Three Essays on the Pittsburgh Promise

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Submitted to the Graduate Faculty of the

School of Education in partial fulfillment

of the requirements for the degree of

Doctor of Philosophy

University of Pittsburgh

2021

UNIVERSITY OF PITTSBURGH

SCHOOL OF EDUCATION

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University of Pittsburgh, 2021

Promise programs are place-based programs that discount the price of postsecondary education with the goal of increasing degree attainment. I contribute to the growing literature on the effectiveness of promise programs in this dissertation. In my first paper, I evaluate the impact of the Pittsburgh Promise Extension Scholarship on college-going outcomes. The Extension Scholarship is a component of the Pittsburgh Promise's Core Scholarship that is available to students that do not meet the Core GPA minimum of 2.5. The Extension Scholarship is a generous award that is available at the local community college. I use regression discontinuity and difference-in-differences designs to assess the program's impact. I find that the scholarship has no impact on student enrollment outcomes at the margin of eligibility, but does produce modest increases in associate's degree attainment. Higher along the GPA range, students are more likely to substitute out of four-year institutions and into two-year institutions. This leads to a reduction in degree attainment.

Next, I examine the possibility of award displacement within the context of the Pittsburgh Promise. Award displacement occurs when one type of financial aid award directly contributes to the change in quantity of another award. I explore whether postsecondary institutions displaced awards in response to the Pittsburgh Promise scholarship by capitalizing on the doubling of the maximum Promise amount in 2012. I assess differences in costs and awards between Promise students and their peers, on average, and examine whether and in what ways these differences

changed after the increase in Promise funding. I do not find evidence that institutions are responding to the Promise increase through aid reductions.

The final study is part of an ongoing research-practice partnership with the Pittsburgh Promise. In response to decreasing Promise usage trends, the Pittsburgh Promise launched a college coaching pilot program in three high schools. The program was implemented during the 2020-2021 academic year when the COVID-19 pandemic prompted schools to move to online instruction. Using interviews with program staff, I analyze the relationship-building between Promise coaches and guidance counselors. I offer recommendations to consider from the literature on school-community partnerships that may strengthen collaboration.

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Preface

When I enrolled at the University of Pittsburgh many years ago, I wanted to hone my quantitative research skills and contribute to improving the lives of K12 students. I was particularly interested in college access and success. This interest was driven by my time working for the GED Scholars Initiative when I was an undergraduate at Kent State University. My position at the nonprofit exposed me to a world of inequity, racism, and barriers to college entry that were purely bureaucratic. I wanted to research these barriers and contribute to solutions.

I was lucky enough to begin my studies at Pitt when my advisor, Lindsay Page, and colleague, Jennifer Iriti, begin collaborating on an evaluation of the Pittsburgh Promise. Dr. Iriti had already established a research-practice partnership with the Promise and had provided qualitative interview and survey analyses to Promise staff. I, along with fellow graduate student Aaron Anthony, were tasked with cleaning the Pittsburgh Promise data. Looking back on this experience, I realize now that it was pivotal in teaching me important skills about data cleaning and processing, learning the importance of understanding program culture to better understand the data, and the significance of detailed record keeping! It was a long and arduous process for two novice Stata users, but it was certainly worthwhile.

I have learned so much working on Promise projects. I have been able to use the skills I've learned in the classroom in an applied setting. I have also had the opportunity to work with great people and a wonderful organization. The Pittsburgh Promise is appreciative of data analysis, and program administrators use the data (whether good or bad) to improve the program's design and better serve students.

I want to continue my work in an applied setting. I enjoy seeing my work used in real policy improvement. I enjoy relationship-building with amazing people who care about disadvantaged students and are motivated to improve the Pittsburgh community.

Many people have helped me on this (far too) long journey. I have my fellow academic siblings, Alberto and Aaron, to thank for providing me with very welcome feedback and great friendship. I also would like to thank my colleague (and future boss) Jen Iriti for offering some much-needed words of encouragement and advice during these tumultuous last few months. I want to also thank my committee members Dr. Jones and Dr. Shafiq for agreeing to be a part of this process and giving me thoughtful critiques after my overview presentation.

I would also like to thank the many wonderful people at the Pittsburgh Promise for trusting me with their student data. I'd like to specifically thank Shelley, Janay, and Sydney. Together we make a terrific team and I am so unbelievably grateful to be a part of that team.

I especially want to thank my very patient advisor, Lindsay Page. As I have said to her before, I sometimes felt like I was the child she couldn't quite get to move out of the house. I'm finally moving out! It was thanks to Lindsay's support that I have made it to the end. Above all, it is solely thanks to Lindsay that I stayed in this program at all.

Finally, I want to thank two people that have had profound influence on me. First, my mother. She is a very powerful and assertive woman. I used to find that behavior embarrassing, and now my assertive personality embarrasses her! She raised me after my father died and she did a great job while struggling with her own demons. I could not have gotten this far without her. The second and final person I would like to thank is my husband. I met him when I was seriously considering dropping out of Pitt. He gave me the encouragement I needed to finish this program. Even at my craziest, he still wanted to marry me. Thank you all so much. I love you all!

Danielle Lowry

Akron, OH, November 1, 2021

1.0 Introduction

In the 2020-2021 academic year, the average full-time first-time (FTFT) student attending a public four-year institution in the US was responsible for $14,850 in out-of-pocket costs for tuition, fees, and room and board. For a similar student attending a private institution, these out-of-pocket costs were an average of $29,110. Students at both institutional sectors faced an additional average cost greater than $4,000 for books and supplies, transportation, and other personal expenses. Since 2006, the average amount of grant aid received per FTFT student has increased nearly one-for-one with increases in published tuition and fees at these same institutions, providing little financial relief for students over the years (Ma, Pender & Libassi, 2020). A 2018 analysis examining the affordability of public four-year institutions used conservative net price figures for the average Pell grant recipient and found that nearly 75% of residential four-year institutions did not qualify as affordable options for low-income students (Warick & DeBaun, 2018). To cover the cost of higher education, many students take on loan debt. Unfortunately, evidence suggests that the probability of graduating with a degree declines for low-income students with greater amounts of debt burden (Kim, 2007).

Regions and small communities have sought to alleviate student debt burden, increase higher education affordability, and provide greater access to education and a well-paying career through the creation and implementation of place-based promise programs. Promise programs are localized scholarship foundations. A decade of research has produced overwhelmingly positive impacts from these scholarship organizations. In addition to inducing college enrollment and degree completion, there is evidence that promise programs build stronger postsecondary school cultures and more positive school climates while encouraging better K12 student outcomes. For a full

review of the literature on promise program impacts, see Anderson (2019) or Swanson, Watson, Ritter and Nichols (2017).

The idea for the Pittsburgh Promise (hereafter, "the Promise") was publicly announced in 2006 as a district-wide policy to attract new families to the city after years of declining populations. The Promise was not able to establish the scholarship in perpetuity and is, therefore, in a constant state of fundraising. Due to continually missed fundraising targets,[1] the Promise has had to increase eligibility requirements and limit the amount of the scholarship itself to remain viable. The changes in eligibility and funding across cohorts are presented in Table 1.1. The first cohort of Promise awardees was the class of 2008. Students were required to obtain a cumulative graduating GPA of 2.0, meet residency requirements, and have enrolled in the district since at least the ninth grade. Eligibility requirements were raised in the following years. Current eligibility requirements are set at a 2.5 GPA and a 90% attendance rate. A smaller scholarship is available for students who do not meet the 2.5 GPA threshold but have at least a 2.0 GPA. Called the Extension Scholarship, these students are able to use Promise dollars at the local community college.

An evaluation studying the impact of the Pittsburgh Promise on early college-going outcomes was published in 2019 by my colleagues and me (Page, Iriti, Lowry & Anthony, 2019). We found that students were 8 percentage points more likely to enroll in a four-year institution and 6 percentage points more likely to persist into their second year of college.

In this dissertation, I expand on this original evaluation of the Promise. The first paper examines the impact of the Extension Scholarship program. My second paper examines how institutions respond to Promise dollars through award displacement policies by capitalizing on a

[1] https://www.bloomberg.com/opinion/articles/2018-02-13/pittsburgh-shows-the-way-to-a-rust-belt-rebound

doubling of the award amount in 2012. The third paper is a qualitative study exploring the first year of the Pittsburgh Promise Coaching Initiative, a new Promise project that aims to increase college-going at three pilot high schools. In the remainder of this chapter, I provide a brief summary of the research problem, the corresponding research questions and the policy implications for each dissertation paper.

1.1 The History of the Pittsburgh Promise

1.1.1 The Pittsburgh Promise Core Scholarship

Once the beating heart of the steel industry, Pittsburgh became a "rust belt" city with a declining population and fierce competition for few job opportunities when the steel industry collapsed in the 1970's. Since the late aughts, Pittsburgh community leaders have worked on numerous economic policies and nationwide advertising to bring young families to the region.[2]

The Pittsburgh Promise was one such policy proposal that arose from this fervor and creativity as a mechanism to bring vitality back to Pittsburgh. The Pittsburgh Promise became an idea in 2006 when former Pittsburgh superintendent Mark Roosevelt and former mayor Luke Ravenstahl collaborated on the concept. The goals guiding the establishment of the Promise included: support PPS student access to postsecondary education; reform educational systems; stabilize city and school populations; and act as an engine for an invigorated workforce and volunteer core (Page & Iriti, 2016).

[2] https://www.bloomberg.com/opinion/articles/2018-02-13/pittsburgh-shows-the-way-to-a-rust-belt-rebound

Roosevelt and Ravenstahl presented the promise idea publicly in 2006 but had no funding to move it from concept to reality. UPMC, a major hospital system and one of the largest employers in Pittsburgh, committed $100 million to the Pittsburgh Promise. The Promise was guaranteed this donation only if Promise staff could raise an additional $150 million. Promise staff failed to reach this target by $56 million, but UPMC donated the full amount anyway. If the Promise had obtained the full donation upfront, the scholarship fund could have been endowed in perpetuity.[3] Instead, the Promise is in a constant state of fundraising. Due to continually missed fundraising targets, the Promise has had to increase eligibility requirements and limit the amount of the scholarship itself to remain viable. The changes in eligibility and funding across cohorts are presented in Table 1.1.

Despite this rocky start, the Pittsburgh Promise has produced positive impacts on enrollment and early persistence outcomes since its inception in 2008. Using a regression discontinuity design with the GPA eligibility threshold of 2.5 as the running variable, we found that the Pittsburgh Promise had a nonsignificant 5 percentage point increase on overall enrollment in college among cohorts 2008 to 2012 (Page, Iriti, Lowry & Anthony, 2019). We found that students were 8 percentage points more likely to enroll in a four-year institution and 6 percentage points more likely to persist into their second year of college. However, at the time of publication, we did not have pertinent college-going data for an entire cohort of students. In recent years, we have obtained more comprehensive student data and have calculated much more promising results. We find that the Pittsburgh Promise did increase overall enrollment and encouraged students to substitute out

[3] https://www.publicsource.org/will-your-child-receive-a-pittsburgh-promise-scholarship-the-answer-might-surprise-some-parents/

of two-year institutions and into four-year institutions. Again, we find positive impacts on persistence from year one to year two in college.

One potential mechanism to explain the positive impacts on student persistence in postsecondary is the enrollment of Promise students in more selective (and, perhaps, more expensive) institutions. Page and Iriti (2016) explore the relationship between the Promise and college-match based on student SAT scores. The authors define an "undermatch" as a student that enrolls in an institution where the median SAT score of the freshmen class is 15 percentiles below the student's SAT score. A small share of Promise-eligible students transitioning to a four-year institution undermatched, with many attending institutions where the median SAT score was higher than their own. In talking to students and parents, the authors found that Promise recipients' families believed that college was a more affordable option, and expensive and/or selective institutions were possible choices because of Promise funding. The authors conclude that the Promise encouraged college right-matching. This is important because, oftentimes, the more selective institutions are in a better financial position to provide students with support services. Many PPS students are low-income or the first in their families to attend college. To encourage retention, these students may need additional support offered by their universities.

Not all results from the Page and Iriti (2016) study were reassuring. The researchers found that nearly half of students eligible to attend a two-year or four-year institution with Promise funds did not enroll in college at all. Half of the students that enrolled in community college in the fall after high school also undermatched. The effects on matching were smaller in magnitude at the margin of eligibility when the Core scholarship was available to students with GPAs of 2.0 in 2008 and 2.25 in 2009. These results, taken together, may suggest that undermatching is more likely to occur among students with lower GPAs and among Promise-eligible students that enroll in the

local community college. These results have implications for the Extension Scholarship which is available to lower-performing students to attend community college.

1.1.2 The Pittsburgh Promise Extension Scholarship

The Pittsburgh Promise Extension Scholarship was officially launched in 2010. Since the Promise's inception in 2008, program administrators annually increased the GPA minimum to obtain the scholarship. Although 2008 graduates only needed a cumulative GPA of 2.0 to be eligible, students graduating in 2010 were required to achieve a 2.5 GPA. The Extension program was established to provide a "safety net" to students with GPAs between 2.0 and 2.49. Extension students are required to attend the Community College of Allegheny County (CCAC) to receive funding. However, if a student's desired program of study is not available at CCAC, students may attend another two-year or less-than-two-year institution with funding if they contact program administrators and make an appeal. If students maintain a 2.0 GPA in their first year of college, they are eligible to obtain the Core Scholarship funding in their second year at the college of their choice. Students may also decide to attend a four-year institution in their first year without Promise financial support, maintain a 2.0 GPA, and apply for Core funding for their second year.

Program administrators established the Extension to allow lower-performing students a second chance at obtaining the Core Scholarship. However, they unintentionally created a convoluted program. In focus groups with students in the Promise's early years, students indicated that Promise eligibility requirements were confusing (Iriti, 2011, unpublished manuscript). Students were unsure of whether they were eligible for the scholarship and where/how to check their eligibility status. A qualitative study conducted by RAND also confirmed that students were generally confused about the Promise eligibility requirements (Gonzalez, Bozick, Tharp-Taylor & Phillips,

2011). Adding to this complexity is the unadvertised opportunity for Extension-eligible students to use Extension funding at other institutions when CCAC does not have their desired program. Additionally, Extension-eligible students also have the ability to start at a four-year institution and obtain the Core in the following year if they maintain a 2.0 GPA. A final complication is the appeals process in which students can appeal their Promise eligibility status. This leads some Extension-eligible students on the margin of Core eligibility to appeal and obtain the Core Scholarship. These are not highly advertised processes and may inadvertently create equity issues where students with more social and cultural capital at home may be more likely to understand the eligibility rules or navigate the appeals process to access the Core Scholarship.

1.2 Mechanisms

In this section, I discuss the possible underlying mechanisms and theories influencing student behavioral responses to the Pittsburgh Promise Scholarships.

1.2.1 "Free College" Messaging

The perception of free college or the feeling of losing out on gaining "free" money, is prevalent in the college financial aid literature. For example, an MTurk study found that respondents were more likely to choose a hypothetical selective and expensive institution that offered more in grant aid over a cheaper option with a lower net price if presented with the discount amount (grants) rather than the actual costs (net price) (Anthony, 2018). When presented with a larger amount of grant aid, respondents felt that they were gaining more by choosing the more expensive

option. A real-world quasi-experiment provided some evidence that students are more likely to enroll in an institution when it offers a larger amount of financial aid, even if the out-of-pocket costs charged to students does not change (Gitter, MacDonald & Greenleaf, 2018). Monks (2009) finds weak evidence to support what he terms the "price illusion effect." In this study, freshmen at a single institution were offered a merit scholarship, but due to a price increase, these students faced the same net price as freshmen from the year before. The author found a small enrollment effect, mostly concentrated among female students.

This sensitivity to framing and messaging demonstrates that students may not have the knowledge and social support to fully comprehend their postsecondary options. Avery and Hoxby (2004) found that students' enrollment probability increased when their financial aid award letters listed "scholarships" rather than "grants." The sample in their study was students applying to extremely selective liberal arts colleges. Because this sample of students likely has access to more social and cultural capital, we may hypothesize that lower socioeconomic students may be even more sensitive to financial aid framing. Even post-graduate law students were less likely to choose an aid package when it was framed as a "loan" that would be forgiven if they entered public service over a "grant" that would need to be repaid if they did not enter public service (Field, 2009).

1.2.2 Socioeconomic Gaps in Social Capital and College Knowledge

A well-known and often-cited theory in education research that explains how certain groups are advantaged due to social relationships is called social capital theory. This theory contends that access to social relationships is a factor in accessing resources and benefits and can be used to explain how social position contributes to human capital development (Rogošić & Baranović, 2016). In education, students with parents, family members, or community members that

attended college will have more access to college knowledge than students that are first-generation college students or students that are not exposed to college in their community.

Studies have found that a parent's education level does often predict whether a student will enroll in college (Bryan, Farmer-Hinton, Rawls & Woods, 2017). Using machine learning techniques and the National Education Longitudinal Survey (NELS), Soland (2017) found that a student's probability of enrolling in and persisting in postsecondary could be predicted with over 90% accuracy using a small number of variables. Socioeconomic status was one of the four measures predicting this probability. The college application and financial aid process is an often complex barrier to overcome for many first-generation students and students without access to social capital. Students that do not have advocates with college experience have a much more difficult time navigating this process (O'Connor, 2000).

1.2.3 Complicated Financial Aid Designs

The complexity in the design of financial aid programs affects the magnitude of student take-up. Financial aid programs need to be simple. Targeted programs with means-testing require more paperwork and more steps to apply. Deming and Dynarski (2010) found that means-tested programs like the Pell have smaller effects on enrollment than simpler financial aid programs. Any additional paperwork is an additional hurdle, especially for underrepresented college students. Merit programs often produce better enrollment effects for the simple reason that means-tested aid requires students to complete extra steps to prove their low-income status (Li & Gandara, 2020; Anderson & Goldrick-Rab, 2018; Singell & Stone, 2002). Any additional steps students must take to access financial aid can "add up" and become a barrier to enrollment, especially to low-income students (Page & Scott-Clayton, 2016).

Overall, merit aid programs that are well-publicized, have minimal application procedures, clearly specified amounts, and transparent designs tend to produce larger positive effects (Deming & Dynarski, 2010; Dynarski, 2004).

1.2.4 Academic Match

Academic match in the higher education research literature is when a student's academic ability matches that of their peers' ability at the institution in which they attend. The hypothesized problem with academic undermatch is that students with high academic qualifications may not be challenged or engaged at institutions that are not an academic match. This may lead to low retention or completion rates. For example, Ovink, Kalogrides, Nanney & Delaney (2018) capitalize on student proximity to "match" institutions and find that students that undermatch experience a 20% decrease in the probability of obtaining a Bachelor's degree than matched students. This impacts later employment and career earnings (Ovink et al., 2018). Other recent studies confirm these findings (Dillon & Smith, 2020; Mountjoy & Hickman, 2020).

Evidence supports the fact that lower-achieving students and students from underrepresented backgrounds are more likely to persist if they enroll in an institution of higher selectivity. Students of color, in particular, have a higher probability of gradating if they attend an institution that is more selective (Alon & Tienda, 2005). A randomized controlled trial that placed students in higher performing peer groups experienced greater increases in GPAs, with lower-performing students experiencing the greatest benefits (Carrel, Fullerton & West, 2009).

Unfortunately, research demonstrates that students of color, first-generation college students, and students from low-income backgrounds are more likely to enroll in an undermatch institution (Ovink et al., 2018; Mountjoy & Hickman, 2020).

1.2.5 Mental Health Services and Postsecondary Persistence

After a year of online schooling and student loneliness, mental health services are more important now than ever before. Research has consistently shown that students suffering from depressive symptoms are more likely to have lower GPAs and are less likely to complete their degree programs (Arbona, Fan & Olvera, 2018; Jonsson, Bohmn, Hjern, Knorring & Knorring, 2010; Hyesenbegasi, Hass, Rowland, 2005). Mental health service utilization is much lower at less selective institutions and nonresidential campuses (Lipson, Gaddis, Heinze, Beck & Eisenberg, 2015), such as community colleges. One study explored the mental health of students transitioning from high school to college. The authors found that students attending postsecondary institutions where the peer ability was lower than the peer ability of their high school were more likely to have depressive symptoms (Brazil & Anderson, 2020). Meanwhile, students that transitioned to institutions with similar or higher peer ability to that of their high schools experienced no changes in depressive symptoms.

1.3 Research Questions, Methods, and Summary

1.3.1 An Evaluation of the Pittsburgh Promise Extension Scholarship

The Pittsburgh Promise implemented the Extension Scholarship program in 2009. This scholarship is available to Pittsburgh Public Schools students who do not meet the GPA requirements of the Core Scholarship but who have maintained a cumulative high school GPA of 2.0.

Students can use their scholarship—a minimum of $500 and maximum of $5,000 / year—at the local Community College of Allegheny County (CCAC).

No extant research exists examining the impact of this scholarship program on student college-going outcomes. A chief concern among program administrators is whether limiting the scholarship to a single community college has been beneficial or harmful to student enrollment, persistence, and degree attainment. The results from this study will be used by the Promise to determine whether the Extension Scholarship is achieving the goals of the Promise and whether it ought to be altered to better assist students in their postsecondary career. If the Extension Scholarship has done little to induce enrollment and persistence among eligible students, possible programmatic alternatives may include expanding the pool of institutions from which eligible students can choose to attend or providing additional supports while lower-achieving students are enrolled in college.

In my first paper, I evaluate the impact of the Pittsburgh Promise Extension Scholarship on college-going outcomes. I use regression discontinuity and difference-in-differences designs to assess the program's impact on Pittsburgh Public Schools students from the graduating classes of 2010 to 2015. The scholarship has no impact on student enrollment outcomes at the margin of eligibility, but does produce modest increases in associate's degree attainment. Students with higher GPAs are more likely to substitute out of four-year institutions and into two-year institutions. This leads to the unintended consequence of reducing degree attainment. These effects are most pronounced among disadvantaged student populations.

1.3.2 Institutional Responses to the Pittsburgh Promise

The second paper of my dissertation explores whether and to what extent institutions may be responding to students' Promise funding through institutional price adjustments or changes in institutional grant aid. Anecdotal evidence from siblings and Promise recipients suggests that institutions may be responding to the Promise by decreasing the amount of institutional aid given to Promise recipients. This is often called "award displacement" in the higher education finance literature. Although studies examining award displacement in response to federal and state-level grants are abundant, little research exists determining whether this occurs in response to more localized scholarship programs. If institutions are essentially raising prices in response to the Promise, then the Promise is subsidizing institutions rather than making higher education more affordable for students. If award displacement is occurring, the Promise can do what other scholarship organizations often do in similar situations: contact the institution's financial aid office and request that they forgo their award displacement practices for Promise recipients. If institutions do not change their behavior, the Promise would have to make a decision on whether to warn students about the institution's award displacement policy or direct students to other institutions that do not capture Promise aid.

I explore whether postsecondary institutions displaced awards in response to the Pittsburgh Promise scholarship by capitalizing on the doubling of the maximum Promise amount in 2012. I use de-identified student-level data on each Promise recipient's actual cost of attendance, grants, and scholarships, as well as demographic and academic characteristics from school district administrative files to examine whether and how components of students' financial aid packages and total costs of attendance changed after the Promise award increase. To account for overall trends in pricing and financial aid, I compare Promise recipients to the average first-time, full-time

freshman entering the same institutions in the same year as reported by the Integrated Postsecondary Education Data System (IPEDS). With these two data sources, I assess differences in costs and awards between Promise students and their peers, on average, and examine whether and in what ways these differences changed after the increase in Promise funding. I refer to this strategy as a "quasi-difference-in-differences" design. I do not find evidence that institutions are responding to the Promise increase through aid reductions.

1.3.3 Pittsburgh Promise College and Career Coaching Pilot

The final dissertation paper explores the robustness of implementation of the Pittsburgh Promise's new Coaching Initiative. In recent years, the college-going rates of PPS students have plateaued. The Promise, acknowledging this stagnation, introduced the Coaching Initiative to increase the college-going rates of three Pittsburgh Public high schools with enrollment rates that are less than the district average. This pilot program was introduced to the district in the fall of 2020 as the COVID-19 Pandemic caused the closure of many of the nation's schools.

Pittsburgh Promise administrators and board members are hoping for the Coaching Initiative to succeed in its goals of increasing graduation rates, student self-esteem and self-advocacy skills, and college-going rates. In order to meet the goals and strengthen the program, an evaluation of the program's strengths and weaknesses will be conducted across the five-year pilot.

The final dissertation paper is part of an ongoing research-practice partnership evaluation with the Pittsburgh Promise. In response to plateauing college enrollment and decreasing Promise usage trends, the Pittsburgh Promise secured funding to implement a college coaching pilot program in three district high schools. The program was implemented during the 2020-2021 academic year when the COVID-19 pandemic resulted in schools closing and instruction moving online.

Using interviews with coaches and field notes taken during coaching meetings, I analyze the robustness of implementation of the coaching program within the schools with a particular focus on relationship-building with counselors. I find that coaches at two of the high schools encountered tensions with counselors that were brought about by a lack of communication and unclear role definition. I provide a roadmap for coaches to collaborate with counselors by using simple Venn Diagrams and counselor and Promise coach job descriptions. From this analysis, I offer recommendations to reduce redundancies in work tasks between these professional groups and provide methods to consider that may strengthen partnerships and postsecondary and career structures at the three high schools.

1.4 Tables and Figures

Table 1.1 Pittsburgh Promise eligibility and funding amounts by cohort year

	Graduating Classes		2008	2009	2010 2011	2012 2013	2014 2015 2016	2017	2018 +
Initial Eligibility	HS GPA	Core	2.00	2.25	2.50	2.5	2.5	2.5	2.5
		Exten.		2.0	2.0	2.0	2.0	2.0	2.0
	Attendance		0	85%	90%	90%	90%	90%	90%
	Residency		Valid Feeder	Valid Feeder	Valid Feeder	Valid Feeder	Valid Feeder	Valid Feeder	Valid Feeder
	Enroll Since	K	100% ($5,000)	100% ($5,000)	100% ($5,000)	100% ($10,000)	100% ($10,000)	100% ($7,500)	100% ($5,000)
		5	95% ($4,750)	95% ($4,750)	95% ($4,750)	95% ($9,500)	95% ($9,500)	90% ($6,750)	100% ($5,000)
		8	85% ($4,250)	85% ($4,250)	85% ($4,250)	85% ($8,500)	85% ($8,500)	70% ($5,250)	100% ($5,000)
		9	75% ($3,750)	75% ($3,750)	75% ($3,750)	75% ($7,500)	75% ($7,500)	50% ($3,750)	100% ($5,000)
		12	0%	0%	0%	0%	0%	0%	0%

2.0 Exclusion or Extension? An Evaluation of a Community College Promise Program

2.1 Introduction

In August 2021, Senate Democrats released the text of a budget resolution that would provide access to two years of free community college. Currently, 25 states already offer free community college programs, according to the Campaign for Free College Tuition.[4] In a recent Pew Research poll, the majority of Americans surveyed offered their support for free college policies.[5] With growing public support for the free college movement and potential implementation of a federal free community college policy, research examining the effects of free community college programs are particularly important for understanding how these policies may affect student outcomes and the wider economy.

Research on promise scholarship programs can inform policy regarding free community college proposals. Promise scholarships are place-based scholarship programs to increase college access and degree completion among high school graduates in an attempt to uplift the community. Robust research studies over the last decade have consistently found positive impacts of promise scholarship programs. In addition to inducing college enrollment and degree completion, there is evidence that promise programs build stronger postsecondary school cultures and more positive

[4] https://www.freecollegenow.org/

[5] https://www.pewresearch.org/fact-tank/2021/08/11/democrats-overwhelmingly-favor-free-college-tuition-while-republicans-are-divided-by-age-education/

school climates while encouraging better K-12 student outcomes. For a full review of the literature on promise program impacts, see Anderson (2019) or Swanson, Watson, Ritter and Nichols (2017).

Most of this research has focused on programs that provide access to four-year institutions in addition to community colleges. Less well understood is the impact on college access and degree attainment of promise programs explicitly targeting enrollment at community colleges. We contribute evidence on this question by examining the impact of one such community college promise program on student college-going outcomes.

The Pittsburgh Promise (hereafter, "the Promise") was established in 2008 to encourage college enrollment and reduce the college debt burden of Pittsburgh Public Schools (PPS) high school graduates. Any PPS student graduating high school with a 2.0 GPA was able to access up to $5,000 / year for four years. In 2009, the merit requirements were raised: students needed both a 2.25 GPA and an 85% cumulative high school attendance rate to obtain the scholarship. Wanting to provide a second chance option for students who did not meet the qualifications for the "Core" Scholarship, the Promise introduced the "Extension" Scholarship in 2009. Students that graduated with a 2.0 GPA or above, were eligible to receive up to $5,000 / year in funding to attend the local community college. Then, provided students earned a 2.0 GPA or better, after a year, they could take the Core Scholarship to any eligible institution for up to three additional years.

An investigation into the Pittsburgh Promise Core Scholarship found that it induced students to enroll in postsecondary education, with impacts especially strong for enrollment in a four-year Pennsylvania institution (Page, Iriti, Lowry & Anthony, 2019). No analogous evaluation of the Extension Scholarship has been conducted. In this paper, we explore whether the Extension Scholarship promotes college enrollment—overall and at the local community college—and whether it encourages degree completion. Following Page et al (2019), we use both regression

discontinuity and difference-in-differences designs to investigate the impact of the offer of a community college scholarship on student outcomes at the margin of eligibility and along the eligible GPA range.

To preview our results, we find that there is no impact of the offer of the Extension Scholarship on student college-going outcomes at the margin of eligibility. However, the Extension Scholarship does lead to improvements in persistence and eventual associate's degree attainment. Subgroup results reveal that this increase in attainment is concentrated among females, white students, and students not from socioeconomically disadvantaged neighborhoods. From the difference-in-differences analysis, we find that students with higher GPAs are more likely to substitute out of four-year institutions, leading to lower degree attainment. These effects are most pronounced among females and disadvantaged student populations.

In the next section we discuss the history and eligibility rules of both the Pittsburgh Promise Core and Extension Scholarships. We follow with a review of the literature evaluating the advantages and disadvantages of beginning postsecondary at a two-year versus a four-year institution. Next, we compare the Extension Scholarship to other community college promise programs. We then discuss our data and analytic strategies in more detail. Finally, we turn to results and discussion.

2.2 The Pittsburgh Promise Extension Scholarship

One of the leading goals of the Pittsburgh Promise scholarship is to encourage students to engage in their education and raise their achievement level. The Promise is an award for those students who have worked diligently in high school and are prepared for a college-level

curriculum. The Core Scholarship has undergone numerous iterations since it began in 2008 to reflect this goal. The first eligible cohort was required to graduate with a 2.0 GPA to secure the scholarship. In the next two years, the GPA requirement increased to 2.25 and, finally, to 2.5. An 85% attendance requirement was introduced in 2009 and was raised to 90% in 2010. See Table 1 for a detailed description of the Pittsburgh Promise scholarship components, eligibility criteria, and changes to the scholarship since 2008.

