



**Increasing Academic Progress among Low-Income Community College Students:
Early Evidence from a Randomized Controlled Trial**

Marianne Bertrand
Kelly Hallberg
Kenny Hofmeister
Brittany Morgan
Emma Shirey

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Address correspondence to:

Kelly Hallberg, PhD
Scientific Director and Senior Research Associate
University of Chicago Poverty Lab and Harris School of Public Policy
773.702.9830
Email: khallberg@uchicago.edu

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Abstract

Community colleges have the potential to be powerful vehicles for social mobility in the United States. They enroll nearly half of all postsecondary students in the U.S. and graduates who earn an associate's degree increase their earnings by more than 30 percent over a lifetime (Carnevale et al., 2014; The White House, 2015). However, the vast majority of students who enroll in community colleges do not receive a degree within three years. The barriers to degree attainment are multi-faceted and interconnected, spanning the financial, academic, personal, and professional domains of students' lives. We present the preliminary findings from a randomized controlled trial studying a comprehensive program designed to address each of these barriers. One Million Degrees (OMD) is a non-profit organization serving community college students in the Chicago metro area that supports students financially, academically, personally, and professionally through last-dollar scholarships, skill-building workshops, advising, and coaching.

Year 1 results from the first two cohorts of our study find that the offer of a spot in the OMD program leads to a 7 to 9 percent increase in college enrollment, a 13 percent increase in full time enrollment, an 11 percent increase in persistence to spring term, and a 16 percent increase in full-time persistence. For individuals that took up the offer of the program, effects were substantially larger – a 23 to 27 percent increase in enrollment, a 35 percent increase in full-time enrollment, a 35 percent increase in persistence, and a 47 percent increase in full-time persistence. These treatment on the treated effects were driven by students who applied to the program when still in high school. These students were less likely to take up the offer of the program than students who were already enrolled in community college, but outperformed their control group peers by a larger margin.

Introduction

Over the last four decades, growing income inequality and reduced social mobility have meant that children born into poverty are increasingly likely to remain poor (Chetty et al., 2017). Research tells us that the most effective route out of poverty is education, and this is increasingly true as the labor market continues its decades-long shift away from manufacturing and agriculture toward fields such as technology and healthcare. By 2020, 65 percent of U.S. jobs will require some form of postsecondary education, but as of 2012 only 39 percent of U.S. working-age adults held a postsecondary credential. With only a high school diploma, nearly half of children born into poverty will remain poor as adults; with a college degree, only 17 percent of poor children will be poor as adults. The benefits of educational attainment also extend beyond earnings, especially for African American males. Among those who don't complete high school, 68 percent will be imprisoned by age 34. With a high school diploma, the risk of incarceration is 21 percent; with a college degree, it falls to six percent (Greenstone, Looney, Patashnik, & Yu, 2013).

Community colleges have the potential to be powerful vehicles for social mobility in the United States. They enroll nearly half of all postsecondary students in the U.S. and graduates who earn an associate's degree increase their earnings by more than 30 percent over a lifetime (Carnevale et al., 2014; The White House, 2015). As open access institutions with tuition rates that are a fraction of the cost of four-year public and private institutions, community colleges are a particularly attractive option for low-income and first-generation college students.

However, for too many students, community colleges are falling short of this promise. Nationally, two-thirds of first-time, full-time, degree-seeking students that enroll in community college do not receive a degree within three years (National Center for Education Statistics, 2017). In Chicago, the site of our study, the three-year community college graduation rate is just 22.9 percent.

Low-income and first-generation students face multiple, interrelated barriers that make completing an associate's degree challenging. While community college tuition is more affordable than tuition at four-year institutions, *financial barriers* remain a major challenge for students. Like low-income individuals in other contexts, many low-income community college students live on the brink of economic hardship (Barr & Blank 2009; Shipler 2008; Bertrand et al., 2004). As such, just one unexpected expense can have long-term effects on students' likelihood of completing a degree, with financial instability cited as the most common reason students disengage from school (Johnson et al., 2015).

Low-income and first-generation students often face *personal barriers* to graduation as well. Few of these students have role models who have successfully navigated the transition to and through college. As a result, though they aspire to attend and complete college, many of these students harbor doubts about their own ability to get into and succeed in college. Common obstacles on the path through college can serve to reinforce these doubts. While it is common for first-year students to have feelings of apprehension about finding a new community and adjusting to increased autonomy, low-income students are more likely to internalize the common challenges that come with the transition to college, worrying about whether they truly belong (Yeager et al., 2016).

