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Forging a Path to College Persistence: An Experimental Evaluation of the Detroit Promise Path Program

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Detroit students who obtain a college degree overcome many obstacles to do so. This article reports the results of a randomized evaluation of a program meant to provide support to low-income community college students. The Detroit Promise Path program was designed to complement an existing College Promise scholarship, providing students with coaching, summer engagement, and financial incentives. The evaluation found that students offered the program enrolled in more semesters and earned more credits compared with those offered the scholarship alone. However, at the 3-year mark, there were no discernable impacts on degrees earned. This article examines systemic barriers to degree completion and offers lessons for the design of interventions to increase equity in postsecondary attainment.

Keywords: *community colleges, program evaluation, retention, experimental design, community college coaching, high-need students, persistence, randomized trial*

Living in the poorest, most segregated city in the United States, Detroit students who obtain a college degree overcome many obstacles to do so (Farley et al., 1994; Logan & Stults, 2011). Economic decline and population decline due to deindustrialization and racist policies have reshaped the city over the past half century (Boyle, 2001; Darden et al., 1987); as a result of these historical processes and structures, Detroit has one of the highest rates of concentrated poverty in the United States, with 69% of households living below poverty (United Way, 2021). Concentrated poverty makes it more difficult for people to be upwardly mobile, and Detroit is one of the least economically mobile cities for children, ranking 46th out of the 50 largest U.S. commuting zones (Chetty et al., 2014).

Educational attainment offers a promising path out of poverty, yet rates of higher education among Detroit residents are low. Only 17% of young people 25 to 34 years old hold a bachelor's degree, half the national average of 35%

(U.S. Census Bureau, 2017). In recent years, about half of Detroit high school graduates enrolled in postsecondary education and enrollment rates are on the rise (Brockman et al., 2021). Yet despite these optimistic trends, many Detroit college enrollees fall off-track from graduation and few eventually earn degrees

The Detroit Promise scholarship was launched in 2013 to help more of the city's high school graduates enroll in college. It is available to all high school graduates who live in the city of Detroit, and students may use the scholarship to attend any college in the greater Detroit area. In 2016, MDRC and the Detroit Regional Chamber partnered to create the Detroit Promise Path (DPP), an evidence-based student services program designed to help more students eligible for the Detroit Promise enroll and persist in community college, accumulate credits, graduate, and potentially transfer to a 4-year program. At the heart of DPP are campus coaches who help students acclimate to college, proactively reach out to them with help and reminders about tasks and deadlines, and offer a sympathetic ear to young people who may be grappling with personal challenges—all with the goal of keeping them in school and on track to graduate.

This article presents findings from a randomized controlled trial evaluation of the DPP student support program at five Detroit community colleges. It is important to note that the program group is offered the new program on top of the existing Detroit Promise scholarship; the control group students in this study continued to receive scholarship dollars. This is not an evaluation of College Promise scholarships. Rather, the evaluation examines the efficacy of integrating multicomponent student support services on top of an existing College Promise scholarship.

The evaluation found that the intervention was implemented with mostly high fidelity across four of the five participating colleges. A survey of participating students indicated that a high proportion of respondents rated the program as valuable or highly valuable. Yet, despite these promising findings, many students continued to face significant obstacles to enrollment and persistence. Only about 62% of students offered the full DPP program enrolled in courses in the fall semester that they applied for a Promise scholarship. Of these enrolled students, a third dropped out after only 1 year. Students most often identified nonacademic barriers such as financial issues as the reason they left school. More students in the DPP program stayed enrolled in school, both during the traditional academic year and over the summer, and students offered the DPP program earned more credits compared with students who were offered the Promise scholarship alone. At the 3-year mark, however, there was no evidence of an overall impact on degrees earned, and suggestive evidence of only small, positive impacts on graduation rates at some colleges.

This article offers lessons for the design of future interventions that aim to increase equity in postsecondary attainment. Students self-report that they are most often derailed in their progress by issues outside of college, and so programs must also tackle the challenges that prevent students from staying in school and graduating. For high-need student populations, much more than typical campus-based support is required. The Detroit Promise scholarship, combined with the DPP program supports, is a step toward helping students stay in school. But there is still more to be done to help them get to graduation, too.

Background

Detroit City and Educational Context

Higher education attainment in Detroit must be viewed against the backdrop of concentrated urban poverty and racial segregation owing to a long history of deindustrialization and racist policies and structures (Boyle, 2001; Darden et al., 1987). Detroit is America's most segregated city, with a history of housing and educational policies that exacerbated income inequality (Harrison, 2017; Logan & Stults, 2011). Throughout the postwar era, economic decline and population decline in Detroit have resulted in disinvestment in public institutions, including public schools. The consequences included chronic school budget deficits and perpetual political battles over educational reforms, significantly barring sustained efforts to adequately support or improve public education (Mirel, 1998).

These historic trends continued into more recent years as well. Following the Great Recession, Detroit faced a series of financial

hardships: The city was under emergency financial management, and later filed for bankruptcy, and the Detroit public school district was also under "state takeover" for 15 years (Pitchford, 2019). During this time Detroit saw unemployment, foreclosures, and deficits rise, leading to a loss of population in the city and school district and the closure of around 200 district schools (Steele, 2020; Sugrue, 2014). Although the city of Detroit and the Detroit Public School Community District have stabilized in recent years, the turmoil students in this study experienced during their K–12 years could have ripple effects throughout their college experience.

Lack of access to transportation is another structural barrier faced by Detroit students. Access to educational and vocational opportunities in the Detroit region is heavily dependent on access to a vehicle, as residents consistently oppose tax increases to invest in a regional transit system (Grengs, 2010; Witsil & Lawrence, 2016). Detroit's chronic absenteeism rate for K–12 students is the highest in the country and transportation may be one contributing factor, with crime, a large geographic area, and low temperatures all impacting parents' willingness to use public transit (Lenhoff, Singer, Stokes, et al., 2022; Singer et al., 2021). At the postsecondary level, four of the five regional community colleges are located outside of Detroit, and Detroit students spend over an hour, on average, commuting via public transit (Table 1).

Recent trends in educational attainment for Detroit graduates reveal the impact of the structural barriers students face. Even though about half of all high school graduates pursue higher education, most are not adequately prepared for success in college (Brockman et al., 2021). Using the test score thresholds set by the Detroit Promise scholarship as a measure of readiness to attend a 4-year college, only 11% of Detroit high school graduates from the classes of 2016 and 2017, peers of the students in this study, earned a "college-ready" score.[1] College persistence is low and the vast majority of students never earn degrees. Among recent high school graduates who first enrolled at 2-year institutions, just 1% had earned a degree by the end of their second year, a number that rises to only 10% after 6 years. The degree attainment rate for students who enrolled at 4-year institutions was higher (35%), but still well below the state average (63%).

Several of the barriers Detroit students face are challenges for community college students nationally. Despite serving many more students who need additional support and guidance to succeed, community colleges in the United States typically receive less funding relative to what 4-year colleges receive—a basic inequity in college funding benefiting better prepared, higher income students (Baum et al., 2013; Community College Research Center, 2022). Community college students must also grapple with many institutional issues, including lack of sufficient advising and counseling staff, high rates of contingent or adjunct faculty teaching introductory courses, and a confusing array of requirements and paperwork for financial aid and course selection (Dougherty et al., 2017; Feldman, 2017; Juszkiewicz, 2020).

Other systemic issues may present additional barriers. For example, research shows that Black students and students from low-income households (again, the majority of Detroit Promise scholarship recipients) are more likely than White students to be selected for Free Application for Federal Student Aid (FAFSA) verification, an often-difficult process in which students may experience delays in receiving Pell grants, or may lose out on a semester of financial aid altogether (Holzman & Hanson, 2020; Page et al., 2020). Community college students are also referred to remedial courses at high rates, delaying their expected time of graduation (Chen, 2016; National Center for Education Statistics, 2018). They are commonly working while in school, meaning they cannot always prioritize studying (Velez et al., 2018). For students from low-income households, the need to work is especially acute, as financial aid may cover tuition and fees but not textbooks and other educational costs. Nor does it cover the cost of transportation back and forth to school, child care, food, or other necessities (Baum, 2016; Ma & Pender, 2021).

Black students often face additional hurdles, such as self-doubt, a reduced sense of belonging, stereotyping by faculty or other students, and both subtle racism and overt racism. These challenges can be further amplified for students who are coming from predominantly Black schools in

Detroit to predominantly White colleges in the suburbs (Harper & Simmons, 2019; Owens et al., 2010). Some of the colleges in this study were predominantly Black institutions and some were predominantly White institutions. And because community college students often spend little time on campus outside of class—they are unlikely to live on campus, participate in clubs, or play on school sports teams—their social connection to the school can be more tenuous, further reducing their sense of belonging in the campus community (Deil-Amen, 2011; Strayhorn, 2012).

Reversing these trends for Detroit students will require both systemic and institutional changes; however, the need for such changes is not always apparent as Detroit high school graduates are often among the minority of students at their local community colleges. Detroit students also differ considerably from their community college classmates. Unlike Detroit high school graduates, the majority of their community college classmates come from the suburban neighborhoods surrounding the city, where the colleges themselves are located. Compared to their suburban peers, Detroit students enter community college less prepared and with fewer resources.

Table 1 summarizes the demographic and educational background of students in the study sample (both program and control group students), and those of their Detroit high school graduate peers and community college classmates. The study sample was representative of Detroit high school graduates in most respects. Compared with their community college classmates, however, students in the study were more likely to be Black (83% of the study sample compared to 19% of their community college peers) and from low-income families (90% compared to 48%). The median income of residents in the study samples' census blocks was roughly half that in the neighborhoods of other community college students ($31,137 compared to $66,757), as was the share of residents with at least a bachelor's degree (13% compared to 32%).