Recognizing the need for a "second chance" to obtain the Promise Scholarship, the Pittsburgh Promise Extension Scholarship was introduced to the PPS graduating class of 2009. Graduates who do not meet the 2.5 GPA minimum for the Core Scholarship but who graduate with at least a 2.0 GPA and a 90% attendance rate (85% in 2009), are able to use Promise funding to attend the Community College of Allegheny County (CCAC). Extension-eligible students are offered the same funding levels as those students that qualify for the Core Scholarship: up to $5,000 / year toward tuition and fees, room and board, and books, with the actual amount received based on a student's length of enrollment in the district. Extension-eligible students can use Promise dollars at any in-state two-year or less-than-two-year institution if their desired program of study is not available at CCAC. Once enrolled at CCAC or another qualifying institution, students are required to enroll in at least 9 credit hours and maintain a 2.0 cumulative GPA for a year. Students who meet these criteria are considered "Extension Completers" and can use Promise dollars at any accredited institution in Pennsylvania for three additional years. Students can also become Extension Completers if they enroll in a four-year institution for one year without Promise funding and maintain the same requirements as those students attending CCAC.

Thus far, the Extension Scholarship has not been fully evaluated. Before turning to our data analytic approach, we situate this study in the relevant literatures on community colleges and promise programs.

2.3 Literature Review

2.3.1 Beginning Postsecondary at a Community College versus a Four-Year institution

Critics of free community college policy proposals are concerned that diverting students from highly resourced four-year institutions to less well-resourced community colleges may negatively impact student outcomes. Indeed, studies have consistently found that enrolling in a two-year rather than a four-year institution, once the cost of community college has been reduced, lowers a student's probability of obtaining a bachelor's degree (Doyle, 2009; Long & Kurlaender, 2009; Reynolds, 2012; Gentsch & Truelsch, 2016). One study estimates that approximately a third of students with greater access to community colleges are diverted from enrolling at four-year institutions to attend a community college (Mountjoy, 2021). Researchers estimate that this diversionary effect (substituting out of a four-year and into a two-year institution) lowers eventual bachelor's completion substantially (Schudde & Brown, 2019; Mountjoy, 2019). Substituting into a community college can especially reduce bachelor's attainment among women (Long & Kurlaender, 2009; Reynolds, 2012; Mountjoy, 2019) and Black students (Long & Kurlaender, 2009).

Despite this sobering overview, community colleges do offer enormous benefits, especially for those students who otherwise would not attend a college at all. For example, students induced

to enroll at a community college when they otherwise would not enroll in postsecondary education are more likely to complete more years of schooling and earn a bachelor's degree (Acton, 2020; Denning, 2017; Mountjoy, 2019; Mountjoy, 2021). Economically disadvantaged students and women, in particular, are more likely to earn a degree and higher wages if induced to attend (Brand, Pfeffer & Goldrick-Rab, 2014; Mountjoy, 2021).

In sum, that the literature points to the conclusion that community college can be beneficial for those students who would not enroll in any postsecondary institution otherwise, while potentially hindering the long-term outcomes of students who are diverted from four-year institutions (Kane & Rouse, 1995; Mountjoy, 2019; Mountjoy, 2021; Reynold, 2012).

2.3.2 Community College Promise Programs

According to the PennAhead college promise program database—which has recorded detailed promise program information since 2015—there were approximately 425 promise programs throughout the United States as of fall 2021. Only 30% of these programs are community college programs (Perna & Leigh, 2021), with the vast majority being last-dollar awards.[6] Most community college promise programs are localized to a single institution and provide limited funding. For example, established in 2006 and one of the longest-running community college programs, the Ventura College Promise offers last-dollar awards only toward fees to attend Ventura Community College.

[6] Last-dollar scholarship are awarded to students up to the total cost of attendance (sometimes up to the cost of tuition and fees or just tuition depending on the program) minus all other grant and scholarship awards received.

As previously discussed, the research examining the causal effects of community college promise programs on student college-going outcomes is limited but growing. Appendix Table A.1. provides a list of results from current community college promise program studies. We categorize the programs by whether they are "high-touch" programs or "low-touch" programs. Low-touch programs most closely resemble the Extension Scholarship in that these programs offer financial aid only. High-touch programs provide additional assistance, such as mentoring, case management, or advising services.

Low-touch and high-touch community college programs, unsurprisingly, produce differential impacts on student outcomes. In terms of seamless enrollment into postsecondary education, low-touch programs have found small, nonsignificant (but positive in direction) effects on overall enrollment (Billings, 2018; Chimel, 2020). Among high-touch programs, Knox Achieves, the precursor to TNAchieves, showed substantial positive effects on seamless enrollment (Carruthers & Fox, 2016). Knox Achieves provided last dollar awards to eligible students to attend a wide variety of community college and technology centers in the state, as well as connecting students with a community mentor for additional support. Increases in enrollment occurred at community colleges among students who, in the absence of the program, would not have enrolled in college otherwise; however, there was some evidence of substitution out of four-year institutions (Carruthers & Fox, 2016). Other studies confirm substitution out of four-year institutions and into two-year institutions is a possible outcome from community college promise programs (Chimel, 2020; Nguyen, 2020). In the case of Knox Achieves, these students switching from four- to two-year institutions appeared to be higher-achieving and / or wealthier students (Carruthers & Fox, 2016).

Once enrolled in community college, student outcomes differ by program design. For example, Knox Achieves and ASAP (Accelerated Study in Associate Programs)—which provides

an extensive number of wraparound services to low-income, nontraditional students in community colleges in New York and Ohio—produce positive impacts on associate degree completion (Carruthers & Fox, 2020; Miller & Weiss, 2015). In contrast, the low-touch Tennessee Education Lottery Scholarship (TELS), which provided eligible students with $4,000 toward a four-year institution or $1,500 toward a two-year degree, produced different degree attainment outcomes. Community college students eligible for the scholarship were no more likely than ineligible students to transfer to a four-year or earn an associate's (Welch, 2014). Similarly, the Tulsa Achieves scholarship program, available to Tulsa County high school graduates to attend Tulsa Community College, produced no impact on credential or associate degree completion for those marginally eligible for the program based on a 2.0 GPA minimum (Bell, 2021).

One of the ultimate goals of the programs discussed thus far is to accelerate and expand postsecondary access and, ultimately, degree completion. This does not necessarily mean that these programs are intended to increase completion of bachelor's degrees specifically. In the case of ASAP, in particular, the goal has been to increase associate's degree attainment. However, students who are induced to attend community college often enroll in a general studies program, which is an indication that they plan to transfer to a four-year institution (Acton, 2020). Studies show no effect of either low-touch or high-touch programs on increasing the number of students with Bachelor's degrees (Bell, 2021; Miller & Weiss, 2015; Welch, 2014) and some evidence of possible negative impacts on Bachelor's degree completion (Carruthers & Fox, 2020; Chimel, 2020). Overall, the literature demonstrates that low-touch scholarship programs, like the Extension Scholarship, may not be efficient policy levers to promote equity or increase postsecondary degree completion.

The goal of the Extension Scholarship is to provide a second chance to access higher education among lower-achieving PPS students. For those Extension-eligible students who desire a bachelor's degree, the Promise intends for CCAC to be a stepping stone to a four-year institution. In this paper, we explore whether the offer of the Extension Scholarship encourages postsecondary enrollment in community college, transfer to a four-year institution, and eventual degree completion.

2.4 Methods

2.4.1 Data

We merge data from several sources to investigate these questions. First, we use data from the Pittsburgh Promise to determine which students applied for and received Promise dollars. Second, we use data from the Pittsburgh Public Schools (PPS) which provides detailed demographic data such as attendance rate, GPA, race / ethnicity, sex, PSAT score, and whether the student is an English language learner. Also within this dataset is the student's zip code at the time of graduation from high school. Because the PPS data does not contain a measure for socioeconomic status (SES), we use the student's zip code to match them to neighborhood characteristics from the Census' 2015 American Community Survey's 5-year estimates with which we build a composite

measure of neighborhood SES.[7] Finally, we merge this data to student college-going outcomes from the National Student Clearinghouse (NSC).[8]

Like Page et al. (2019), we utilize both regression discontinuity and difference-in-differences (DID) methods to investigate the impact of eligibility for the Extension Scholarship on college enrollment and degree completion outcomes. A regression discontinuity design provides greater internal validity but only allows us to determine the effects of the Extension scholarship on those students at the margin of eligibility. Although reliant on stronger assumptions, the DID strategy provides more information about impacts on students across a broader GPA range. We discuss the samples and the methodologies in more detail in the following sections.

2.4.2 Analytic Strategy 1: Regression Discontinuity

We capitalize on the Extension GPA eligibility threshold of 2.0 for the regression discontinuity design. To produce an accurate coefficient on completion, we limit the sample to only those cohorts with at least six years of post-high school NSC data. We start with a sample size of 9,800. We limit the sample to those students who meet the three other non-GPA criteria that determines

[7] We perform a principal components analysis (PCA) on the following neighborhood variables: unemployment rate, percent with no high school diploma, share with Bachelor's degree, percent below the poverty line, percent white, and percent Black. We use the continuous first component score as a control in the final model. The first component explains 63% of the variance in the data.

[8] The NSC is a nonprofit organization that maintains postsecondary enrollment records at the majority of U.S. colleges and universities. NSC data provide student semester-level enrollment information and these records represent the best, most comprehensive source of college enrollment information for U.S. students.

Extension eligibility. The student must: be a resident of the district, be enrolled since at least the ninth grade, and have at least a 90% high school attendance rate. This eliminates 2,189 students from the sample. We drop an additional 5,501 students who do not fall within the GPA bandwidth of 1.0 and less than 2.5. Our final analytic sample includes 2,110 students from the graduating classes of 2010 to 2015. Table 2 reports the summary statistics for the analytic sample. Students within the Extension-eligible GPA range are more likely to be female, white, and have higher PSAT scores than those students with graduating GPAs between 1.0 and 2.0.[9]

To investigate evaluate the impact of the Extension Scholars program, we estimate the following reduced form equation:

$$Y_{ics} = \beta_0 + \beta_1 Elig_{ic} + \beta_2 CGPA_{ic} + \beta_3 (Elig\ X\ CGPA)_{ic} + \boldsymbol{\gamma X_{ic}} + \varphi_{cs} + \epsilon_{ics} \quad (1)$$

where Y_{ics} represents the outcome of student i in cohort c and high school s, $Elig_{ic}$ is a dichotomous indicator for whether a student's GPA meets the Extension eligibility threshold, $CGPA_{ic}$ is student i's GPA centered at 2.0, and X_{ic} represents a vector of student characteristics displayed in Table 3. The coefficient β_1 on the eligibility indicator estimates the difference in outcomes between those students just above and those just below the GPA cutoff. We allow slopes to differ on either side of the GPA cutoff and include φ_{cs}, a cohort-by-high school fixed effect. We use triangular kernels to upweight those observations closer to the GPA cutoff, and we cluster standard errors by high school and cohort year.

[9] We collapse nonwhite racial categories into a single variable for simplicity. Less than 10% of the PPS high school population identifies as a race other than white or Black.

To obtain valid causal estimates from a regression discontinuity design, the characteristics of students from the "treatment" group (students who meet the 2.0 GPA threshold) and the "control" group (students with GPAs below 2.0) must not differ statistically or substantively at the margin of eligibility. We investigate whether student observables differ on either side of the GPA cutoff by estimating Equation (1) using student observables presented in Table 2 as outcomes. The results of this validity check are reported in Table 3. We find no statistically significant differences in observable student characteristics at the margin of eligibility.

Another threat to the validity of causal conclusions from a regression discontinuity analysis is the ability of students to manipulate the running variable to become eligible for the Extension Scholarship. We plot the distribution of student GPA in Figure 1 and overlay a kernel density line. There is no indication of heaping on either side of the 2.0 GPA threshold. To test for manipulation at the cutoff, we employ the local-polynomial density estimator approach developed by Cattaneo, Jansson, and Ma (2017). The results of this analysis yield no evidence of systematic manipulation of the GPA running variable.

2.4.3 Analytic Strategy 2: Difference-in-Differences

We complement the regression discontinuity design with a difference-in-differences (DID) strategy. This identification strategy allows us to observe the effects of the Extension Scholarship beyond the margin of eligibility. We use cohorts 2005 to 2007 as pre-Promise years. We exclude students from cohorts 2008 and 2009 from the analytic sample as the Extension Scholarship was not offered in 2008 and the eligibility criteria to receive it was different in 2009 than in later cohorts. As a comparison group, we use students who are ineligible for the Extension due to not meeting the 90% attendance rate or the required length of enrollment in the district. All students

in the final analytic sample graduated from high school with a GPA equal to or greater than 2.0 and less than 2.5. The summary statistics for the sample are presented in Table 4. The only notable differences between the ineligible and eligible students in the pre- and post-Extension years is that post-Extension ineligible students are more likely to be nonwhite and female than the other three categories of students. Our final analytic sample consists of 2,911 students.

We estimate the effect of the scholarship within a DID framework using the following equation:

$$Y_{ics} = \beta_1 Post_c + \beta_2 Elig_i + \beta_3 (Post_c \, X \, Elig_i) + \varphi_{cs} + \gamma X_i + \varepsilon_{ics} \qquad (2)$$

where Y_{ics} represents the college-going outcomes for student *i* in cohort *c* and high school *s,* $Post_c$ is a dichotomous variable equal to 1 if a student graduated in a year when the Extension Scholarship was offered, $Elig_i$ is a binary variable equal to 1 if the student meets Extension eligibility criteria, φ_{cs} is a cohort-by-high school fixed effect, and X_i is a vector of student characteristics. We also cluster standard errors at the cohort by high school level. The parameter of interest, β_3, represents the effect of the Extension Scholarship on college-going outcomes.

To establish validity in the DID, any shifts in outcomes must be attributable to the Extension Scholarship rather than another policy change that happened simultaneously. In our conversations with Promise staff, they are unaware of any other policy changes occurring in 2010 that would affect students within the Extension-eligible GPA range.

Another key assumption in utilizing a DID design is that there are parallel trends in the outcomes of interest between the treatment and control groups in the pre-treatment years. A visual inspection of the data confirms that this assumption does not always hold. We provide figures displaying the linear fit of the outcome data by DID control and treatment groups before and after

Extension implementation in Appendix B. We interpret results from the DID specification with caution.

2.4.4 Subgroup Analysis

According to the literature on community college promise programs, students of different backgrounds and social groups may respond differently to the offer of an award at the local community college. Therefore, we investigate heterogenous impacts of the Extension Scholarship on college-going outcomes. We specifically explore differences among male and female students, white and nonwhite students, and students from economically disadvantaged neighborhoods versus higher-income neighborhoods. For income status, we use the continuous first component score from a principal components analysis of the PCA analysis we created from neighborhood Census data to create a binary indicator for socioeconomic status. We visually inspected the distribution of this score and found a natural cut point at zero.

2.5 Results

2.5.1 Regression Discontinuity

A concern about the Extension Scholarship program is that it is considered by students to be a "second tier" program to the Core Scholarship. Further, some students are not aware that it exists. Approximately 58% of Extension-eligible students enroll in postsecondary education without using Promise dollars, with 27% of eligible non-users enrolling at CCAC. Although there are

many reasons why students may not apply for Promise funds, these numbers demonstrate that the Extension Scholarship is not well-known or understood or else it is not a popular choice among students.

A further potential complication to the program—and our design strategy—is the appeals process. If students do not meet one of the eligibility criteria to obtain either the Extension or Core Scholarship, they can contact the Promise and complete the appeals process to obtain the scholarship. Nearly 20% of Extension-eligible students receive Promise dollars to attend a four-year institution, likely via this appeals process.

Figure 2 shows the discontinuous take-up of the Extension Scholarship at the 2.0 threshold and Table 5 reports the take-up rate using Equation (1). Approximately 5% of students just below the GPA eligibility minimum receive Promise dollars, likely through the appeals process. The first column in Table 5 shows that, at the 2.0 GPA threshold, Promise take-up within the first year after high school graduation jumps only 9 percentage points. It would be ideal to use a fuzzy regression discontinuity to estimate the effect of scholarship receipt rather than estimating the intent-to-treat (ITT) coefficient. Unfortunately, due to the small sample size and the relatively low scholarship take-up at the 2.0 threshold, estimates calculated from the second stage of a fuzzy RD are imprecise. For this reason, we focus on ITT estimates in our regression discontinuity analyses and examine the effect of the offer of the Extension Scholarship on college-going outcomes.

The second column of Table 5 presents results for dollars received at the 2.0 GPA cutoff within one year after high school graduation. Students marginally eligible for the scholarship are likely to receive a statistically nonsignificant $14.91 more in Promise than those marginally ineligible. This rather small coefficient is the result of many students not receiving any Promise funding. For those students who do receive Extension Scholarship funds, the average award is $1,409.

Taken together, these results demonstrate that the Extension Scholarship is not a popular among students but, for those students who do take up the scholarship, they receive a large sum of money to attend an inexpensive community college.

We estimate take-up rates at the 2.0 cutoff using Equation (1) and a fully interacted model for student subgroups. We find no statistically significant or practical differences in take-up between female and male students, white and nonwhite students, or students differing socioeconomic neighborhoods. These results are available upon request.

We next turn to the main regression discontinuity results as presented in Table 6. The top panel of Table 6 reports the effects of the offer of the Extension Scholarship on enrollment outcomes and the bottom panel reports results for the effects on degree attainment outcomes. We find no effect of Extension eligibility on changes in overall enrollment or substitution from the four-year to the two-year sector for those students marginally eligible. Additionally, no effects on enrollment within six years of high school are detected.

The Extension Scholarship does not appear to induce postsecondary enrollment at the margin of eligibility. Nevertheless, it may still be possible for Extension dollars to increase persistence and eventual degree attainment. The bottom panel of Table 6 shows that there are no statistically significant changes in transfers from two-year to four-year institutions or impacts on bachelor's degree attainment. These results hold even after six years post-high school. Only 4% of students just below the GPA eligibility threshold obtain a degree within six years, which demonstrates the difficult task of increasing degree attainment among this lower-achieving student population. Nevertheless, there is a 2.4 percentage point increase in associate's degree attainment after six years, contributing to an increase of almost 3 percentage points in overall degree attainment at the eligibility threshold. Taken together, the Extension Scholarship appears to have done little to encourage

enrollment in postsecondary, but it did encourage greater persistence and eventual associate's degree attainment.

2.5.2 RD Subgroup Results

We next turn to results by subgroup. When we subset results by male and female students and by socioeconomically disadvantaged neighborhood status, we find no differences in enrollment effects between these groups and the main results. Therefore, we present these tables of results in Appendix C. Table 7 displays subgroup results for nonwhite students and Table 8 displays results for white students. We find no null effects of the offer of the Extension on nonwhite student outcomes. White students at the margin of Extension eligibility, however, were 7.4 percentage points more likely to enroll at any institution. Much of the increase in enrollment occurred at trade and technical institutions. Examining the data descriptively, these results are driven by white males. Six years after high school graduation, Extension-eligible students are 4.7 percentage points more likely to have ever enrolled in a four-year institution and 4.5 percentage points more likely to have ever enrolled in a trade or technical school. Approximately 51% of the Extension-eligible white students that enroll in a four-year institution are funded by the Pittsburgh Promise. Most white students in Pittsburgh Public Schools are concentrated within three high schools. Nonwhite students, on the other hand, or more evenly spread throughout PPS high schools. One mechanism explaining these results is that white students may have been exposed to more information regarding the Promise Scholarship and, especially, the more complicated details about other Extension-qualifying institutions.

Degree attainment subgroup results are in Appendix C. From these tables, we observe that the rise in the full sample's associate's degree completion was most heavily concentrated among

females, students from neighborhoods not deemed socioeconomically disadvantaged, and white students. Again, as previously mentioned, most white students in the district attend one of three schools. Additionally, students from neighborhoods that are not socioeconomically disadvantaged are also overrepresented in these three schools. Because we detect positive effects on degree attainment for these more advantaged groups, these results could be due to a combination of Promise money and high school or family-based supports.

2.5.3 Difference-in-Differences

We now turn to results from the difference-in-differences identification strategy. Table 9 displays results for Extension take-up and the average award received. A greater share of students in the DID sample use Promise dollars. Extension-eligible students are 24 percentage points more likely to use Promise money within the first year after high school graduation. On average, eligible students receive $316.63 in their first year after high school graduation.

Analogous to the main RD results, enrollment outcomes are shown in the top panel and degree outcomes are in the bottom panel of Table 10. Overall, the Extension Scholarship does not induce more students to enroll in college. Extension-eligible students graduating during an Extension year were 6.4 percentage points more likely to enroll at a community college and 6.5 percentage points less likely to enroll at a four-year institution. By including higher-achieving students further away from the 2.0 GPA Extension cutoff, we find evidence that the offer of the award induces substitution out of a four-year and into a two-year institution. Indeed, the Extension scholarship appears to reduce the likelihood of ever enrolling in a four-year institution by 8.4 percentage points. Consistent with prior literature, this result suggests that students are forgoing four-year institutions to attend two-years or not enrolling at all. This latter result could be due to a “stigma

effect" from failing to meet the 2.5 GPA threshold for Core Scholarship eligibility, a possibility deserving of further exploration.

The bottom panel of Table 10 shows that degree attainment decreases across the board for those students who are eligible for the Extension. After six years, students are 2 percentage points less likely to obtain an associate's degree and 4 percentage points less likely to obtain a bachelor's degree. Overall degree attainment is reduced by 6 percentage points.

2.5.4 DID Subgroup Analysis

Finally, we explore DID results by subgroup. Tables 11 and 12 display results for female and male students, respectively. The probability of an Extension-eligible female student enrolling in a four-year institution is reduced by 5.5 percentage points. There is no statistically significant effect on two-year enrollment, which suggests that Extension eligibility may have caused a discouragement effect among female students. Conversely, eligible male students were 7.5 percentage points less likely to enroll at a four-year institution but 9.7 percentage points more likely to enroll at a community college. Among male students, the offer of the Extension both encouraged sectoral substitution and new enrollment at community college. However, six years after high school, results for both female and male students show a reduction in four-year enrollment and a nonsignificant decrease in overall postsecondary enrollment. The bottom panel of Table 10 shows that female students experienced the largest decrease in bachelor's degree attainment of 6.2 percentage points.

We next examine the effect of the Extension offer by neighborhood socioeconomic status. We find no enrollment effects of eligibility on students not from socioeconomically disadvantaged neighborhoods. Table 13 displays results for disadvantaged students and Table 14 presents results

for non-disadvantaged students. We can conclude that substitution effects and possible discouragement effects are wholly concentrated on disadvantaged students. Although this student population did not experience any statistically significant effects on associate's degree attainment, the probability of obtaining a bachelor's degree decreased by 6 percentage points. We also find an unexplained decrease in associate's degree attainment of students not from economically disadvantaged neighborhoods. As their enrollment trends did not change, we are unsure what to conclude about this result. Perhaps the stigma effect extended to associate's degree attainment, in general. More research into this result will be conducted to understand the underlying cause of this decreased attainment.

Similar to results for students not from economically disadvantaged neighborhoods, we do not find any enrollment effects from Extension eligibility on white student enrollment. Table 15 provides results for nonwhite students and Table 16 for white students. The offer of the Extension encouraged nonwhite students to opt out of four-year and into two-year institutions. Six years after high school graduation, nonwhite students were 4 percentage points less likely to obtain a bachelor's degree. Overall degree completion for these students was lower by 7.5 percentage points. These same effects do not exist for white students.

2.6 Discussion

Promise programs are one of many innovative policy solutions intended to economically lift communities and increase degree attainment. However, when promise programs limit student choice to a select few institutions, they may lead to unintended negative outcomes, especially among disadvantaged student populations. We find that the offer of the Extension Scholarship

does not affect student enrollment at the margin of eligibility. These impacts may be due to the difficulty in encouraging enrollment among students with low high school GPAs. Additionally, these results may be driven by student confusion about the scholarship or the Extension opportunity being overshadowed by the Core Scholarship. We detect increases in associate's degree completion among those students who are marginally eligible. It may be at the 2.0 GPA margin, the scholarship dollars are enough to encourage a share of students to persist in postsecondary education and earn a degree.

We find no heterogenous effects of the Extension on enrollment outcomes by race or neighborhood socioeconomic status at the 2.0 GPA threshold. White students, however, were induced to enroll at trade and technical institutions and at four-year institutions. The increase in trade and technical enrollment was heavily concentrated among white males. We hypothesize that increases in enrollment at four-year institutions among marginally eligible white students may be due to informational barriers across high schools. Most white students in the Pittsburgh Public Schools are enrolled at three high schools, while nonwhite students are distributed across high schools. Counselors at the three high schools that white students predominantly attend may provide more information about the Extension Scholarship, including details about enrolling at other qualifying institutions or the appeals process. This may indicate that the Pittsburgh Promise would benefit from targeting high schools where complex information about the scholarship is not being shared with students.

The regression discontinuity results also demonstrate that more advantaged groups of Extension-eligible students are more likely to obtain associate's degrees as a result of the scholarship opportunity. These students may have more college supports at school or at home. Other community college scholarships demonstrate the need for additional supports, such as mentoring or

advising services, to move the needle on degree attainment (Carruthers et al., 2020; Evans et al., 2020). Students from disadvantaged backgrounds may need additional support to navigate the complexities of enrolling and persisting in college and thus to take advantage of the Promise funding for which they qualify.

Aligning with the literature, we find that the Extension Scholarship produces negative outcomes for those students with higher GPAs. Overall, results demonstrate that students are induced by Extension eligibility to substitute out of four-year institutions and into two-year institutions. This enrollment effect leads to decreases in degree attainment overall. This result is not surprising given that students with higher GPAs, in the absence of the Extension Scholarship, may have chosen to enroll in more well-resourced four-year institutions. When we break these results down by race, gender, and neighborhood socioeconomic status, we find the greatest decreases in Bachelor's degree attainment among females, nonwhite students, and students from socioeconomically disadvantaged neighborhoods. These results may also be consistent with the notion of a stigma effect. Because of the Extension's status as "second tier" to the Core Scholarship, some students may become discouraged if they do not qualify for the Core Scholarship. Furthermore, some students may take their Extension eligibility as a signal that they should not enroll in a four-year institution.

Overall, although the Extension Scholarship is a low-cost program, it does not produce positive effects for all students. Instead, for many students, the offer of the Extension leads them to substitute out of a four-year institution or to not enroll at all. In addition, these results are more pronounced among nonwhite students and students from disadvantaged neighborhoods. Such patterns may contribute to greater inequality in educational outcomes, a result counter to the goals of the Pittsburgh Promise overall.

2.7 Conclusion

Promise programs that limit institutional choice for students may lead to unintended negative outcomes. The Pittsburgh Promise, as part of a research-practice partnership, is already working to change the current Extension program. They have reached out to college partners and are planning to provide Extension-eligible students additional supports while enrolled in college. Additionally, the Promise has also implemented a college coaching pilot program for high school students. These newer efforts may serve to ameliorate the negative effects observed in this analysis.

2.8 Tables and Figures

Table 2.1 Pittsburgh Promise eligibility rules over time

	Graduating Classes		2008	2009	2010 2011	2012 2013	2014 2015 2016	2017	2018 +
Initial Eligibility	**HS GPA**	**Core**	2.00	2.25	2.50	2.5	2.5	2.5	2.5
		Extension		2.0	2.0	2.0	2.0	2.0	2.0
	Attendance		0	85%	90%	90%	90%	90%	90%
	Residency		Valid Feeder	Valid Feeder	Valid Feeder	Valid Feeder	Valid Feeder	Valid Feeder	Valid Feeder
	Enroll Since	**K**	100% ($5,000)	100% ($5,000)	100% ($5,000)	100% ($10,000)	100% ($10,000)	100% ($7,500)	100% ($5,000)
		5	95% ($4,750)	95% ($4,750)	95% ($4,750)	95% ($9,500)	95% ($9,500)	90% ($6,750)	100% ($5,000)
		8	85% ($4,250)	85% ($4,250)	85% ($4,250)	85% ($8,500)	85% ($8,500)	70% ($5,250)	100% ($5,000)
		9	75% ($3,750)	75% ($3,750)	75% ($3,750)	75% ($7,500)	75% ($7,500)	50% ($3,750)	100% ($5,000)
		12	0%	0%	0%	0%	0%	0%	0%

Table 2.2 RD sample descriptive statistics, cohorts 2010-2015

	Graduating GPA between 1.0 and < 2.0 N=724	Graduating GPA between 2.0 and < 2.5 N=1,386
Student Characteristics		
Female	0.374 (0.484)	0.466 (0.499)
PSAT Score	81.499 (38.994)	85.535 (41.170)
Missing PSAT	0.140 (0.347)	0.152 (0.359)
Nonwhite	0.805 (0.396)	0.707 (0.455)
ESL	0.012 (0.111)	0.017 (0.130)
Neighborhood Characteristics		
PCA Score	0.540 (1.818)	0.353 (1.989)
% Unemployed	0.380 (0.072)	0.376 (0.075)
% No HS	0.095 (0.028)	0.095 (0.030)
% BA	0.315 (0.133)	0.312 (0.133)
% Below Poverty	0.186 (0.070)	0.179 (0.078)
% Black	0.324 (0.172)	0.300 (0.172)
% White	0.606 (0.172)	0.629 (0.172)

Source: Pittsburgh Public Schools and American Community Survey 2015 Five-Year Estimates.
Notes: Table cells present means and standard deviations (in parentheses).

Table 2.3 Coefficients for GPA above 2.0 from model predicting student observable characteristics, N=2,110

	Graduating GPA > 2.0	Mean 0.20 GPA points Below	R^2
Student Characteristics			
Female	-0.013 (0.045)	0.422	0.029
PSAT Score	-4.280 (3.016)	84.17	0.259
Missing PSAT	0.025 (0.019)	0.141	0.272
Nonwhite	-0.025 (0.038)	0.797	0.162
ESL	-0.020 (0.016)	0.026	0.033
Neighborhood Characteristics			
PCA Score	0.032 (0.156)	0.467	0.108
% Unemployed	-0.004 (0.005)	0.381	0.106
% No HS	0.000 (0.002)	0.094	0.154
% BA	-0.006 (0.011)	0.321	0.200
% Below Poverty	0.001 (0.006)	0.183	0.112
% Black	0.007 (0.015)	0.318	0.237
% White	-0.005 (0.013)	0.611	0.244

Source: Pittsburgh Public Schools and American Community Survey 2015 Five-Year Estimates.
Notes: Coefficients and standard errors (in parentheses) are presented from an reduced form OLS regression predicting the discontinuity in covariates at the margin of Extension eligibility. Regressions include high school-by-year fixed effects and standard errors clustered at the high school-by-year level.

Table 2.4 Summary statistics for DID analytic sample, cohorts 2005-2007 and 2010-2015

	Pre-Extension 2005-2007		Post-Extension 2010-2015	
	Eligible N=665	**Ineligible N=445**	**Eligible N=1,298**	**Ineligible N=503**
Student Characteristics				
Female	0.498	0.530	0.465	0.594
	(0.500)	(0.500)	(0.499)	(0.491)
HS GPA	2.271	2.235	2.259	2.222
	(0.145)	(0.145)	(0.142)	(0.142)
Nonwhite	0.681	0.647	0.703	0.831
	(0.466)	(0.478)	(0.457)	(0.375)
ESL	0.006	0.007	0.018	0.008
	(0.077)	(0.082)	(0.132)	(0.089)
Neighborhood Characteristics				
PCA	0.274	0.360	0.339	0.758
	(1.878)	(1.879)	(1.997)	(1.683)
% Unemployed	0.373	0.369	0.376	0.381
	(0.070)	(0.072)	(0.074)	(0.078)
% No HS Diploma	0.091	0.095	0.094	0.100
	(0.029)	(0.029)	(0.030)	(0.026)
% BA	0.337	0.316	0.315	0.297
	(0.140)	(0.133)	(0.134)	(0.116)
% Poverty	0.178	0.181	0.179	0.194
	(0.069)	(0.071)	(0.078)	(0.066)
% Black	0.307	0.305	0.300	0.335
	(0.174)	(0.166)	(0.174)	(0.153)
% White	0.619	0.624	0.629	0.595
	(0.171)	(0.162)	(0.174)	(0.152)

Source: Pittsburgh Public Schools and American Community Survey 2015 Five-Year Estimates.
Notes: Cells present means and standard deviations (in parentheses).