The growing achievement gap between affluent and poor children means that many low-income students face *academic barriers* to college success as well (Duncan & Murnane, 2011). These students face challenges when they arrive on campus, impacting their ability to enroll in and be successful in college-level coursework. As a prerequisite for enrollment in elementary-level college courses, many freshmen from low-income backgrounds often spend at least a part of their first year taking remedial courses which offer partial or no credit, keeping these students further behind their peers (Stewart, Lim, & Kim, 2015). These courses typically still carry the same financial obligation as a full-credit college course, so students who take more remedial courses often end up paying more for college (Barry & Dannenberg, 2016). In addition, the academic gap between low-income students and the general student

population can manifest itself in the classroom in lack of participation or submitting work that is below instructors' expectations, resulting in poor or even failing course grades and leading to the additional burden of more courses required to stay on top of credit. Students from low-income families or who are the first in their family to attend college also tend to have fewer supports to navigate the community college system and, as a result, may develop insufficient academic plans and unknowingly enroll in courses that they do not need. They are also less likely to access the support services available on campus to support their academic success (Kopko, Ramos, and Karp, 2018).

Finally, the link between coursework and a student's post-college employment prospects are not always clear to students from low-income backgrounds, leading to *professional barriers* to success (McCoy & Bowen, 2015). Without connections to individuals working in the fields in which they are interested, many community college students have difficulty translating a degree into labor market success. Further, students without the social capital and social networks needed to successfully transition into a career post-college may have more difficulty acquiring gainful employment after their time in school (Moschetti & Hudley, 2014).

In this paper, we present initial findings from a randomized controlled trial (RCT) studying the effectiveness of a comprehensive support program designed to address each of these barriers to community college completion. One Million Degrees (OMD) is a non-profit organization operating at all seven campuses of the City Colleges of Chicago (CCC, Chicago's community college district) and at three community colleges in the Chicago suburbs: Prairie State, South Suburban, and William Rainey Harper (Harper). The colleges participating in the study are the seven City Colleges and Harper. OMD uses a comprehensive approach to serve community college students. Its program supports students financially, academically, personally, and professionally through financial incentives, skill-building workshops, advising, and coaching. OMD students meet at least monthly with Program Coordinators, who work with scholars to set and reflect on academic and professional goals and encourage their academic and personal progress. Program Coordinators work with an assigned caseload of 50-65 students

and are embedded on the college campus, allowing students to meet with them on campus and enhancing Program Coordinators' ability to connect students to additional resources and services through the college. Depending on a scholar's academic needs, risk factors, and stage in their community college journey, scholars may meet with their Program Coordinator as often as weekly. Students also attend monthly workshops that include meeting with a volunteer coach and participating in activities designed to build professional skills. By participating regularly in professional development programming and similar OMD events, scholars receive a performance-based stipend in addition to their last-dollar scholarships.

Year 1 results from the first two cohorts of our study find that the offer of a spot in the OMD program leads to a 7 to 9 percent increase in college enrollment (for fall and spring, respectively), a 13 percent increase in full-time enrollment, an 11 percent increase in persistence to spring term, and a 16 percent increase in full-time persistence. For individuals who took up the offer of the program, effects were substantially larger: a 23 to 27 percent increase in enrollment, a 35 percent increase in full-time enrollment, a 35 percent increase in persistence, and a 47 percent increase in full-time persistence. These treatment on the treated (TOT) estimates are of a magnitude that is larger than early findings from a study of the Accelerated Study in Associate Programs (ASAP) program implemented by the City University of New York (CUNY), a similar comprehensive support program for community college students, which was ultimately found through an RCT to double community college graduation rates.

These early findings add suggestive evidence to the growing body of literature indicating that comprehensive support programs can substantially and cost-effectively improve outcomes for community college students. By demonstrating that such programming is effective in a different context, with a different management structure (i.e., programming implemented by a non-profit provider rather than the community college itself), and with a theory of change focused on the accumulation of social capital and fostering community, these results provide optimism for the generalizability of early positive findings about comprehensive support programs for community college students.

Interestingly, the treatment on the treated effects were driven by students who applied to the program when still in high school. These students were less likely to take up the offer of the program than students who were already enrolled in community college but outperformed their control group peers by a larger margin. While additional work is needed to understand these differential effects, these subgroup differences provide suggestive evidence for how limited resources could be targeted to lead to the largest impact on student outcomes.