Detroit Promise Scholarship

College access and attainment have been a priority for Michigan state leadership across several administrations; Detroit is one of 15 Promise Zones established in Michigan since 2007. The Promise Zones started as public–private partnerships aimed at ensuring a tuition-free path to community college. The Detroit Promise was launched in 2013 as the Detroit Scholarship Fund, to help more of the city's high school graduates enroll in college. A last-dollar scholarship, Detroit Promise, covers any gaps between financial aid and tuition and fees that students may face. Like most College Promise scholarships, the Detroit Promise is geographically specific: It is available to all high school graduates who live in the city of Detroit, and it does not have merit-based eligibility criteria. Students may use their scholarship to attend any community college in the greater Detroit area.

The Detroit Scholarship Fund operated for 3 years as a scholarship-only program. In the scholarship's early years, Chamber staff members observed that while the scholarship seemed to help high school graduates enroll in college initially, large proportions of recipients were dropping out of college before their second year. Staff developed the idea of the DPP to address this issue.

DPP: Theory of Change

Building on evidence that approaches such as advising and financial incentives can have positive, modest effects, the DPP program set out to investigate whether a specific combination of multifaceted interventions supports students' progress toward degrees (Bettinger & Baker, 2014; Mayer et al., 2016; Scrivener & Coghlan, 2011). Figure 1 depicts the program model which included three student-facing core components—coaching, summer engagement, and financial incentives—supported by a management information system (MIS).

First, the heart of DPP is its campus coaching component. Students begin meeting with a coach in the late summer before their first semester of college. Coaches undertake an intensive, proactive, and holistic coaching model using case management in which students consistently see and build a relationship with the same coach throughout their time in college. Coaches meet with students twice per month, ideally in an in-person, one-on-one setting. Rather than waiting for students to come to them, coaches use

TABLE 1

Comparison of DPP Students With Detroit High School Graduates and Community College Students

Characteristic (proportion, mean)	DPP study sample	Detroit high school graduates	Detroit community college students
Student demographics			
Women	0.59	0.55	0.51
Black	0.83	0.86	0.19
Hispanic	0.12	0.08	0.04
White	0.03	0.04	0.72
Other races	0.02	0.02	0.05
Educational experiences in 9th to 12th grade			
Identified as economically disadvantaged in 9th to 12th grade	0.90	0.92	0.48
Identified for special education in 9th to 12th grade	0.12	0.12	0.11
Identified as limited English proficient in 9th to 12th grade	0.12	0.10	0.12
Attended a charter school in 12th grade	0.38	0.32	0.06
Attended a suburban school (outside Detroit) in 12th grade	0.01	0.31	0.95
Attended a Detroit district school (DPSCD) in 12th grade	0.53	0.41	0.03
Attendance rate in 12th grade	0.89	0.88	0.95
Eighth-grade composite test *z*-score	−0.52	−0.44	−0.09
College ready test score (ACT ≥21, SAT ≥1,060)			
ACT score	15.4	16.0	18.9
SAT score	827	857	964
Schools attended in 12th grade			
Eligible for free or reduced-price lunch	0.75	0.74	0.37
Black	0.83	0.81	0.19
Hispanic	0.11	0.09	0.04
White	0.04	0.08	0.69
Other races	0.01	0.02	0.05
Four-year cohort graduation rate	0.82	0.79	0.91
Percent enrolling in postsecondary education	0.31	0.30	0.45
Neighborhoods in 12th grade			
Black	0.76	0.78	0.14
Hispanic	0.10	0.08	0.04
White	0.14	0.12	0.76
Other races	0.04	0.04	0.07
BA degree or higher	0.13	0.12	0.32
Median household income	$31,137	$30,668	$66,757
Receiving public assistance	0.06	0.06	0.03
Drive time to all study colleges (average)	24.44	24.38	24.57
Transit time to all study colleges (average)	67.93	67.69	68.71
Postsecondary outcomes 3 years after high school graduation			
Any postsecondary enrollment	0.74	0.48	1.00
Number of terms enrolled (maximum of nine)	3.66	4.09	5.13
Credits earned	26.66	37.99	44.45
Any credential earned	0.10	0.03	0.11
Summer terms enrolled (maximum of three)	0.43	0.51	0.84
Terms enrolled full time (maximum of nine)	1.45	2.58	2.38
Any developmental education courses attempted	0.69	0.42	0.45
Number of developmental education courses passed	3.23	1.98	2.09
Sample sizes	1,258	10,463	21,422

Note. "Any postsecondary enrollment" measured for all students. Other postsecondary outcomes measured only for students who enrolled except developmental education measures that are also conditional on taking any such courses. "College ready test scores" refers to thresholds set by the Detroit Promise scholarship (i.e., score of 21 or higher on the ACT, or a score of 1,060 or higher on the SAT). Eighth-grade test scores standardized to the state mean. DPP = Detroit Promise Path; DPSCD = Detroit Public School Community District; BA = Bachelor of Arts.

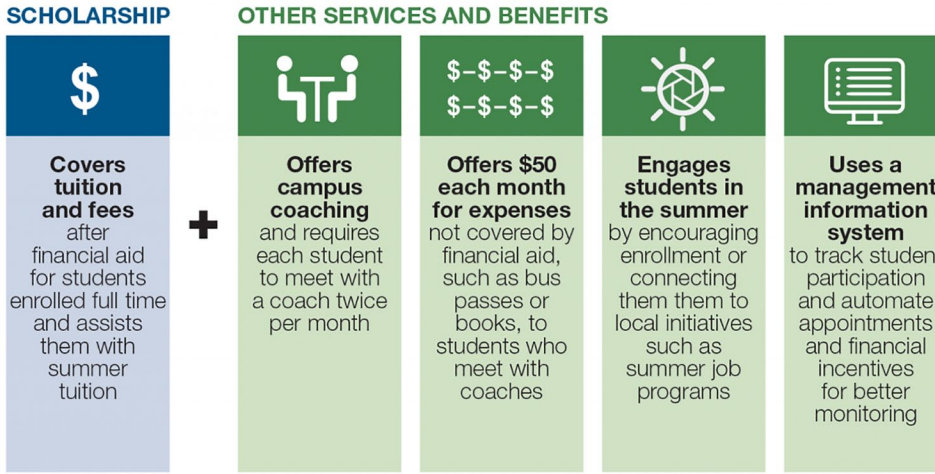

FIGURE 1. *Detroit Promise Path Program model.*
Source. The Detroit Promise Path (n.d.). https://detpromise.wpengine.com/the-detroit-promise-path/.

proactive outreach using multiple modes to speak with students, including in-person, telephone/video chat, and text messages. Complementing traditional academic advising on campus, coaches' holistic approach includes many topics outside of traditional advising, such as time management, study skills, career pathways, building self-confidence, grappling with racism, and dealing with support (or lack thereof) for education from family and friends.

The coaching component of DPP was developed based on prior research that shows that meeting with a coach can help college students make more progress. Several prior studies find consistent positive effects, though the demonstrated effects are small. The Opening Doors community college program provided students at two community colleges in Ohio with access to counselors with relatively low caseloads and, similar to DPP, students were offered a small financial incentive, delivered in installments to incentivize engagement in counseling (Scrivener & Weiss, 2009). The program was found to have a modest, positive effect on continuous enrollment. As another example, Bettinger and Baker (2014) found that students who were randomly assigned to two semesters of support from an Inside Track coach had higher persistence and degree completion rates. Unlike the DPP evaluation, however, the program in that study did not focus on low-income or community college students.

A second DPP core component is financial incentives to attend coaching meetings. DPP students are offered a monthly gift card that is refilled with $50 each month they meet with their coach. The money helps students pay for expenses not covered by financial aid. The $50 was originally tied to the cost of a monthly bus pass ($48 at the start of the study) though students may use it for any expense. The goal is twofold: to incentivize participation in coaching and to alleviate some financial stress. Although few studies have directly tested the effects of financial incentives on their own, this program component is supported by evidence demonstrating the success of college support programs that included similar types of financial supports (Scrivener et al., 2015; Scrivener & Weiss, 2009; Sommo et al., 2018).

Third, DPP lasts for the full 3 years of the Promise scholarship, including summer semesters, when students are encouraged to enroll in classes (paid for by the scholarship) or engage in a citywide summer jobs program. Students do not lose the scholarship if they drop below full time; however, they are encouraged to attend full time, and in the summer, whenever possible. The summer enrollment messaging in DPP differs somewhat from other college success programs. Although most programs focus only on continuous college enrollment, DPP asks students to undertake either summer coursework or a summer jobs program (Weiss & Bloom, 2022). The

goal is to maintain a connection to program staff while also acknowledging that some students need to work in the summer.

Finally, DPP program operation is supported by a MIS. Coaches use this tool to track coaching participation and for outreach via email, phone, and text messages. We are not aware of any prior studies that specifically examine the effects of using a MIS.

DPP was designed to meet students' needs beyond tuition alone by adding these evidence-based student supports to the existing Detroit Promise scholarship. Evaluations of comprehensive programs that, like DPP, combine multiple evidence-based components and provide services to students for a longer period of time have shown larger effects (Barr & Castleman, 2021; Carrell & Sacerdote, 2017; Dawson et al., 2020; Page et al., 2019; Rolston et al., 2017; Weiss & Bloom, 2022). One Million Degrees serves first-time, low-income community college students in the Chicago metro area by offering a multifaceted set of supports including coaching, stipends, tutoring, skill-building workshops, and professional mentors. The program shows promising early results, with a recent study finding large intent-to-treat (ITT) impacts on college enrollment (7–9 percentage points), full-time enrollment (13 percentage points), persistence to a second term (11% increase), and full-time persistence (16% increase; Bertrand et al., 2019).

Another well-known example is the comprehensive Accelerated Study in Associate Programs (ASAP) at the City University of New York (CUNY). ASAP offers a wide variety of supports, including enhanced advising, tutoring, blocked or linked first-year courses, a first-semester seminar to build study skills, waivers for any tuition or fees not covered by needs-based financial aid, a MetroCard, and free use of textbooks. An evaluation of CUNY ASAP found that the program nearly doubled associate's degree completion rates (40% vs 22%), and after 6 years the effect was still 10 percentage points (Scrivener et al., 2015; Weiss et al., 2019). A replication study of ASAP in Ohio community colleges found similarly large impacts on degree completion (11 percentage points, a 140% increase; Sommo et al., 2018).