Table 2.5 Extension take-up at margin of eligibility, cohorts 2010-2015, N-2,110

	Received Promise Dollars 1st Year After HS	Average Promise Award 1st Year After HS	Ever Received Promise Dollars
Extension-Eligible	0.089***	14.910	0.108***
	(0.026)	(31.001)	(0.021)
Control Mean	0.049	32.85	0.062
R^2	0.110	0.099	0.126

Source: Pittsburgh Promise administrative files.
Notes: Coefficients and standard errors (in parentheses) are presented from an OLS regression predicting the discontinuity in take-up at the margin of Extension eligibility. Regressions include high school-by-year fixed effects and standard errors clustered at the high school-by-year level.

Table 2.6 RD enrollment and degree outcomes for cohorts 2010 to 2015, N=2,110

	Seamless enrollment at any college	Seamless enrollment at 2-year	Seamless enrollment at 4-year	Seamless enrollment at other institution	Ever enrolled within 6 years	Every enrolled at 2-year	Ever enrolled at 4-year	Ever enrolled ever
Extension Eligible	0.038	0.029	0.009	0.000	0.022	-0.005	0.025	0.004
	(0.035)	(0.023)	(0.023)	(0.009)	(0.032)	(0.034)	(0.029)	(0.012)
Control Mean	0.373	0.291	0.062	0.020	0.513	0.408	0.075	0.029
R-squared	0.104	0.031	0.113	0.011	0.090	0.024	0.110	0.016
	Transfer from 2-year to 4-year	**Associate's within 2 years**	**Associate's within 4 years**	**Associate's within 6 years**	**BA within 4 years**	**BA within 6 years**	**Other degree within 6 years**	**Any degree within 6 years**
Extension Eligible	-0.005	0.002	0.012	0.024*	-0.006	-0.009	0.012	0.027*
	(0.022)	(0.005)	(0.007)	(0.012)	(0.008)	(0.012)	(0.011)	(0.015)
Control Mean	0.052	0.000	0.003	0.003	0.003	0.016	0.016	0.036
R-squared	0.020	0.007	0.016	0.022	0.022	0.045	0.014	0.041

Source: Pittsburgh Promise administrative files, Pittsburgh Public Schools, and American Community Survey 2015 Five-Year Estimates.
Notes: Coefficients and standard errors (in parentheses) are presented from an OLS regression predicting the discontinuity in outcomes at the margin of Extension eligibility. Regressions include high school-by-year fixed effects and standard errors clustered at the high school-by-year level.

Table 2.7 RD enrollment and degree outcomes among nonwhite students for cohorts 2010-2015, N=1,563

	Seamless enrollment at any college	Seamless enrollment at 2-year	Seamless enrollment at 4-year	Seamless enrollment at other institution	Ever enrolled within 6 years	Every enrolled at 2-year	Ever enrolled at 4-year	Ever enrolled ever
Extension Eligible	0.014 (0.048)	0.023 (0.036)	0.007 (0.027)	-0.016** (0.005)	0.010 (0.040)	0.001 (0.042)	0.022 (0.032)	-0.012 (0.010)
Control Mean	0.398	0.299	0.074	0.025	0.529	0.406	0.090	0.033
R-squared	0.107	0.029	0.114	0.017	0.099	0.025	0.112	0.020
	Transfer from 2-year to 4-year	**Associate's within 2 years**	**Associate's within 4 years**	**Associate's within 6 years**	**BA within 4 years**	**BA within 6 years**	**Other degree within 6 years**	**Any degree within 6 years**
Extension Eligible	-0.001 (0.026)	-0.001 (0.004)	-0.000 (0.006)	0.008 (0.006)	-0.008 (0.010)	-0.018 (0.014)	0.013 (0.011)	0.004 (0.010)
Control Mean	0.061	0.000	0.000	0.004	0.004	0.021	0.008	0.033
R-squared	0.024	0.011	0.044	0.038	0.029	0.052	0.011	0.053

Source: Pittsburgh Promise administrative files, Pittsburgh Public Schools, and American Community Survey 2015 Five-Year Estimates.
Notes: Coefficients and standard errors (in parentheses) are presented from an OLS regression predicting the discontinuity in outcomes at the margin of Extension eligibility. Regressions include high school-by-year fixed effects and standard errors clustered at the high school-by-year level.

Table 2.8 RD enrollment and degree outcomes among white students for cohorts 2010-2015, N=547

	Seamless enrollment at any college	Seamless enrollment at 2-year	Seamless enrollment at 4-year	Seamless enrollment at other institution	Ever enrolled within 6 years	Every enrolled at 2-year	Ever enrolled at 4-year	Ever enrolled other
Extension Eligible	0.074*	0.005	0.028	0.041**	0.027	-0.065	0.047*	0.045***
	(0.041)	(0.036)	(0.025)	(0.018)	(0.048)	(0.053)	(0.024)	(0.012)
Control Mean	0.274	0.258	0.016	0.000	0.452	0.419	0.016	0.016
R-squared	0.110	0.089	0.138	0.033	0.082	0.079	0.125	0.035
	Transfer from 2-year to 4-year	**Associate's within 2 years**	**Associate's within 4 years**	**Associate's within 6 years**	**BA within 4 years**	**BA within 6 years**	**Other degree within 6 years**	**Any degree within 6 years**
Extension Eligible	-0.016	0.011	0.047*	0.067*	-0.006	0.012	-0.017	0.062
	(0.011)	(0.011)	(0.026)	(0.035)	(0.014)	(0.021)	(0.013)	(0.042)
Control Mean	0.016	0.000	0.000	0.000	0.000	0.000	0.048	0.048
R-squared	0.074	0.005	0.025	0.044	0.031	0.065	0.039	0.048

Source: Pittsburgh Promise administrative files, Pittsburgh Public Schools, and American Community Survey 2015 Five-Year Estimates.
Notes: Coefficients and standard errors (in parentheses) are presented from an OLS regression predicting the discontinuity in outcomes at the margin of Extension eligibility. Regressions include high school-by-year fixed effects and standard errors clustered at the high school-by-year level.

Table 2.9 DID Extension take-up, cohorts 2010-2015, N=2,911

	Received Promise Dollars 1st Year After HS	Average Promise Award 1st Year After HS	Ever Received Promise Dollars
Eligible x Post2010	0.238***	316.634***	0.274***
	(0.024)	(39.492)	(0.026)
R^2	0.122	0.117	0.140

Source: Pittsburgh Promise administrative files.
Notes: Coefficients and standard errors (in parentheses) are presented from an OLS regression predicting the discontinuity in take-up at the margin of Extension eligibility. Regressions include high school-by-year fixed effects and standard errors clustered at the high school-by-year level.

Table 2.10 DID enrollment and degree outcomes, cohorts 2005-2007 and 2010-2015, N=2,911

	Seamless enrollment at any college	Seamless enrollment at 2-year	Seamless enrollment at 4-year	Seamless enrollment at other institution	Ever enrolled within 6 years	Ever enrolled at 2-year	Ever enrolled at 4-year	Ever enrolled other
Extension Eligible x Post	0.009	0.064**	-0.065***	0.010	-0.038	0.042	-0.084***	0.006
	(0.022)	(0.024)	(0.012)	(0.007)	(0.026)	(0.026)	(0.016)	(0.011)
Extension Eligible	0.131***	0.051**	0.084***	-0.004	0.110***	0.028	0.090***	-0.010
	(0.034)	(0.022)	(0.017)	(0.004)	(0.032)	(0.021)	(0.019)	(0.009)
R-squared	0.075	0.021	0.085	0.009	0.051	0.012	0.080	0.009

	Transfer from 2-year to 4-year	Associate's within 2 years	Associate's within 4 years	Associate's within 6 years	BA within 4 years	BA within 6 years	Other degree within 6 years	Any degree within 6 years
Extension Eligible x Post	-0.010	-0.015**	-0.022**	-0.021*	-0.012*	-0.042**	0.001	-0.063***
	(0.006)	(0.006)	(0.009)	(0.011)	(0.007)	(0.014)	(0.006)	(0.020)
Extension Eligible	0.020**	0.015**	0.020*	0.021*	0.013	0.043*	0.002	0.065*
	(0.008)	(0.007)	(0.010)	(0.011)	(0.009)	(0.020)	(0.012)	(0.036)
R-squared	0.015	0.013	0.021	0.016	0.032	0.056	0.015	0.040

Source: Pittsburgh Promise administrative files, Pittsburgh Public Schools, and American Community Survey 2015 Five-Year Estimates.
Notes: Coefficients and standard errors (in parentheses) are presented from an OLS regression. Outcomes are a function of a dummy indicator for Extension eligibility and an interaction between eligibility and an indicator for whether the student graduated in an Extension year. Regressions include high school-by-year fixed effects and standard errors are clustered at the high school-by-year level.

Table 2.11 DID enrollment and degree outcomes among female students, cohorts 2005-2007 and 2010-2015, N=1,470

	Seamless enrollment at any college	Seamless enrollment at 2-year	Seamless enrollment at 4-year	Seamless enrollment at other institution	Ever enrolled within 6 years	Ever enrolled at 2-year	Ever enrolled at 4-year	Ever enrolled other
Extension Eligible x Post	-0.013	0.032	-0.055*	0.009	-0.038	0.012	-0.070**	0.023
	(0.039)	(0.035)	(0.029)	(0.009)	(0.034)	(0.041)	(0.027)	(0.013)
Extension Eligible	0.149**	0.064	0.090**	-0.005	0.098*	0.029	0.083**	-0.017*
	(0.054)	(0.037)	(0.031)	(0.007)	(0.048)	(0.042)	(0.028)	(0.008)
R-squared	0.082	0.023	0.087	0.014	0.050	0.011	0.081	0.012

	Transfer from 2-year to 4-year	Associate's within 2 years	Associate's within 4 years	Associate's within 6 years	BA within 4 years	BA within 6 years	Other degree within 6 years	Any degree within 6 years
Extension Eligible x Post	-0.032*	-0.014**	-0.015	-0.001	-0.022	-0.062***	-0.001	-0.065*
	(0.015)	(0.006)	(0.010)	(0.010)	(0.016)	(0.020)	(0.014)	(0.031)
Extension Eligible	0.038***	0.011	0.018	0.009	0.026	0.061**	0.006	0.074
	(0.009)	(0.007)	(0.012)	(0.011)	(0.015)	(0.027)	(0.014)	(0.044)
R-squared	0.021	0.012	0.064	0.048	0.046	0.067	0.016	0.051

Source: Pittsburgh Promise administrative files, Pittsburgh Public Schools, and American Community Survey 2015 Five-Year Estimates.
Notes: Coefficients and standard errors (in parentheses) are presented from an OLS regression. Outcomes are a function of a dummy indicator for Extension eligibility and an interaction between eligibility and an indicator for whether the student graduated in an Extension year. Regressions include high school-by-year fixed effects and standard errors are clustered at the high school-by-year level.

Table 2.12 DID enrollment and degree outcomes among male students, cohorts 2005-2007 and 2010-2015, N=1,441

	Seamless enrollment at any college	Seamless enrollment at 2-year	Seamless enrollment at 4-year	Seamless enrollment at other institution	Ever enrolled within 6 years	Ever enrolled at 2-year	Ever enrolled at 4-year	Ever enrolled other
Extension Eligible x Post	0.033	0.097**	-0.075**	0.010	-0.038	0.073*	-0.100**	-0.011
	(0.032)	(0.037)	(0.031)	(0.011)	(0.034)	(0.036)	(0.038)	(0.017)
Extension Eligible	0.110***	0.035	0.078***	-0.004	0.121**	0.027	0.099**	-0.005
	(0.031)	(0.033)	(0.022)	(0.006)	(0.049)	(0.034)	(0.035)	(0.020)
R-squared	0.074	0.030	0.095	0.018	0.057	0.020	0.091	0.025

	Transfer from 2-year to 4-year	Associate's within 2 years	Associate's within 4 years	Associate's within 6 years	BA within 4 years	BA within 6 years	Other degree within 6 years	Any degree within 6 years
Extension Eligible x Post	0.009	-0.016*	-0.030***	-0.039**	-0.003	-0.025*	0.002	-0.062***
	(0.010)	(0.008)	(0.010)	(0.016)	(0.006)	(0.013)	(0.011)	(0.017)
Extension Eligible	0.007	0.020**	0.023**	0.033*	-0.000	0.029*	-0.004	0.058
	(0.011)	(0.009)	(0.010)	(0.017)	(0.005)	(0.015)	(0.012)	(0.033)
R-squared	0.025	0.023	0.028	0.019	0.040	0.061	0.031	0.047

Source: Pittsburgh Promise administrative files, Pittsburgh Public Schools, and American Community Survey 2015 Five-Year Estimates.
Notes: Coefficients and standard errors (in parentheses) are presented from an OLS regression. Outcomes are a function of a dummy indicator for Extension eligibility and an interaction between eligibility and an indicator for whether the student graduated in an Extension year. Regressions include high school-by-year fixed effects and standard errors are clustered at the high school-by-year level.

Table 2.13 DID enrollment and degree outcomes among students from disadvantaged neighborhoods, cohorts 2005-2007 and 2010-2015, N=2,026

	Seamless enrollment at any college	Seamless enrollment at 2-year	Seamless enrollment at 4-year	Seamless enrollment at other institution	Ever enrolled within 6 years	Ever enrolled at 2-year	Ever enrolled at 4-year	Ever enrolled other
Extension Eligible x Post	0.002	0.095***	-0.098***	0.005	-0.035	0.073*	-0.108***	-0.000
	(0.028)	(0.023)	(0.019)	(0.006)	(0.038)	(0.035)	(0.020)	(0.010)
Extension Eligible	0.127***	0.031	0.099***	-0.003	0.107**	0.016	0.100***	-0.008
	(0.038)	(0.018)	(0.022)	(0.005)	(0.037)	(0.021)	(0.021)	(0.012)
R-squared	0.085	0.025	0.100	0.007	0.058	0.018	0.093	0.010

	Transfer from 2-year to 4-year	Associate's within 2 years	Associate's within 4 years	Associate's within 6 years	BA within 4 years	BA within 6 years	Other degree within 6 years	Any degree within 6 years
Extension Eligible x Post	0.009	-0.008	-0.011	-0.005	-0.016*	-0.060**	-0.006	-0.070**
	(0.013)	(0.006)	(0.007)	(0.013)	(0.009)	(0.021)	(0.011)	(0.025)
Extension Eligible	0.008	0.008	0.010	0.013	0.023*	0.059**	0.009	0.079*
	(0.013)	(0.007)	(0.008)	(0.009)	(0.013)	(0.026)	(0.017)	(0.042)
R-squared	0.014	0.016	0.015	0.014	0.050	0.077	0.018	0.053

Source: Pittsburgh Promise administrative files, Pittsburgh Public Schools, and American Community Survey 2015 Five-Year Estimates.
Notes: Coefficients and standard errors (in parentheses) are presented from an OLS regression. Outcomes are a function of a dummy indicator for Extension eligibility and an interaction between eligibility and an indicator for whether the student graduated in an Extension year. Regressions include high school-by-year fixed effects and standard errors are clustered at the high school-by-year level.

Table 2.14 DID enrollment and degree outcomes among students not from disadvanataged neighborhoods, cohorts 2005-2007 and 2010-2015, N=885

	Seamless enrollment at any college	Seamless enrollment at 2-year	Seamless enrollment at 4-year	Seamless enrollment at other institution	Ever enrolled within 6 years	Ever enrolled at 2-year	Ever enrolled at 4-year	Ever enrolled other
Extension Eligible x Post	0.034	-0.002	0.015	0.021	-0.043	-0.029	-0.026	0.017
	(0.022)	(0.031)	(0.021)	(0.013)	(0.024)	(0.042)	(0.033)	(0.021)
Extension Eligible	0.130***	0.089*	0.045	-0.004	0.112**	0.052	0.063	-0.007
	(0.043)	(0.049)	(0.027)	(0.013)	(0.040)	(0.056)	(0.041)	(0.020)
R-squared	0.079	0.027	0.085	0.017	0.051	0.014	0.072	0.015

	Transfer from 2-year to 4-year	Associate's within 2 years	Associate's within 4 years	Associate's within 6 years	BA within 4 years	BA within 6 years	Other degree within 6 years	Any degree within 6 years
Extension Eligible x Post	-0.050***	-0.031***	-0.049***	-0.056***	-0.000	-0.002	0.013	-0.048*
	(0.012)	(0.007)	(0.013)	(0.015)	(0.010)	(0.015)	(0.019)	(0.024)
Extension Eligible	0.047**	0.033***	0.047***	0.042*	-0.012*	0.003	-0.011	0.034
	(0.018)	(0.007)	(0.014)	(0.022)	(0.006)	(0.016)	(0.018)	(0.028)
R-squared	0.021	0.023	0.035	0.031	0.032	0.047	0.019	0.038

Source: Pittsburgh Promise administrative files, Pittsburgh Public Schools, and American Community Survey 2015 Five-Year Estimates.
Notes: Coefficients and standard errors (in parentheses) are presented from an OLS regression. Outcomes are a function of a dummy indicator for Extension eligibility and an interaction between eligibility and an indicator for whether the student graduated in an Extension year. Regressions include high school-by-year fixed effects and standard errors are clustered at the high school-by-year level.

Table 2.15 DID enrollment and degree outcomes among nonwhite students, cohorts 2005-2007 and 2010-2015, N=2,072

	Seamless enrollment at any college	Seamless enrollment at 2-year	Seamless enrollment at 4-year	Seamless enrollment at other institution	Ever enrolled within 6 years	Ever enrolled at 2-year	Ever enrolled at 4-year	Ever enrolled other
Extension Eligible x Post	0.016	0.104***	-0.092***	0.004	-0.032	0.076***	-0.105***	-0.004
	(0.036)	(0.024)	(0.019)	(0.008)	(0.035)	(0.022)	(0.024)	(0.013)
Extension Eligible	0.121**	0.018	0.106***	-0.003	0.113**	0.006	0.107***	-0.001
	(0.045)	(0.027)	(0.019)	(0.007)	(0.039)	(0.025)	(0.021)	(0.009)
R-squared	0.070	0.024	0.082	0.008	0.048	0.017	0.080	0.006

	Transfer from 2-year to 4-year	Associate's within 2 years	Associate's within 4 years	Associate's within 6 years	BA within 4 years	BA within 6 years	Other degree within 6 years	Any degree within 6 years
Extension Eligible x Post	0.011	-0.014	-0.022*	-0.024**	-0.018	-0.044*	-0.006	-0.075**
	(0.013)	(0.008)	(0.011)	(0.010)	(0.010)	(0.021)	(0.008)	(0.026)
Extension Eligible	0.002	0.016	0.017	0.025**	0.023	0.049	0.006	0.078*
	(0.013)	(0.009)	(0.014)	(0.011)	(0.013)	(0.029)	(0.010)	(0.042)
R-squared	0.017	0.016	0.049	0.039	0.042	0.060	0.010	0.055

Source: Pittsburgh Promise administrative files, Pittsburgh Public Schools, and American Community Survey 2015 Five-Year Estimates.
Notes: Coefficients and standard errors (in parentheses) are presented from an OLS regression. Outcomes are a function of a dummy indicator for Extension eligibility and an interaction between eligibility and an indicator for whether the student graduated in an Extension year. Regressions include high school-by-year fixed effects and standard errors are clustered at the high school-by-year level.

Table 2.16 DID enrollment and degree outcomes among white students, cohorts 2005-2007 and 2010-2015, N=839

	Seamless enrollment at any college	Seamless enrollment at 2-year	Seamless enrollment at 4-year	Seamless enrollment at other institution	Ever enrolled within 6 years	Ever enrolled at 2-year	Ever enrolled at 4-year	Ever enrolled other
Extension Eligible x Post	-0.005	-0.016	-0.011	0.023	-0.051	-0.028	-0.045	0.027
	(0.030)	(0.038)	(0.041)	(0.015)	(0.035)	(0.056)	(0.033)	(0.015)
Extension Eligible	0.149***	0.117***	0.037**	-0.006	0.101**	0.071*	0.057*	-0.031*
	(0.039)	(0.037)	(0.016)	(0.012)	(0.034)	(0.039)	(0.032)	(0.016)
R-squared	0.076	0.042	0.077	0.029	0.051	0.013	0.080	0.008

	Transfer from 2-year to 4-year	Associate's within 2 years	Associate's within 4 years	Associate's within 6 years	BA within 4 years	BA within 6 years	Other degree within 6 years	Any degree within 6 years
Extension Eligible x Post	-0.045*	-0.016**	-0.018	-0.010	0.001	-0.038	0.016	-0.032
	(0.023)	(0.006)	(0.016)	(0.020)	(0.010)	(0.025)	(0.012)	(0.021)
Extension Eligible	0.048**	0.012**	0.028**	0.013	-0.009	0.028**	-0.008	0.033
	(0.019)	(0.004)	(0.012)	(0.013)	(0.012)	(0.011)	(0.024)	(0.032)
R-squared	0.021	0.019	0.017	0.010	0.032	0.073	0.027	0.033

Source: Pittsburgh Promise administrative files, Pittsburgh Public Schools, and American Community Survey 2015 Five-Year Estimates.
Notes: Coefficients and standard errors (in parentheses) are presented from an OLS regression. Outcomes are a function of a dummy indicator for Extension eligibility and an interaction between eligibility and an indicator for whether the student graduated in an Extension year. Regressions include high school-by-year fixed effects and standard errors are clustered at the high school-by-year level.

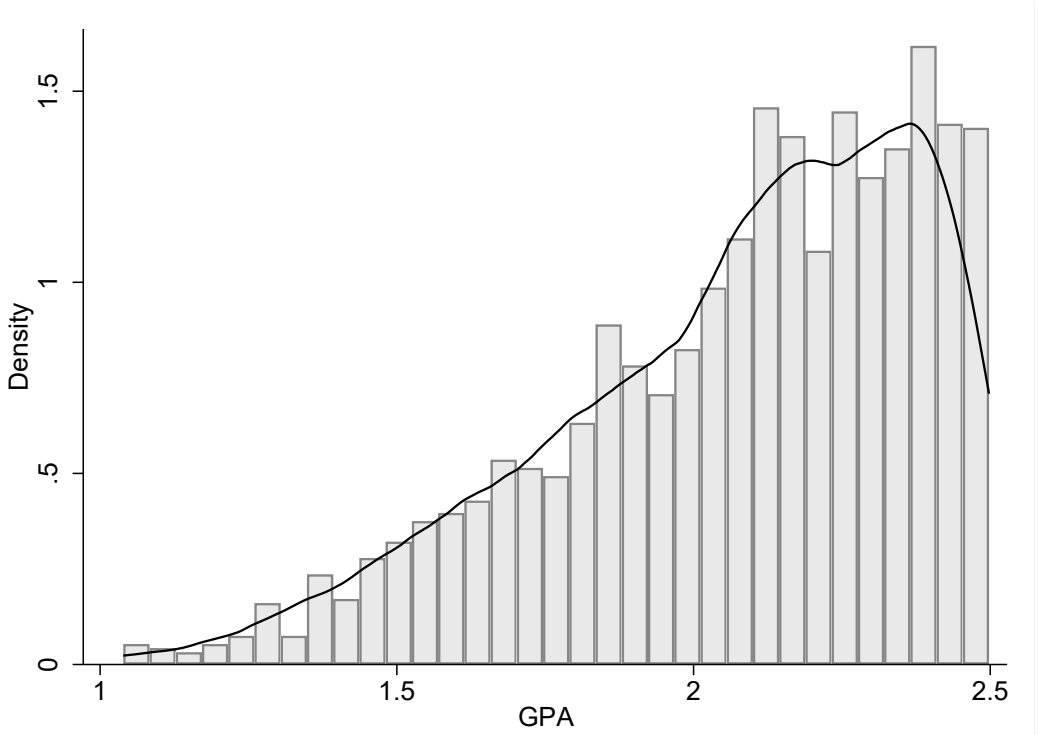

Figure 2.1 Density of GPA distribution, cohorts 2010-2015

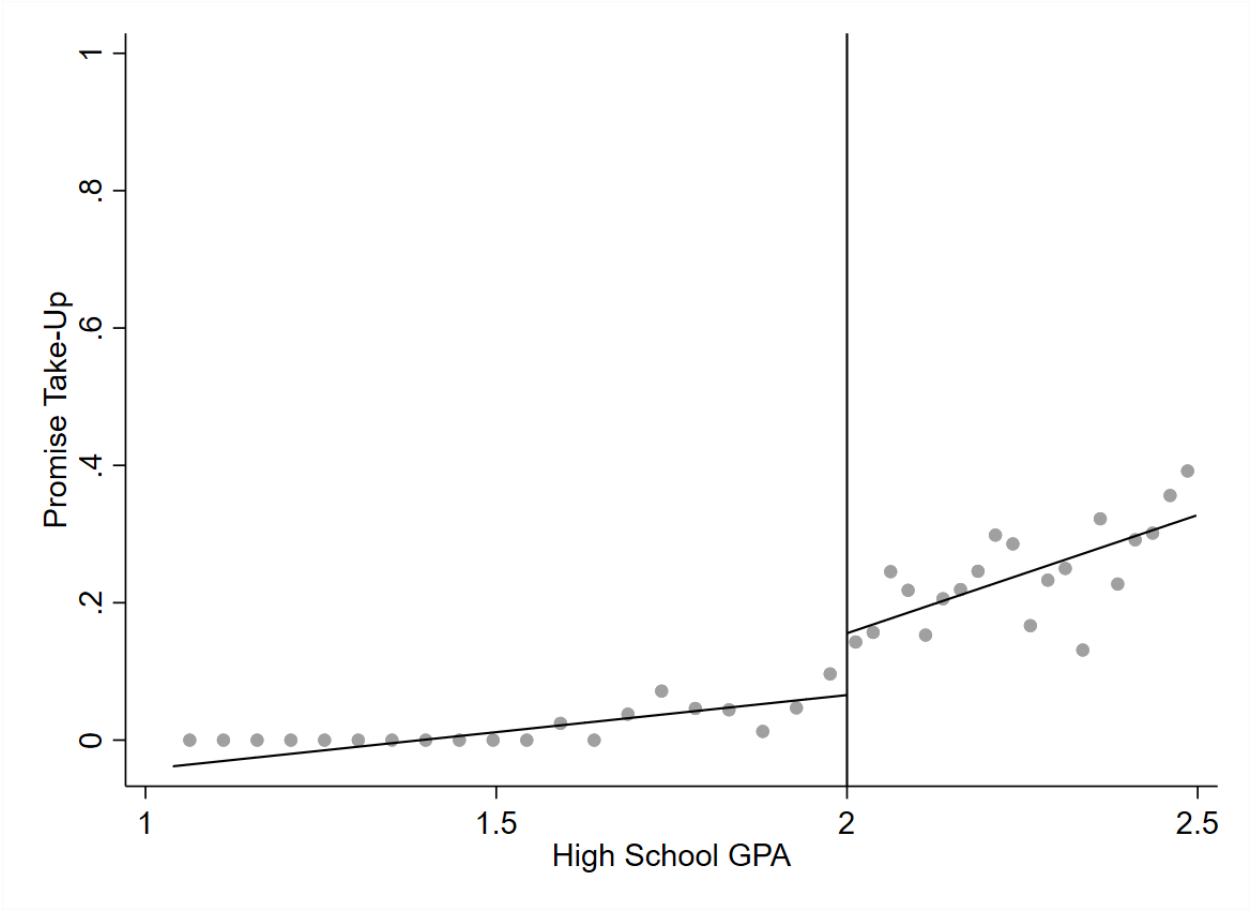

Figure 2.2 Extension Scholarship Take-up, cohorts 2010-2015

3.0 Subtraction by Addition: Do Private Scholarship Awards Lead to Financial Aid Displacement?

3.1 Introduction

In 2017, Maryland became the first state to place restrictions on financial aid award displacement at public institutions. With the passage of Maryland House Bill 266, the Maryland legislature stipulated that public higher education institutions cannot reduce institutional financial aid to a student as a result of that student receiving a private scholarship award. The law, implemented in academic year 2018-2019, allows institutions to decrease institutional aid only if the student's total aid exceeds the student's need or if the institution receives permission from the private scholarship foundation. This legislation was motivated by evidence from a scholarship provider, Central Scholarship, which reported that the scholarships they awarded to students were displacing institutional aid awards rather than reducing the out-of-pocket costs that their awardees faced in paying for college.[10]

There are thousands of scholarship providers in the US, and Central Scholarship is not the only one that fears that institutions strategically alter financial aid packages in response to private scholarships. During the 2003-2004 academic year alone, more than $3 billion in private scholarship aid was disbursed to students in the US (McSwain, Cunningham, Keselman, & Merisotis, 2005). Although only 10% of students receive private scholarships, the average award is almost

[10] http://www.baltimoresun.com/news/maryland/education/higher-ed/bs-md-scholarship-displacement-20170704-story.html

$2,000, which has the potential to represent a substantial reduction in the out-of-pocket costs students must pay (McSwain et. al., 2005). Students will not experience such a reduction, however, if they receive less in institutional aid because of earning a private scholarship, as some scholarship providers have reported. For example, the Michael and Susan Dell Foundation, which runs a scholarship program that specifically targets low-income students, reported that almost half of their students had institutional awards that were displaced by Dell funds over a two-year period.[11] In this paper, we investigate whether the aid packaging practices of postsecondary institutions are responsive to the generosity of a place-based scholarship in the context of the Pittsburgh Promise.

The Pittsburgh Promise ("the Promise" from here forward) began awarding scholarships to graduating seniors from the Pittsburgh Public Schools (PPS) in 2008 to promote college access and reduce college debt burdens. Eligible students may use Promise funds at any accredited postsecondary institution, public or private, in the state of Pennsylvania. Existing research points to the positive effects of such grant and scholarship programs on college access and success outcomes. For example, state grant programs have led to increases in college enrollment, particularly at four-year institutions (Bruce & Carruthers, 2014; Cornwell, Mustard & Sridhar, 2006; Dynarski, 2004, 2008), as well as increases in degree attainment (Scott-Clayton, 2011; Dynarski, 2008). District-level promise programs have also led students to shift toward more selective institutions and to realize increased rates of college enrollment and degree attainment (Bartik, Hershbein, & Lachowska, 2015; Andrews, DesJardins & Ranchhod, 2010). The Pittsburgh Promise, specifically, has increased the immediate postsecondary enrollment of PPS graduates and has induced students

[11] http://www.palisadeshudson.com/2013/03/top-scholars-should-avoid-schools-that-displace-scholarships/

to shift toward attending four-year rather than two-year institutions (Page, Iriti, Lowry & Anthony, 2019).