The paper proceeds as follows. We first provide a more detailed description of the OMD program model and then situate this study in the broader literature on the effectiveness of comprehensive support services for improving community college completion rates. Next we provide an overview of the study's methodology, data, and analytic approach. Finally, we present study findings, discuss our initial takeaways from these findings, and describe the next steps for the study.

The One Million Degrees (OMD) Program

OMD is the only Chicago-area non-profit that uses a comprehensive approach to support the success of the region's community college students. To be eligible to enroll in the program students must be enrolled or plan to be enrolled full time in one of the community colleges where the program operates. To join the program, students must be Pell-eligible or eligible for the Chicago STAR scholarship (a local promise of free CCC tuition for high performing Chicago Public Schools graduates), have a grade point average (GPA) of at least 2.0, be pursuing their first college degree, and have at least one full year remaining to graduation. Students join the program either directly from high school, after they are already enrolled in community college, or occasionally as adults returning to school. The scholars who enroll in the program after matriculation tend to be older than those who enroll while still in high school.

The program provides comprehensive supports designed to address the financial, personal, academic, and professional barriers that can interfere with scholars' plans to graduate. To address the *financial barriers* facing these low-income students, scholars receive \$1,000 (CCC) or \$750 (Harper)

annually in performance-based stipends to address any financial needs that might arise. In addition to providing additional financial security, the stipend acts as a critical recruitment and retention tool, with receipt of the stipend tied to meeting program participation requirements. The program offers last-dollar scholarships when needed to close any gap between financial aid and tuition but, given the program requirement that students be eligible either for a Pell grant or STAR scholarship, these funds are rarely needed. Scholars are also able to apply for up to \$250 in enrichment grants to offset expenses that will help them accelerate academically or professionally (e.g., membership dues to Phi Theta Kappa, conference registrations, four-year university application fees, etc.). In addition, the monthly workshops that scholars attend include financial literacy training to help scholars manage their household budgets and plan for economic mobility.

To address *personal barriers*, scholars are required to meet regularly with a Program Coordinator to discuss their academic plans and progress as well as address any issues that have arisen in a scholar's personal life that may interfere with their ability to engage in school. The Program Coordinators have caseloads (50-65:1) that are much lower than typical advisor-to-student ratios at CCC and Harper, allowing them to develop strong personal relationships and provide targeted individualized supports to students.

To address *academic barriers*, scholars are provided with tutors and/or referred to existing supports within the college. Scholars earning less than a C grade in any course or who are enrolled in a developmental education course are required to attend tutoring. Program Coordinators support students in completing critical academic tasks, such as meeting class registration deadlines, submitting financial aid documentation, and developing academic plans. They also coach scholars as they progress through their coursework, assisting them in applying to specialized programs within their college or supporting their transfer to a four-year university.

To address the *professional barriers* that scholars face, the program pairs each scholar with a coach, local professionals who volunteer to serve scholars in a mentor capacity. While not always

possible, One Million Degrees aims to match scholars with coaches who are working in their field of interest. The coaches and scholars jointly attend regular professional development events and workshops sponsored by the program. Further, coaches regularly meet and communicate with scholars outside of formal OMD programming to provide them with personalized supports, job shadowing, and networking opportunities that will help them fulfill their career development goals as well as personal ambitions.

Contribution to the Literature

The growing body of literature rigorously investigating interventions designed to improve outcomes for community college students has found somewhat mixed results. Neither interventions specifically targeting community college students' limited academic preparedness (Long, 2014; Matorell & McFarlain, 2011) nor interventions designed to reduce advisor-to-student ratios and improve the quality of academic counseling that students receive (Scrivener & Weiss, 2009) have been found to have long-term effects on degree attainment. Likewise, a randomized controlled trial examining the receipt of emergency financial assistance alone found that this type of support did not result in increased degree attainment (Evans, Kearney, Perry, & Sullivan, 2017).

The results from the studies of more comprehensive programs, designed to address the multiple barriers community college students face to degree attainment, have been more promising. For example, a randomized controlled trial of the *Stay the Course* program, which combined comprehensive case management (including academic and personal counseling) with emergency financial assistance, was found (though imprecisely) to increase community college six-semester persistence and degree attainment, especially for female students (Evans, Kearney, Perry, & Sullivan, 2017). Likewise, and most closely aligned to the OMD program, a randomized controlled trial of the CUNY ASAP program has found the most promising results to date. The ASAP program includes many elements that closely parallel the key components of OMD, including comprehensive personal advising, enhanced tutoring and career advising services, tuition waivers and MetroCards (an important financial support in New York City), and seminars on goal-setting and study skills (Scrivener et al., 2015). The study found that ASAP

has almost doubled graduation rates, reduced drop-out rates, and increased credit attainment for participating students (Scrivener et al., 2015).