Successful comprehensive programs tend to offer a suite of complementary components to support students academically, personally, financially, and (in some programs) professionally. The multifaceted nature of programs like One Million Degrees and ASAP means that it is difficult to know which elements of the program are essential or most effective. Although providing such a wide range of student supports is not low cost, in the case of ASAP, for example, cost–benefit analyses justify the substantial investments required given improvements in cost per degree (Weiss et al., 2019).

Although DPP shares several features of previously studied interventions, it differs in a few key ways. It does not include any components inside the classroom—for instance, no changes to pedagogy, no required tutoring, and no changes to developmental/remedial education. Notably, unlike many multifaceted community college programs evaluated in other prior studies, management of the DPP program took place outside of the colleges. Although some coaches were college employees, most were employees of the Detroit Promise and were supervised by the Chamber, which administered the scholarship. This is a function of how the Detroit Promise scholarship operated prior to the creation of DPP.

There are pros and cons to this approach. Students receive a consistent experience and are able to connect with staff and students across campuses—this is valuable for students who attend more than one college, as about 15% of students in the study did. On the other hand, coaches who are not college employees must rely on college staff and on-campus referrals to resolve issues—for instance, they cannot see students' financial aid status, so they cannot proactively investigate issues for FAFSA completion or verification.

Enrollment requirements were another important variation. Many multifaceted support programs require full-time enrollment, and students must be enrolled full time to be eligible for all the benefits of the program. In DPP, students are directed to enroll full time (12 credits every fall and spring), but do not lose the scholarship or program benefits if they drop below full time. This aspect of the program was purposeful: Program staff designed the program to include as many students as possible, and did not want to risk students leaving the program if they could not attend full time in a given semester. As noted

above, the summer enrollment messaging that DPP students receive also differs from other programs (Weiss & Bloom, 2022).

DPP Program Delivery and Student Participation

To examine the implementation of DPP across the five participating colleges, we conducted interviews and focus groups with program staff and students, an online survey with students, and an analysis of DPP program participation data from the MIS. These qualitative data sources gathered information about students' experiences in college and with the DPP program, as well as barriers they faced in continuing their education.

Overall, DPP was implemented with high quality and with high fidelity to the model at four of the five colleges. The contrast between the services that students participating in DPP received and what students in the control group received was meaningful at most colleges in most semesters. At one college, the program operation differed considerably as a result of staff turnover and a lack of support for the program from senior leadership at the college. We first discuss program implementation and fidelity for the four colleges where fidelity was high, and then describe implementation variations.

Coaches reached out to students assigned to the program group by emails, text messages, and phone calls to inform them of the new program, to schedule in-person meetings, and to remind students about completing key steps like registering for classes or completing the FAFSA. More than 90% of students responded to outreach from coaches in the first semester. Students were directed to meet with their coach one-on-one twice per month in the first semester of college, and in any semester thereafter if they were struggling academically or personally. Most enrolled students met with their coach five or more times per semester, on average. Although slightly below the twice-per-month requirement, the consistent connection with the coaches shows a high level of engagement in the program among enrolled students. Figure 2 shows student participation in coaching, derived from MIS data.

In interviews and focus groups, nearly all students said that coaching was the most important component of the DPP program, and students' assessment of their coaches' support was also almost universally positive. Students regularly used words such as "helpful," "generous," "caring," and "motivational" to describe their coaches. Coaches were also praised for going above and beyond to help students resolve nonacademic challenges. Students appreciated that the coaches understood their experiences, often because the coaches came from similar socioeconomic backgrounds and were from the city of Detroit. Students also noted the value of having coaches who had attended the same community colleges where they coached. One student said the DPP coach was "the best African American educational role model I have had the pleasure to be introduced to."

The financial incentive to attend coaching meetings was also implemented as planned. Students automatically received $50 on a refillable gift card each month, contingent on meeting with coaches as directed. The monthly incentive represented a unique aspect of DPP: Researchers could not identify an analogous program at any of the participating colleges.

The summer engagement component of DPP was implemented as designed. Each spring, coaches dedicated meeting times to map out summer plans with their students. Coaches recommended taking summer courses, or suggest alternatives such as participating in the local summer jobs program, Grow Detroit's Young Talent. Not all students followed through on their plans, however, and many students who chose to participate in the jobs program reported having difficulty getting through the application process.

The final DPP program component, the MIS, was implemented with high fidelity to the model. Coaches used the MIS daily as a case management tool to schedule and document meetings with their students, track key activities like FAFSA completion and enrollment in the upcoming semester, make notes about follow-up items, and communicate with students using a two-way text messaging application. An important element of the MIS is that it not only allowed staff to track who they had spoken with, but it also allowed staff to identify students they had not spoken with, facilitating targeted outreach.

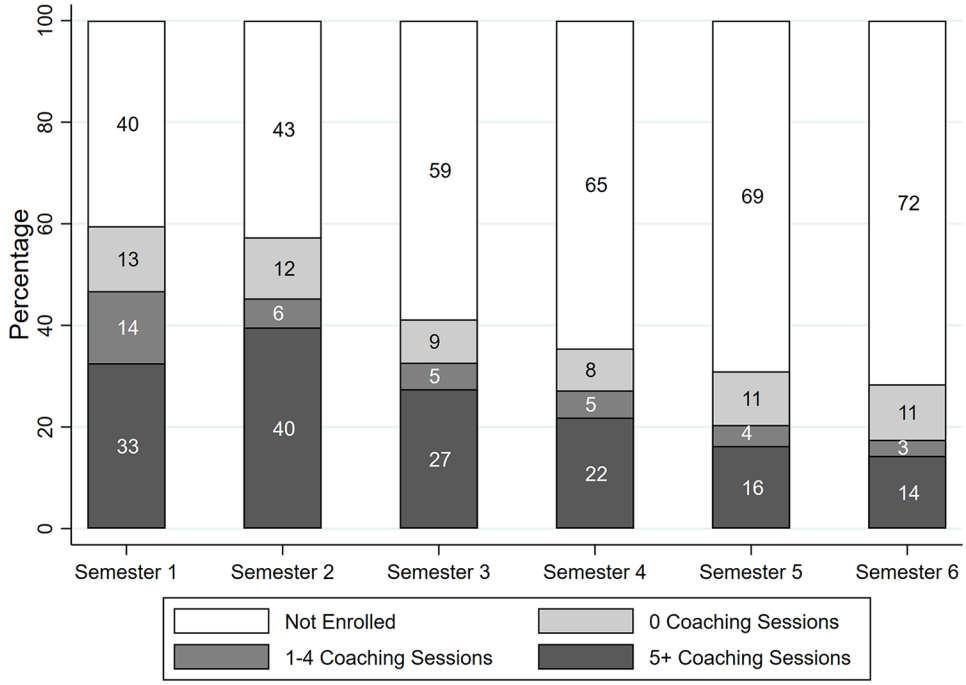

FIGURE 2. *Program students' coaching session attendance rates.*
Source. Data from MEDC educational records and the DPP management information system.
Note. Only coaching sessions attended by program group students during semesters in which they were enrolled in college are shown above. Coaching sessions for students who enrolled at colleges other than the ones they identified on their Detroit Promise scholarship applications are not included. The sample for this figure is the 823 program group students. For the purposes of this table, enrollment is defined as being enrolled at the college of random assignment only. MEDC = Michigan Education Data Center; DPP = Detroit Promise Path.

Implementation Variations

The implementation of three program components—financial incentives, encouragement to enroll in summer courses, and the use of the MIS—closely resembled the program model across all five colleges. The coaching component, however, varied over time and by college. When the COVID-19 pandemic shutdown began in Detroit, the study's second cohort of students (N = 644) were in their sixth semester of the 3-year study period. Twenty-seven percent of study students in this cohort were still enrolled in the spring 2020 semester. Students at all colleges who were engaged with the program at the start of the COVID-19 pandemic in March 2020 transitioned from meeting with their coaches in-person to meeting over the phone or video chat. Scheduling for virtual coaching used the same system as the in-person meetings and participation rates remained steady in spring 2020.

At one college, the coaching component departed from the original model after the first year, and ultimately, college leadership and the Chamber decided to move the program entirely off campus. Beginning in 2017, DPP students at this college met with coaches in various community locations or by video chat. The lack of support from college leadership presented a number of issues for the program at this college that worsened over time. These included a diminished ability to solve financial aid issues, a lack of access to student data such as enrollment, and coaches' inability to meet with students on campus, among other issues. As a result, the coaching component at this college differed greatly compared to the other colleges and did not adhere to the program model. On average, program students at this college attended fewer coaching sessions than those at other colleges.

The service contrast following the shift to an off-campus version of the program is unclear.

The study team was unable to gather the same types of data to assess the control condition at this college after 2017. Notably, this college enrolled the second largest number of students in the study. We return to the possible implications of how the DPP program was implemented at this college in the section on DPP impacts.

Data and Empirical Methods

Data and Measures

We evaluated the DPP program's impact on progress toward a degree, as measured by enrollment status and total credits earned, and completion of a degree, measured by attainment of a certificate or degree. The MDRC Institutional Review Board approved our research plan which we preregistered through Open Science Framework (Blake et al., 2022).

Data on students' program group statuses and coaching session attendance were linked to Michigan Education Data Center (MEDC) data on students' K–12 and postsecondary education records. These data include all Michigan students in public and charter schools; our data therefore include all public school records of college enrollment, credit accumulation, and degree attainment for students eligible for the Detroit Promise scholarship. The statewide scope of the data mean we can follow our study sample at all Michigan public postsecondary institutions, not just the five participating community colleges.