The potential for such positive effects on college access to translate to increases in degree attainment may be undermined, however, if institutions effectively absorb some or all of the value of the grant dollars through aid displacement. Risk-averse, low-income students may be especially sensitive to cost and pricing changes and may consider not enrolling or persisting in college if out-of-pocket costs are higher than anticipated. The Pittsburgh Promise provides a case study context for a potentially larger phenomenon of institutional responses to place-based and other scholarships.

Our investigation capitalizes on the doubling in the Pittsburgh Promise's maximum annual award amount from $5,000 to $10,000 in 2012. Institutions seeking to capture some or all of this increase in Promise dollars potentially could respond by decreasing institutional aid to Promise recipients or by adjusting students' financial need through increasing miscellaneous living expenses charged to the student.[12] Due to the last-dollar design of the Pittsburgh Promise, the scholarship organization collects student-level information regarding institutional costs and financial aid awards received each semester. To control for average trends in college costs and financial aid, we compare Promise recipients to the average first-time, full-time freshmen entering the same institution in the same year as reported in the Integrated Postsecondary Education Data System (IPEDS). Using these data allows us to consider differences in financial aid packages between

[12] "Financial need" is defined as the difference between the institution's total cost of attendance and the student's estimated family contribution (a measure of a student's financial capacity to pay for college). Financial aid administrators may use professional judgement to alter Expected Family Contribution (EFC) inputs or estimated living expenses, which may change a student's financial need.

Promise students and the general student population at their institutions and how these differences changed with the increase in Promise generosity. We refer to this strategy as a "quasi-difference-in-differences" design.

To preview our results, we do not find conclusive evidence that institutions allocate less in institutional aid in response to the Promise increase. However, across institutional sectors students receive significantly less in other private and government sources of aid. These impacts are especially substantial for Pell-eligible students. Although we are not able to disaggregate this category further to investigate why students are receiving less in private and government sources of aid, we discuss potential mechanisms driving this result.

In the next section, we describe the Pennsylvania higher education market and the process of financial aid packaging. We then synthesize the research literature on institutional responses to federal, state, and local grants and scholarships and discuss mechanisms through which we might expect institutions to respond to the Promise award. Then, in section III, we detail our data sources and research design. We present results in section IV and conclude with a discussion and the implications of our findings in section V.

3.2 Mechanisms and Literature Review

3.2.1 Pennsylvania Context

Institutional reactions to state grant aid differ between states and may be more pronounced in states where universities themselves have more oversight over finances and price setting (Curs & Dar, 2010a; Rizzo & Ehrenberg, 2004). Given that our investigation focuses on the Pittsburgh

Promise, we must consider the Pennsylvania (PA) higher education context and the substantial autonomy that some PA colleges and universities have in setting tuition and granting aid.

Unlike other state higher education markets, PA contains three institutional types—public, private and "state-related"—that differ in the degree of control the state legislature possesses over institutional operations. "State-related" institutions receive only a fraction of their operating budget from the state and have a self-perpetuating board of trustees with limited oversight from the state legislature or the governor (Heller, 2006).[13] Both private and state-related institutions have ample control over setting tuition and other price levels and distributing institution-specific financial aid. Public institutions in the state, however, are constrained by the PA Board of Governors, which sets tuition and develops policies that guide the state's public institutions in the dissemination of scholarships and grants.[14,15]

Another consideration in our analysis is the price of college and the availability of state-operated grants in PA. PA's in-state published tuition and fees at public four-year institutions are the third highest in the nation (Ma et al, 2015).[16] Because of the high tuition charged by many PA colleges and universities, institutions may carefully monitor state grants and outside scholarships

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[13] These colleges include Lincoln University of Pennsylvania, Pennsylvania State University (and its regional campuses), Temple University, and the University of Pittsburgh (and its regional campuses).

[14] There are 17 two-year public colleges in the state (with additional branch campuses) and 14 four-year public institutions.

[15] http://www.passhe.edu/inside/policies/Pages/default.aspx

[16] This ranking does identify Pennsylvania's state-related institutions as public institutions, which may inflate Pennsylvania's ranking. As of academic year 2015-2016, the published tuition and fees at PA state-related institutions were an average of $4,000 more than fully public institutions in the state.

to ensure all students are adequately funded. For example, institutions may want to provide aid to the greatest number of students or to those most in need by distributing institutional aid to students not receiving other state or private scholarships. Additionally, the state operates the PA Higher Education Assistance Agency (PHEAA) grant program, which distributes postsecondary financial aid based on need.[17] Approximately 150,000 students in academic year 2016-2017 received a PHEAA grant, with the average award estimated at $2,600 and a maximum award of $4,340 (NASSGAP custom query tool, 2019).

3.2.2 Financial Aid Packaging and Financial Need

During this study's timeframe, a student's financial need was calculated as the total cost of attendance (TCA) at a given institution minus her Expected Family Contribution (EFC), as calculated based on information provided on the Free Application for Federal Student Aid (FAFSA).[18] Federal and state means-tested aid are awarded based on demonstrated financial need. Whereas EFC was federally determined, the US Department of Education affords institutions discretion in calculating "other living expenses" which ultimately affect a student's TCA and financial need. Institutions establish differential living costs for different categories of students, such as students with disabilities and / or students with dependents. Furthermore, the federal government allows financial aid administrators "to use professional judgment to adjust the cost of attendance on a

[17] A student's level of PHEAA eligibility is based on her expected family contribution (EFC) and Pell grant allocation.

[18] A federal law passed in December 2020 will phase out the use of the EFC formula. EFC is an appropriate measure for the time period under study here. For more information about the 2020 law, see: https://www.nytimes.com/2020/12/30/your-money/fafsa-expected-family-contribution.html

case-by-case basis to allow for special circumstances" (p. 37, FSA Handbook, 2019). There are no federal laws dictating how institutions calculate living expenses. Most institutions use student surveys or rental listings to establish cost estimates with guidance on data collection from national financial aid administrator associations (Kelchen, 2018). It is unsurprising, then, that living cost allowances vary widely across institutions even when institutions are located in similar geographic areas (Kelchen, Goldrick-Rab & Hosch, 2017). If institutions are adjusting prices in response to Promise awards, these adjustments may be reflected in students' estimated living expenses.

3.2.3 Institutional Responses to Means-Tested Aid

Although the Pittsburgh Promise is a merit scholarship, the evidence on institutional responses to changes in means-tested aid may still inform our hypotheses about how institutions may react to shifts in merit aid generosity. Research suggests that public four-year institutions often decrease institutional aid (Lucca, Nadauld & Shen, 2019; Turner, 2014; Acosta, 2001; Li, 1999) and raise list tuition (Curs & Dar, 2010b; Rizzo & Ehrenberg, 2004; Acosta, 2001; Li, 1999) in response to increases in Pell and state need-based aid. However, the ability for public colleges to respond can be more limited and dependent on their state higher education governance structures. In states such as Ohio and Indiana, higher education coordinating boards have centralized tuition-setting authority. Institutions in these states often reduce the net price charged to students after the introduction or increase of a means-tested federal or state-aid program (Lee, 2016; Curs & Dar, 2010b). Governing boards, in contrast, allow institutions more autonomy over their budgets. In these systems—where there is less institutional oversight—net price rises after the introduction of means-tested federal or state aid (Lee, 2016; Curs & Dar, 2010b).

Research on private institutions suggests that these institutions increase institutional aid (Curs & Dar, 2010b; Acosta, 2001; Li, 1999; McPherson & Schapiro, 1991) and tuition (Curs & Dar, 2010; Singell & Stone, 2007; Acosta, 2001; Li, 1999) in response to federal financial aid programs. Some research finds that net price rises as a result (Gordon & Hedlund; Singell & Stone, 2003; Acosta, 2001). Similar to public institutions, the final price charged to students at private institutions is complicated by other factors. Using student-level data and a regression discontinuity and kink design, Turner (2014) finds that increases in the Pell grant result in a reduction in institutional aid received by Pell-eligible students at selective private institutions. At the margin of eligibility, Pell students received more in institutional grant aid; however, for every additional dollar of Pell received above the eligibility margin, institutional aid received decreased. This kind of price discrimination is also observed in other studies (Lucca et al., 2019).

In sum, this literature provides three key insights. First, selective institutions appear to be more responsive to changes in financial aid programs. Second, for public institutions, the state higher education governance structure often guides financial aid packaging and therefore can limit the capacity for institutions to respond to shifts in aid generosity. Finally, there appears to be price discrimination within institutions where students are awarded differently based on income and other awards received. Table 1 in Appendix A provides a summary of the literature on this topic.

3.2.4 State Merit Aid Programs

Causal studies on the effects of state merit aid systems on institutional financial aid packaging demonstrate varied responses by public institutions. Several studies find that merit scholarships have no significant effect on institutional aid at public four-year institutions (Welch, 2015; Curs & Dar, 2010a; Curs & Dar, 2010b). However, Hunt (2016) finds that public institutions in

Florida offered larger institutional aid awards after the introduction of the Florida Bright Futures scholarship. Evidence indicates that institutions in states with merit aid awards similar to that of Florida's may compete for high ability students by offering larger price discounts (Doyle, Delany & Naughton, 2009). In effect, this encourages high ability students to remain in-state for college. Dreir (2018), in an investigation of the Tennessee Lottery Scholarship, finds that more selective institutions were more likely to reduce aid amounts. Geographically based merit aid can induce more students to remain in-state for higher education (Page et al, 2019; Cohodes & Goodman, 2014). This, in turn, may lead to increased competition for seats, particularly at more selective schools. The result is that these institutions will have the advantageous position of being able to partially capture the merit aid award. This is true in response to federal aid as well (Lucca et al., 2019; Turner, 1997).

Existing evidence suggests that public institutions lower tuition after the introduction of a state merit aid program (Curs & Dar, 2010a; Curs & Dar, 2010b). In states with centralized higher education systems such as Texas, there may be a concerted effort to keep tuition low as part of a multi-faceted policy approach to induce college enrollment across the state (Kramer, Ortagus & Lacy, 2018; Long, 2004). Public institutions, with little discretion in setting tuition, may find other ways of increasing student charges. Long (2004) finds that institutions with a large share of Georgia HOPE recipients raised room and board rates after HOPE's inception. In states where public institutions have more authority in price-setting (such as Kentucky or West Virginia), institutions have increased tuition and fees after the introduction of a merit award (Kramer, Ortagus & Lacy, 2018; Hunt, 2016; Upton Jr, 2014). Overall, this leads to lower net prices in centrally controlled higher education systems and higher net prices in institutionally-autonomous systems (Lee, 2016; Curs & Dar, 2010b).

Research finds that private institutions respond to state merit scholarships by capturing the aid through price increases or lower institutional aid. In Georgia, private institutions that received a large share of HOPE recipients decreased institutional aid and increased tuition (Long, 2004). Other studies present compelling evidence that many private institutions compete for merit aid awardees in subtle ways. For example, institutions may lower both list tuition and institutional aid such that the net price faced by the student and family is essentially unchanged (Curs & Dar, 2010a; Curs & Dar, 2010b). Other institutions have been observed to decrease tuition and fees to appear more affordable (Hunt, 2016; Welch, 2015). Still others have raised institutional aid to capture the state's most academically qualified students (Lee, 2016).

There are five institutional responses to merit aid programs that inform our study's hypotheses. Selective institutions have the opportunity and the power to decrease institutional aid or increase college prices because the demand for seats at these institutions is high and may increase with the implementation of a state-based merit aid program. State coordinating boards—such as the Pennsylvania State System of Higher Education (PASSHE)—work to keep tuition and fees low. Governing boards—like those overseeing Pennsylvania's state-related institutions—have more authority to raise tuition or reduce institutional aid. However, even among public institutions within coordinating board systems, there are strategies to capture the value of statewide merit aid, such as increasing room and board rates or other non-tuition fees. Additionally, institutions are more likely to change prices or institutional aid in response to an outside grant when a large proportion of the student body received the outside grant.

3.2.5 Institutional Responses to Place-Based Scholarship Programs

Although evidence points to institutional responses to large-scale federal and state aid programs, responses to promise programs may differ due to their targeted nature and the more limited number of students they serve. Delaney and Hemenway (2017) investigate evidence regarding smaller place-based scholarships specifically.[19] The authors identify postsecondary institutions where students can use promise dollars and the academic years in which the relevant programs were in existence. Using institution-level data and a difference-in-differences analytic strategy, the authors report that tuition and institutional aid increased at four-year institutions after promise implementation. Due to their reliance on institution-level data available through IPEDS, the authors' analytic strategy assumes that the availability of promise funds for selected students—typically a small share of any college's entire student population—would affect tuition and aid for all students at a given institution. When subsetting their data just to those promise programs that require students to enroll in one specific institution—and where we might expect a larger share of the incoming freshmen class to have received promise dollars—the authors find no impact on tuition or institutional aid amounts. This finding calls into question whether the shifts above are reasonably attributed to the implementation of a targeted promise program.

Indeed, we reason that it is unlikely that an institution would adjust tuition or institutional aid for all students in response to a small number of students receiving outside grant aid. Comparatively more plausible is that an institution would respond to a student's access to promise funding with adjustments in financial aid packaging at the individual level that would not necessarily

[19] https://aefpweb.org/sites/default/files/webform/41/16-02-29PromiseDelaneyHemenway.pdf

register in aggregate figures. Evidence of such targeted responses has not been investigated. We contribute to this gap in the literature by examining individual-level financial aid data.

3.3 Methods

3.3.1 Data

Our analyses rely on data from several sources. First, we use student-level administrative records from the Pittsburgh Promise on Promise recipients from the Pittsburgh Public Schools (PPS) graduating classes of 2009 through 2015.[20] The Promise requires each student's institution to complete and submit an invoice detailing the student's financial aid package. Through this invoicing process, the Promise captures detailed, student-level cost and financial aid information, including EFC, institutional charges by category, and financial aid. This comprehensive information enables the Promise to calculate the last-dollar scholarship amount for each student. From a research perspective, these data allow us to observe each student's total cost of attendance and grant-based financial aid from all possible sources. Our second source of data is PPS administrative records. From these files, we use the following student-level demographic, academic and behavioral variables: sex, race / ethnicity, high school GPA, year of graduation, PSAT scores, and high school attendance rate. Merging these two data sources yields a sample of 6,172 unique student records across seven graduating cohorts.

[20] Although the Promise began with the graduating class of 2008, it did not collect information on individual student charges until the 2009-2010 academic year.

We make several restrictions to arrive at our final analytic sample. First, we restrict our analysis to those students attending four-year institutions and drop 1,258 students who attended a community college. Due to more limited resources and low tuition costs, two-year institutions do not provide much in institutional aid and therefore have little opportunity to alter aid allocations in response to the Promise. Second, we exclude an additional 178 students attending for-profit institutions, reasoning that we do not have sufficient data to estimate effects for this sector. Next, we drop 810 students who did not enroll in college immediately after high school graduation and 235 students who attended out-of-state institutions during the academic year but who enrolled in a Pennsylvania institution in the summer (presumably when home from their primary institution).

Because our analytic strategy relies on comparing students across cohorts who attend the same institution, we drop an additional 656 students attending institutions where no or only one Promise student attended in one of the years in our analysis. Eligibility criteria in the Promise's first two years in operation were less stringent than in later years (for more information, see Page et al., 2019). Therefore, to keep student cohorts similar across years, we drop 56 students from cohort 2009 who did not meet the eligibility criteria in later years of a 90% high school attendance rate and a 2.5 graduating GPA. Our final sample includes 2,979 first-year college students across 23 PA four-year institutions.

In Table 1, we present descriptive statistics for student characteristics and time-variant institutional characteristics. Promise recipients in our analytic sample have an average GPA of 3.25, a high school attendance rate of 97%, and an average PSAT score in the 40th percentile of the national score distribution. Approximately 47% of recipients are nonwhite and three in five are female. Due to skewness in the EFC distribution, we take the natural log of EFC after adding 1 for

those students with EFCs of zero. More than half of the Promise students in our sample have EFCs that qualify them for need-based federal and state aid.

We emulate extant studies examining institutional responses to financial aid by including in our models measures for demand for placement at the institution (Rizzo & Ehrenberg, 2003; Lee, 2016), the wealth of the institution (Acosta, 2001; Curs & Dar, 2010), and the economic conditions in the institution's county (Acosta, 2001). These time-variant covariates allow us to account for the number of students requiring aid each year; the amount of financial aid the institution can distribute to students; and the cost of living in the institution's community which is used in the calculation of a student's other living expenses.

3.4 Empirical Strategies

3.4.1 Interrupted Time Series

Our analytic strategy capitalizes on the shift in the maximum Promise award from $5,000 / year to $10,000 / year starting with the graduating class of 2012. Institutions are aware of the amount each student is eligible to receive in Promise dollars through the invoicing process. If institutions are adjusting student charges or financial aid awards in response to Promise funding, we would expect to see a discontinuous change in charges and / or aid packages for Promise recipients in the class of 2012 and beyond. To explore this possibility, we use an interrupted-time series approach similar to Pallais' (2015) examination of student responses to the increase in the number of free-score sends that the ACT provided to test-takers in 1997. Our analytic model takes the following form:

$$Y_{ijs} = \alpha_j + \rho_s + \beta_1 2012_i^+ + \beta_2 Year_i + \beta_3 2012^+ \times Year_i + \boldsymbol{\gamma X_i} + \boldsymbol{\varphi W_j} + \varepsilon_{ijs}$$

(1)

where the dependent variable is a measure of institutional charges or a financial aid award component for student *i* in institution *j* who graduated from high school *s*. 2012_i^+ is a binary indicator equal to 1 if a student graduated from high school in 2012 or beyond.[21] $Year_i$ indicates the year student *i* completed high school, centered on 2012, and β_2 represents the linear trend in time, while $2012^+ \text{x} Year_i$ adjusts for a differing linear trend post-2011. To control for any shifts over time in the characteristics and qualifications of students, $\boldsymbol{X_i}$ is a vector of student-level characteristics, which includes all those reported in Table 1. $\boldsymbol{W_j}$ is a vector of institution-level characteristics that vary by year and can also be found in Table 1. We include institution fixed effects, α_j, to focus on variation in expenses and aid for students attending the same institution. We also include high school fixed effects, ρ_s, to control for high school-specific factors, such as college-going cultures, behaviors, and supports regarding financial aid. β_1 is our primary coefficient of interest and represents changes in institutional charges or financial aid award components from 2011 to 2012 when the Promise doubled in maximum generosity. We cluster standard errors at the higher education institution by graduation year level.

[21] Similar to Pallais (2015), we first included an indicator for whether a student graduated in 2012 and another indicator for whether a student graduated after 2012. We hypothesized that institutions may not respond to the Promise increase in its first year and that we may only see effects of the increase in later cohorts after institutions were more attuned to the increase in scholarship level. We found that results were similar across years and therefore estimate a pooled effect for 2012 and beyond.

Our key research questions pertain to potential shifts in institutional aid. Yet, using this same model specification, we comprehensively examine shifts over time in students' college costs and other financial aid awards. Specifically, we examine shifts in total cost of attendance, Promise award amounts, Pell awards, and other grants and scholarships. We examine each student charge and financial aid component both in 2016 dollars and as a percentage of the total cost of attendance in that year. Finally, we consider the aggregate effect of these financial aid package components by examining student net price. We use the IPEDS definition of net price which is the total cost of attendance (including tuition, fees, room and board, books, and other living expenses) minus all grants and scholarships received. This allows us to estimate the impact of the Promise increase on out-of-pocket costs borne by the student.

3.4.2 Quasi-Difference-in-Differences

A threat to the validity of our estimates is that the changes in student costs and aid packages that we observe before and after 2012 may be a function of changes over time in the higher education funding environment in Pennsylvania, rather than changes in response to the shift in Promise generosity. A stronger analytic design would be possible if we could observe financial aid information for students who were observationally similar to and attended the same colleges at the same time as Promise recipients. With these data, we would match Promise students to their non-Promise counterparts and use a matched difference-in-differences design in which we compared differentials in aid packages before and after 2012.

Unfortunately, we lack access to this ideal comparative student-level data. Instead, to address this concern, we turn to information available through the Integrated Postsecondary Data System (IPEDS). IPEDS is a system of surveys conducted by the US Department of Education

that provides publicly available data about all institutions of higher education in the US participating in the federal student financial aid program. From IPEDS, we observe year-by-year information on financial aid awards for the typical student within each of the institutions on which we focus. The use of IPEDS data is predicated on the idea that we would not see changes in the aggregated institution-level data in response to a place-based scholarship and, therefore, this data serves as a reasonable point of comparison. The largest class of Promise students in a single institution was 55 students and this Promise cohort accounted for less than 1% of the entering freshmen class; therefore, we reason that the Promise students in any institution are unlikely to have an impact on the aggregate financial aid values as reported in IPEDS. With these data, we consider how, if at all, Promise Scholars' financial aid awards differ from their average peer attending the same institution in the same year. To make this comparison, we augment our student-level data set with IPEDS-reported average levels of financial aid for the same institution in the same academic year and calculate for each Promise recipient the deviation of their college costs and financial aid components from the average levels reported in IPEDS.

More specifically, we match each individual Promise student to the average amount first-time, full-time students at the same institution and in the same year received in Pell, institutional grants, and other awards, separately.[22] Because institutions may alter a student's living expenses and financial need in response to outside aid the student receives (Kelchen & Goldrick-Rab, 2017),

[22] Unfortunately, we are not able to disaggregate federal, state, and private grants and scholarships that Promise students have received because institutions do not have to list each individual award on their invoice to the Promise. Instead, we use IPEDS' summation of federal, state, and local scholarships received by the average student and match this to the summation of these same grants received by Promise students.

we also match Promise students to the average student total cost of attendance charges reported in IPEDS.

We refer to our resulting analytic approach as a "quasi-difference-in-differences" strategy, where students' deviations from campus-cohort levels serve as a first difference, and we compare the magnitude of these differences before and after 2012. We use the same model specification as articulated in equation (1) but with the differential from the campus average as the outcome.

The coefficient on 2012+ in equation (1) tells us whether this differential became larger or smaller for the 2012 cohort. If there is a significant change in this differential in 2012, we may infer that the difference in outcomes between Promise recipients and the average student changed due to the Promise award increase. If institutions are adjusting financial aid packages, we should see either a positive coefficient on student charges (indicating that costs grew among Promise recipients relative to the average student) or a negative coefficient on institutional financial aid awards (indicating that award amounts for Promise recipients decreased relative to the average student). We use pre-policy shift differentials to contextualize the magnitude of effects that we estimate.

3.4.3 Subgroup Analyses

We hypothesize that institutions may have differential capacity to respond to the increase in Promise generosity according to institutional sector. Therefore, we conduct analyses where we subset the sample into public, private and state-related institutions. These subgroup analyses produce sample sizes that are small, rendering our estimates somewhat noisy. For this reason, we consider both statistical and practical significance in our interpretations.

At the student level, we subset the sample by Pell-eligibility status. Based on research that demonstrates institutional manipulation of aid awards in response to Pell (Lucca et al, 2015; Turner, 2014; Singell & Stone, 2007), we hypothesize that institutions may respond to students who receive more in means-tested aid differently from those students who do not receive this aid. Specifically, institutions may further decrease institutional aid to Pell recipients due to these students receiving a large amount of grant aid from multiple sources. We use the yearly Federal Pell Grant payment schedules from 2009 to 2016 to identify, based on EFC, those Promise students who would have been Pell-eligible according to that year's EFC Pell schedule.

3.4.4 Threats to Validity

Our analytic strategy assumes that trends in college costs and non-Promise financial aid awards of Promise recipients in each institution prior to 2012 would be informative of the costs and aid components for Promise recipients at these same institutions in 2012 and beyond, absent any changes to the Promise award maximum. The validity of this assumption would be threatened if Promise recipients attending a given institution were substantially different before and after the increase in the maximum award in 2012. To determine whether institutions enrolled qualitatively different Promise recipients after the Promise became more generous, we estimate trends in student characteristics using a model following the structure of equation (1) with student characteristics as outcomes. We present results by institutional sector in Table 2. There is a statistically significant increase of 15 percentage points in the proportion of male students attending public institutions in 2012. We test for differences in outcomes between male and female students by subsetting the sample by gender and modeling Equation (1). We find no statistically significant or practical differences. We also observe a small decrease in the PSAT scores of students attending public and

private institutions in 2012. We control for both high school GPA and attendance rate, which provide additional information about each student's academic ability and background. Overall, our results do not suggest large within-institution shifts in the composition of Promise recipients.

A final consideration is understanding the key differences in student characteristics between Promise students and the general student population as reported in IPEDS. First, Promise students are from lower-income households compared to the average incoming first-year student at the institutions in our sample. When we compare the proportion of Promise students receiving Pell to the Pell-recipient rates of the student bodies at the same institutions, we find that Promise students are more likely than the average student on their campus to receive Pell funds. Thus, it follows that Promise students receive more in means-tested state and federal aid. The differences in Pell rates between these two student populations remain consistent throughout the study's timeframe, providing support for the parallel trends assumption necessary for a difference-in-differences strategy.

Additionally, students may be charged differentially based on program of study. STEM (Science, Technology, Engineering, and Math) degrees, especially engineering and computer-related fields, cost more for universities to produce. Therefore, many institutions charge students in STEM fields more in tuition and fees (American Institutes for Research, 2013). Universities may also charge students different prices based on the financial returns to their degrees. For example, this has led some universities to charge more to students enrolled in business programs (Stange, 2013). To satisfy the parallel trends assumption for our quasi-DID approach, we compared the proportion of students enrolled in STEM, business, and education majors in the fall incoming classes of 2010, 2012, and 2014 as reported in IPEDS, and the analogous proportion of Promise students in these fields in the same cohorts. Overall, the differences in field of study between the

IPEDS data and Promise students are stable over the three time periods.[23] Therefore, it would be reasonable to expect for differentials in charges also to be relatively stable over time.

3.5 Results

3.5.1 Descriptive Trends

We begin by examining descriptive trends in average Promise awards and net price across Promise cohorts to demonstrate visually the impact the Promise award increase had on out-of-pocket college costs for Promise recipients. In Figure 1, we present the average first-year Promise award by cohort in 2016 dollars.[24] The average Promise award nearly doubled in size in 2012. This is true both overall and within each institutional sector.

In Figure 2, we present overall trends in net price after accounting for all grants and scholarships—including Promise—for Promise students across institutional sectors and the overall trend in net price at these same institutions, as reported in IPEDS. The average student attending the same institution in the same year paid substantially more in out-of-pocket costs than did the average Promise student prior to 2012. Consistent with the timing of the 2012 scholarship increase, Promise recipients from this year forward experienced a large decrease in out-of-pocket costs.

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[23] IPEDS began tracking enrollment in specific fields of study in 2010 and continues to record this data for every other academic year. We omit this table of results from the paper for parsimony, but it is available upon request.

[24] Note that dollar amounts have been converted to 2016 real dollars; therefore, reported Promise dollars received by students may be greater than $5,000 in 2011 or prior cohorts or $10,000 in 2012 or later cohorts.

3.5.2 Promise Awards and Net Price

To interpret the results from our quasi-DID models, we must understand the magnitude of the change in differentials in 2012 in conjunction with the magnitude of the differentials in 2011. For example, the fitted 2011 means provides the difference (Promise value – IPEDS value) in each of the outcomes between Promise students and the average student population prior to the doubling of the Promise award. The coefficient on 2012+ tells us whether this differential became larger or smaller for the 2012 cohort. If there is a significant change in this differential in 2012, we may infer that the difference in outcomes between Promise recipients and the average student changed due to the Promise award increase. To calculate the differential in 2012, we simply add the 2011 fitted mean and the coefficient on 2012+. If institutions are adjusting financial aid packages to capture value from the increased Promise award, we should see either a positive coefficient on student charges (indicating that costs grew among Promise recipients relative to the average student) or a negative coefficient on institutional financial aid awards (indicating that award amounts for Promise recipients decreased relative to the average student).

We present the results for changes in Promise dollars and net price for each institutional sector in Table 3. The left panel presents results from the interrupted time series model using only Promise recipient scholarship award values, while the right panel presents quasi-DID results for net price. The top panel displays the results for public institutions. In 2011, the Promise accounted for almost 19% of the total cost of attendance for Promise recipients attending public institutions. Once the Promise doubled in size, the award accounted for 41% (19 + 22) of the total cost of attendance. Due to higher costs, the Promise award amounted to only one-quarter of the total cost of attendance in 2012 at private institutions and about one-third of the costs at state-related institutions.

We next turn to the right panel of Table 3 which presents the results of the quasi-difference-in-differences model on net price. If institutional prices and financial aid remain constant across time and students, we would expect to see an increase in Promise dollars that corresponds to a one-for-one decrease in net price. We do not find this to be true within any of the institutional sectors. For example, at public institutions, the average student was responsible for $7,741 more in out-of-pocket costs than the average Promise student in 2011. This differential only increased by $2,825 in 2012, which translates to 61% of the average increase in the Promise award received at these institutions. This trend also exists within private institutions, where the decrease in net price is also 61% of the average increase in the Promise award. At state-related institutions, the net price change amounts to 81% of the Promise increase. These results suggest that adjustments to Promise students' financial aid packages could be occurring.

3.5.3 Total Cost of Attendance

We next turn to results examining the changes in the cost of attendance in Table 4. The first column of the top panel shows that the average student attending a public institution in 2011 faced approximately $641 less in total costs than did the average Promise student. In 2012, this differential grew by $271. Most of this increase is due to a statistically significant $789 change in the 2012 room and board differential. One potential mechanism explaining this result is that Promise students could be selecting more expensive living arrangements and/or meal plans after the increase in Promise generosity. Institutions in our sample do offer students a variety of meal plan and dorm options. Students in particular fields of study, athletics, or honors programs, in particular, may have other living options available to them. Another possibility is that institutions are charging

Promise students more in room and board fees. We find this latter hypothesis improbable as room and board fees are standardized.

We find no other statistically or practically significant changes in the remaining cost differentials. Although we observe nonsignificant but practically large changes in the other living expenses differential at public and state-related institutions, the changes in room and board fees lead us to believe that other living expenses in this sample may be affected by changing student living arrangements rather than institutional responses to the Promise increase.

3.5.4 Financial Aid Awards

Table 5 displays the shifts in non-Promise financial aid awards. The first panel reveals that Promise students attending public institutions in 2011 received approximately $3,317 more in financial aid than the average student attending the same institution. The majority of this aid is from the Pell and non-Pell federal, state, and local grants categories. Unfortunately, we are unable to break this latter category down further due to how the Promise invoice is structured. It is unknown if these grants are means-tested government-provided aid or from private sources. We find that the total grant aid differential between Promise students and the average student at public institutions decreases by $1,524 in 2012. This decline appears to be concentrated in the non-Pell federal, state, and local grants category. We observe a similar decline in this aid category among students attending the other two institutional sectors. It is possible that other award-granting organizations disbursed less aid to Promise students once the Promise award doubled. Another mechanism driving this result may be that additional Promise dollars are exceeding Promise students' financial need calculation (e.g., TCA – EFC). For example, a student may qualify for a government grant if their financial need has not been met by other sources of aid; however, if the additional Promise dollars

received in 2012 exceeds a student's financial need, they will no longer qualify for the government grant. It may be that Promise dollars are displacing other awards. We test for this hypothesis and find that student net cost (TCA minus total grants excluding the Promise) remains unchanged from 2011 to 2012 within all institutional sectors. However, including the Promise in this calculation, greatly decreases net cost further. This may have implications for student eligibility for campus-based aid such as the Federal Supplemental Educational Opportunity Grant (FSEOG), which is only available to a campus' neediest students.