The current study builds on this literature, providing additional evidence of the potential for comprehensive support programs to have substantial and sustained effects on community college degree attainment. While the OMD program includes many of the same features as the ASAP program, one difference is worth noting: OMD is operated by an independent non-profit organization, rather than the community college system itself. As such, if the program proves to be as efficacious as ASAP, it might be scaled more efficiently to reach more students around the country.

Methodology

To assess the effectiveness of the OMD model, we conducted a block randomized controlled trial at all seven campuses of CCC and one suburban Chicago area community college, Harper College. As the largest community college system in Illinois and the fourth largest in the nation, and a large suburban community college system, respectively, CCC and Harper provide ideal settings for this study. CCC has 4,000 faculty and staff serving 80,000 students annually at seven colleges and five satellite sites across the city of Chicago. CCC has an open enrollment policy that provides accessible, affordable postsecondary education for students from diverse ethnic, racial, and socioeconomic backgrounds. While the district has made remarkable progress in recent years, 77 percent of students who enroll in CCC still fail to attain an associate's degree within three years (City Colleges of Chicago, 2018). Harper College, located in Chicago's northwest suburbs, serves more than 35,000 students annually. While Harper's graduation rate is slightly higher than CCC's (nearly 30 percent of students graduate within three years), the college's administration is committed to continuing to raise this rate and sees its partnership with OMD as a critical component of this effort.

OMD recruited students to participate in the program and the study through its normal application process, with students submitting an online application to express interest in the program. The program

receives more applications than they have program slots and made especially robust recruitment efforts to ensure there were a sufficient number of applicants to the program to support the sample needed for the study. Once the program screened the application data to determine if candidates met the basic program eligibility criteria, the list of eligible candidates was sent to the research team, which randomly selected which applicants would be offered a spot in the program. Randomization was blocked on two characteristics: the campus the applicant was enrolled or intended to enroll in and whether the applicant was a graduating high school student or a current community college student. In spring 2016, we randomized 1,452 unique, eligible OMD applicants, 779 of whom were offered a spot in the program. In spring 2017, we randomized 2,822 unique, eligible OMD applicants, 1,396 of whom were offered a spot in the program.¹ Across these two cohorts, we randomized 4,274 unique applicants, 2,175 of whom were offered a spot in the program.²

This paper presents first-year outcomes for the first two cohorts of students to be randomized for the study. Table 1 below details the baseline characteristics of the students who were randomly assigned to the treatment and control groups. The vast majority of the study sample was African American or Hispanic. Roughly two-thirds were female and about half were working at least part-time. Roughly 60 percent of the sample were first-generation college students and, consistent with OMD program requirements, all were eligible for the Pell or STAR grants. There were no statistically significant differences between the treatment and control groups at baseline.

¹ An additional third cohort of 623 returning community college students was randomized in the spring of 2018, but based on data availability, we only present results for the first two cohorts here.

² Of the original 4,274 applicants that were randomized, one application was excluded because OMD had no record of this applicant so we were not able to observe take-up. An additional 16 cases were excluded from this analysis. Five of these students should have been excluded from randomization because they had a sibling from the program. Eleven students were missing a birthdate and therefore could not be linked to the NSC data. Consequently, the analytic sample contains 4,257 unique applicants.

Table 1. Baseline Covariates for Study Cohorts 1 and 2

Baseline Characteristics	Control	Treatment	Difference	P-value
<i>Race/ethnicity</i>				
Black	36.78%	39.70%	2.91%	0.99
Hispanic	48.47%	45.18%	-3.29%	0.23
White	5.36%	6.27%	0.91%	0.88
Asian	4.74%	4.89%	0.15%	0.61
Multiracial	2.97%	2.40%	-0.57%	0.17
Native American	<1%	<1%	N/A	0.99
Other	1.39%	1.11%	-0.28%	0.18
<i>Other Baseline Characteristics</i>				
Female	60.44%	60.03%	-0.41%	0.83
Married	2.73%	3.04%	0.31%	0.35
Single	93.39%	91.93%	-1.46%	0.90
Divorced	1.20%	1.84%	0.65%	0.71
US Citizen	86.83%	86.86%	0.03%	0.39
Veteran	2.30%	2.72%	0.42%	0.85
First-generation college	61.30%	58.55%	-2.75%	0.54
Pell-eligible	67.58%	69.16%	1.58%	0.61
Chicago Star	39.56%	36.98%	-2.58%	0.94
Age	20.09	21.15	1.06	0.15
<i>N</i>	2,169	2,088		

NOTES: *** p<0.001, ** p<0.01, * p<0.05, + p<0.1.