The MEDC data include a rich set of student background characteristics including: gender; race/ethnicity; special education, limited English proficient, and economic disadvantage status; standardized college entrance exam scores (ACT, SAT); eighth-grade mathematics and reading standardized assessment scores; indicators for moving schools in high school; and 12th-grade attendance rate. We also summarized the characteristics of students' high schools in 12th grade, including for each school: the demographic characteristics of the students served, school district, charter status, location (in Detroit or in Detroit's suburbs), total student enrollment, average test scores, and 4-year high school graduation rate. We used students' last recorded census block in 12th grade to generate measures of their neighborhoods, including: median household income and the share of residents who had a bachelor's degree or higher, received public assistance, and identified with different racial/ethnic groups. We calculated the distance, drive time, and public transit time from students' home census block to each study college using geocoding software and the Google Distance Matrix and HERE APIs (Google, 2022; HERE, 2022; Picard, 2019; Weber & Péclat, 2022).

To measure students' progress toward a degree, we observed their enrollment status in each fall and spring semester of the 3-year study period (six total terms). We also observed credits attempted and accumulated, both overall and by term. Finally, to measure completion of a degree, we observed students' attainment of a certificate or degree, including both associate and bachelor's degrees. An exploratory analysis looked at a combined measure of degrees and transfers to 4-year colleges. We also explored the DPP program's effects on summer enrollment, enrollment intensity, and progress in developmental education courses. We observed summer enrollment in each of the three summer terms during the study period. We identified students as enrolling full time if they attempted 12 or more credits within a term. Finally, using course-level information, we identified whether students attempted and passed any developmental education courses each term.

Sample Selection and Baseline Equivalence

All students who were eligible for the Detroit Promise scholarship were also eligible for the new DPP program. The evaluation included two cohorts of Detroit Promise scholarship applicants, the high school graduating classes of 2016 and 2017. At the time they signed up for the scholarship, over the summer following high school graduation, students were notified of the new DPP program and study and were given the option to decline to participate; no students chose to decline the program and study.[2] Students were randomly assigned via computer algorithm to either a program group ($N = 829$), in which campus coaches made contact with students and students were eligible for the additional financial incentives, or a control group ($N = 439$), in which students continued to receive their Promise scholarships and regular college services, but did

not receive the new intervention of outreach from coaches, messaging, or monthly financial incentives.

At the time that they completed the scholarship application and joined the study, students were asked which of the five participating community colleges they would be attending. To maintain a consistent ratio of program group to comparison students within each college, we conducted randomization separately by site. To assign students to coaches as quickly as possible after they signed up on a rolling basis during the summer, we conducted randomization four times per summer, with each time point about 2 to 3 weeks apart. We also conducted randomization one additional time during fall 2017 for students who registered that term to start college in the spring semester. About two-thirds of the students at each college were assigned to the program group with one-third assigned to the control group. This ratio was set to maximize the pilot DPP program's capacity to serve students while also ensuring that the study would be able to detect even relatively modest DPP effects. Following random assignment, coaches for each college cold-called program group students, inviting them to the new program and asking them to schedule their first one-on-one meeting.

Completing the scholarship application process included registering for college; students needed to share where they had registered and their student ID number. Therefore, it was expected that most students would be enrolled in college in Semester 1, although students had up to three semesters after high school graduation to take up the scholarship. However, only 60% of program group students enrolled in courses in Semester 1, a figure that rose to 76% as of Semester 6. Our qualitative findings suggest that FAFSA issues were the most common reason for delayed enrollment, especially for students who were flagged for FAFSA verification and were not able to resolve their application before the semester began.

A total of 1,268 students were in the study. Among the original participants, 10 students (six program and four control group students) could not be matched to any educational records, either K–12 or postsecondary, and so were removed from the sample. The low rates of overall and differential attrition, 0.8% and 0.2%, respectively, were not a likely source of bias in the impact findings.

Table 2 presents descriptive data on the study sample at baseline, including demographics and characteristics of their educational experiences in high school (9th–12th grade). About 60% of the participants were women and 97% of students identified as people of color, primarily as Black. Students' educational experiences during 9th through 12th grade were similar across research groups: 90% were identified as economically disadvantaged, 12% were identified for special education, and 12% were identified as limited English proficient. Students in both groups attended, on average, 89% of the school days during their 12th-grade year. Students' performance on the ACT, SAT, and eighth-grade standardized assessments was similar across research groups. Table 2 demonstrates that the random assignment procedure yielded two groups that were not statistically different on any of the baseline measures.

Empirical Strategy: ITT Effects

Because the DPP program was administered using random assignment, simple difference of mean outcomes for the program and control groups is an unbiased estimator of the average effect of the program. We estimated the ITT effect using an ordinary least squares model of the general form:

$$Y_i = \alpha + \beta_o T_i + \sum_{1}^{k} \beta_k \mathbf{X}_{ki} + \sum_{m=1}^{m=9} \gamma_m S_{mi} + \varepsilon_i,$$

where Y_i represents an outcome for student i; T_i is an indicator for assignment to the DPP program (0 for control group students and 1 for program group students); $\mathbf{X}_{ki}$ is a vector of baseline student covariates; S_{mi} indicates students' random assignment block, where block is defined by a unique college and random assignment date; and ε_i is a heteroskedastic robust random error term. To increase the precision of the impact estimator, we included the following student covariates in the impact model: standardized college entrance exam score (ACT, SAT), gender, race/ethnicity, interaction between gender and race/ethnicity, and college. No demographic data were missing. Missing test scores were imputed

to the mean and a missing indicator variable was included in the model.

Take-Up and Treatment-on-Treated Effects

The study examines the effect of offering students the chance to participate in DPP, knowing that some of them would not take advantage of this offer. In many ITT analyses, some program group members do not receive program services. In this study, however, the proportion of program group members who did not receive program services (24%) was higher than expected. Two reasons likely explain this. First, all Detroit Promise scholarship applicants were randomly assigned, regardless of their interest in the additional DPP services. A benefit of this "opt-out" approach is that the study results are generalizable to nearly all Detroit Promise scholarship applicants, not just to a subset who expressed interest in the DPP program. The second reason for high attrition relates to the timing of study enrollment. Random assignment occurred during the summer before school started. Many students signed up for the program when they had registered for college, but had not yet enrolled in classes. Although some initial outreach from coaches began over the summer, the bulk of the program was delivered once the academic year began. Delaying randomization could have helped to reduce attrition from the study, but with the downside of delaying the start of coaching to the beginning of the academic year.

As a result of these two elements of the study design, a relatively high proportion of program group members (24%) did not interact with the program. These students' outcomes were not counted as attritors; instead, their outcomes were all reported in the analyses as zeroes, as they were not enrolled or accumulating credits. These zeroes draw the overall outcomes downward in both the program group and the control group. Although the bulk of the program was delivered during the school year, our results showed that DPP induced students to enroll who would not have otherwise enrolled in any college (see Table 3). Given this, we focused on the results for the sample of students who were offered an opportunity to participate in DPP and on the ITT effects.

Heterogeneity of Treatment Effects

To statistically test for differential impacts, we estimated the effect of DPP separately for several student subgroups and then tested whether the amount of variation in the effects across groups was greater than expected due to chance alone. The subgroup impacts we explored included: college, study cohort, gender, and a risk index score. Since there was little variation in students' identified racial/ethnic groups, it was not valuable to estimate differences in the DPP program's effect along this dimension. All subgroup analyses are considered exploratory (Schochet, 2008), with limited statistical power to detect differential effects.

The risk index measured students' likelihood of college success in the absence of the DPP program. To compute index scores, we followed the procedure outlined by Abadie, Chingos, and West (2018). We avoided the potential limitations of full-sample endogenous stratification by estimating the predicted probabilities with data from prior cohorts of Detroit high school graduates. Using data on the five high school graduating classes from 2011 to 2015, we estimated the relationship between our confirmatory outcome variables (enrollment, credit accumulation, and degree attainment 3 years after high school graduation) and a rich set of student, school, and neighborhood covariates.[3] After estimating a separate model predicting each outcome using the sample of students from prior graduating cohorts, we computed the predicted probabilities (i.e., index scores) for each student in the study sample using the coefficients from the regression for each outcome. Then, we broke the index scores into three groups—representing a lower, middle, and higher likelihood of achieving the outcome—and used students' group statuses to separately estimate the DPP effect for students with different observed probabilities of college success.

Accounting for Multiple Hypothesis Testing

When testing for estimated impacts on several different outcomes, it is important to account for the fact that the probability of detecting at least one statistically significant impact merely by chance (i.e., a Type I error) increases with the

TABLE 2

Summary Statistics and Baseline Equivalence

Characteristic (proportion, mean)	Program group	Control group	Difference	Effect size
Gender, race/ethnicity (N = 1,258)				
Women	0.59	0.60	−0.01	−0.03
Black students	0.83	0.84	−0.01	−0.04
Hispanic students	0.13	0.11	0.02	0.06
White students	0.03	0.03	0.00	0.01
Students identifying as other races	0.02	0.02	−0.01	−0.04
Educational experiences in 9th to 12th grade				
Identified as economically disadvantaged in 9th to 12th grade (N = 1,224)	0.90	0.90	0.00	0.01
Identified for special education in 9th to 12th grade (N = 1,224)	0.12	0.12	0.00	0.00
Identified as limited English proficient in 9th to 12th grade (N = 1,224)	0.12	0.12	0.01	0.02
Attendance rate in 12th grade (N = 1,218)	0.89	0.89	0.00	−0.04
Eighth-grade composite test score (N = 1,147)	−0.54	−0.48	−0.06	−0.10
ACT score (N = 547)	15.3	15.6	−0.3	−0.10
SAT score (N = 579)	829.4	822.5	6.9	0.06
College of intended enrollment, site of random assignment				
College 1 (N = 570)	0.45	0.46	0.00	−0.01
College 2 (N = 149)	0.12	0.12	0.00	0.00
College 3 (N = 183)	0.14	0.15	0.00	−0.01
College 4 (N = 103)	0.08	0.08	0.00	0.00
College 5 (N = 253)	0.20	0.20	0.01	0.02
Sample sizes	823	435		

Source. MEDC educational records.