Finally, we turn to changes in institutional grants. We find no meaningful changes in the grant differentials at public or state-related institutions. At private institutions, Promise recipients received $1,104 (251 – 1,355) less in institutional aid in 2012 than did the average student; however, this result is not precisely estimated.

3.5.5 EFC Subgroup Analysis

3.5.5.1 Public Institutions

We next examine changes in financial aid and costs by Pell eligibility status within institutional sectors. We subset our results by Pell eligibility as determined by the year-relevant Pell-eligible EFC range. We only discuss those tables of results that provide more clarity to the main results presented in the previous sections. The remaining tables we do not discuss here can be found in Appendix A.

Table 6 displays cost of attendance results for those students attending public institutions. The top panel displays results for Pell-eligible students, while the bottom panel displays results for non-Pell-eligible Promise recipients. The bottom panel of Table 6 shows that students not eligible for Pell are responsible for the increases in the room and board differential discussed above, as

well as the changes in the other living expenses category. We also find a $600 increase in the tuition and fees differential in 2012 among non-Pell-eligible students. This may suggest that higher income students are opting in to different living arrangements.

The top panel of Table 7 shows that students with EFCs within the year-relevant Pell range experienced a large reduction in non-Pell federal, state, and local grants. In 2011, Promise recipients received approximately $2,562 more in these grants than did the average student. In 2012, however, this differential decreased by 56%. For lower-income students that receive a large amount in need-based aid, the Promise award could be disqualifying them from receiving awards from private scholarship organizations or from campus-based sources available to the neediest students.

3.5.5.2 State-Related Institutions

We turn to results by Pell eligibility within the state-related sector. In Table 8, we find that Pell-eligible students in 2012 may have selected or been placed in different living arrangements, as the differential decreased by $1,179. In contrast, we find no significant changes in room and board among higher income students. However, we do observe that the other living expenses differential is reduced quite substantially in 2012. It is possible for institutions within this sector to increase financial need by inflating a student's other living expenses to ensure the student's financial awards are not displaced by other awards. For example, the University of Pittsburgh, where many Promise recipients enroll, already has a policy against award displacement in place.[25]

[25] https://www.post-gazette.com/business/money/2016/09/16/Colleges-financial-practices-can-hurt-students-in-need-loans-scholarships/stories/201609160079

3.5.5.3 Private Institutions

We finally turn to results by Pell eligibility status within private institutions. Table 9 displays the quasi-DID results for non-Promise financial aid. The top panel shows that Pell-eligible students received $3,854 more in non-Promise grants than did the average student. In 2012, this differential decreased by $2,747. The reason for this large decrease is due to a reduction in the non-Pell federal, state, and local grants category. Similar to results discussed above for students attending public institutions, it may be that the Promise award is displacing means-tested aid for lower-income students. This is particularly noteworthy at private institutions because Promise recipients did not experience a statistically significant change in net price after the Promise award doubled.

The bottom panel of Table 9 displays analogous results for non-Pell-eligible Promise recipients. Although not robust, we find a large change in the differential on institutional grants. Results indicate that Promise recipients received $4,844 more, on average, in institutional grants than did the general population attending the same institutions in 2011. In 2012, the differential decreased by $4,317. This is suggestive evidence that private institutions may be awarding less aid to those students who are not eligible for means-tested aid.

3.6 Discussion and Conclusion

The purpose of this study was to determine whether and the extent to which institutions respond to generous place-based scholarships by strategically adjusting financial aid packages and/or student costs. Using detailed data on the financial aid packages of students' awarded

scholarship funds through the Pittsburgh Promise and IPEDS data, we do not find conclusive evidence that institutions are altering the financial aid packages of students receiving Promise dollars.

Overall, we find that the Promise is a considerable piece of the aid package that Promise students receive. It significantly reduces costs, especially at public institutions. The difference in net price between Promise students and the average student attending the same institution in the same year is a testament to the Promise's impact on total cost of attendance.

There is suggestive evidence that private institutions are responding to the Promise through decreases in institutional aid for wealthier students not eligible for the Pell award. Although results are noisy, there is a substantial drop in institutional aid received by these students at private institutions once the Promise award increased and a nonsignificant reduction in net price. The literature on award displacement has provided evidence that some private institutions provide less institutional aid to those students receiving other awards (Turner, 2014; Lucca et al, 2019) and that the most selective institutions are more likely to capture outside aid (Singell & Stone, 2003). Ideally, with a larger sample size, we could examine shifts in institutional aid within the private school sector by selectivity. Unfortunately, we do not have the power to conduct this kind of analysis. We believe this is an area for further study.

The surprising result is that students across institutional sectors experienced a large reduction in non-Pell federal, state, and local grants. As previously discussed, due to the nature of the Promise invoice, we are unable to break this category down further. One possibility is that this result is driven by student rather than institutional action. For example, perhaps students did not apply for as many other sources of scholarship aid once they learned the Promise award doubled in size. Scholarship organizations themselves also could have responded to the increase in Promise generosity. For example, among their scholarship applicants, perhaps scholarship providers were

less likely to select students from the Pittsburgh Public Schools to receive their awards. Most of the reduction in this aid category is occurring among lower-income students that qualify for Pell. One possible mechanism behind this result is that the Promise award (in addition to other awards received by lower income students) may reduce a student's financial need to the extent that they become ineligible for campus-based aid available only to the neediest of students. This is possible because the Promise invoice received by institutions lists the amount the student is eligible to receive in Promise dollars. One recommendation offered by the National Scholarship Providers Association (2013) in response to award displacement is for private scholarship providers to contact institutional financial aid offices to discuss altering a scholarship recipient's financial need calculation. If an institution adjusts a student's financial need, the student may be able to keep both the private scholarship and other awards.

Place-based scholarships are often the result of community initiatives with limited funding and substantial investments in ongoing fundraising. The true value and potential longevity of such programs are important considerations for every promise program. If institutions respond to these programs by lowering aid to promise recipients, promise programs essentially subsidize institutions rather than students. If decreases in institutional aid match promise dollars nearly one-for-one, a student's net price does not decrease. We find some evidence of such institutional "maneuvering" at private institutions in response to the Pittsburgh Promise. However, overall, we find that the Promise could be exceeding a student's financial need and, therefore, displacing other grant awards. The extent to which these results generalize to other Promise settings is unknown. Therefore, we encourage other promise programs to conduct similar analyses to investigate whether and to what extent this phenomenon could be occurring at institutions where their students enroll.

3.7 Tables and Figures

Table 3.1 Analytic sample descriptive statistics

Variables	Mean (SD)
Student Characteristics	

Female	0.59 (0.49)
Nonwhite	0.47 (0.50)
HS GPA	3.25 (0.43)
HS Attendance Rate	96.94 (2.67)
PSAT	114.46 (49.77)
Missing PSAT	0.13 (0.33)
Off Campus	0.13 (0.34)
Log EFC	5.65 (4.44)
Time-Variant Characteristics	
Admit Yield	32.75 (9.40)
Percent Admitted	69.06 (15.10)
Endowment FTE	20,858.60 (30,934.76)
Gifts FTE	2,290.13 (2,734.04)
Investment FTE	1,453.96 (5,309.69)
State Appropriations (in thousands)	58,700 (94,300)
Average Rent in Institution County	772.18 (92.90)
N	2,979

Sources: Pittsburgh Promise, Pittsburgh Public Schools, IPEDS, and US Census.
Notes: Means and standard deviations (in parentheses) are reported for all cohorts.

Table 3.2 Differences in covariates before and after Promise increase

	Female	Nonwhite	HS GPA	Attendance	Logged EFC	PSAT Score	Missing PSAT
Public Institutions, N=834							
2012+	-0.15* (0.08)	-0.04 (0.06)	-0.00 (0.06)	-0.46 (0.36)	0.21 (0.65)	-7.77* (4.43)	0.00 (0.02)
R-squared	0.039	0.211	0.147	0.182	0.094	0.764	0.861
State-Related Institutions, N=1,111							

2012+	-0.08 (0.05)	0.01 (0.07)	0.05 (0.05)	0.33 (0.26)	0.73 (0.61)	1.98 (4.28)	-0.01 (0.02)
R-squared	0.053	0.272	0.446	0.323	0.219	0.745	0.850
Private Institutions, N=1,034							
2012+	-0.00 (0.08)	0.03 (0.06)	0.09 (0.06)	0.36 (0.33)	0.33 (0.45)	-7.55** (2.96)	0.03** (0.01)
R-squared	0.194	0.175	0.187	0.199	0.126	0.767	0.910

* p<0.10, ** p<0.05, *** p<0.01

Source: Pittsburgh Promise administrative files.

Notes: Coefficients presented from OLS regressions as a function of graduating in a year in which the Promise doubled in value. Standard errors are presented in parentheses.

Table 3.3 Promise awards and net price

	Difference, Promise Student Sample		**Quasi-DID**	
	Promise		**Net Price**	
	% TCA	**$ 2016**	**% TCA**	**$ 2016**
Public Institutions, N=834				
2012+	21.48*** (0.83)	4,636.13*** (170.21)	-16.30*** (3.77)	-2,824.91*** (881.27)
Fitted 2011	18.56	5,065.43	-30.72	-7,741.03

Mean				
R^2	0.645	0.726	0.575	0.579
State-Related Institutions, N=1,111				
2012+	15.70***	4,166.99***	-13.37***	-3,379.36***
	(1.26)	(241.46)	(3.03)	(1,044.53)
Fitted 2011 Mean	16.69	4,967.49	-22.57	-7,512.84
R^2	0.578	0.692	0.371	0.357
Private Institutions, N=1,034				
2012+	11.48***	4,262.52***	-6.80*	-2,588.47
	(0.95)	(251.59)	(3.94)	(1,886.29)
Fitted 2011 Mean	12.27	5,089.81	-19.92	-8,614.47
R^2	0.652	0.694	0.378	0.404

* p<0.10, ** p<0.05, *** p<0.01

Sources: Pittsburgh Public Schools, Pittsburgh Promise administrative files and IPEDS.

Notes: Coefficients presented from OLS regressions predicting financial aid outcomes as a function of receiving a Promise award up to $10,000 for cohorts 2012 to 2015. Data are restricted to first-time, full-time students enrolling in college in the year immediately after high school graduation. All models include covariates displayed in Table 1. Models include institution and high school fixed effects. Standard errors are clustered at the year by institution level and are presented in parentheses. Fitted outcomes for students in cohort 2011 presented as baseline means.

Table 3.4 Cost of attendance, Quasi-DID results

	Total Cost of Attend-ance	Tuition and fees		Room and board		Books		Other living expenses	
	$ 2016	**% TCA**	**$ 2016**	**% TCA**	**$ 2016**	**% TCA**	**$ 2016**	**% TCA**	**$ 2016**
					Public Institutions, N=834				
2012+	270.83	-0.23	71.13	2.94	788.77*	0.05	26.13	-2.75	-615.20
	(347.50)	(0.58)	(215.78)	(1.82)	(465.31)	(0.15)	(28.93)	(1.72)	(395.17)
Fitted 2011 Mean	641.14	-0.72	75.45	-0.37	174.54	-0.21	-13.96	1.30	405.11
R-squared	0.418	0.441	0.142	0.397	0.630	0.463	0.242	0.272	0.222
					State-Related Institutions, N=1,111				
2012+	128.80	-1.42	-230.97	-2.44***	-581.57**	-0.25	-47.64*	4.11	988.98
	(861.35)	(2.31)	(278.44)	(0.84)	(257.17)	(0.20)	(25.67)	(3.00)	(824.14)
Fitted 2011 Mean	-937.48	3.78	375.08	0.49	-46.04	0.60	143.33	-4.87	-1,409.85
R-squared	0.227	0.180	0.179	0.211	0.282	0.404	0.505	0.147	0.254
					Private Institutions, N=1,034				
2012+	-421.92	-0.12	-11.16	1.02*	42.08	-0.09	-1.45	-0.81	-451.39
	(679.51)	(1.81)	(585.70)	(0.59)	(167.25)	(0.15)	(49.57)	(1.89)	(735.81)
Fitted 2011 Mean	709.85	-0.51	409.52	-1.22	-388.35	0.21	125.03	1.51	563.65
R-squared	0.388	0.481	0.238	0.106	0.192	0.613	0.739	0.372	0.360

* p<0.10, ** p<0.05, *** p<0.01

Sources: Pittsburgh Public Schools, Pittsburgh Promise administrative files and IPEDS.

Notes: Coefficients presented from OLS regressions predicting financial aid outcomes as a function of receiving a Promise award up to $10,000 for cohorts 2012 to 2015. Data are restricted to first-time, full-time students enrolling in college in the year immediately after high school graduation. All models include covariates displayed in Table 1. Models include institution fixed effects. Standard errors are clustered at the year by institution level and are presented in parentheses. Fitted outcomes for students in cohort 2011 presented as baseline means.

Table 3.5 Non-Promise grant aid, Quasi-DID results

	Total non-Promise grant aid		Non-Pell federal, state, and local grants		Pell		Institutional grants	
	% TCA	$ 2016	% TCA	$ 2016	% TCA	$ 2016	% TCA	$ 2016
Public Institutions, N=834								
2012+	-4.93	-1,540.39*	-2.62	-776.82	-0.35	-198.61	-1.96	-491.39
	(3.56)	(849.89)	(2.15)	(505.75)	(1.51)	(340.10)	(2.13)	(497.55)
Fitted 2011 Mean	11.60	3,316.74	5.42	1,470.83	6.70	1,798.03	-0.52	-98.72
R^2	0.567	0.567	0.228	0.219	0.813	0.822	0.187	0.182
State-Related Institutions, N=1,111								
2012+	-2.05	-658.83	-4.18	-1,114.08	1.59*	352.67	0.55	189.14
	(2.92)	(902.95)	(3.02)	(822.78)	(0.83)	(233.09)	(3.27)	(993.01)
Fitted 2011 Mean	5.49	1,607.87	11.70	3,384.75	4.21	1,216.92	-10.42	-3,116.39
R^2	0.324	0.332	0.200	0.207	0.789	0.821	0.204	0.182
Private Institutions, N=1,034								
2012+	-4.49	-2,095.97	-1.08	-604.80	0.14	-50.38	-3.55	-1,355.21
	(3.62)	(1,771.01)	(2.34)	(1,334.07)	(0.68)	(234.08)	(3.66)	(1,903.88)
Fitted 2011 Mean	7.23	4,234.51	5.13	2,285.80	3.82	1,522.21	-1.72	251.15
R^2	0.414	0.337	0.202	0.222	0.781	0.806	0.275	0.164

* p<0.10, ** p<0.05, *** p<0.01

Sources: Pittsburgh Public Schools, Pittsburgh Promise administrative files and IPEDS.

Notes: Coefficients presented from OLS regressions predicting financial aid outcomes as a function of receiving a Promise award up to $10,000 for cohorts 2012 to 2015. Data are restricted to first-time, full-time students enrolling in college in the year immediately after high school graduation. All models include covariates displayed in Table 1. Models include institution and high school fixed effects. Standard errors are clustered at the year by institution level and are presented in parentheses. Fitted outcomes for students in cohort 2011 presented as baseline means.

Table 3.6 Cost of attendance by Pell eligibility status for students attending public institutions, N=834

	Total Cost of Attendance	Tuition and fees		Room and board		Books		Other living expenses	
	$ 2016	% TCA	$ 2016	% TCA	$ 2016	% TCA	$ 2016	% TCA	$ 2016
Pell-Eligible, N=574									
2012+	-28.29	-0.95*	-266.50	3.00	682.03	0.15	32.50	-2.20	-476.33
	(436.59)	(0.53)	(251.05)	(1.96)	(499.53)	(0.18)	(36.98)	(1.83)	(414.39)
Fitted 2011 Mean	659.37	-0.86	77.96	-0.61	151.30	-0.26	-27.45	1.73	457.56
R-squared	0.417	0.596	0.167	0.416	0.616	0.470	0.196	0.353	0.383
Not Pell-Eligible, N=260									
2012+	624.28**	0.97	599.99**	3.26*	1,008.75**	-0.09	14.06	-4.14**	-998.51*
	(229.42)	(0.93)	(229.47)	(1.83)	(438.38)	(0.08)	(15.65)	(1.88)	(497.74)
Fitted 2011 Mean	548.97	-0.65	-43.59	-0.07	159.25	-0.11	9.30	0.83	424.02
R-squared	0.530	0.585	0.371	0.503	0.760	0.627	0.750	0.490	0.294

* p<0.10, ** p<0.05, *** p<0.01

Sources: Pittsburgh Public Schools, Pittsburgh Promise administrative files and IPEDS.

Notes: Coefficients presented from OLS regressions predicting financial aid outcomes as a function of receiving a Promise award up to $10,000 for cohorts 2012 to 2015 in the top panel. Data are restricted to first-time, full-time students enrolling in college in the year immediately after high school graduation. All models include covariates displayed in Table 1. Models include institution and high school fixed effects. Standard errors are clustered at the year by institution level and are presented in parentheses. Fitted outcomes for students in cohort 2011 presented as baseline means. The bottom panel presents the coefficient on the linear time trend from equation (1).

Table 3.7 Gift aid by Pell eligibility status at public institutions, N=834

	Total non-Promise grant aid		Federal, state, and local grants		Pell		Institutional grants	
	% COA	$ 2016	% COA	$ 2016	% COA	$ 2016	% COA	$ 2016
Pell-Eligible, N=574								
2012+	-6.17*	-2,215.72***	-4.89*	-1,452.13**	1.42	-19.61	-2.70	-669.38
	(3.19)	(760.50)	(2.42)	(571.91)	(1.35)	(320.01)	(2.36)	(548.84)
Fitted 2011 Mean	20.90	5,809.13	9.53	2,562.36	12.30	3,302.10	-0.94	-202.49
R-squared	0.373	0.321	0.180	0.147	0.694	0.686	0.196	0.189
Not Pell-Eligible, N=260								
2012+	1.23	407.45	2.83	698.02	-0.84	-21.06	-0.76	-196.84
	(3.71)	(909.63)	(1.89)	(447.69)	(1.22)	(274.92)	(3.33)	(792.31)
Fitted 2011 Mean	-11.54	-2,770.75	-5.03	-1,245.62	-7.64	-1,953.47	1.13	282.96
R-squared	0.295	0.289	0.313	0.320	0.475	0.454	0.240	0.239

* p<0.10, ** p<0.05, *** p<0.01

Sources: Pittsburgh Public Schools, Pittsburgh Promise administrative files and IPEDS.

Notes: Coefficients presented from OLS regressions predicting financial aid outcomes as a function of receiving a Promise award up to $10,000. Coefficients are estimated from a fully interactive model. Data are restricted to first-time, full-time students enrolling in college in the year immediately after high school graduation. All models include covariates displayed in Table 1. Models include institution and high school fixed effects. Standard errors are clustered at the year by institution level and are presented in parentheses. Fitted outcomes for students in cohort 2011 presented as baseline means in brackets.

Table 3.8 Cost of attendance by Pell eligibility status for students attending state-related institutions, N=1,111

	Total Cost of Attendance	Tuition and fees		Room and board		Books		Other living expenses	
	$ 2016	% TCA	$ 2016	% TCA	$ 2016	% TCA	$ 2016	% TCA	$ 2016
Pell-Eligible, N=574									
2012+	-528.36	-1.24	-265.65	-4.11***	-1,179.37**	0.03	-10.04	5.32*	926.70
	(1,018.83)	(3.16)	(239.88)	(1.29)	(458.51)	(0.26)	(39.52)	(3.16)	(833.96)
Fitted 2011 Mean	-189.47	4.10	642.05	1.93	469.22	0.63	168.53	-6.67	-1,469.27
R-squared	0.190	0.211	0.177	0.192	0.230	0.402	0.475	0.239	0.253
Not Pell-Eligible, N=537									
2012+	1,311.58	-2.58	-40.01	-0.45	243.38	-0.61***	-82.20**	3.63	1,190.41
	(897.88)	(2.45)	(457.47)	(1.49)	(445.62)	(0.18)	(36.61)	(3.20)	(926.79)
Fitted 2011 Mean	-1,737.75	3.64	78.80	-0.78	-507.44	0.56	114.93	-3.42	-1,424.04
R-squared	0.371	0.234	0.285	0.357	0.551	0.482	0.560	0.163	0.311

* p<0.10, ** p<0.05, *** p<0.01

Sources: Pittsburgh Public Schools, Pittsburgh Promise administrative files and IPEDS.

Notes: Coefficients presented from OLS regressions predicting financial aid outcomes as a function of receiving a Promise award up to $10,000 for cohorts 2012 to 2015 in the top panel. Data are restricted to first-time, full-time students enrolling in college in the year immediately after high school graduation. All models include covariates displayed in Table 1. Models include institution and high school fixed effects. Standard errors are clustered at the year by institution level and are presented in parentheses. Fitted outcomes for students in cohort 2011 presented as baseline means. The bottom panel presents the coefficient on the linear time trend from equation (1).

Table 3.9 Non-Promise gift aid by Pell eligibility status at private institutions, N=1,034

	Total non-Promise grant aid		Federal, state, and local grants		Pell		Institutional grants	
	% COA	$ 2016	% COA	$ 2016	% COA	$ 2016	% COA	$ 2016
Pell-Eligible, N=636								
2012+	-4.19	-2,746.56*	-4.29**	-2,249.74**	0.63	-102.43	-0.52	-294.46
	(3.64)	(1,488.25)	(2.14)	(1,090.99)	(0.94)	(319.75)	(3.33)	(1,373.12)
Fitted 2011 Mean	7.18	3,853.70	6.97	3,054.49	7.19	2,913.01	-6.98	-2,302.80
R-squared	0.504	0.486	0.275	0.361	0.646	0.675	0.454	0.330
Not Pell-Eligible, N=398								
2012+	-6.13	-2,266.25	4.26	2,218.74	-0.57	-97.83	-9.83	-4,317.00
	(4.97)	(2,631.81)	(4.18)	(2,459.10)	(0.43)	(178.70)	(6.06)	(3,563.90)
Fitted 2011 Mean	4.70	3,901.08	0.68	404.93	-3.49	-1,500.27	7.50	4,844.24
R-squared	0.443	0.371	0.260	0.254	0.660	0.496	0.282	0.243

* p<0.10, ** p<0.05, *** p<0.01

Sources: Pittsburgh Public Schools, Pittsburgh Promise administrative files and IPEDS.

Notes: Coefficients presented from OLS regressions predicting financial aid outcomes as a function of receiving a Promise award up to $10,000. Coefficients are estimated from a fully interactive model. Data are restricted to first-time, full-time students enrolling in college in the year immediately after high school graduation. All models include covariates displayed in Table 1. Models include institution and high school fixed effects. Standard errors are clustered at the year by institution level and are presented in parentheses. Fitted outcomes for students in cohort 2011 presented as baseline means in brackets.

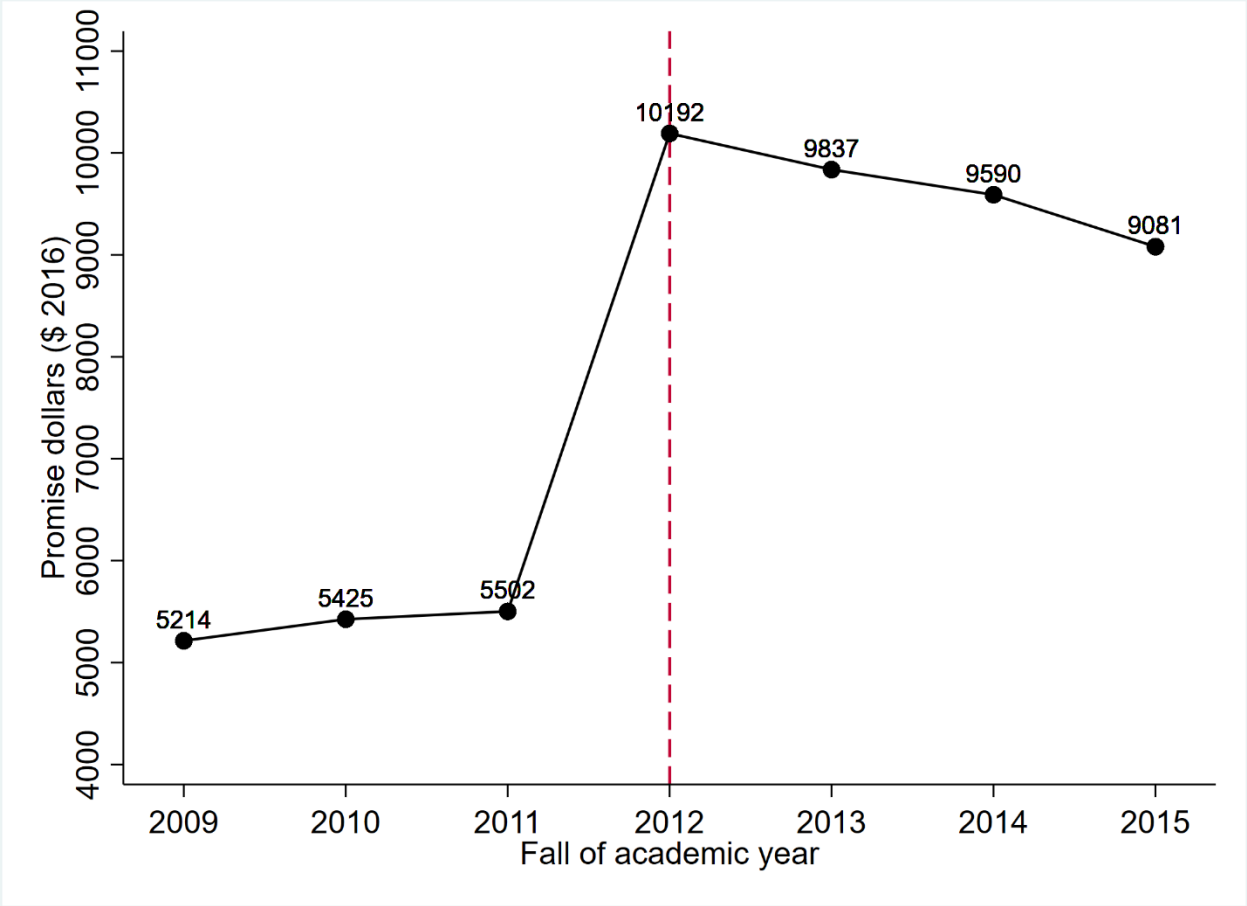

Figure 3.1 Promise dollars recieved by cohort

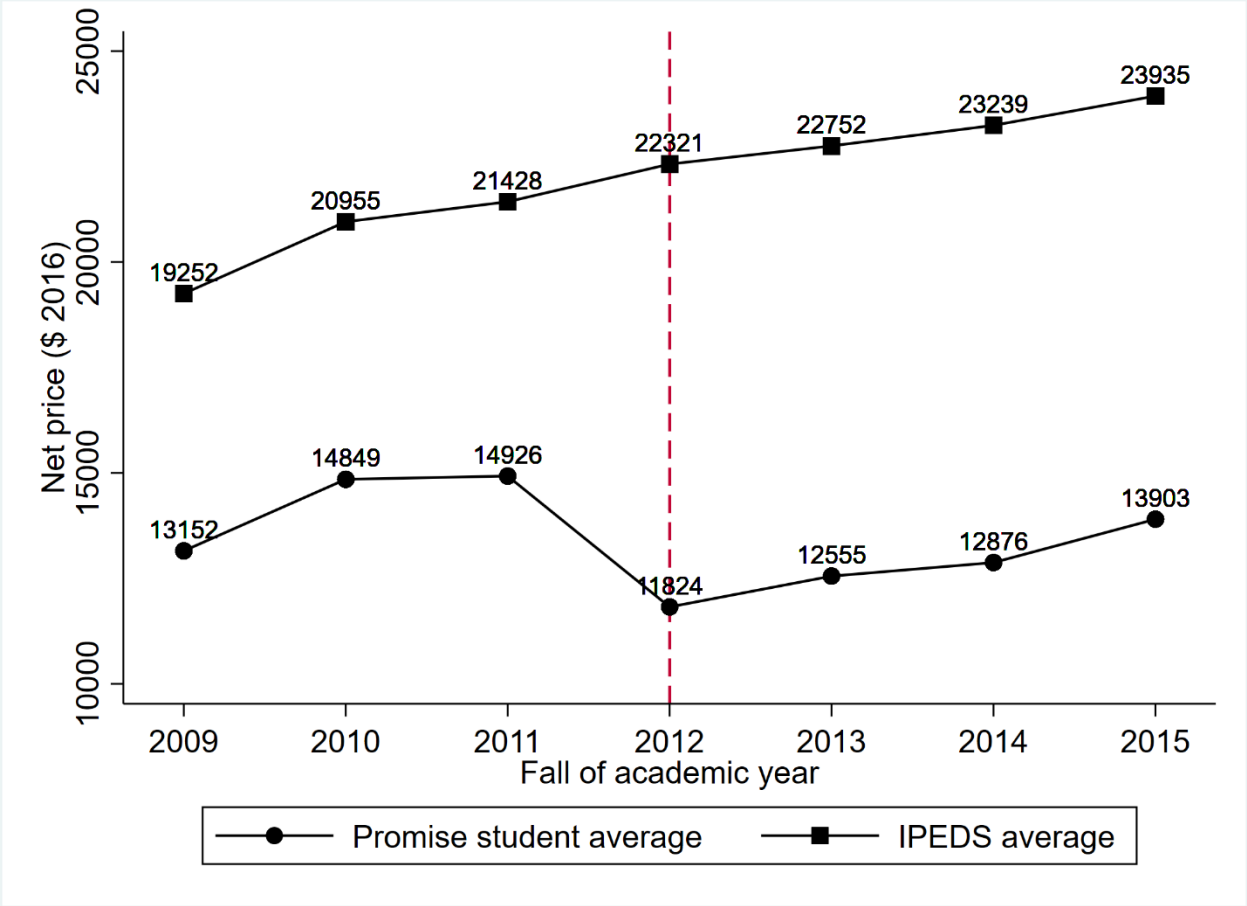

Figure 3.2 Net price average among Promise and IPEDS samples

4.0 Strengthening Postsecondary and Career Structures through a School-Community Partnership: The Case of the Pittsburgh Promise Coaching Pilot

4.1 Introduction

To improve college enrollment and degree attainment, localities across the United States have invested in place-based promise programs to offset the cost of postsecondary education through the offer of financial awards. Since the inception of the Kalamazoo Promise in 2005—a generous scholarship offered to all Kalamazoo Public School graduates meeting residency requirements—promise programs have gained widespread popularity. According to PennAhead's promise program database, which collects detailed information about current promise programs, there are approximately 425 promise programs across the nation (Perna & Leigh, 2021). Although research on these programs have shown marked improvement in student college-going and degree attainment among promise-eligible students (Bartik, Hershbein, Lachowska, 2015; Carruthers & Fox, 2016; Page, Iriti, Lowry & Anthony, 2019; Swanson & Ritter, 2020), evidence also demonstrates that lower-achieving students, students of color, and students from lower-income families do not reap the same benefits as their more advantaged peers (Carruthers, Fox & Jepsen, 2020; Collier & McMullen, 2020; Page & Iriti, 2016). Money alone is not sufficient to encourage postsecondary enrollment and completion; however, complementing a financial award with a mentoring component may produce large effects on enrollment and persistence (Carrell & Sacerdote, 2012).