The p-value column shows the p-value for t-tests for differences in mean baseline characteristics for students assigned to the treatment and control groups. These tests include school fixed effects to account for randomization within campus and age group blocks. F-test for joint probability that baseline variables predict an offer of treatment is $F(17, 4,159) = 0.506$, $p = 0.952$

Of the 2,175 students who were offered a spot in the OMD program, 729 enrolled (a take-up rate of roughly 33 percent). Individuals who were offered the program did not take up this offer for a variety of reasons, including not enrolling in CCC or Harper, not enrolling full-time, or not meeting other program requirements. In general, individuals who accepted the offer of treatment generally looked like the broader sample with some notable exceptions. Individuals who enrolled in the program were more likely to be Black (44 percent compared to 38 percent of non-takers), less likely to be Hispanic (40 percent compared to 48 percent), more likely to be married (4 percent compared to 2 percent), less likely to be single (90 percent compared to 93 percent), more likely to be divorced (3 percent compared to 1 percent), less likely to be a first-generation college student (54 percent compared to 61 percent) and less

likely to be a Chicago STAR scholarship recipient (35 percent compared to 38 percent). Program takers were also slightly older than non-takers, with an average age of 22.9 compared to 20.3 among non-takers. This is consistent with the fact that program take-up was higher among current community college students relative to recent high school graduates, more of whom did not enroll in CCC or Harper in the fall following their application to the program.

Outcome data for this study come from the National Student Clearinghouse (NSC). The NSC collects data from colleges and universities around the country on students' enrollment and degree attainment. As of the fall of 2011, NSC records were reported to include 93 percent of college enrollment nationally (Dynarski, Hemelt, & Hyman, 2015). The NSC give us the most comprehensive information on where study students enroll and ultimately receive degrees, allowing us to track outcomes for both the treatment and control groups regardless of whether they enroll in CCC or Harper.

While the primary outcome of interest in the study is students' three-year graduation or four-year college transfer rate, enough time has not yet elapsed to report on these outcomes. Instead, in this paper, we present early indicators of student success, including enrollment in college, full-time enrollment, persistence to a second term, and full-time persistence to a second term. For these outcomes, we leverage data from the NSC to determine students' enrollment status in the fall and spring subsequent to their randomization (2016-17 for Cohort 1 and 2017-18 for Cohort 2).

In addition to examining three-year graduation or transfer rates, future analyses will examine whether the OMD program increases students' credit accumulation and grades (drawing on administrative records from CCC and Harper), bachelor's degree attainment (according to the NSC), and employment and wages (drawing on data from the Illinois Department of Employment Security). We will also explore program mechanisms, drawing on data from annual student surveys and focus groups, as well as CCC and Harper data on student take-up of campus services (e.g., tutoring) and course-taking patterns.

We estimate both the effect of an offer of a spot in the program (the intent to treat or the ITT effect) and the effect of actually enrolling in the program (the treatment on the treated or TOT effect). We modeled the ITT effect as follows:

$$Y_{ib} = P_{ib}\beta_1 + X_{ib}\beta_2 + \gamma_b + \varepsilon_{ib}$$

Where Y_{ib} is an outcome indicator for individual i in randomization block b , P_{ib} is the treatment assignment indicator for individual i in randomization block b , β_1 is the coefficient for the treatment indicator, X_{ib} is a vector of the control covariates described in Table 1 for individual i in randomization block b , β_2 is a vector of coefficients for control covariates, γ_b is the individual intercept for each randomization block b , and ε_{ib} is the error term for individual i in randomization block b .

We will estimate the TOT effects using assignment to treatment as an instrument for actual program participation (Bloom, 1984; Angrist, Imbens & Rubin, 1996). To that end, we estimate the first stage as follows:

$$T_{ib} = P_{ib}\pi_1 + X_{ib}\pi_2 + \alpha_b + \mu_{ib}$$

Where T_{ib} is the take-up indicator for individual i in randomization block b , P_{ib} is the treatment assignment indicator for individual i in randomization block b , π_1 is the coefficient for the treatment indicator in the first stage, X_{ib} is the vector of control covariates for individual i in randomization block b , π_2 is a vector of coefficients for control covariates in the first stage, α_b is a vector of fixed effects for each of the randomization blocks, and μ_{ib} is the error term for individual i in randomization block b .