Note. Table shows the means in the program and control groups adjusted for varying random assignment ratios. MEDC = Michigan Education Data Center.

$^{\dagger}p < .1$. $^{*}p < .05$. $^{**}p < .01$. $^{***}p < .001$.

number of outcomes considered (Schochet, 2008). To attenuate the risk of drawing inappropriate conclusions based on false positives, we first identified and preregistered a small set of confirmatory outcomes: enrollment, total credits earned, and degree completion. Following the Benjamini and Hochberg (1995) procedure, we also adjusted the critical p values used to determine the statistical significance of our confirmatory outcomes (for adjusted p values, please see Supplementary Table S1 in the online version of the journal).

Empirical Results

DPP Program Impacts on 3-Year Academic Outcomes

Over the 3 years of the program, DPP helped students in the program group make more progress in higher education compared with students in the control group. The program had positive effects on the average number of semesters students enrolled in college and the average number of credits they earned (Table 3). On average, DPP students enrolled for 2.5 semesters, compared with 2.2 semesters for control group students, a 17% increase (p = .003). Program group students also earned significantly more credits than the control group students, on average—19.4 credits compared with 16.1 credits, respectively, a 20% increase—for an estimated impact of 3.3 credits. The DPP program did not, however, lead to additional credential completion overall at the 3-year mark: 7.3% of the program group earned a degree or certificate compared with 6.9% of the control group. The estimated effect on our primary confirmatory outcome, credential attainment (0.4 percentage points), is neither practically meaningful nor statistically distinguishable from zero. Exploratory analyses (discussed in more detail in the next section) found that in the subsample of the four colleges where DPP was

TABLE 3

Intent-to-Treat Effects on 3-Year Academic Outcomes

Outcome	Program group		Control group		Estimated effects			Sample size
	M	*SD*	*M*	*SD*	Difference	*SE*	*p* value	
Average number of terms enrolled	2.534	2.158	2.172	2.088	0.362**	0.122	.003	1,258
Categorical								
0	0.243	0.429	0.299	0.458	−0.056*	0.026	.032	1,258
1–2	0.335	0.472	0.345	0.476	−0.010	0.028	.733	1,258
3–4	0.171	0.378	0.166	0.372	0.005	0.022	.818	1,258
5–6	0.252	0.433	0.191	0.393	0.061*	0.024	.010	1,258
Total credits earned	19.411	23.125	16.095	21.004	3.316**	1.225	.007	1,258
Earned a degree	0.073	0.260	0.069	0.254	0.004	0.015	.780	1,258
Highest degree earned								
Associate's degree	0.055	0.230	0.041	0.199	0.014	0.012	.240	1,258
Bachelor's degree	0.001	0.035	0.000	0.000	0.001	0.001	.326	1,258

Source. MEDC educational records.

Note. Estimates are adjusted by site, study cohort, race, gender, interaction between race and gender, college entrance exams, and an indicator for imputed college entrance exam scores. Missing values for entrance exam scores were mean-imputed. Standard errors are heteroskedastic robust. Weights are calculated to make the effective (weighted) random assignment ratio the same in all random assignment blocks. The effective random assignment ratio is equal to the full sample's random assignment ratio. MEDC = Michigan Education Data Center.

$^{\dagger}p < .1$. $^{*}p < .05$. $^{**}p < .01$. $^{***}p < .001$.

implemented as designed, DPP may have led to small increases in associate degree attainment and, at some colleges, overall credential attainment as well. These impacts should be interpreted cautiously, however, given the smaller sample sizes and given that the analysis and subgroup were not prespecified in the original analysis plan for the evaluation.

DPP helped more students enroll and persist in college. Figure 3 presents enrollment by semester for each study group during the 3-year study period. In the first semester, 60% of the program group students enrolled in college. During that same semester, 55% of control group students enrolled in college. The 4.8-percentage-point difference in first-semester enrollment represents the estimated impact on "summer melt" ($p = .094$). In Semesters 2 and 3, the estimated impact grew to 7.7 and 9.2 percentage points, respectively, with a smaller estimated effect beginning in Semester 4. At the 3-year mark, 29% of the program group and 23% of the control group were still enrolled in college. The estimated 5.3-percentage point difference ($p = .039$) implies that the DPP program helped more students stay engaged with college longer, a first step toward making academic progress.

As is typical of postsecondary evaluations, enrollment dropped steadily over time. There was a substantial drop between the second and third semesters of about 18 percentage points for both research groups: Program group enrollment dropped from 58% to 41%, and control group enrollment dropped from 50% to 32%. For 96% of the study sample, this time period represents the transition between the end the first spring semester and the start of the second fall semester (in other words, the start of the second academic year). Such drop-offs during this time frame are quite common (Kuh et al., 2008; Pretlow et al., 2022). Some of the reasons identified in prior research include financial aid issues in a new FAFSA year, students leaving school to work, students losing motivation or a connection to the college during the summer, and students experiencing adverse life events that prevented reenrollment (Bailey et al., 2016; Bailey et al., 2015; Feldman, 2017). In an attempt to stave off some of these issues, the DPP program model included a component that encouraged students to continue to make progress toward their goals over the summer. The program successfully increased summer enrollment in this period and maintained the enrollment impact from Semester 2 to Semester 3. However, since both research groups

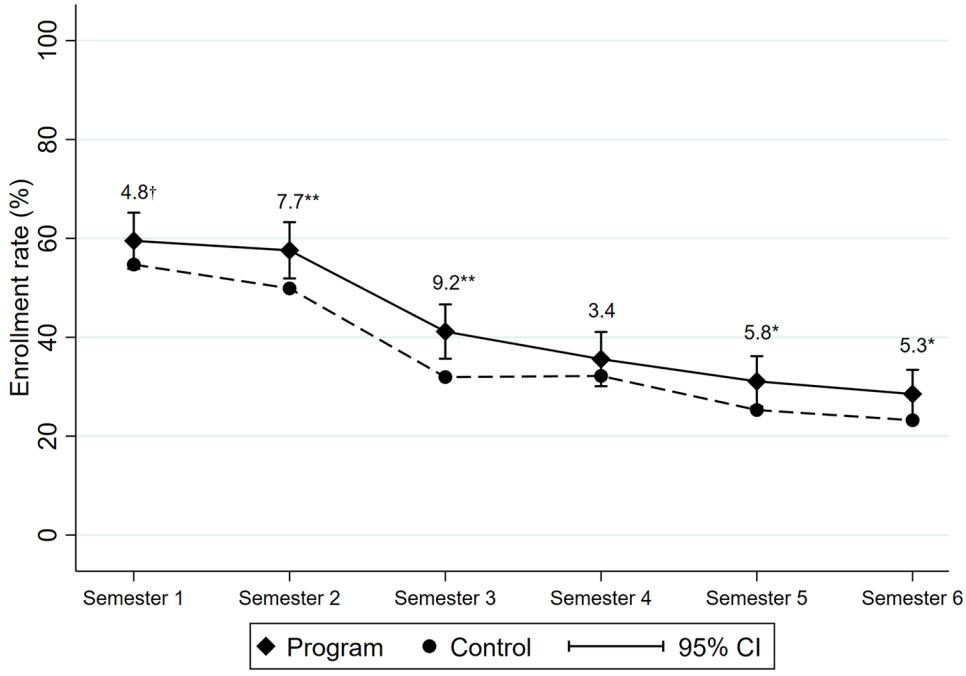

FIGURE 3. *College enrollment rates by semester.*
Source. MEDC educational records.
Note. Estimates are adjusted by site, study cohort, race, gender, interaction between race and gender, college entrance exams, and an indicator for imputed college entrance exam scores. Missing values for entrance exam scores were mean-imputed. Standard errors are heteroskedastic robust. Weights are calculated to make the effective (weighted) random assignment ratio the same in all random assignment blocks. The effective random assignment ratio is equal to the full sample's random assignment ratio. Total sample size is 1,258 students (program group = 823, control group = 435). MEDC = Michigan Education Data Center; CI = confidence interval.
$^{\dagger}p < .1$. $*p < .05$. $**p < .01$. $***p < .001$.

saw a sizable drop in this time frame, it suggests that there is more to be done to help students through this transition.

Looking at the distribution of the number of semesters enrolled provides additional insights. As shown in Table 3, 64.4% of the control group enrolled in zero, one, or two semesters compared with 57.8% of the program group. In other words, the program induced an additional 6.6% of the program group students to enroll in three or more semesters. In fact, the largest increase is seen in enrolling in five or six semesters (6.1 percentage points, $p = .010$). Also of note, the program caused 5.6% of students who would not have enrolled in college at all to enroll in at least one term. For many students, this meant an investment of time and money that did not ultimately lead to graduation, and so whether to consider this outcome beneficial depends on the value of attending some college without earning a degree.

DPP increased cumulative credits earned throughout the 3-year study period. Figure 4 shows the cumulative total credits earned (in both precollege-level developmental courses and college-level courses combined) during Semesters 1 through 6, and the estimated impact on cumulative total credits earned within each semester. Notably, the estimated impact of DPP on credit accrual within each semester was similar, and program students continued to gain more credits than control group students even in Semesters 5 and 6. At the end of 3 years, the program group was ahead by 3.3 credits ($p = .007$), on average, representing a 20% increase over the control group average of 16.1 credits.