One such organization attempting to implement a model to engage students in their education and provide supports to students as they explore postsecondary and career options is the

Pittsburgh Promise. The Pittsburgh Promise is a scholarship organization that promotes college-going among Pittsburgh Public Schools (PPS) graduates. The $5,000 / year scholarship is available to all PPS graduates with at least a 90% high school attendance rate and a cumulative GPA of 2.5. Since the Pittsburgh Promise's inception in 2007, the organization has made great strides in improving student college-going outcomes. An evaluation of the impact of the Promise on enrollment and persistence in postsecondary demonstrated that the Promise is improving student outcomes and that these effects are uniform across racial and gender groups (Page, Iriti, Lowry & Anthony, 2019). However, annual reporting metrics published by the Pittsburgh Promise show that student postsecondary enrollment rates have plateaued in recent years.[26] Additionally, as the report makes clear, large disparities in enrollment and completion still remain between white and Black students. For example, white females from the first 10 Promise cohorts are 15 percentage points more likely to have attained a degree or are still enrolled in postsecondary than Black females, while this gap between white males and Black males is 20 percentage points. The Pittsburgh Promise recognized that eliminating financial barriers was not enough to continue increasing college-going rates. The Promise began to work on a college coaching initiative to provide additional supports to PPS students. Promise staff secured funding to launch a Pittsburgh Promise coaching initiative at three pilot schools in the fall of 2020.

The goals of the coaching initiative are comprehensive and evidence-based. Promise coaches will work with all high school grade levels to expose students to different career and college pathways and will provide direct support and referrals to help students become Promise-eligible. Beginning with 9th graders, coaches will assist students in: identifying their skills and

[26] https://pittsburghpromise.org/wp-content/uploads/2021/02/24290-Annual-Report-v14_spreads.pdf

interests, exploring a variety of college and career pathways, utilizing financial resources, learning how to manage emotional distress, and learning how to advocate for themselves, among other skills.

The first full year of implementation of this initiative was overshadowed by the COVID-19 Pandemic. Like many school districts across the nation, PPS administrators cancelled in-person learning and transitioned to fully online instruction. Coaches, unable to meet students or school staff in person, often struggled to perform the main functions of the initiative. The transition to online learning in the initiative's first year hampered relationship building with both staff and students. Coaches were also unable to learn about each school's organizational routines and staff politics and were not able to integrate coaching practices within these structures. Despite these challenges, coaches adapted and many lessons were learned.

This paper is part of a research-practice partnership that will help the Promise coaching staff plan for the coming years, as well as to provide pertinent information to other school districts considering implementing similar programs. I use field notes from coaching meetings and data from interviews with the Promise coaches to understand the difficulty coaches experienced building a collaborative relationship with school-based staff, especially counselors. I find that coaches and counselors did not have clear role differentiation in the first year of the project's implementation and this caused confusion and tension among the two groups of professionals. To better serve coaches in the new school year and to provide a roadmap of collaboration if the project expands to other district high schools, I analyze the PPS job descriptions for counselors and Promise coaches. I create simple Venn Diagrams to observe job task overlap and potential coach opportunities. This provides two analytical benefits. First, I am able to observe how job tasks overlap between the professions. This will allow the coaching program to identify areas for collaboration

or to eliminate work redundancy to increase efficiency in supporting students. Secondly, where gaps in student support are observed in job tasks, coaches can find opportunity to provide the counseling team with additional assistance to increase the coaches' perceived value among school-based staff. Providing support to counselors and social workers will allow Promise coaches to more easily build buy-in from staff.

The remaining paper is organized as follows. First, I provide a brief introduction to the Pittsburgh Promise coaching pilot and the schools chosen to host the Promise coaches. Then, I explore the extant literature on college coaching and school buy-in. Next, I describe the data and methods I use to understand how robustly the Promise coaching initiative was implemented in its first year. I then analyze the PPS job descriptions data and provide recommendations on future staff collaboration. Finally, I discuss the results of these analyses and how the Promise coaching pilot can use this data to build collaborative relationships with school staff.

4.2 Background

4.2.1 Pittsburgh Promise Coaching Pilot

The Pittsburgh Promise coaching initiative was established to address inequitable access to the Pittsburgh Promise scholarship for a subset of PPS students. In recent years, key Pittsburgh Promise success indicators have shown minimal growth. These indicators include: 1) high school graduation rates; 2) the share of PPS graduates eligible for the Promise based on merit criteria; and 3) the share of Promise-eligible students using Promise dollars.

In 2019, with generous funding from the Richard King Mellon Foundation, the Pittsburgh Promise was able to begin designing the college and career coaching program. The initial program development phase included PPS leadership, Promise staff, education policy researchers from the University of Pittsburgh, and other pivotal community partners in several two-hour long design sessions. In these design sessions, collaboration with and buy-in from school counselors was discussed and anticipated, but counselors themselves were not involved in these sessions. Instead, the PPS director of student services, who manages counselors in the district, served as a proxy for counselors. Those involved in designing the program assumed the director would inform counselors of the project's details, but it became apparent in the fall that these conversations with counselors did not occur.

Promise leadership and stakeholders articulated the program's theory of change (see Figure 1) in these design meetings. The theory of change provides a high-level overview of the purpose of the initiative and the mechanisms it employs to effect change. The ultimate vision for the work is to increase high school graduation rates, the proportion of students who are eligible for the Promise, the proportion of students who use the Promise (called "Promise Scholars"), the proportion of students attending right-matched institutions, and the culture of coaching and college / career advising within the Pittsburgh Public Schools. To achieve this vision, the coaching initiative uses both direct and indirect strategies that are implemented through targeted actions to bring about the desired impact.

Three high schools were chosen for the Promise coaching pilot because of low Promise usage rates among graduates at these schools. I use pseudonyms to protect the identities of the three high schools. The high schools are North High, Central High, and South High. At all three high schools, most students are from low-income families. The number of students eligible for the

Promise at the pilot high schools remains low in comparison to the other six high schools in Pittsburgh. The three schools differ in enrollment size. According to the Common Core of Data, a database on public elementary and secondary schools in the United States that is maintained by the National Center for Education Statistics, in the 2019-2020 academic year, North High School had an enrollment of 361 students. Central contains both a middle and high school. Approximately 240 of Central's total enrollment of 322 students were high schoolers during the same academic year. Finally, South has the largest enrollment of 700 students. The number of coaches assigned to each school is based on these enrollment numbers. Two coaches are assigned to North, three coaches are located at Central, and four coaches are assigned to South.

Central High experiences high staff turnover, while North and South's faculty and staff have years of experience at the schools. Although the Pittsburgh Promise coordinated with school leadership to design the coaching program, many staff members at each of these high schools were not kept informed about the design or implementation of the program. I explain how this might effect implementation in the following sections.

4.2.2 Successful School-Community Partnerships

School-community partnerships are collaborative relationships between a school and an external organization that agree to collaborate on a shared goal of contributing to student development and success. There is a large and robust literature on the effectiveness of school partnerships with universities to promote college-going cultures (Núñez & Oliva, 2009), but surprisingly few studies examining the effectiveness and prevalence of school-community partnerships that hold similar college-going goals. Núñez & Oliva review the literature on P20 collaborations and provide a list of conditions and supports necessary to promote collaboration between schools and

universities. The authors conclude that the main components of successful collaborations are trust among stakeholders, frequent and formal communication, and a data collection and analysis process to monitor progress.

To implement and maintain strong school-community partnerships, school leadership must promote and guide the partnership and its shared initiative. An evaluation of college-going structures within five high schools from differing communities in the southwest concluded that partnerships and college-going were strongest in high schools where school leadership spearheaded and continuously supported college access initiatives and policies (Bosworth, Convertino & Hurwitz, 2014). Other studies confirm that successful partnerships are strengthened when school leadership is involved in the formation of the partnership and consistently provides encouragement to students and staff (Gross, 2015; McClafferty, McDonough & Nunez, 2002). In a program that included college and career coaches at several area high schools, schools with principals that conspicuously supported coaches led to faculty and staff supporting the program; in schools where principals did not make this effort, it became harder for the coaches to effectively conduct their work (McClafferty, McDonough & Nunez, 2002).

A strong high school college-going culture is supported by a network of actors that include school-based staff and other community partners. This includes fostering positivity among staff members and promoting a shared culture of supports for students as they make decisions regarding college and career opportunities after high school (Oseguera, 2013). In successful school-community partnerships, there is a mutual respect and understanding between partners that encourages external partners to constructively contribute to the school's initiatives and programming (Gross, 2015). Resistance to external partners from school staff members may happen if roles and

responsibilities between the partners are not clearly defined or staff members do not see the value of the external partner's work (McClafferty, McDonough & Nunez, 2002).

A final necessary component to instill collaboration among school-community partners is reciprocity through communication and data-sharing. One of the major assets in these partnerships is clear and frequent communication between partners to prevent confusion and "surprises" in program deliverables (Gross, 2015). When communication breaks down or becomes too infrequent and informal, the partnership also deteriorates (Moquett, 2012). As was mentioned above, in a review of effective school partnerships with universities, researchers concluded that a data collection and analysis process is an important evaluative tool to promote collaboration (Núñez & Oliva, 2009). A data-sharing process allows the partnership to diagnose problems early; furthermore, sharing-out data between stakeholders is a pivotal step to promote trust and reciprocity. In sum, successful school-community partnerships are supported by school leadership; are strengthened by a shared school culture of student support; and are maintained by frequent communication and reciprocity between stakeholders.

4.2.3 Existing College Coaching Programs and Faculty Buy-In

I now review the causal literature evaluating college and career coaching and advising programs with an emphasis on developing collaborative relationships between school and coaching staff. In order for a college coaching program to be implemented with a high degree of fidelity, it is important to establish a collaborative relationship with the host institution. TRIO Talent Search staff reported that their positive relationships with high schools mostly centered around reciprocation. For example, high schools assisted program staff in recruiting students and loaning school facilities for Talent Search activities, while Talent Search provided pre-college advising that

school counselors did not have time for with their heavy workload (Calahan, 2004). College Possible, an advising program with modest student outcomes, is provided with office space and classrooms from host high schools (Avery, 2013). In the Detroit Promise Path program, only one institution showed no positive effects on early student outcomes. Staff reported that this college did not provide much support or display much enthusiasm for the program (Rutledge et. al., 2019).

Coaches that make the greatest impacts are long-term employees with experience with underrepresented student populations. Unfortunately, some college coaching programs with limited effects on college outcomes employ peer advisors or university students. For example, the Razor COACH (Creating Opportunities for Arkansan's Career Hopes) hired academic coaches from the University of Arkansas. The coaches received a graduate assistantship for their roles and advised students did not see a large impact in college enrollment (Moore, 2015). In a study of the Advise TX program, researchers found no impact of the program on immediate college enrollment. Although the program identified near-peer mentors that had similar backgrounds to the students served, advisors did not stay with the program long enough to develop collaborative relationships. Most advisors were involved in the program for a year with the option to stay on for a second year. This was not a full-time commitment for these advisors and there was not enough time for students and advisors to form a trusting relationship (Bettinger & Evans, 2019). Students do well when their coach is fully committed to the program and can act as the student's mentor.

All successful college coaching programs use a centralized data management system that is regularly utilized by program staff and allows for easily produced reports to share-out with stakeholders (Page, Kehoe, Castleman & Sahadewo, 2019; Ratledge at. Al., 2019; Scrivener, 2015). Staff at coaching programs with no centralized data system took notes or submitted documentation to superiors, but data on student attendance or completion of college tasks was not

collected (Cunha et. al., 2018; Moore 2015). Additionally, in programs with little to no impact on student college outcomes there were no procedures in place to evaluate and act on the data.

Taken together, the literature on college coaching programs demonstrates that successful programs are often embedded at host schools to provide direct support to students when they need it; have centralized data management systems that allow coaches and collaborators to easily share and assess student data; and build collaborative relationships with school-based staff that are centered on reciprocity.

4.2.4 Implementation Timeline

After the coaching program's design was finalized, the Promise began the hiring process. The director of the coaching program was hired in January 2020 and coach recruitment began in February. Coach candidates were interviewed in March 2020 as the COVID-19 Pandemic intensified in the United States. Coaches were hired in the next month and virtual-only onboarding began in May 2020.

In April 2020, the coaching director attempted to meet with school leadership and counselors. It was assumed that coaches would work alongside guidance counselors due to the overlap in job responsibilities between coaches and counselors. The goal of these meetings was to clearly define the roles of the coaches and to discuss how the program's implementation would roll out throughout the year. Unfortunately, these meetings did not take place. Due to the COVID-19 Pandemic, PPS schooling moved to remote-only in the spring of 2020 and remained in an online-only format for much of the 2020-2021 academic year. PPS faculty and staff had variable backgrounds with technology skills and platforms and were learning how to provide instruction and student support online under the pandemic conditions. Before the school year began in the fall of 2020,

the coaching director was able to meet with only two counselors from one school. She received no other responses from counselors despite frequent attempts and she received no support from school leadership in communicating with counselors.

4.3 Data and Methods

I use data from multiple sources to analyze coach integration at the three PPS pilot high schools. I began observing coach staff meetings in September of 2020. These meetings first occurred bi-weekly over Microsoft Teams. As school started in the fall, the meetings became weekly. The coaching director used these meetings to talk about coaching updates and strategies, as well as debriefing sessions to discuss the status of coaching implementation at each of the three high schools.

In April 2021, I interviewed all nine coaches and the director over Microsoft Teams. I, along with my colleague Dr. Iriti, worked together to create an interview script delving into coaches' relationships with school staff, students, and parents. We also asked questions about working with community partners, technology, and data collection. The interviews were semi-structured to allow for conversation and to discuss topics that we did not translate into questions. Each of these interviews were recorded and Microsoft Stream transcribed the interviews. I reviewed the transcripts and made corrections where the audio was not properly transcribed.

4.3.1 Grounded Theory and Thematic Coding

I use grounded theory to analyze the interview and observational data. Grounded theory allows researchers creativity in developing theory from the data itself throughout the research process (Corbin & Strauss, 2014). That is, using grounded theory in qualitative research is an iterative process that begins with data collection and continues with analysis. A researcher using grounded theory does not begin the research process with theory in mind; instead, theories develop from the data itself. My coding is slightly concept-driven, as I am familiar with the program and have been observing coaching meetings all year. I have pre-conceived ideas about themes from listening in on these meetings and the topics that coaches themselves brought to the conversation. The 10 interviews with coaching staff were approximately an hour long each.

4.4 Interview Analysis

4.4.1 The Role of School Leadership

The Promise coaches are hired and funded by the Pittsburgh Promise. They are not employees of the district. Because of this arrangement, Promise coaches do not have access to the same data and technology as district staff without school and district permissions. A major setback for the coaches once the school year began was their lack of access to the PPS Microsoft Teams account, which is the main tool used by both staff and students in the school district. Teams is used for online classes as well as school-wide staff and faculty communication. Without access to their

school's Teams channel, coaches would be unable to meet with students in the fall and would be unaware of schoolwide and faculty events.

Aligning with the literature on school-community partnerships, school leadership became key in promoting the college coaching program and providing access to Teams. At Central High, there was already a college and career structure in place through the offer of AVID classes as an elective course.[27] The principal assigned the assistant principal as the coaches' point of contact within the school. The assistant principal immediately made a connection between Promise coaches and AVID teachers. Coaches became valued resources for AVID teachers. Additionally, through communication between the assistant principal and the activities director at Central, coaches were also given permission to access Microsoft Teams. By mid-semester, coaches at Central were already beginning to meet with students in one-on-ones.

Accessing Microsoft Teams and, therefore, students was a more complicated process at the other two high schools. At North, although the principal was supportive and communicative in regards to the coaching program, he left the district before the fall. This loss of leadership proved to be a barrier to accessing Teams. Coaches were not provided access to Teams until February 2020. At South, despite numerous attempts at communication, the principal was unresponsive and coaches were not able to use Teams until the winter break. Once coaches accessed Teams, the work became much more efficient. Additionally, Teams became the main tool used by coaches to interact with each other and other school-based staff formally through staff meetings and informally through frequent chat conversations.

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[27] Advancement Via Individual Determination (AVID) is a curriculum designed by a nonprofit college-readiness organization to help students develop the skills they need to be successful in college.

4.4.2 Developing Culture of Support

One North High coach revealed in a coaching meeting in September 2020 that a school counselor said that they, "Had no idea what is going on" with the coaches. From this coach's perspective, this was the sentiment felt by the school counselors and other staff members at their school. Because the director was unable to meet with much of school leadership and guidance counselors before the start of the school year, coaches were not able to become familiar with the postsecondary and career structures already in place at the high schools and did not have points of contact before the school year began. Teachers and other school-based staff began preparing for an unprecedented school year and the coaching program became less of a priority for school leadership and staff members. Due to these circumstances, coaches were left to make connections with faculty and staff on their own.

The inability to sit down with staff members and discuss the coaches' roles before the start of the school year and differentiate their duties from school counselors may have led to confusion. Ultimately, key staff members that could have assisted the coaches in their transition into the schools were left confused about the coaching project and did not provide coaches with access to students or district wide communication technology.

Coaches were only able to begin contacting students through staff members that acted as gateways to that access. For example, at Central High, the activities director and the assistant principal, reached out to the coaches and expressed interest in their work. At the other two high schools, coaches began contacting students after school social workers recruited them to help track down students with chronic truancy issues. Virtual learning resulted in an increase in chronic absences in the district. Social workers reached out to Promise coaches and asked if they could assist in tracking students down and re-engaging them in school. The social workers shared student names

with coaches and were grateful for their help. This led to coaches forming relationships with students that needed additional support and intervention during the online school year.

4.4.3 Uncertain Role Differentiation and Lack of Reciprocity

As mentioned previously, school counselors did not understand the role differentiation between coaches and themselves at Central and South. One coach at South High commented that:

> "So from day one there was some tension because these very seasoned staff at [South], like, […] one of them has been there since the 90s. Like, they're very, very seasoned staff and there was tension and there were some conflicts. There was like some territory, like, hey, these are my kids that I've known for four years. And you're coming in and trying to do this."

This coach believes that, at least at South, much of the territorial behavior over students displayed by school counselors is due to the very low staff turnover and the long careers at the school. The coaches at South believed that counselors were comfortable in their roles and the coaching initiative disrupted the status quo. Because there wasn't a meeting with coaches, counselors, and school leadership at the beginning of the school year as planned, there was not an opportunity for the coaching director to assure the counselors that coaches were not there to "take their jobs" or "do their jobs better," as one coach noted. From the counselors' perspectives, it may be that they view the Promise coaching project as a way of outsourcing the guidance counselor role and effectively circumventing the negotiated union contract. Because PPS has higher than average student-to-counselor ratios, counselors are unable to perform all of their duties effectively. Counselors may argue that they could more effectively perform their duties with additional counselor hires, rather than relying on an external partner.

Promise coaches at South High found that social workers and counselors were their main points of contact during the first few months of school. One South High coach noted in an interview that she recognized immediately that the coaches could not perform their duties without collaboration and assistance from counselors. Not only are counselors gatekeepers to pertinent student data, she stated, but they have already formed relationships with students and they are much more familiar with the school climate and culture. Overall, coaches at South and North found that counselors were not receptive to them. One coach said that there is a lot of overlap in the counselor and coaching goals. A South coach complained that not enough communication occurred between the Promise organization and school counselors concerning the delineation of roles.

In interviews, one Central coach offered an explanation for the much warmer welcome from counselors at Central over South and North. She said that Central is a low-performing school and counselors spend a great deal of time encouraging students to attend and pass class. Not much of a counselor's time is spent exploring postsecondary and career options and coaches naturally filled this gap. In fact, Central coaches learned to the work without any regular assistance or contact with the school's guidance counselors. This resulted in coaches and guidance counselors working in silos.

Another explanation for the receptivity of counselors and staff at Central is due to staff turnover. Coaches at this school remarked that staff members are fairly young and leave the school frequently. Perhaps the staff members at Central do not become comfortable enough in their positions to develop territorial behavior. At North and South, staff turnover is low and counselors are much older. These staff members may feel safe with the status quo and may view any changes as a threatening. This may be especially true given that Promise coaches have very similar job responsibilities.

4.5 Job Description Analysis

4.5.1 Problem

Given the tension felt at South and North, as well as the experiences of other coaching programs detailed in the literature review, it's important to consider how to build buy-in from school counselors and social workers within the context of these coaching programs. If the Pittsburgh Promise is able to secure the monies necessary to expand the coaching program to the remaining district high schools, more proactive measures to strengthen collaboration must be developed. One method to accomplish this is to fully understand the job duties of counselors and Promise coaches and to provide clear and definitive role definition. This kind of analysis accomplishes two tasks. First, this analysis allows the coaches to identify redundancies between their work and the work of guidance counselors. Creating a more stream-lined process of accomplishing the same tasks may reduce time spent on redundant tasks and produce more efficiency in student support. Second, this analysis identifies gaps in the student support structure. This could assist coaches in filling these support gaps to better assist students and to prove the value of Promise coaches to counselors and other staff members that may not understand why the coaching program exists. Finally, a thorough analysis of job tasks shared by counselors and Promise coaches can lead to a roadmap for collaboration to strengthen the existing postsecondary and career structures in place at the high schools.

4.5.2 Building the Venn Diagrams

In this section, I describe how I built the Venn Diagrams to analyze the job descriptions of counselors and Promise coaches. There are many other actors that engage in postsecondary and career activities within each of the three host high schools. Some staff members that are involved include librarians, activities directors, athletic coaches, social workers, and teachers. For example, the activities director reached out to the South High coaches to suggest collaboration on building student resumes through participation in extracurriculars and hosting postsecondary and career events. I focus the job description analysis exercise on counselors because the stakeholders involved in the coaching pilot design assumed that counselors and coaches would work together due to their job responsibilities overlapping.

In addition to school staff already mentioned, school leadership, in general, such as principals and assistant principals, coordinate and lead the strength of the postsecondary and career culture within high schools. However, I exclude the school leadership team from this analysis for two reasons. First, the leadership team oversees many issues outside of student support services and they do not exclusively work with students. Secondly, coaches' and counselors' daily activities are interrelated and ought to complement each other. Together, guidance counselors and Promise coaches contribute to the growth and exploration of a student's personal/social, academic, and career skills and goals. I use these three themes to categorize each profession's job duties and responsibilities as listed in their job descriptions.

I start by color coding each job description statement according to the three themes as mentioned above. Table 4.2 is a matrix displaying the frequency of each theme by profession. The darker color indicates that the theme was mentioned in at least half of the job description statements, the light color indicates that statements including that theme were mentioned less than half

of the time, and white cells indicate the theme was not mentioned at all. A majority of the tasks required by Promise coaches involves career planning, with some statements dealing with student academic and social skills. Counselors' responsibilities are more evenly split between the three overarching themes with most tasks involving academic or career goals and planning. Indeed, this matrix reveals how similar the job responsibilities are between counselors and coaches. This result on its own provides a fuller understanding of why counselors may have felt threatened by the presence of Promise coaches in their schools.

The statements within each theme are further categorized under three types of job tasks. The job descriptions for PPS counselors include the statement that these professionals' job responsibilities require them "to *educate*, *assess*, and *provide* intervention, referral, and support to students and/or families regarding their identified needs" (emphasis my own). I use these three words to categorize the type of job task described in the job description statements that fit within the three overarching student themes. Job tasks filed under the "educate" and "provide" categories may seem interchangeable at first. I classify more active tasks—such as meeting with students or parents—under *educate,* while more passive tasks—such as maintaining contacts with community partners—are filed under the *provide* category. Tasks requiring the professional to compile or analyze data are filed under the *assess* task.

From here, I use Venn Diagrams to visually depict where and how job duties among counselors and Promise coaches intersect or differ. Venn Diagrams provide this analysis with two analytical benefits. First, a Venn Diagram allows us to map where and how these separate professionals can collaborate or allocate tasks for better efficiency. It also allows us to see where student supports or important tasks to support the postsecondary and career culture within high schools may be lacking. From the Promise's perspective, this latter analysis could be an area of

opportunity. Promise coaches may consider ways in which they could fill these gaps to improve the postsecondary and career supports to better serve students with the additional benefit of demonstrating to faculty and staff the value of the Promise coaching program.

In this analysis, I found that the greatest opportunity for task overlap and opportunity was, unsurprisingly, through college and career-related tasks. Therefore, I focus my analysis on the intersection between counselor and coach tasks within the career category. Specifically, the greatest potential for overlap and opportunity occurs within the *provide* and *educate* subcategories. Therefore, I focus the remainder of my analysis on these two subcategories. The next section delves deeper into results of the Venn Diagram job description analysis.

4.6 Venn Diagram Job Description Analysis

4.6.1 College and Career-Related Job Tasks

The area in which Promise coaches' work is most heavily centered, is career-related job tasks. Figures 4.3 and 4.4, within the Educate and Provide subcategories, respectively, visually depict how many job tasks are related between coaches and counselors. Both sets of professionals are required to work with students to identify their skills and interests, develop occupational and postsecondary career plans, and assist with postsecondary and job applications. It is also assumed that both professionals will provide students with information regarding college and careers. In interviews with coaches, coaches at North and South were uncertain how or when counselors work with students on these issues. The coaches were also unclear about what documentation counselors keep concerning student postsecondary and career plans. At Central, coaches were unaware of any

career-related tasks led by counselors. Moving forward, to strengthen the postsecondary and career structures in place, it is imperative for counselors and Promise coaches to work together to ensure student data is shared and that workshops and lessons are not redundant between the two groups.

4.7 Discussion

The interview analysis and the Venn Diagram exercise allows for a broader picture of the status of each of the high schools in regards to the three components needed for successful school-community partnerships. Table 4.1 depicts each high school's status. Both North and South continue to struggle with communication and guidance from school leadership, while Central has developed a rapport with the assistant principal. Coaches at all three high schools are working with and building community with teachers. At North, coaches and counselors are developing a more collaborative relationship. However, South coaches are still struggling with building cohesion with the counseling staff. Instead of working directly with counselors, South coaches have instead begun forming deeper relationships with teachers and the career and technical education counselors. At Central, coaches and counselors work independently. Although coaches are working efficiently at Central, working independently from counselors does not contribute to a shared culture of support within the school. More work may be needed to strengthen collaboration between coaches and counselors. Finally, coaches and counselors have begun sharing student data and support strategies at North. This reciprocity and sharing of data may contribute to stronger collaboration. Central and South coaches, however, continue to work separately from counselors. Coaches at these schools ought to consider strategies to build closer connections with counselors.

In the interview analysis, Promise coaches said they would like more direct communication from Promise leadership to counselors and school-based staff to explain the intention of the coaching initiative, why their school was chosen, and the roles coaches ought to play at the schools. Already, the coaching director and Promise coaches' plan for the new school year includes more direct communication between coaches and counselors, as well as consistent meetings.

It may also be helpful to establish regular routines for communication and collaboration between coaches and counselors around the critical overlapping functions and information needs. This may include weekly email report/summaries to/from coaches, routine meetings with clearly articulated agendas that reflect counselors' and coaches' information needs, and/or data sharing protocols to exchange information customized to the norms and needs of each school.

Beyond these general recommendations, the Venn Diagram analysis of job descriptions provides additional, specific recommendations for moving the coaching program forward. There are many overlapping job functions between Promise coaches and counselors. Some of these functions include assessing and developing student interests and skills and working with a student to define postsecondary and career planning and goals. Current coaches at North and South High need to understand the type and frequency of student assessments conducted by counselors. There is no need for redundant tasks. Instead, coaches and counselors ought to develop a yearly postsecondary and career plan to record and share student information and plan college and career events. This model can be used for other high schools if and when the coaching pilot expands to other schools in the district.

A major setback to collaboration between these two professions is the lack of a centralized data management system or data-sharing plan. It is obvious from coach interviews that student data can be territorialized. It is also clear that counselors and coaches collect the same or similar

data points from students, such as interest or career inventory assessments. A central directory of student information or a data-sharing plan could increase student support efficiency and encourage collaboration. For example, Promise coaches could: share information about the topics that develop in conversations with students; the share and the breakdown of demographics of those students that apply for Promise dollars; and semesterly or yearly data about student enrollment and persistence in postsecondary. From the literature, it is obvious that successful coaching programs are built on reciprocity. The coaching program can "give back" to the schools by providing a regularly scheduled data-sharing memo to school-based staff.

4.8 Conclusion

The first year of implementation of the Pittsburgh Promise coaching program occurred during the same year as a global health emergency. Despite this huge barrier to implementation—and the resulting transition to online learning in public schools—the Promise Coaches were resourceful and adaptable to their circumstances. As schools return to in-person learning in the fall of 2021, Promise Coaches have established a strong foundation to jumpstart the year. An opportunity exists in bringing coaches and counselors together to differentiate the overlapping job tasks and determine how they might specialize and coordinate their responsibilities. By utilizing the results of the job description analysis, Promise coaches can develop more collaborative relationships with counselors and social workers to further strengthen postsecondary and career supports in the host high schools.

