probably intrinsically motivated. Who probably had decent parental support." Another says they were "students that probably had a general idea that college was in their future and were thinking in those terms." Given this, some qualifying students would likely not attend their local community college, preferring to go to a four-year college (potentially even receiving scholarships to do so). Others would reach senior year and, for one reason or another, decide not to attend college at all. Overall, program design predicts an exceedingly small number of participants.

In fact, the Harrisburg Promise may have *limited* enrollment at one point. "It wasn't available to everybody", the Steelton counselor told us. "It was kind of first come, first served. You had to apply, you had to be accepted. We can only take so many students." She said that each cohort was limited to between 15-20 students. The counselor and the former superintendent also told us that that some qualifiers would drop out from each cohort. But, the counselor said, the program "did grow as the years went on, and people grew to know it more."

This is consistent with HACC officials' testimony to us that "we have our first cohort of students (from the Harrisburg Promise) in HACC right now. They graduated in the class of 2022 and **four of them** are enrolled in classes." Later the official said that they had five currently enrolled students (from the first cohort). The official stated that there are also "cohorts of students coming up behind them" but would not say how large these cohorts were. We strongly suspect that the program as designed was going to produce just a handful of qualifying students per year. Given the income profile of Steelton-Highspire, most if not all these students would have tuition fully covered by need-based grants, and HACC would not have to pay a dime.

However, it seems that HACC is either fully winding down the Harrisburg Promise or turning it into something else. What is unclear is what that new something is, and what is going to happen to the Steelton students who had spent years involved in the program. It is also unclear what the reason is for HACC's decision to modify or replace the program.

First, it seems that HACC is shifting to something called HACC Pathways, and with this program HACC is looking to involve students from across its eleven-county region. HACC sources told us that it would be "the same program, just not restricted by geography." This seems to imply that the core features will be retained: an early-commitment, college pathway program linked to a last-dollar scholarship for qualifiers. HACC sources responded affirmatively when asked if the "same last-dollar model" would be used.

The current Steelton superintendent, however, told us that HACC dropped the "Promise" label because they were no longer offering two years' tuition-free. "There's no promise of getting, you know, the two free years," he said. "That's what they kept saying to us." I haven't been able to find any reference to "HACC Pathways" online, so I can't confirm which of these characterizations is closer to reality.

What is most contentious is what is happening with existing Harrisburg Promise students in Steelton. HACC officials insisted that 4-5 graduated qualifiers are currently taking classes at HACC, presumably with a tuition guarantee applied (though this wasn't explicitly confirmed). They didn't say anything about whether the last-dollar scholarship would be provided to the remaining Steelton cohorts. The Steelton counselor told us that her HACC contacts had told her that "their focus is on the students currently enrolled in the program... and trying to follow through on their promises to them." This sounds like she believes these students will be covered as promised. But the community activist believes differently. "They (HACC) were trying to back out of committing to those 40 to 50 students that were in the program that worked from grade seven to 12th grade," he said. The former superintendent also said that he had heard that HACC was "reneging a little on what they promised" program participants. The activist said that he had objected vehemently to this decision, and that as a result he was barred from further participation in the program beyond fundraising. We cannot confirm either side of this story.

There does seem to have been some confusion about what "free college" meant in this context. Specifically, students and families interpreted "free" to mean something very different from a last-dollar scholarship. The Steelton superintendent told us: "'You'll get two years at HACC for free.' That's the way it was said. So, our kids, our families, hear 'free.'" But a last-dollar tuition guarantee is "free tuition" only to someone who understands how financial aid works. "I knew myself that it wasn't like, 'we're gonna write you a check for all the tuition,'" the Steelton counselor says. "I understood that you had to go through the FAFSA process... In a sense it is still like they are receiving a free education. It just isn't all HACC paying for it." Some parents were surprised and upset

that they would have to share financial information to complete FAFSA, but "that is always a piece in our community," said the current superintendent. In any event, there was "pushback" from participants and their families. The superintendent said that HACC officials blamed the community activist for the spread of this misconception, and that it was this that led to his being "pushed out of the program." Finally, there is disagreement about why these changes are being made by HACC. HACC sources described the shift as more of an evolution. "This is a very organic process that needed to be revamped," one of them said. "What we're not doing is losing how we serve these students. But what we have to do is come at it in a more structured and effective manner." Steelton sources suggest two underlying reasons. First, they suggested that some new members of the administration came on who introduced different priorities or perspectives. Second, they suggested that HACC was scaling back the program as part of broader financial cutbacks. "They renovated their student union building and they overextended themselves," one said. "So, they were trying to get rid of programs that cost them money, and the Harrisburg Promise was one program they were trying to get rid of."

Obviously, HACC has every right to make any program it wishes and to end them if they no longer seem advantageous. But equally obviously, HACC should honor commitments it has previously made to students. Given the tiny to nonexistent cost of doing so, it is hard to understand why HACC would not guarantee tuition to the handful of Steelton students who participated in their program for five to six years.

It is clear to us that the Harrisburg Promise was never intended to make college considerably more affordable to large numbers of students. Of course, just as is the case with CCP, HACC cannot afford to create an expensive new mass-scholarship program. Unlike CCP's 50th Anniversary Scholars program, the Harrisburg Promise doesn't appear intended to increase enrollment at low cost by producing the appearance of a new mass-based scholarship. It is hard to know exactly what the initial designers intended with the program. Our suspicion is that they thought that an "early intervention" college experience program would be a Good Thing, even for the handful of students they intended to involve. The scholarship seems to be something to lure students into participating in this program. What designers didn't seem to realize is that what appear to be services to providers can appear as costly obligations to recipients. Six years of participation, however enriching, can amount to simply a massively difficult procedural hurdle for scholarship eligibility. Designers who are interested in maximizing participation minimize should minimize or eliminate such obstacles whenever at all possible.

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