This impact is meaningful, as credit accumulation is an important indicator of academic progress. At the same time, the overall level of credits earned by both groups after 3 years was low. If students consistently enrolled in college

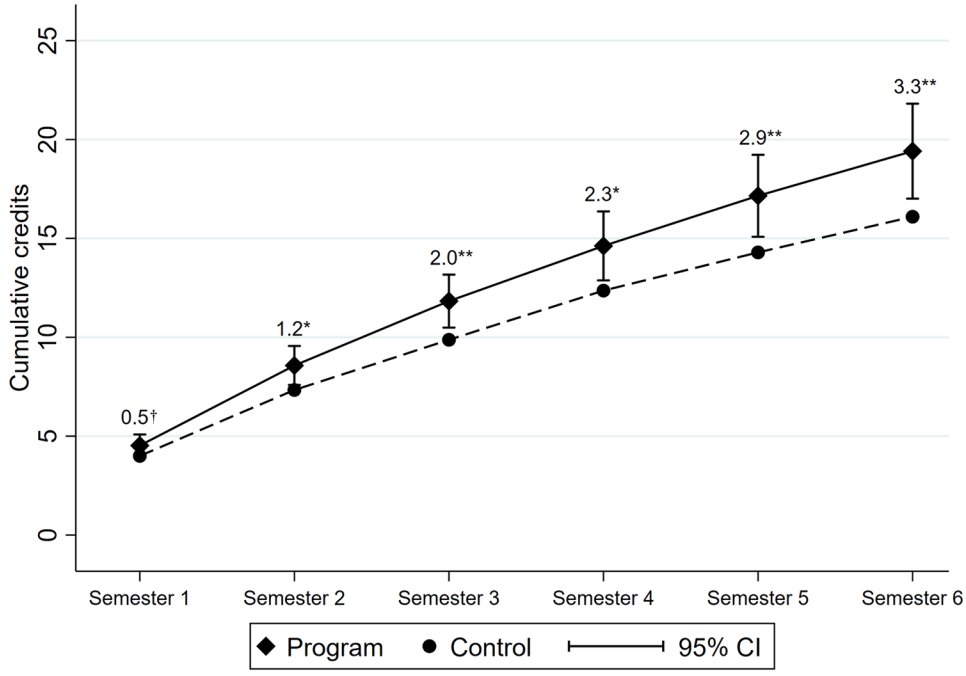

FIGURE 4. *Cumulative credits earned by semester.*
Source. MEDC educational records.
Note. Estimates are adjusted by site, study cohort, race, gender, interaction between race and gender, college entrance exams, and an indicator for imputed college entrance exam scores. Missing values for entrance exam scores were mean-imputed. Standard errors are heteroskedastic robust. Weights are calculated to make the effective (weighted) random assignment ratio the same in all random assignment blocks. The effective random assignment ratio is equal to the full sample's random assignment ratio. Total sample size is 1,258 students (program group = 823, control group = 435). MEDC = Michigan Education Data Center; CI = confidence interval.
$^{\dagger}p < .1$. $*p < .05$. $**p < .01$. $***p < .001$.

for 3 years, their expected average credits earned should range from 36 credits (for part-time students) to over 60 credits (for full-time students). By contrast, program group students earned, on average, just 19 credits in 3 years. The relatively low levels of average credits earned in this study reflect the large number of students who never enrolled in college (roughly 26%) or dropped out after one or two semesters (about 33%). Restricting the sample to students in the program group who enrolled in college at some point, the average number of credits earned by the 3-year mark rises to 26 credits, still far short of the 60 credits required to earn an associate degree.

After 3 years, there was not a substantial effect on graduation. As shown in Table 3, after 3 years (or six semesters), 7.3% of the program group earned any degree or certificate compared with 6.9% of the control group, for a difference of 0.4 percentage points ($p = .780$) that was not statistically significant or practically meaningful. Most of the credentials earned were associate degrees, with the remainder largely comprised of certificates.

Given that many students enrolled part time, they may take longer to graduate, and thus 3 years may not be enough time to observe whether DPP helped more students earn a degree. There are several reasons to focus on the impact of DPP after 3 years. Both the DPP program and Detroit Promise scholarship provide only 3 years of support. Aligned with the structure of the program, the confirmatory outcomes in our preregistered design plan all focused on academic progress by the 3-year mark. Assuming students enrolled full time, this would represent their progress as of 150% of the typical time to degree. Acknowledging that many students enrolled part time, a follow-up analysis examined outcomes at the 4-year mark

(Ratledge & Dai, 2022). At the 4-year mark, there remained a statistically significant impact on college enrollment. However, there was no statistically significant impact on our confirmatory outcome of credential attainment for the full study sample. There were also no effects on a combined measure of graduation and transfer to 4-year colleges (an exploratory outcome). Exploratory analyses did suggest impacts on credential attainment in a subsample of colleges, though the effects are small and the results should be interpreted cautiously. We turn to findings from our exploratory analyses in the next section.

Exploratory Impacts on Additional Outcomes

Exploratory analyses showed that DPP impacted several intermediary outcomes that helped students to progress toward a degree (Table 4). DPP nearly doubled the proportion of students enrolling in summer courses during the first summer program (i.e., the summer between Semesters 2 and 3).[4] Among the program group, 14.8% enrolled in courses in the first summer term, compared with 8.5% of the control group, for an estimated impact of 6.3 percentage points ($p = .000$; full results available upon request). As mentioned, coaches encouraged students to continue to make progress toward their goals over the summer, either by enrolling in summer courses or by participating in a local summer jobs program called Grow Detroit's Young Talent. As shown in Table 4, cumulatively across all summer terms, 37% of the program group enrolled in summer courses compared with 23% of the control group, for an estimated impact of 13.5 percentage points ($p = .036$). During this period, program group members also earned 1.8 credits, on average, compared with 1.3 credits in the control group, with the estimated difference of 0.47 credits ($p = .048$) representing about 14% of the total impact on cumulative credits earned.

DPP induced more students to enroll full time throughout the full 3 years. Estimated impacts across the six semesters of the study ranged from 3.7 to 7.1 percentage points (Table 4). The Detroit Promise scholarship—which both research groups were eligible to receive—had a nominal full-time enrollment requirement, giving both research groups an incentive to enroll full time. (Recall that students were told to enroll full time, but they did not lose their scholarship if they dropped below full-time status.) Although the additional components of the DPP program were not tied to full-time enrollment, the combination of coaching support and additional resources made full time more salient and feasible for a portion of students.

A small portion of both research groups attended 4-year institutions. The share of 4-year enrollees ranged from roughly 2% to 5% each term. There were no statistically significant differences between the rates at which program and control group students enrolled in 4-year institutions. At the end of six semesters, about 20% of the DPP program group students had enrolled in a 4-year institution for at least one term, compared to 14% of the control group. Although the nonsignificant 6-percentage-point difference suggests that the DPP program did not help students transfer, there was also no evidence that the reverse was true. For example, DPP program students might have been reluctant to transfer out of a concern of losing the support of their DPP coach. These results suggest, however, that this was not the case.

Many community college students are referred to developmental education courses. Among students in the study who enrolled in college, 69% took at least one developmental education course. Program group students attempted 23% more developmental education credits and earned 17% more developmental education credits than the control group, for a cumulative increase of 0.35 more developmental education credits earned ($p = .084$) compared to the control group average of 2.1 developmental education credits (Table 4). Notably, the DPP program's effect on developmental education credits attempted was not limited to early semesters; the DPP program appeared to increase credits attempted in Semesters 2 through 6 (results by semester available upon request). Although the DPP program did not include supports specifically related to developmental education, coaches counseled students about course selection in general and may have discussed the timing of developmental education course-taking. Our findings suggest that continuing to counsel

TABLE 4

Exploratory Intent-to-Treat Effects on 3-Year Outcomes

Outcome	Program group		Control group		Estimated effects			Sample Size
	M	*SD*	*M*	*SD*	Difference	*SE*	*p* value	
Summer enrollment								
Enrolled	0.365	0.738	0.230	0.532	0.135***	0.036	.000	1,258
Credits attempted	2.227	4.935	1.570	4.146	0.657*	0.260	.012	1,258
Credits earned	1.776	4.353	1.313	3.811	0.463*	0.234	.048	1,258
Full-time enrollment								
Enrolled full time in each term								
Semester 1	0.292	0.456	0.221	0.415	0.071**	0.025	.004	1,258
Semester 2	0.255	0.436	0.200	0.400	0.055*	0.024	.022	1,258
Semester 3	0.194	0.395	0.140	0.348	0.054*	0.021	.012	1,258
Semester 4	0.162	0.368	0.131	0.338	0.031	0.020	.132	1,258
Semester 5	0.131	0.338	0.083	0.276	0.048**	0.018	.006	1,258
Semester 6	0.120	0.324	0.083	0.276	0.037*	0.017	.032	1,258
Enrollment at a 4-year college								
Total terms enrolled	0.196	0.897	0.138	0.708	0.058	0.046	.207	1,258
Developmental education								
Credits attempted	3.384	4.538	2.761	3.741	0.623**	0.236	.009	1,258
Credits earned	2.372	3.835	2.025	3.200	0.347†	0.201	.084	1,258

Source. MEDC educational records.

Note. Estimates are adjusted by site, study cohort, race, gender, interaction between race and gender, college entrance exams, and an indicator for imputed college entrance exam scores. Missing values for entrance exam scores were mean-imputed. Standard errors are heteroskedastic robust. Weights are calculated to make the effective (weighted) random assignment ratio the same in all random assignment blocks. The effective random assignment ratio is equal to the full sample's random assignment ratio. MEDC = Michigan Education Data Center.

$^{\dagger}p < .1$. *$p < .05$. **$p < .01$. ***$p < .001$.

and support students in developmental education well beyond their initial terms may be a beneficial program component.