4.9 Tables and Figures

Table 4.1 Status of School-Community Partnership at Each Host High School

	NORTH	CENTRAL	SOUTH
Leadership	Absent	Supportive	Absent
Shared culture of support	Teachers, counselors	AVID teachers, not counselors (silos)	Teachers and CTE counselors
Communication and reciprocity	Coaches sharing and connecting	Coaches sharing and connecting with teachers	Working in silos

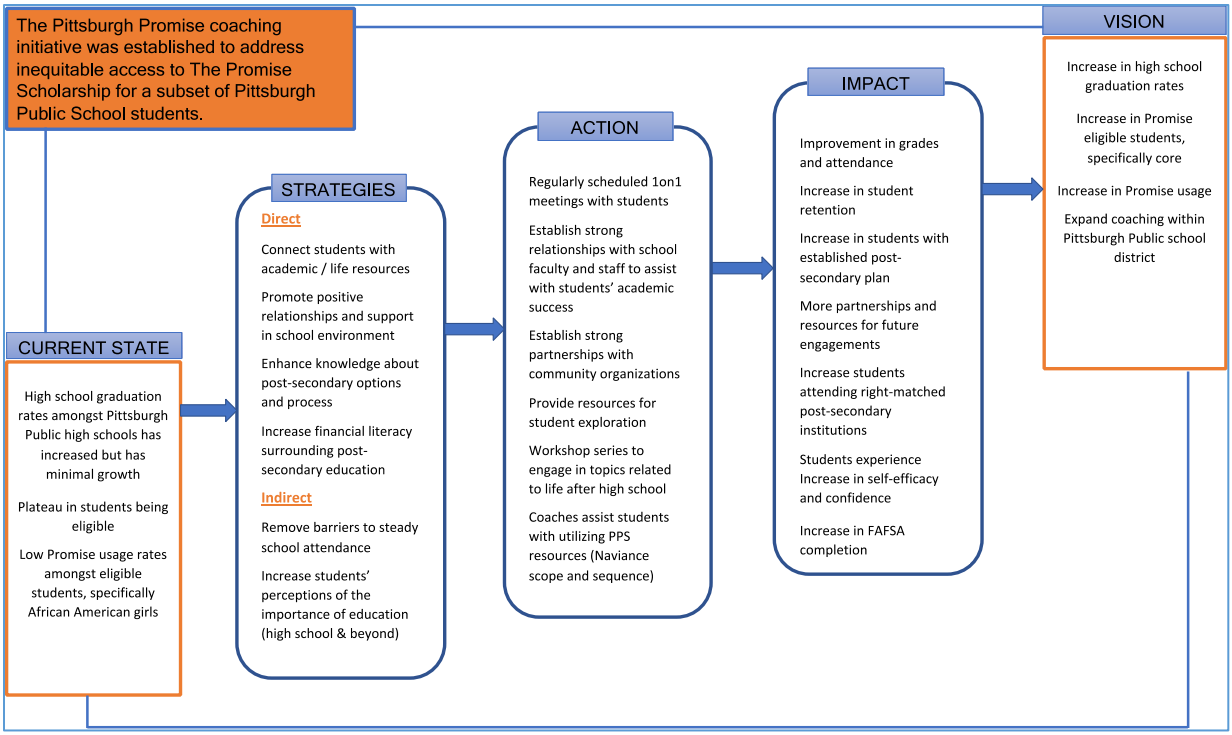


Figure 4.1 Pittsburgh Promise Coaching Theory of Change

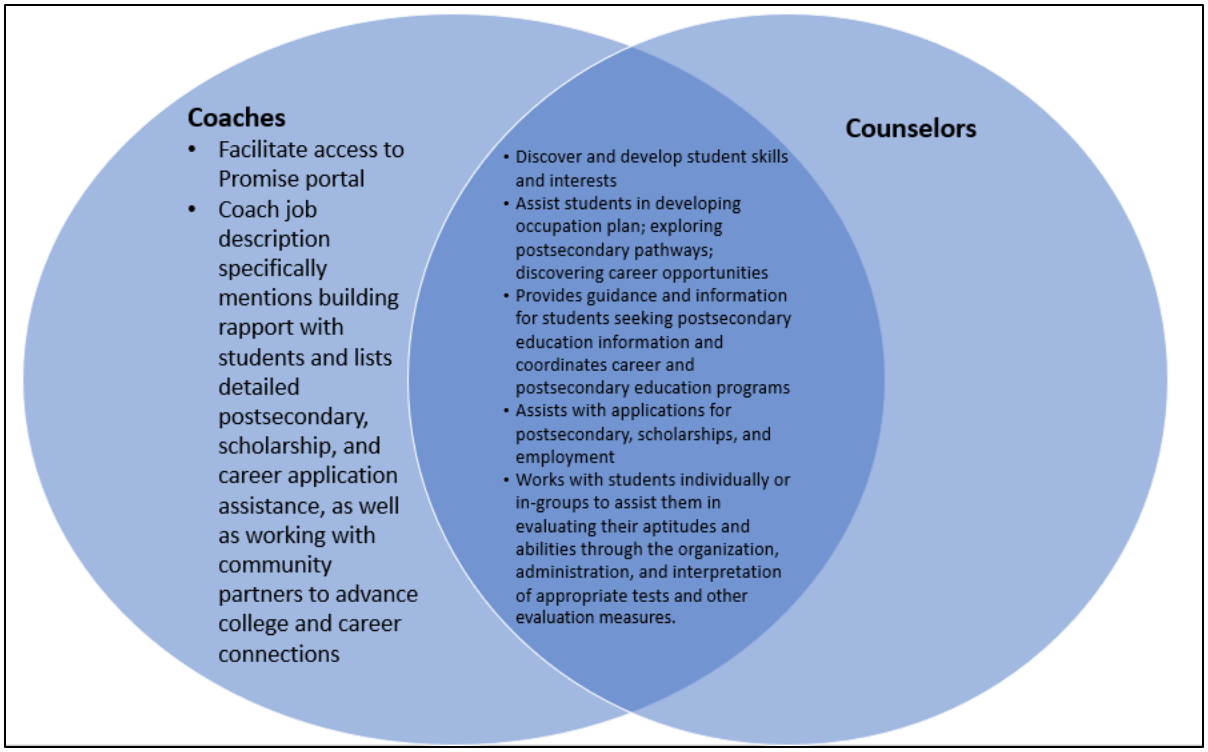


Figure 4.2 Venn Diagram, Career Educate Tasks

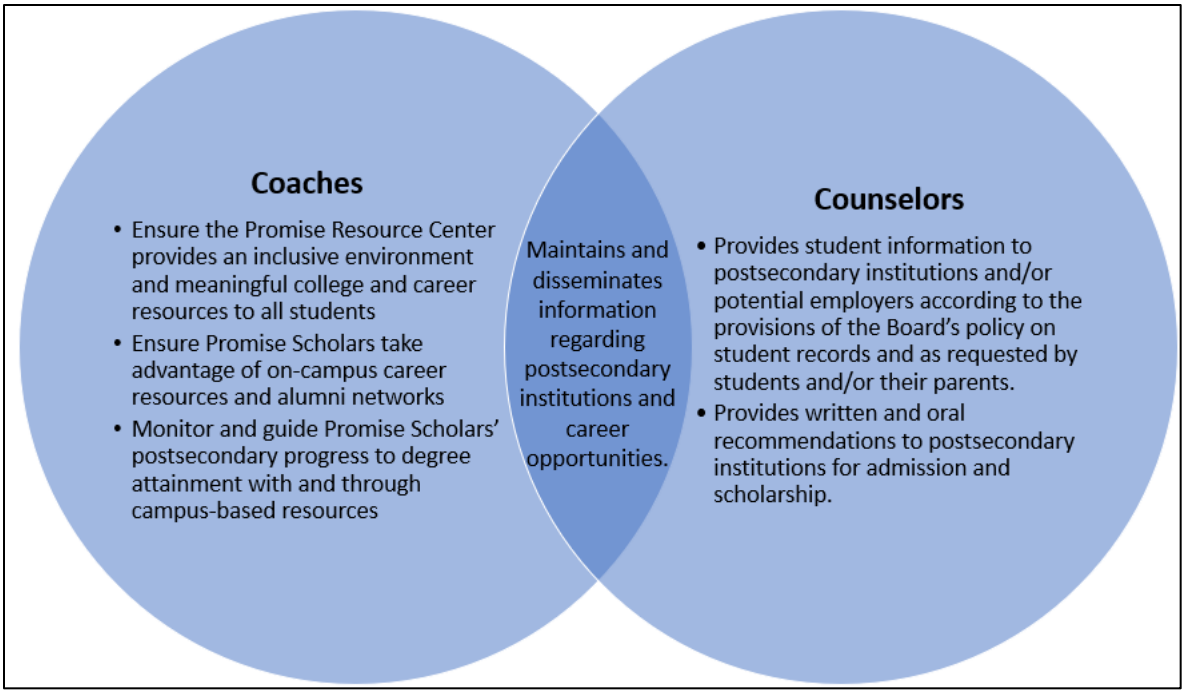


Figure 4.3 Venn Diagram, Career Provide Tasks

Appendix A List of Studies from Literature Review

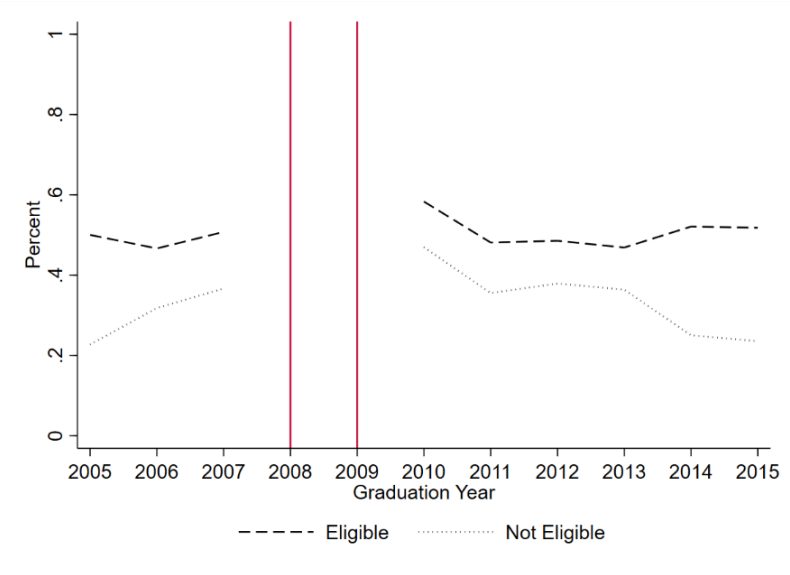
Appendix Table A.1 Programs similar in design to the Pittsbrugh Promise Extension Scholarship

Low/High Touch	Cite	Name	Eligibility Criteria	Additional Requirements or Resources	Amount	Expenses Covered	Institution	Overall Enrollment	Persistence	Degree Completion
Low	Billings, 2018	Michigan Promise Zones	Need	None	Various; Last Dollar	Tuition and fees	Local community college or four-year institution	Positive, small, non-significant	Positive, nonsignifi-cant	--
Low	Chimel, 2020	Garrett County Scholar-ship	Universal	None	Last Dollar	Tuition and fees	Garrett College	Positive, large, non-significant	--	Negative, non-significant ef-fect on Bache-lor's attain-ment
High	Carruthers & Fox, 2016	Knox Achieves	Universal	Mentor and community service re-quirement	Last Dollar	Tuition and fees	Any com-munity col-lege or technology center in the state	Positive, moderate, significant	Positive, significant	--
High	Nguyen, 2020	Tennes-see Promise	Universal	Mentor and community service re-quirement	Last Dollar	Tuition and fees	Any com-munity college or technology center in the state	Positive, moderate, significant	--	--

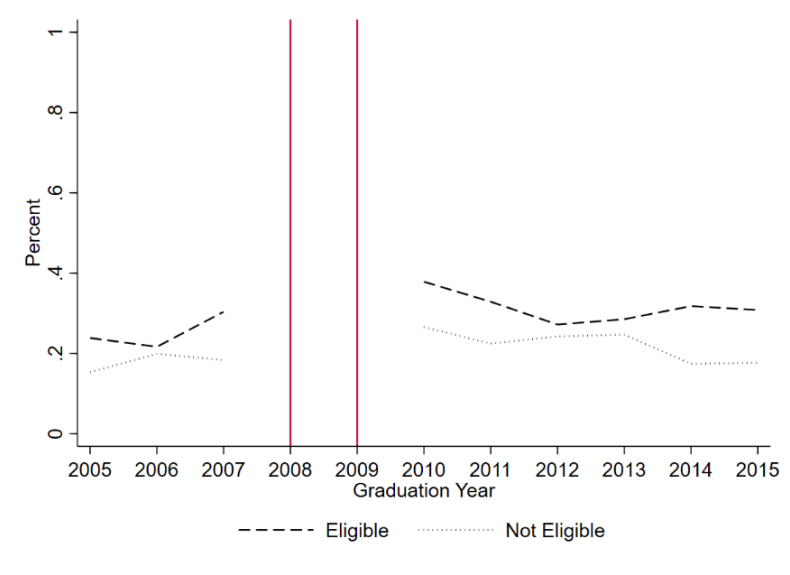
Low/High Touch	Cite	Name	Eligibility Criteria	Additional Requirements or Resources	Amount	Expenses Covered	Institution	Overall Enrollment	Persistence	Degree Completion
High	Evans, Kearney, Perry & Sullivan, 2017	Stay the Course	Need	Case Management	--	Emergency Assistance	Trinity River Campus of Tarrant County College	Positive, large, significant	--	Positive, large, nonsignificant effect on associate's attainment
High	Miller & Weiss, 2021	ASAP Model	Need, Meet remediation requirement	--	--	Tuition	Designated community colleges in NY and OH		Positive, large, significant	Positive, large, significant effect on associate's attainment; Positive, nonsignificant effect on Bachelor's attainment
Low	Welch, 2014	Tennessee Education Lottery Scholarship--HOPE	Merit--3.0 GPA or 21 ACT	--	$3,000	Total Cost	Any community college in the state	--	Positive, nonsignificant	Positive, nonsignificant effect on associate's attainment (low GPA); Negative, nonsignificant effect on Bachelor's attainment (low GPA)
High	Bell, 2021	Tulsa Achieves	Merit--2.0 GPA	Community service & completion of student success course	Last Dollar	Tuition and fees	Tulsa Community College	--	Positive, nonsignificant (RD); Positive, nonsignificant (DID)	Negative, nonsignificant effect on credential attainment (RD); positive, nonsignificant effect on Bachelor's attainment (RD); Positive, nonsignificant effect on

Low/High Touch	Cite	Name	Eligibility Criteria	Additional Requirements or Resources	Amount	Expenses Covered	Institution	Overall Enrollment	Persistence	Degree Completion
										credential attainment; Positive, significant effect on Bachelor's attainment (DID)
High	Carruthers, Fox & Jepsen, 2020	Knox Achieves	Universal	Mentor and community service requirement	Last Dollar	Tuition and fees	Any community college or technology center in the state	--	--	Positive, significant effect on certificate and associate's attainment; Negative, non-significant & significant effect on Bachelor's attainment

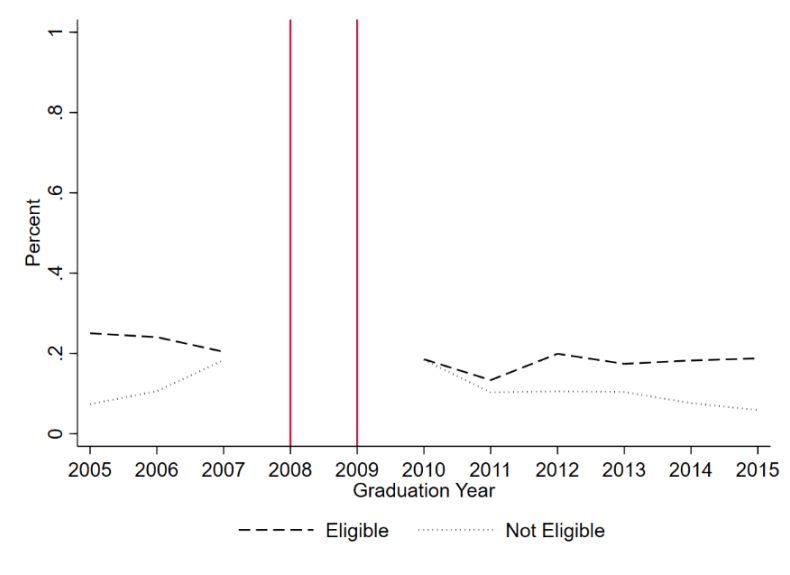
Appendix B Trends in Outcomes



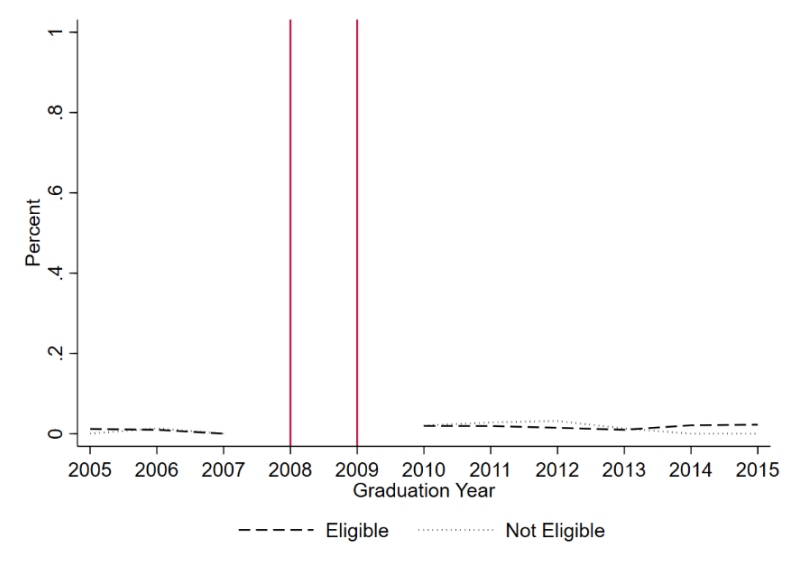
Appendix Figure B. 1 Seamless enrollment, any college



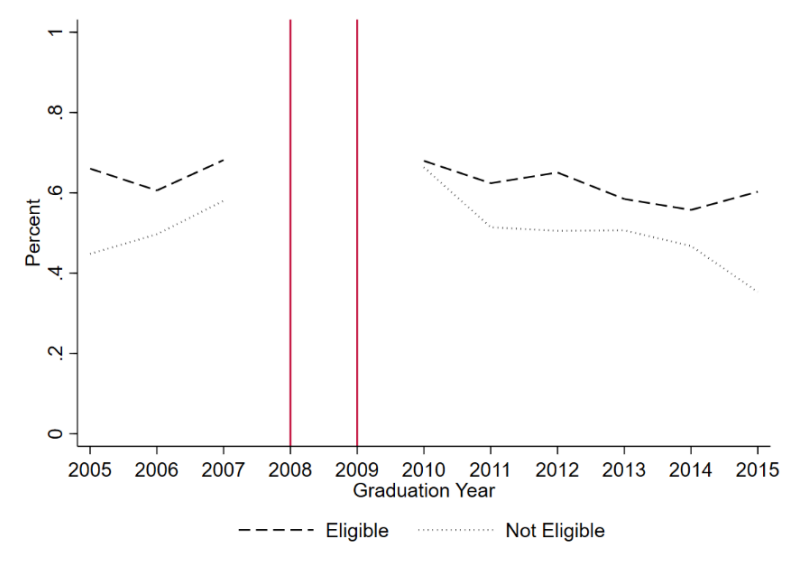
Appendix Figure B. 2 Seamless enrollment, community college



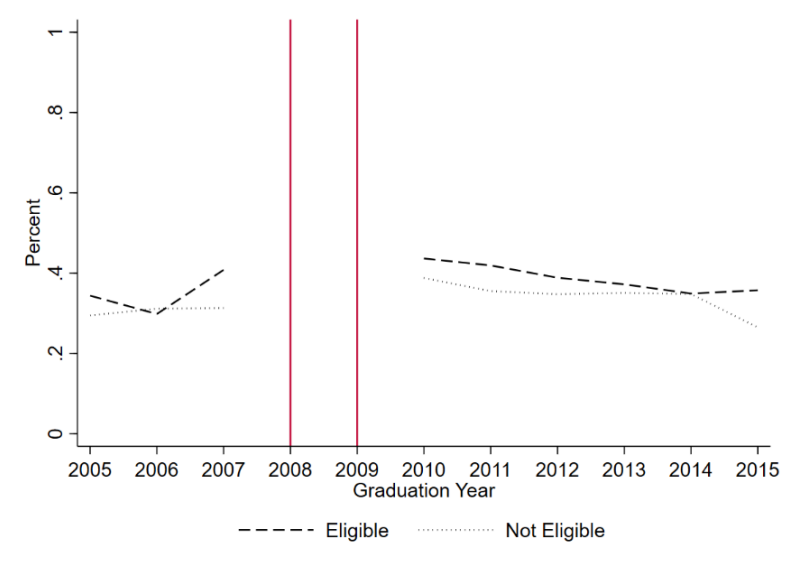
Appendix Figure B. 4 Seamless enrollment, four-year institution



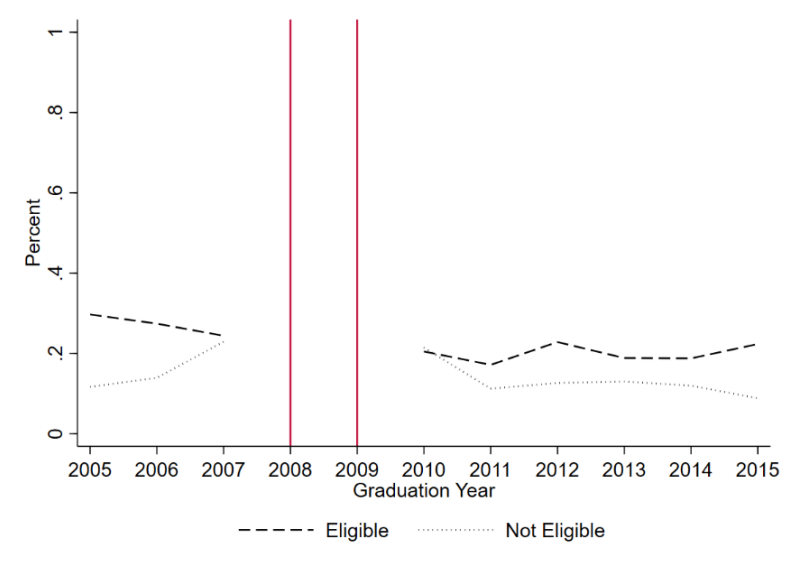
Appendix Figure B. 5 Seamless enrollment, other institution



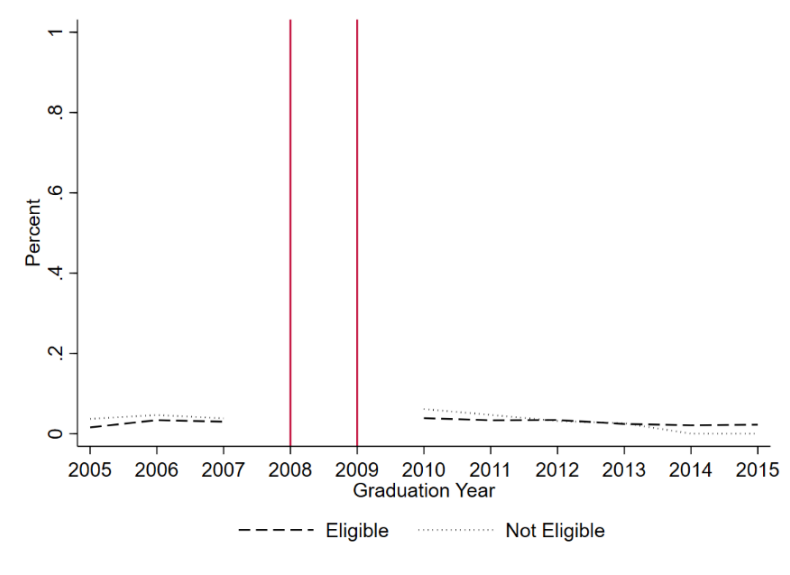
Appendix Figure B. 6 Ever enrolled, any college



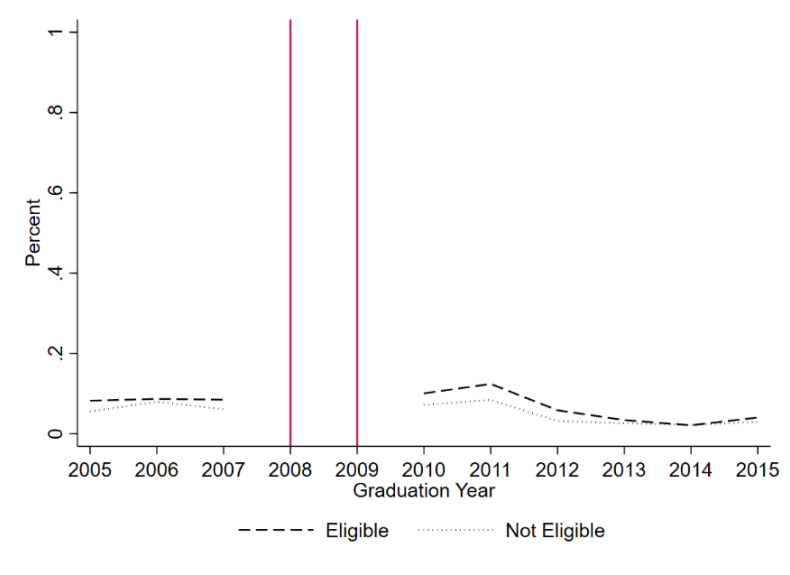
Appendix Figure B. 7 Ever enrolled, community college



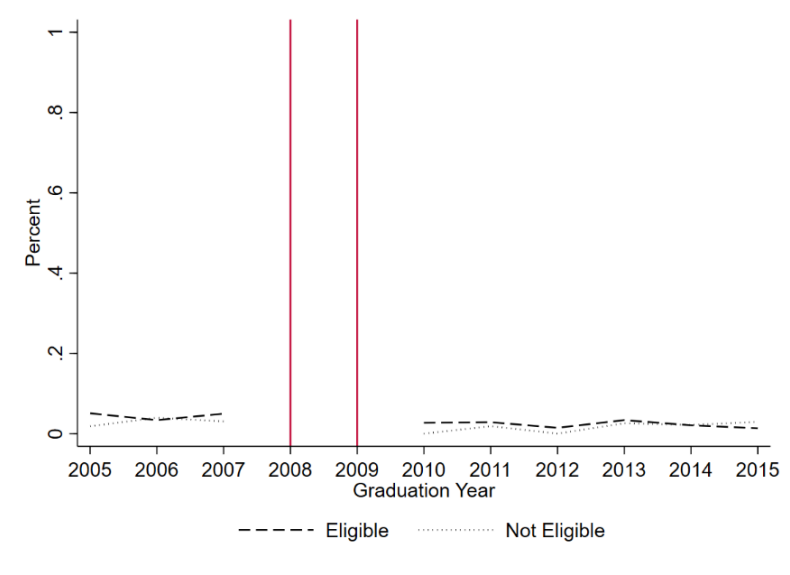
Appendix Figure B. 8 Ever enrolled, four-year institution



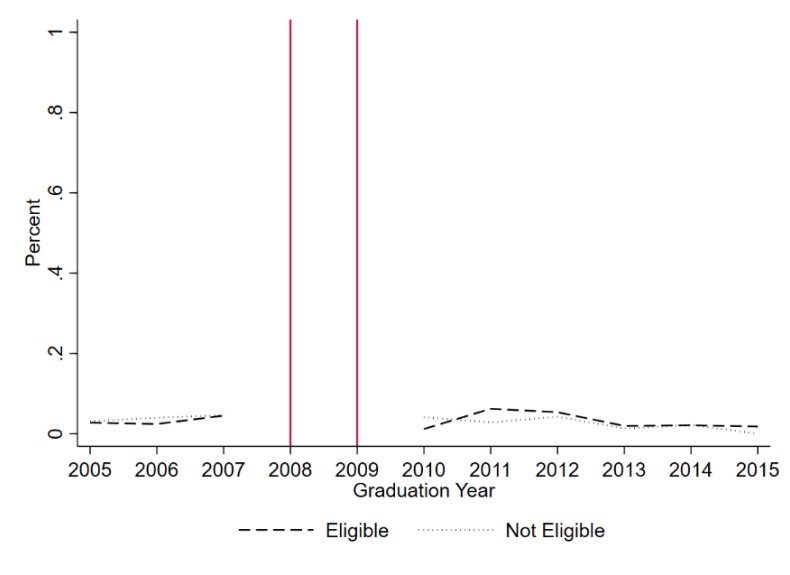
Appendix Figure B. 9 Ever enrolled, other institution



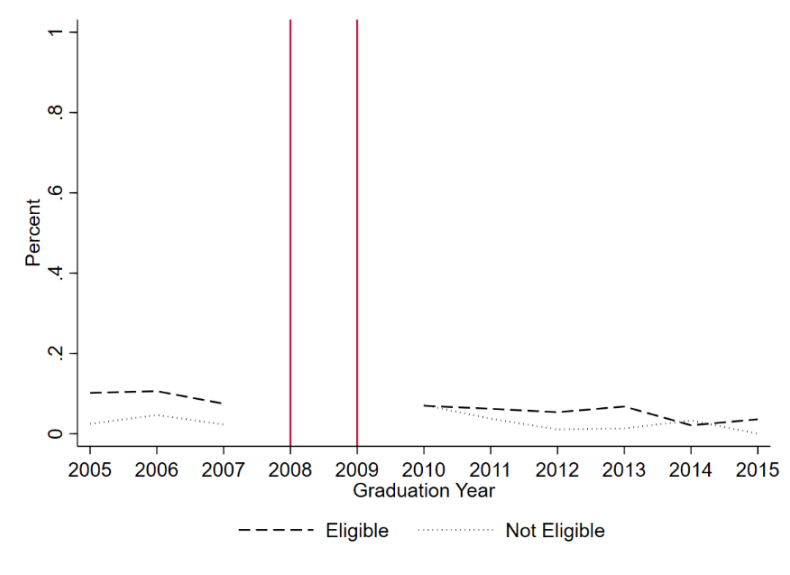
Appendix Figure B. 10 Transfer from two-year to four-year



Appendix Figure B. 11 Associate's degree within 6 years



Appendix Figure B. 12 Credential within 6 years



Appendix Figure B. 13 Bachelor's degree within 6 years

Appendix C Additional RD and DID Results

Appendix Table C.1 RD enrollment and degree outcomes among female students for cohorts 2010-2013, N=917

	Seamless enrollment at any college	Seamless enrollment at 2-year	Seamless enrollment at 4-year	Seamless enrollment at other institution	Ever enrolled within 6 years	Every enrolled at 2-year	Ever enrolled at 4-year	Ever enrolled ever
Extension Eligible	0.023	0.036	-0.018	0.005	0.007	0.037	-0.030	0.002
	(0.070)	(0.056)	(0.037)	(0.008)	(0.045)	(0.046)	(0.034)	(0.017)
Control Mean	0.364	0.295	0.062	0.008	0.535	0.426	0.085	0.023
R-squared	0.104	0.031	0.113	0.011	0.090	0.024	0.110	0.016
	Transfer from 2-year to 4-year	**Associate's within 2 years**	**Associate's within 4 years**	**Associate's within 6 years**	**BA within 4 years**	**BA within 6 years**	**Other degree within 6 years**	**Any degree within 6 years**
Extension Eligible	0.005	-0.003	0.005	0.032**	-0.009	-0.014	-0.005	0.013
	(0.033)	(0.004)	(0.016)	(0.015)	(0.013)	(0.017)	(0.017)	(0.020)
Control Mean	0.062	0.000	0.003	0.003	0.003	0.016	0.016	0.036
R-squared	0.042	0.007	0.016	0.040	0.037	0.064	0.028	0.049

Source: Pittsburgh Promise administrative files, Pittsburgh Public Schools, and American Community Survey 2015 Five-Year Estimates.
Notes: Coefficients and standard errors (in parentheses) are presented from an OLS regression predicting the discontinuity in outcomes at the margin of Extension eligibility. Regressions include high school-by-year fixed effects and standard errors clustered at the high school-by-year level.

Appendix Table C. 2 RD enrollment and degree outcomes among male students for cohorts 2010-2015, N=1,193

	Seamless enrollment at any college	Seamless enrollment at 2-year	Seamless enrollment at 4-year	Seamless enrollment at other institution	Ever enrolled within 6 years	Every enrolled at 2-year	Ever enrolled at 4-year	Ever enrolled ever
Extension Eligible	0.044 (0.042)	0.022 (0.039)	0.026 (0.030)	-0.004 (0.016)	0.025 (0.047)	-0.040 (0.048)	0.061 (0.037)	0.004 (0.026)
Control Mean	0.379	0.288	0.062	0.028	0.497	0.395	0.068	0.034
R-squared	0.113	0.032	0.125	0.017	0.097	0.020	0.127	0.018
	Transfer from 2-year to 4-year	**Associate's within 2 years**	**Associate's within 4 years**	**Associate's within 6 years**	**BA within 4 years**	**BA within 6 years**	**Other degree within 6 years**	**Any degree within 6 years**
Extension Eligible	-0.013 (0.022)	0.004 (0.008)	0.015 (0.015)	0.016 (0.018)	-0.005 (0.008)	-0.011 (0.016)	0.025 (0.017)	0.031 (0.021)
Control Mean	0.045	0.000	0.000	0.000	0.000	0.011	0.006	0.017
R-squared	0.029	0.012	0.025	0.035	0.034	0.046	0.021	0.053

Source: Pittsburgh Promise administrative files, Pittsburgh Public Schools, and American Community Survey 2015 Five-Year Estimates.
Notes: Coefficients and standard errors (in parentheses) are presented from an OLS regression predicting the discontinuity in outcomes at the margin of Extension eligibility. Regressions include high school-by-year fixed effects and standard errors clustered at the high school-by-year level.