Finally, to provide some insight into how close students were be to earning a degree, we examined the impact of DPP on the status of students at the end of the follow-up period (see Supplementary Table S2 in the online version of the journal). The top panel shows enrollment statuses for the roughly 7% of the study sample who earned a credential by the end of the 3-year study period. Most of these students were enrolled in a 2-year college, suggesting that they had either just earned their credential or were continuing to work on additional degrees (e.g., they earned a certificate and were now pursuing an associate degree). The second panel shows the status of the roughly 93% of the sample who had not yet earned a credential. A majority of both program and control group students were no longer enrolled in college during the final semester (of the program group and 74.3% of the control group). The 4.8-percentage-point difference across groups was marginally statistically significant ($p = .066$), confirming our earlier finding that DPP helped more students stay enrolled and progress toward a degree. In the final semester, 23.2% of the program group and 18.8% of the control group were still enrolled in college; 4.1% of program students and 3.2% of control students were enrolled in a 4-year college and the remainder were enrolled in a 2-year college. Looking at credit accumulation provides further evidence that DPP helped students make additional progress. Among students still enrolled at 2-year colleges, 6.9% of the program group had earned 48 or more credits compared with 3.9% of the control group, for a statistically significant difference of 3 percentage points ($p = .018$). These students were near the 60-credit threshold to earn an associate degree and were still enrolled suggesting that, while we did not observe any

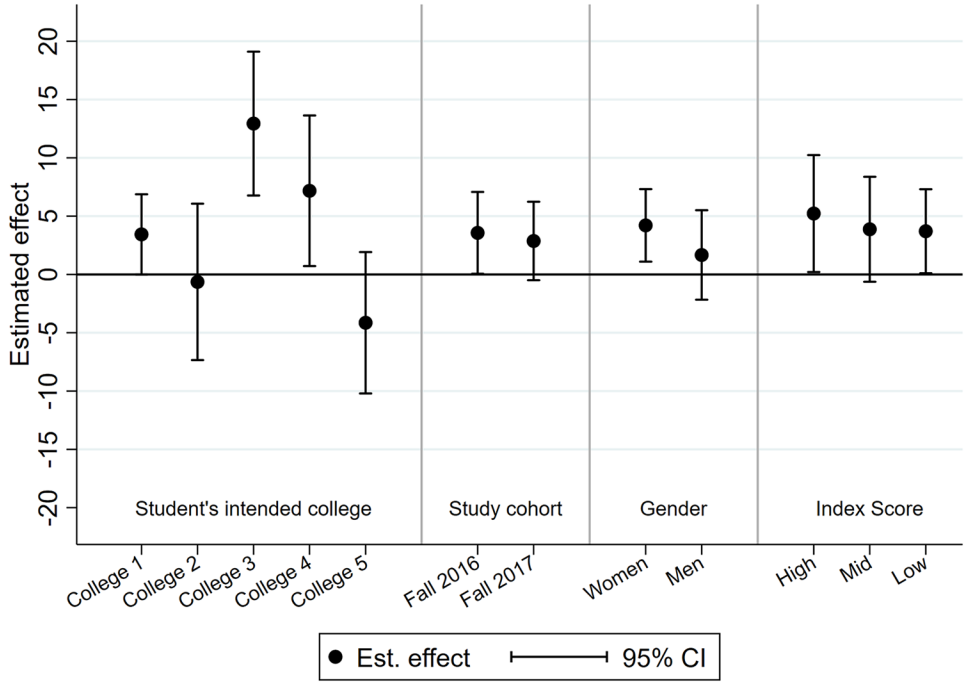

FIGURE 5. *Cumulative credits earned after 3 years, by subgroup.*
Source. MEDC educational records.
Note. Estimates are adjusted by site, study cohort, race, gender, interaction between race and gender, college entrance exams, and an indicator for imputed college entrance exam scores. Missing values for entrance exam scores were mean-imputed. Standard errors are heteroskedastic robust. Weights are calculated to make the effective (weighted) random assignment ratio the same in all random assignment blocks. The effective random assignment ratio is equal to the full sample's random assignment ratio. Total sample size is 1,258 students (program group = 823, control group = 435). MEDC = Michigan Education Data Center; CI = confidence interval.

4-year impacts on degrees, a small effect could emerge over an even longer period.

Differences in DPP Program Effects by Student Subgroup and by College

The findings so far represent the overall average effect of DPP on students' academic progress and completion. As part of an exploratory analysis, Figures 5 and 6 present DPP's effects on cumulative credits and credentials earned for various subgroups of students (full results in Supplementary Tables S3 and S4 in the online version of the journal). Subgroups included college, study cohort, gender, and students' likelihood of college success in the absence of the DPP program—we turn to college in the next paragraph. (Since there was little variation in students' identified racial/ethnic groups, it was not valuable to estimate differences in the DPP program's effect along this dimension.) The final subgroup analysis examined differences in DPP program's effect for students with different predicted probabilities of earning credits and credentials. DPP appears effective at increasing credits earned for all subgroups examined. As it was for the overall sample, there is no evidence of a discernable effect for any of the student subgroups on earning a credential.

Differences in DPP's effects by college are of interest given the variation in program implementation. The small sample sizes at College 2 through College 5 mean that the estimates presented here are imprecise (see Supplementary Tables S3 and S4 in the online version of the journal). However, the amount of variation in the college-specific effect estimates on both outcomes is substantial enough to consider that it may represent real differences in the effectiveness of the program across the colleges.

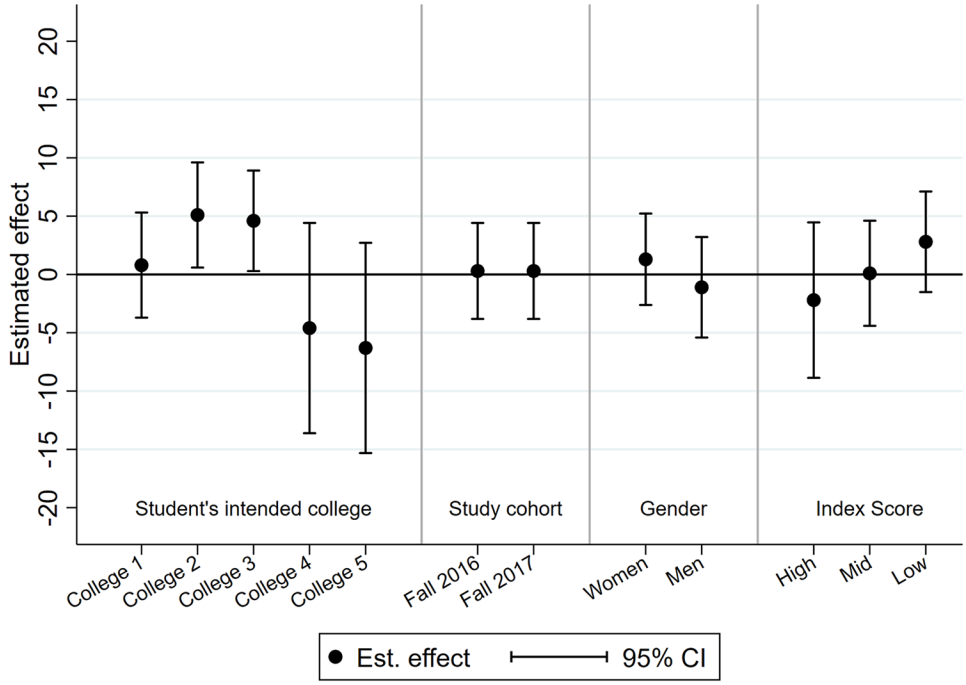

FIGURE 6. *Credentials earned after 3 years, by subgroup.*
Source. MEDC educational records.
Note. Estimates are adjusted by site, study cohort, race, gender, interaction between race and gender, college entrance exams, and an indicator for imputed college entrance exam scores. Missing values for entrance exam scores were mean-imputed. Standard errors are heteroskedastic robust. Weights are calculated to make the effective (weighted) random assignment ratio the same in all random assignment blocks. The effective random assignment ratio is equal to the full sample's random assignment ratio. Total sample size is 1,258 students (program group = 823, control group = 435). MEDC = Michigan Education Data Center; CI = confidence interval.

With respect to credits earned, three colleges had positive effect estimates ($p = .050$, $p = .000$, and $p = .032$), one had an effect near zero ($p = .853$), and one college had a negative effect estimate ($p = .182$). The college with the negative effect estimate is the college that struggled with program implementation and had lower levels of program participation.

Two colleges had positive estimated effects on credentials earned: impacts of 5.1 percentage points and 4.6 percentage points ($p = .023$ and $p = .022$). These effects were particularly notable given the lack of evidence of a discernable effect on degrees in the full sample. At the remaining colleges, one estimated effect was near zero and two were negative, though none of these were statistically different from zero ($p = .739$, $p = .324$, $p = .172$).

A final exploratory analysis looked only at the four colleges where the program was implemented as designed. At those colleges, the program had a statistically significant, positive impact on associate degree attainment. At the 3-year mark, nearly four times as many program group students at the four colleges (4%) earned associate degrees, compared with 1.4% of control group students, a statistically significant impact of 2.6 percentage points ($p = .011$). At the four colleges (pooled), there were also larger impacts observed on number of terms enrolled ($\beta = 0.548$, $p = .000$) and cumulative credits earned ($\beta = 5.180$, $p = .000$) compared to the results for the full study sample. Finally, it is worth noting that a subgroup analysis of 4-year impacts for these four colleges also found evidence of a statistically significant 3-percentage-point impact on credential attainment (Ratledge & Dai, 2022).

These impacts should all be interpreted cautiously. The analyses involved a smaller sample size—a subgroup of four colleges—which was not prespecified in the original design plan and added a nonconfirmatory outcome, associate

degrees (rather than credentials overall). As we discuss in the final section of the article, these findings suggest that successful implementation of college support programs may be essential to their success. We also note, however, that the overall gains in degree receipt were small (between 2 and 3 percentage points), and more can and should be done to raise overall graduation rates.

Costs

To calculate DPP's costs, we collected annual budget data from program leaders. The analysis included direct costs (administration, staffing, monthly financial incentives, etc.) and indirect and technical assistance costs. Using the ingredients method, we calculated a program cost per student in the program group, using a ranged estimate for indirect costs in which the lower bound assumes no indirect costs and upper bound is calculated using IPEDS data for costs of instruction, academic services, and so on. In addition, we conducted a cost-effectiveness analysis using the primary outcome of interest at the 3-year mark, graduation.

We estimated DPP's direct costs at $648 per program group student per year (including students who did not enroll).[5] The direct costs include staff salaries and monthly student financial incentives. At this cost, the program helped more students persist in college and earn more credits. By enabling students to earn more credits, the program added indirect costs of an additional $366 per program group student per year, which from the college perspective was at least partially offset by the increased revenue associated with students taking additional courses. However, because DPP did not lead to more degrees earned at the 3-year mark, it was not cost-effective for improving degree receipt.

Discussion

College promise programs and other placed-based college-access interventions have grown in popularity in recent years (Leigh & González Canché, 2021). DPP built evidence-based student supports into an existing College Promise scholarship program, showing that these programs can be leveraged to help students stay in school and earn more credits. Over the 3 years of the study, the DPP program helped students in the program group enroll in more semesters and earn more credits compared with those offered the scholarship alone. The DPP program also supported students in enrolling continuously and at a higher intensity. Notably, in each of the six semesters in the study, program group students were more likely to enroll in college full time and they were substantially more likely to enroll and earn credits during summer terms. These are all valuable improvements. At the 3-year mark, however, there was no evidence of an overall increase in degrees earned, and suggestive evidence of only small increases in associate degree attainment.

For most students, the additional progress that DPP helped them to make was not enough to lead to a degree. Program group students earned, on average, 19 credits over the course of the 3-year study period.[6] Thus, although their improvement relative to the control group was meaningful, few students obtained the 60 required credits to earn an associate's degree. A similar narrative describes DPP's impacts on cumulative terms enrolled: Though the program provided meaningful support, more was needed to address the substantial barriers that Detroit students continued to face.

To understand the disconnect between DPP's positive impacts on credits and the null or small effects on degrees, those looking to learn from the evaluation might look to ways in which DPP's program model differs from other programs which have demonstrated success in terms of graduation rates. Although the Detroit Promise scholarship encourages students to enroll in college full time, students do not lose their scholarship if they drop below full-time status. This aspect of the program sets it apart from some other similar programs (Dawson et al., 2020). As our results show, students frequently enrolled part time over the course of the study, making it very difficult to graduate within 2 or 3 years, even though they continued to accrue college credits. It is possible that the impact on credit accumulation may lead to an impact on completion in the future, though our analysis of the effects at the 4-year mark also found no statistically significant impact on credential attainment for the full study sample (Ratledge & Dai, 2022).

Instituting a full-time enrollment requirement may improve impacts; it also has clear downsides that led program staff purposely not to require it. Many students have competing priorities such as work and child care. Serving only full-time students would certainly help improve the time it takes to earn a degree within the program, but doing so would cut out many of the highest-need students who stand to benefit the most from the program. For this reason, the Detroit Promise scholarship's staff chose not to enforce a full-time requirement. Programs seeking to learn from this study may want to weigh the relative benefits and drawbacks of encouraging rather than enforcing full-time enrollment.

Another possible interpretation of the findings from this evaluation is that implementation matters. Our exploratory analyses showed that DPP did increase graduation rates at two colleges, and that there was a statistically significant impact on associate degrees earned by students at the four colleges (pooled) where the program was implemented as designed. Although these impacts should be interpreted cautiously, our findings suggest that, when implemented as intended, programs like DPP can have positive, albeit small, impacts.

A more important set of lessons might emerge from this evaluation, and similar studies in the future, through an examination of the contextual and structural factors that prevent college coaching programs like DPP from leading to even greater improvements in college graduation rates. As several reviews of prior studies show, programs that produce large improvements in college persistence and graduation rates have been identified, but they are rare (Dawson et al., 2020; Dynarski et al., 2023; Weiss et al., 2022). In fact, as those reviews document, DPP's impacts on enrollment patterns and credit accumulation compare favorably to those from randomized controlled trials of similar programs. The 3.3 credit increase in cumulative credits earned by DPP program students found in this study is larger than most of the impacts observed in a review of 20 years of MDRC's randomized controlled trials of community college interventions (Weiss et al., 2022). However, DPP's effect on credit accumulation, which is roughly the equivalent of completing one additional college course, is not large enough to reasonably expect to see large shifts in average graduation rates as a consequence. Even if we conclude, as our exploratory findings indicate, that DPP increased the share of students who earned degrees at some colleges, the very low graduation rates (even for DPP program students) observed in this study make it clear that interventions like DPP, on their own, are not enough to help community college students realize their goal of earning a degree.

We argue, therefore, that stakeholders must take an expansive view of the systemic changes needed to dramatically improve community college graduation rates. As noted earlier, Detroit students face a number of structural barriers to college attendance and success including: racial and socioeconomic residential segregation (Sugrue, 2014), systemic disinvestment in public education systems (Mirel, 1998), lack of access to reliable public transportation (Gerber et al., 2017; Grengs, 2010), and systemic and individual experiences of racism (Holzman & Hanson, 2020; Owens et al., 2010). Qualitative findings from this study support the salience of those challenges (for a more detailed discussion of the lessons from our qualitative findings, see: Brockman & Camo-Biogradlija, 2023; Camo-Biogradlija et al., 2023). Students reported that structural barriers, most notably the lack of reliable, organized regional transit, were among the greatest obstacles to their continued college enrollment. DPP coaches saw FAFSA completion and verification as the greatest systemic issue for students. As noted earlier, research has shown that Black students are more likely than White students to be selected for FAFSA verification, as are students from low-income households compared with students from higher income households.

Interviews with students and reports from DPP staff also identified financial concerns as a common roadblock. Many students reported that they could not afford to continue in college due to expenses not covered by financial aid, such as transportation, rent, or child care, and that they opted to work instead of attending school. Coaches saw financial aid issues as a significant driver of "summer melt," in which students who intended to enroll in college in the fall semester disengaged during the summer and did not enroll after all. They reported that other issues typically associated with summer melt, such as losing

interest in college, or changes in circumstance, such as joining the military or moving away, were rare compared with financial struggles.

One way for future research on college success programs to build on the lessons from this study would be to examine college success interventions through an ecological framework (Germain, 2022; Lenhoff, Singer, & Gottfried, 2022). Ecological systems theory draws attention to the intersecting factors in schools, neighborhoods, and communities that produce the conditions in which individual behavior is manifested (Bronfenbrenner, 1979; Bronfenbrenner & Morris, 2006). Prior research on college success interventions, including the current study, tends to collect data on and examine the effects of programs in isolation from the broader contexts in which they are situated. Although some studies note challenges beyond college as a barrier to degree completion (e.g., Evans et al., 2020), research often focuses on college- or program-based factors as the key to improving college success, possibly because those are closest to colleges' locus of control.

From an ecological perspective, comprehensive programs should be just one part of a coordinated approach to systematically improving college graduation rates. Building on lessons learned from the evaluation, in the time since the study the Detroit Chamber, which administers the DPP program, has taken steps to move toward a systems-focused approach to improving postsecondary degree attainment and advancing racial equity (Detroit Drives Degrees Community College Collaborative, 2023). The DPP program has been scaled up to serve more students. Starting in 2018, DPP began serving all incoming students at four of the five Detroit-area community colleges that participated in the study. In 2022, the Detroit Chamber launched a new partnership with area community colleges (Dybis, 2022).

In closing, our qualitative findings underline an important consideration for both the DPP program and for other college-access programs in Detroit. Students highly valued the assistance from DPP and their relationships with their coaches. Yet they continued to face great barriers to success, including financial uncertainty, inadequate academic preparation for college-level work, high rates of enrollment in developmental education coursework, unreliable transportation to school, and competing responsibilities at school and at home, among other challenges. Many of these issues will require collaboration across policy domains to effect meaningful change. For high-need student populations, much more than typical campus-based support is required, and stakeholders must therefore take an expansive view of the systemic changes required.

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Notes

1. Authors' calculations using data from the Michigan Department of Education. Detroit colleges use an SAT score of 1,060 and an ACT score of 21 as a rule of thumb for assessing college readiness as these are the threshold for eligibility for the 4-year Detroit Promise scholarship. Information about Detroit Promise eligibility is available at: https://detroitpromise.com/faq/.

2. It is possible that some students, upon reading the informed consent language in the application, chose not to complete the application at all. The study team did not have a way to measure this. Anecdotally, program staff did not believe this was an issue.

3. The model to compute risk index scores included the following student covariates: gender; race/ethnicity; special education, limited English proficient, and economic disadvantage status; interaction between gender and race/ethnicity; standardized college entrance exam scores (ACT, SAT); eighth-grade mathematics and reading standardized assessment scores; interactions of each test score variable with, separately, gender and economic disadvantage; a quadratic term for each test score variable; indicators for moving schools in high school; and 12th-grade attendance rate. The measures of school characteristics included: Whether the school was in the Detroit school district, a charter school, and located in Detroit (vs. the surrounding suburbs); the proportion of the student population that was economically disadvantaged, receiving special education, limited English proficient, and identified with different racial/ethnic groups; the average college entrance exam scores (ACT, SAT); the school's 4-year high school graduation rate; and the size of the student body. Finally, measures of census block characteristics included: proximity to the five study colleges measured by the average distance, drive time, and time on public transit; median household income; and the share of residents who had a BA degree or higher, received public assistance, and identified with different racial/ethnic groups.

4. Taking a closer look at the summer enrollment findings by calendar year (full results available upon request), it is apparent that the control group began enrolling in summer courses at higher levels in summer 2018. This is likely because of a change in federal policy to reinstate year-round Pell (also known as Summer Pell) in the 2017 to 2018 academic year. Since much of DPP's early summer impacts were due to messaging that summer tuition was covered by the Detroit Promise scholarship, analogous messaging about year-round Pell covering tuition costs sent by the colleges to all students likely contributed to the higher control group summer enrollment rates later in the study.

5. Using the ingredients method, the study calculated a program cost per student in the program group. The study team collected annual budget data from program leaders to calculate the program's direct costs (administration, staffing, monthly financial incentives, etc.). To calculate indirect costs, we used a ranged estimate in which the lower bound assumes no indirect costs and upper bound is calculated using IPEDS data for costs of instruction, academic services, and so on. In addition, we conducted a cost-effectiveness analysis using the primary outcome of interest at the 3-year mark, degree attainment.

6. The 19-credit average for the program group includes students who never enrolled in college (whose value for "total credits earned" was recorded as zero). Program group students who enrolled in college at any time during the 3-year study period earned an average of 26 credits, which is still less than half of the 60 credits required to earn an associate degree.

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