Appendix Table C. 3 RD enrollment and degree outcomes among students from disadvntaged neighborhoods for cohorts 2010-2015, N=646

	Seamless enrollment at any college	Seamless enrollment at 2-year	Seamless enrollment at 4-year	Seamless enrollment at other institution	Ever enrolled within 6 years	Every enrolled at 2-year	Ever enrolled at 4-year	Ever enrolled ever
Extension Eligible	0.011 (0.049)	0.019 (0.033)	0.003 (0.027)	-0.011 (0.011)	-0.010 (0.037)	-0.014 (0.031)	0.012 (0.029)	-0.009 (0.011)
Control Mean	0.394	0.306	0.069	0.019	0.532	0.417	0.088	0.028
R-squared	0.118	0.037	0.120	0.014	0.100	0.036	0.115	0.024
	Transfer from 2-year to 4-year	**Associate's within 2 years**	**Associate's within 4 years**	**Associate's within 6 years**	**BA within 4 years**	**BA within 6 years**	**Other degree within 6 years**	**Any degree within 6 years**
Extension Eligible	-0.011 (0.036)	-0.005 (0.003)	-0.000 (0.003)	0.013 (0.010)	-0.005 (0.009)	-0.010 (0.007)	0.009 (0.019)	0.012 (0.013)
Control Mean	0.064	0.000	0.004	0.005	0.005	0.014	0.014	0.032
R-squared	0.024	0.008	0.028	0.030	0.031	0.059	0.017	0.055

Source: Pittsburgh Promise administrative files, Pittsburgh Public Schools, and American Community Survey 2015 Five-Year Estimates.
Notes: Coefficients and standard errors (in parentheses) are presented from an OLS regression predicting the discontinuity in outcomes at the margin of Extension eligibility. Regressions include high school-by-year fixed effects and standard errors clustered at the high school-by-year level.

Appendix Table C. 4 RD enrollment and degree outcomes among students not from disadvantaged neighborhoods for cohorts 2010-2015, N=547

	Seamless enrollment at any college	Seamless enrollment at 2-year	Seamless enrollment at 4-year	Seamless enrollment at other institution	Ever enrolled within 6 years	Every enrolled at 2-year	Ever enrolled at 4-year	Ever enrolled ever
Extension Eligible	0.090 (0.092)	0.051 (0.087)	0.018 (0.036)	0.022 (0.031)	0.080 (0.067)	0.008 (0.100)	0.048 (0.035)	0.027 (0.030)
Control Mean	0.322	0.256	0.044	0.022	0.467	0.389	0.044	0.033
R-squared	0.121	0.049	0.140	0.020	0.107	0.041	0.139	0.022
	Transfer from 2-year to 4-year	**Associate's within 2 years**	**Associate's within 4 years**	**Associate's within 6 years**	**BA within 4 years**	**BA within 6 years**	**Other degree within 6 years**	**Any degree within 6 years**
Extension Eligible	0.022 (0.033)	0.018 (0.013)	0.039* (0.020)	0.044** (0.019)	-0.007 (0.014)	-0.006 (0.029)	0.025 (0.021)	0.058 (0.057)
Control Mean	0.022	0.000	0.003	0.000	0.000	0.022	0.022	0.044
R-squared	0.053	0.007	0.016	0.030	0.032	0.061	0.030	0.042

Source: Pittsburgh Promise administrative files, Pittsburgh Public Schools, and American Community Survey 2015 Five-Year Estimates.
Notes: Coefficients and standard errors (in parentheses) are presented from an OLS regression predicting the discontinuity in outcomes at the margin of Extension eligibility. Regressions include high school-by-year fixed effects and standard errors clustered at the high school-by-year level.

Appendix D List of Studies from Literature Review

Appendix Table D. 1 Studies examining institutional responses to financial aid

Citation	Study Type	Region and Year	Unit of Analysis	Type of Award	Results
Federal Aid Programs					
Acosta (2001)	Causal: IVE	National: 1991-1996	Institution	Various	Public 4-yr: ↑ Federal Aid: ↓ Institutional Aid, ↑ Tuition, ↓ Net Tuition Private 4-yr: ↑ Federal Aid: ↑ Institutional Aid, ↑ Tuition, ↑ Net Tuition
Gordon & Hedlund (2019)	Static Model	National: 1987-2010	Institution	Various	Overall: ↑ Federal Aid: ↑ Net Tuition *Greatest Impact at Public Non-Selective Institutions
Li (1999)	Causal: IVE	National: 1984-1994	Student	Pell	Public 4-yr: ↑ Pell: ↑ List Tuition, ↑ Net Tuition, (Possible ↓ Institutional Aid) Private 4-yr: ↑ Pell: ↑ List Tuition, ↔ Net Tuition (Possible ↑ Institutional Aid)
Lucca, Nadauld & Shen (2019)	Casual: DID	National: 2000-2012	Institution	Credit Expansion and Pell	Overall: ↑ Pell: ↔ Tuition, ↓ Institutional Aid, ↔ Net Tuition
McPherson & Schapiro (1991)	Correlational	National: 1978-1986	Institution	Various	Public 4-yr:

Citation	Study Type	Region and Year	Unit of Analysis	Type of Award	Results
					↑ Federal Aid to Low-Income Students: ↑ Tuition, ↔ Institutional Aid ↑ State Aid to Higher-Income Students (Merit): ↑ Tuition Private 4-yr: ↑ Federal Aid: ↔ Tuition, ↑ Institutional Aid
Singell & Stone (2007)	Causal: IVE	National: 1989-1996	Institution	Pell	Public 4-yr: ↑ Pell: ↔ Tuition Private 4-yr: ↑ Pell: ↑ Tuition
Singell & Stone (2003).	Causal: IVE	National: 1983-1996	Institution	Pell	Top 100 Selective Institutions: ↑ Pell: ↑ Net Tuition Institutions Outside Top 100: ↑ Pell: ↔ Net Tuition Public Institutions of Any Rank: ↑ Pell: ↔ Net Tuition Privates of Any Rank: ↑ Pell: ↑ Net Tuition
Turner (2014)	Causal: RD & Regression Kink	National: 1996, 2000, 2004, 2008, & 2012	Student	Pell	Public 4-yr: ↑ Pell: ↓ Institutional Aid *More selective publics still provide Pell recipients with more institutional aid than non-recipients Selective private 4-yr: ↑ Pell: ↓ Institutional Aid

Citation	Study Type	Region and Year	Unit of Analysis	Type of Award	Results
					*More selective privates still provide Pell recipients with more institutional aid than non-recipients Less selective private 4-yr: ↑ Pell: ↔ Institutional Aid *Students marginally eligible for the Pell grant: ↑ Institutional Aid *For every additional dollar of Pell above eligible margin: ↓ Institutional Aid
Turner (1997)	Causal: DID	National: 1972, 1980, 1982	Student	Pell	Overall: ↑ Pell: ↓ Net Price *Institutions serving more low-income students saw larger reductions in net cost than more selective institutions
State Aid Programs					
Bell & Place (2018)	Causal: DID	Tennessee: 2012-2016	Institution	Tennessee Promise; last-dollar scholarship covers tuition and fees	Public 2-yr: ↑ Promise: ↑ Tuition & Fees Private 2-yr: ↑ Promise: ↔ Tuition & Fees
Curs & Dar (2010)	Causal: IVE	Differences between states: 2002-2008	Institution	State merit or need-based aid	Public 4-yr: ↑ Merit Aid: ↓ Tuition, ↔ Institutional Aid, ↓ Net Price ↑ Need-Based Aid: ↑ Tuition, ↓ Institutional Aid, ↑ Net Price Private 4-yr: ↑ Merit Aid: ↓ Tuition, ↓ Institutional Aid, ↔ Net Price

Citation	Study Type	Region and Year	Unit of Analysis	Type of Award	Results
					↑ Need-Based Aid: ↑ Tuition, ↔ Institutional Aid, ↑ Net Price
Curs & Dar (2010)	Causal: IVE	Differences between states: 2002-2008	Institution	State and federal grants	Public 4-yr: ↑ State Aid: ↓ Tuition, ↔ Institutional Aid, ↓ Net Price ↑ Federal Aid: ↑ Tuition, ↑ Institutional Aid, ↔ Net Price *Governing Board Systems: ↓ Net Price *Coordinating Board Systems: ↑ Net Price Private 4-yr: ↑ State Aid: ↓ Tuition, ↓ Institutional Aid, ↔ Net Price ↑ Federal Aid: ↑ Tuition, ↑ Institutional Aid, ↓ Net Price
Doyle, Delaney & Naughton (2009)	Correlational	Differences between states: 1999-2004	Student	State aid	Public 4-yr: ↑ Merit Aid: ↓ Institutional Aid *Less Institutional Aid to Low-Income Students, More Aid for Academic Qualifications
Dreier (2018)	Causal: DID	Tennessee: 2000-2009	Institution	Tennessee Education Lottery Scholarship (TELS)	Public 4-yr: ↑ TELS: ↔ Average Institutional Aid but ↓ in Later Years, ↑ # of Students Receiving Institutional Aid, ↓ Gross Institutional Aid *More Selective Institutions Decrease Institutional Aid

Citation	Study Type	Region and Year	Unit of Analysis	Type of Award	Results
Hunt, (2016)	Causal: DID	Florida: 1991-2004	Institution	Florida Bright Futures Scholarship: 75-100% of Tuition	Public 4-yr: ↑ Bright Futures: ↑ Tuition and Fees, ↑ Room and Board, ↑ Institutional Aid. Private 4-yr: ↑ Bright Futures: ↓ Tuition and Fees, ↔ Room and Board, ↔ Institutional Aid
Kramer, Ortagus & Lacy (2018)	Causal: DID	Differences between state merit awards: 1988-2009	Institution	State merit aid awards	Public 4-yr: Tuition Authority Centralized: ↑ Merit Aid: ↓ Tuition and Fees Autonomous Authority over Tuition: ↑ Merit Aid: ↑ Tuition and Fees
Lee (2016)	Causal: DID	Differences between state merit awards: 1987-2009	Institution	State merit aid awards	*Author observed several patterns in responses to merit aid awards 1. ↑ Student Charges, ↔ Institutional Aid, ↑ Net Price (Both Sectors) 2. ↑ Student Charges, ↑ Institutional Aid, ↔ Net Price (Mostly Private 4-yr) 3. ↔ Student Charges, ↑ Institutional Aid, ↓ Net Price (Private 4-yr) 4. ↓Student Charges, (Sometimes) ↑ Institutional Aid, ↓ Net Price (Mostly Public 4-yr), 5. Inconclusive Results
Long (2004)	Causal: DID	Georgia: 1989-1997	Institution	Georgia HOPE Scholarship	Public 4-yr: ↑ HOPE: ↓List Tuition, ↑ Room & Board

Citation	Study Type	Region and Year	Unit of Analysis	Type of Award	Results
					*Tuition results may have been part of a statewide initiative to induce college enrollment *Room & Board increases larger at institutions with more HOPE recipients Private 4-yr: ↑ HOPE: ↑ List Tuition increased, ↔ Room & Board, ↓ Institutional Aid *Tuition and Institutional Aid results larger at institutions with more HOPE recipients
Rizzo & Ehrenberg (2004)	Correlational	Differences between states: 1979-1998	Institution	Various	Public: ↑ Pell / ↑ State Need-Based Aid: ↑ Tuition ↑ State Merit Aid: ↔ Tuition
Upton (2014)	Causal: DID & Synthetic Controls	Arizona: 2000-2010	Institution	Arizona merit scholarship (AIMS): 25% of tuition	Public 4-yr: ↑ AIMS: ↑ Tuition
Welch (2015)	Causal: DID	National: 1986-2010	Institution	State merit aid awards	Public 4-yr: ↑ Merit Aid: ↔ Tuition, ↔ Institutional Aid Private 4-yr: ↑ Merit Aid: ↔ Tuition, ↔ Institutional Aid
Place-Based Promise Programs or Private Scholarships					
Delaney & Hemenway (2016)	Causal: DID	Differences between national promise programs; 2000-2012	Institution	Promise award	Public 2-yr (contingent on model): ↑ Promise: ↑ Fees, ↓ Institutional Aid Public 4-yr:

Citation	Study Type	Region and Year	Unit of Analysis	Type of Award	Results
					↑ Promise: ↑ Tuition, ↑ Institutional Aid
National Scholarship Providers Association (2013)	Descriptive	National: 2011	Institution	Private Scholarships	Public: ↑ Private Scholarships: ↑ COA (Fees) Private: ↑ Private Scholarships: ↓ Institutional Aid *Half of surveyed institutions contact private scholarship providers to discuss how to approach student's overaward

Appendix E Additional Tables of Results

Appendix Table E. 1 Promise dollars and net price by Pell eligibility status at public institutions, N=834

	Difference, Promise Student Sample		Quasi-DID	
	Promise		Net price	
	% COA	$ 2016	% COA	$ 2016
Pell-Eligible, N=574				
2012+	22.11***	4,744.53***	-15.68***	-2,557.09***
	(1.18)	(298.06)	(3.41)	(847.16)
Fitted 2011 Mean	19.29	5,081.10	-40.75	-10,230.87
R-squared	0.673	0.718	0.398	0.432
Not Pell-Eligible, N=260				
2012+	20.24***	4,312.80***	-21.22***	-4,095.96***
	(1.12)	(264.62)	(3.95)	(972.03)
Fitted 2011 Mean	17.30	5,087.87	-6.31	-1,768.14
R-squared	0.806	0.780	0.508	0.457

* p<0.10, ** p<0.05, *** p<0.01

Sources: Pittsburgh Public Schools, Pittsburgh Promise administrative files and IPEDS.

Notes: Coefficients presented from OLS regressions predicting financial aid outcomes as a function of receiving a Promise award up to $10,000. Coefficients are estimated from a fully interactive model. Data are restricted to first-time, full-time students enrolling in college in the year immediately after high school graduation. All models include covariates displayed in Table 1. Models include institution and high school fixed effects. Standard errors are clustered at the year by institution level and are presented in parentheses. Fitted outcomes for students in cohort 2011 presented as baseline means in brackets.

Appendix Table E. 2 Gift aid by Pell eligibility status at public institutions, N=834

	Total non-Promise grant aid		Federal, state, and local grants		Pell		Institutional grants	
	% COA	$ 2016	% COA	$ 2016	% COA	$ 2016	% COA	$ 2016
Pell-Eligible, N=574								
2012+	-6.17*	-2,215.72***	-4.89*	-1,452.13**	1.42	-19.61	-2.70	-669.38
	(3.19)	(760.50)	(2.42)	(571.91)	(1.35)	(320.01)	(2.36)	(548.84)
Fitted 2011 Mean	20.90	5,809.13	9.53	2,562.36	12.30	3,302.10	-0.94	-202.49
R-squared	0.373	0.321	0.180	0.147	0.694	0.686	0.196	0.189
Not Pell-Eligible, N=260								
2012+	1.23	407.45	2.83	698.02	-0.84	-21.06	-0.76	-196.84
	(3.71)	(909.63)	(1.89)	(447.69)	(1.22)	(274.92)	(3.33)	(792.31)
Fitted 2011 Mean	-11.54	-2,770.75	-5.03	-1,245.62	-7.64	-1,953.47	1.13	282.96
R-squared	0.295	0.289	0.313	0.320	0.475	0.454	0.240	0.239

* p<0.10, ** p<0.05, *** p<0.01

Sources: Pittsburgh Public Schools, Pittsburgh Promise administrative files and IPEDS.

Notes: Coefficients presented from OLS regressions predicting financial aid outcomes as a function of receiving a Promise award up to $10,000. Coefficients are estimated from a fully interactive model. Data are restricted to first-time, full-time students enrolling in college in the year immediately after high school graduation. All models include covariates displayed in Table 1. Models include institution and high school fixed effects. Standard errors are clustered at the year by institution level and are presented in parentheses. Fitted outcomes for students in cohort 2011 presented as baseline means in brackets.

Appendix Table E. 3 Promise dollars and net price by Pell status at state-related institutions, N=1,111

	Difference, Promise Student Sample		Quasi-DID	
	Promise		Net price	
	% COA	$ 2016	% COA	$ 2016
Pell-Eligible, N=574				
2012+	14.73***	4,097.75***	-13.50***	-4,141.53***
	(1.19)	(311.30)	(3.16)	(1,031.43)
Fitted 2011 Mean	17.43	5,128.44	-30.79	-9,300.11
R-squared	0.559	0.644	0.263	0.318
Not Pell-Eligible, N=537				
2012+	16.28***	4,432.99***	-14.72***	-3,082.73*
	(1.52)	(313.42)	(4.39)	(1,547.25)
Fitted 2011 Mean	15.98	4,761.54	-11.06	-4,535.52
R-squared	0.640	0.779	0.276	0.287

* p<0.10, ** p<0.05, *** p<0.01

Sources: Pittsburgh Public Schools, Pittsburgh Promise administrative files and IPEDS.

Notes: Coefficients presented from OLS regressions predicting financial aid outcomes as a function of receiving a Promise award up to $10,000. Coefficients are estimated from a fully interactive model. Data are restricted to first-time, full-time students enrolling in college in the year immediately after high school graduation. All models include covariates displayed in Table 1. Models include institution and high school fixed effects. Standard errors are clustered at the year by institution level and are presented in parentheses. Fitted outcomes for students in cohort 2011 presented as baseline means in brackets.

Appendix Table E. 4 Gift aid Pell eligibility status at state-related institutions, N=1,111

	Total non-Promise grant aid		Federal, state, and local grants		Pell		Institutional grants	
	% COA	$ 2016	% COA	$ 2016	% COA	$ 2016	% COA	$ 2016
Pell-Eligible, N=574								
2012+	-0.91	-484.58	-2.15	-472.64	1.82*	410.04	-0.59	-321.69
	(3.07)	(830.20)	(2.36)	(600.89)	(0.94)	(277.11)	(1.99)	(620.91)
Fitted 2011 Mean	12.92	3,982.20	9.26	2,647.99	10.74	3,084.19	-7.08	-1,889.06
R-squared	0.253	0.291	0.208	0.232	0.585	0.682	0.382	0.350
Not Pell-Eligible, N=537								
2012+	-1.35	-38.67	-7.64	-2,136.70	-0.35	-34.08	6.64	2,197.85
	(3.73)	(1,094.17)	(5.48)	(1,511.85)	(0.32)	(109.77)	(5.36)	(1,572.34)
Fitted 2011 Mean	-5.25	-1,963.76	12.47	3,542.04	-3.65	-1,155.13	-14.07	-4,454.64
R-squared	0.235	0.230	0.214	0.216	0.777	0.674	0.219	0.209

* p<0.10, ** p<0.05, *** p<0.01

Sources: Pittsburgh Public Schools, Pittsburgh Promise administrative files and IPEDS.

Notes: Coefficients presented from OLS regressions predicting financial aid outcomes as a function of receiving a Promise award up to $10,000. Coefficients are estimated from a fully interactive model. Data are restricted to first-time, full-time students enrolling in college in the year immediately after high school graduation. All models include covariates displayed in Table 1. Models include institution and high school fixed effects. Standard errors are clustered at the year by institution level and are presented in parentheses. Fitted outcomes for students in cohort 2011 presented as baseline means in brackets.

Appendix Table E. 5 Promise dollars and net price by Pell eligibility status at private institutions, N=1,034

	Difference, Promise Student Sample		Quasi-DID	
	Promise		Net price	
	% COA	$ 2016	% COA	$ 2016
Pell-Eligible, N=636				
2012+	11.86***	4,103.86***	-7.43**	-2,473.04
	(1.25)	(384.04)	(3.67)	(1,646.61)
Fitted 2011 Mean	13.28	5,224.02	-20.94	-8,575.49
R-squared	0.628	0.681	0.451	0.592
Not Pell-Eligible, N=398				
2012+	11.60***	4,526.20***	-5.33	-2,526.90
	(1.04)	(273.94)	(5.60)	(2,670.61)
Fitted 2011 Mean	10.65	4,885.81	-15.70	-7,550.15
R-squared	0.730	0.751	0.399	0.416

* p<0.10, ** p<0.05, *** p<0.01

Sources: Pittsburgh Public Schools, Pittsburgh Promise administrative files and IPEDS.

Notes: Coefficients presented from OLS regressions predicting financial aid outcomes as a function of receiving a Promise award up to $10,000. Coefficients are estimated from a fully interactive model. Data are restricted to first-time, full-time students enrolling in college in the year immediately after high school graduation. All models include covariates displayed in Table 1. Models include institution and high school fixed effects. Standard errors are clustered at the year by institution level and are presented in parentheses. Fitted outcomes for students in cohort 2011 presented as baseline means in brackets.

Appendix Table E. 6 Cost of attendance by Pell eligibility status for students attending private insitutions, N=1,034

	Total Cost of Attendance	Tuition and fees		Room and board		Books		Other living expenses	
	$ 2016	% TCA	$ 2016	% TCA	$ 2016	% TCA	$ 2016	% TCA	$ 2016
Pell-Eligible, N=636									
2012+	-1,115.73	-0.51	-576.12	1.60**	40.05	-0.02	1.44	-1.07	-581.11
	(845.69)	(2.42)	(828.10)	(0.78)	(217.37)	(0.18)	(54.56)	(2.38)	(884.11)
Fitted 2011 Mean	502.23	-0.56	232.19	-1.23	-428.76	0.12	69.92	1.68	628.87
R-squared	0.385	0.473	0.125	0.098	0.168	0.594	0.767	0.368	0.398
Not Pell-Eligible, N=398									
2012+	-266.95	0.84	306.14	0.86	142.59	-0.16	-27.38	-1.54	-688.30
	(913.33)	(1.60)	(608.20)	(0.86)	(306.34)	(0.16)	(71.51)	(2.09)	(918.54)
Fitted 2011 Mean	1,236.74	-0.43	812.94	-1.36	-345.84	0.36	214.86	1.43	554.78
R-squared	0.470	0.547	0.494	0.233	0.310	0.672	0.747	0.458	0.377

* p<0.10, ** p<0.05, *** p<0.01

Sources: Pittsburgh Public Schools, Pittsburgh Promise administrative files and IPEDS.

Notes: Coefficients presented from OLS regressions predicting financial aid outcomes as a function of receiving a Promise award up to $10,000 for cohorts 2012 to 2015 in the top panel. Data are restricted to first-time, full-time students enrolling in college in the year immediately after high school graduation. All models include covariates displayed in Table 1. Models include institution and high school fixed effects. Standard errors are clustered at the year by institution level and are presented in parentheses. Fitted outcomes for students in cohort 2011 presented as baseline means. The bottom panel presents the coefficient on the linear time trend from equation (1).

Appendix F Job Descriptions

Appendix Table F. 1 Counselor job description

***School/Department**	Pittsburgh Public Schools
***Job Title**	Counselor (Secondary)
Salary:	Salary Schedule For Counselors (starting at $44,939 per year)
***Job Type**	Certified - Position - Valid PA Certificate
Subject Area	• Secondary Counselor 7-12
Position Summary	At Pittsburgh Public Schools, we know that our students need support in and out of the classroom to reach their full potential. School-based professionals are critical in our District to ensure that students are not just learning academically, but developing strong character and gaining skills that prepare them for college and career. The Counselor is responsible for providing assistance to students by supporting them in making educational, occupational, and life goals/plans. This position also assumes responsibility to educate, assess, and provide intervention, referral, and support to students and/or their families regarding their identified needs. The Counselor also designs a sequential academic program to accomplish these goals/plans, while meeting the objectives and maintaining confidentiality of students and their families.
Qualifications	Required: A Master's degree in School Counseling. A valid State of Pennsylvania certification as a high school guidance counselor. Preferred qualities and attributes include: - A minimum of five years of experience in the educational field is preferred.

	- A commitment to accelerating student achievement. - A desire to eliminate racial disparities. - The ability to create a positive school and district culture. - The willingness to foster and promote innovation. - The ability to be a culturally-responsive educator who knows how to leverage students' unique skills, interests, and learning styles to create a learning experience that unequivocally includes and empowers each and every student. - Demonstrated enthusiasm and energy in making a difference in the lives of students. - Proven ability to empathize with students and prepare them to achieve academic excellence and strength of character so they have the opportunity to succeed in all aspects of life. Competencies: - Therapy and Counseling: Knowledge of principles, methods, and procedures for diagnosis, treatment, and rehabilitation of physical and mental dysfunctions, and for career counseling and guidance. - Education and Training: Knowledge of principles and methods for curriculum and training design, teaching and instruction for individuals and groups, and the measurement of training effects. - Administration and Management: Knowledge of business and management principles involved in strategic planning, resource allocation, human resources modeling, leadership technique, and coordination of people and resources. - Customer and Personal Service: Knowledge of principles and processes or providing customer and personal services. - Psychology: Knowledge of human behavior and performance; individual differences in ability, personality, and interests; learning and motivation; and assessments. - Stakeholder Relations: The ability and willingness to interact and communicate effectively with stakeholders.
***Residency Requirements**	No Residency Requirement

Essential Job Functions	1.Discovers and develops special abilities of students. 2.Addresses students' educational problems/deficiencies. 3. Confers with families whenever necessary. 4. Utilizes special curriculum and methods of motivating and developing the potential of students from disadvantaged situations. 5.Provides counseling that will lead each student to increased personal growth, self-understanding, and maturity. 6. Provides student information to post secondary institutions and/or potential employers according to the provisions of the Board?s policy on student records and as requested by students and/or their parents. 7. Evaluates, collects, and updates students' historical records (permanent record cards, cumulative folders, etc.) 8.Serves as a liaison between community agencies and the school. 9.Consults with the Student Services, faculty, and community agency representatives to cultivate a mutual understanding and teamwork, when appropriate. 10. Attends staffing meetings. 11. Assists with the homebound process to ensure a smooth, continuous flow of education, when necessary. 12.Processes records for students involved in school transfers, including those returning from correctional facilities, juvenile detention centers, hospitalizations, and related agencies. 13. Aids students in course and subject selection. 14. Works with students individually or in-groups to assist them in evaluating their aptitudes and abilities through the organization, administration, and interpretation of appropriate tests and other evaluation measures. 15. Meets with students individually or in-groups to develop education and occupation plans to identify career objectives. 16. Maintains and disseminates information regarding post secondary institutions and career opportunities.

	17.Provides guidance and information for students seeking post secondary education information. 18.Coordinates school-sponsored career programs, in-services, and student visits to prospective post secondary institutions. 19.Facilitates the preparation and processing of post secondary, scholarship, and employment applications. 20.Provides written and oral recommendations to post secondary institutions for admission and scholarship. 21.Maintains a current file of catalogs, school profiles, and scholarship aid information related to post secondary training and education. 22.Plans guidance field trips to post secondary institutions for interested students. 23.Provides assistance to a multidisciplinary and flexible Student Services Team to generate options that reflect and respond to the needs and priorities of the students. 24.Performs additional related Student Services responsibilities.
# of Jobs	1
Reports To	Principal

Appendix Table F. 2 Promise coach job description

Job Title:	**Promise Coach**	**Job Category:**	Exempt, Salaried, Full Time
Location:	1901 Centre Ave Suite 204 Pittsburgh, PA 15219	**Travel Required:**	Regional
Level/Salary Range:	Competitive salary and generous benefits commensurate with experience and education	**Schedule:**	Monday through Friday Varied to align with school day, with evenings and weekends as required
Position reports to: Director of College and Career Success			
Job Description			

Job Purpose:
The Promise Coach promotes post-secondary access and degree attainment by serving as a mentor, resource, liaison and advocate to PPS students (grades 9-12) and Promise Scholars (post-secondary students). Promise Coaches will provide in-school college and career exploration assistance to students in grades 9-12. For Promise Scholars, Coaches will provide both remote and in-person coaching to ensure Scholars successfully transition to and through their post-secondary education.

Duties:
Identify students' skills and interest

- Pro-actively reach out to assigned students and Scholars to build trusting relationships
- Ensure the Promise Resource Center provides an inclusive environment and meaningful college and career resources to all students
- Encourage students and Scholars take advantage of and help them to interpret/understand strength-based assessment tools and career aptitude resources
- Work with PPS staff to ensure students' records fully and accurately reflect their strengths, community service, work experiences, and interests

Understand their career options and pathway/ Navigate the marketplace and its opportunities

- Coordinate and/or deliver career awareness, exposure and preparation programs and speakers
- Coach students to connect career options, and the required post-secondary pathways, with their strengths, interests, and marketplace opportunities
- Ensure Promise Scholars take advantage of on-campus career resources and alumni networks

Utilize their available financial, academic, and pscyho-social resources

- Help PPS students and Promise Scholars resolve general obstacles to post-secondary and career success that come up throughout the school year by coaching them on self-advocacy and resourcefulness skills
- Facilitate post-secondary access to high school students through individual and group conversations, workshops, and presentations:
    - Comprehensive post-secondary application timeline

- Application assistance (including personal statements, essays, resume),
- Campus visits and admissions interviews,
- FAFSA/PHEAA submission,
- Promise portal access and use
- Scholarship assistance,
- Financial aid applications and interpreting award packages
- Post-secondary decision-making, enrollment processes, and campus arrival

- Ensure Promise Scholars connect with and enroll in on-campus academic and socio-emotional support services
  - First year experience and transition supports
  - Tutoring, writing center, and related academic supports
  - Positive peer and social connections

Realize the urgency of making good choices

- Raise students' awareness of, participation in, and ongoing eligibility for The Pittsburgh Promise scholarship
- Facilitate and promote positive college and career connections with near-peer and adult role models through community partnerships including volunteerism, mentoring, and outside speakers
- Monitor and guide Promise Scholars' post-secondary progress to degree attainment with and through campus-based resources

<u>Other:</u>

- Complete any other duties or responsibilities assigned by the Director of College and Career Success

Qualifications:

- Bachelor's degree required
- Experience developing trusting relationship with under-represented populations, particularly high school students and young adults; experience in post-secondary access and success programming a plus
- Demonstrated ability to build strong working relationships with internal and external partners, and to meaningfully interact with diverse populations including staff, students, civic and business leaders, community partners, and funders
- Proven record-keeping and organizational skills;
- Excellent writing, editing, and speaking skills
- Proactive problem-solver who demonstrates initiative and ability to self-manage work individually and as part of a team
- Ability to multi-task and operate in a professional manner, including proper attire, ethical behavior, and maintaining strict confidentiality with student/family information
- Demonstrated commitment to The Pittsburgh Promise's vision, mission, and core values
- A sense of humor, tolerance for change, and a demonstrated ability to create a positive, inclusive culture and sense of empowerment for students/families
- Ability to master Microsoft Office suite tools

- Ability to make a minimum two-year commitment
- Must pass appropriate clearances (criminal record and child abuse)
- Must be a U.S. citizen

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