The second stage is modeled as follows:

$$Y_{ib} = \hat{T}_{ib}\theta_1 + X_{ib}\theta_2 + \varphi_b + \omega_{ib}$$

Where Y_{ib} is an outcome indicator for individual i in randomization block b , \hat{T}_{ib} is the predicted value of T from the first stage, θ_1 is the estimated effect of the intervention for students who took up the program, X_{ib} is the vector of control covariates for individual i in randomization block b , θ_2 is a vector of

coefficients for the control covariates, φ_b is the individual intercept for each randomization block b , and ω_{ib} is the error term for individual i in randomization block b . All analyses and outcomes were pre-registered with the Open Science Framework prior to accessing outcome data from NSC.

Results

The estimated first-year effects of the OMD program for the first two study cohorts can be found in Table 2 below. Those offered a spot in the OMD program and those who took up the program enrolled in college at a higher rate than those who did not. Enrollment in fall term was 4.9 percentage points higher for individuals offered a spot in the OMD program, an increase of 7 percent over the control group. Spring term enrollment was 5.3 percentage points higher, an increase of 9 percent. The treatment on the treated effects on enrollment were substantially larger. Students who took up the offer of a spot in the program were enrolled at rates that were 16.6 percentage points higher than those in the control group who would have taken a spot in the program if it had been offered. They also enrolled in spring term at rates that were 17.8 percentage points higher. This amounts to a 23 percent and 27 percent increase respectively over the control complier mean.

Table 2. ITT and TOT Effects for Year 1 Outcomes

Outcome	N	Control Mean	ITT	Control Complier Mean	TOT
Fall Enrollment	4257	0.673	0.049** (0.0153)	0.734	0.166** (0.0535)
Spring Enrollment	4257	0.601	0.0528*** (0.0147)	0.651	0.178** (0.0564)
Fall full-time enrollment	4257	0.418	0.0533*** (0.0148)	0.509	0.180*** (0.0513)
Spring full-time enrollment	4257	0.344	0.0432*** (0.0113)	0.418	0.146*** (0.0374)
Persistence	4257	0.556	0.0614*** (0.0142)	0.596	0.207*** (0.0518)
Full-time Persistence	4257	0.278	0.0447*** (0.0111)	0.323	0.151*** (0.0374)

NOTES: Robust standard errors in parenthesis. *** p<0.001, ** p<0.01, * p<0.05, + p<0.1. All regressions include randomization block fixed effects. Control covariates include baseline characteristics listed in Table 1.

The program had a statistically significant impact on *full-time* enrollment in both the fall and spring semesters as well. Full-time enrollment in the fall term was 5.3 percentage points higher for those offered a spot in the program than those in the control group and 4.3 percentage point higher in the spring term. This amounts to a 13 percent increase over the control group mean. The treatment on the treated effect for full-time enrollment in fall term was 18.0 percentage points and 14.6 percentage points for spring term, a 35 percent increase over the control complier mean. These increases in full-time enrollment are larger than the magnitude of the estimated effects of the CUNY ASAP program in year one, which found an 11 percentage point increase in full-time enrollment (Scrivener et al., 2015).³

Finally, the program had a statistically significant impact on both overall first-year persistence and full-time persistence, defined as enrollment in both fall and spring semesters. Overall persistence rates were 6.1 percentage points higher for those offered a spot in the OMD program, an 11 percent increase over the control group mean. Likewise, overall persistence among those who took up the program was 20.7 percentage points higher, a 35 percent increase over the control complier mean. Again, these results were of a larger magnitude than the findings from the first year of the CUNY ASAP study, which found an increase of 10 percentage points in the first year (Scrivener et al., 2015). Full-time persistence was 4.5 percentage points higher for those offered a spot in the program, a 16 percent increase over the control group mean. For those that took up the offer of a program spot, these effects increased to 15.1 percentage points, a 47 percent increase over the control complier mean.

To begin to unpack what is driving the impact of the OMD program, we examined subgroup effects for two important groups of students: those who apply to the OMD program when they are still in high school and those who apply when they are already enrolled at an institution served by OMD. Table 3 details the intent to treat effects for these two subgroups. Across all six first-year outcomes examined, the point estimates for high school students were larger than those for community college students. However,

³ Differences in program implementation (i.e., CUNY administers the program directly to its students) resulted in the CUNY ASAP program having nearly perfect program take-up, so the TOT effects from our study are most comparable to the effects estimated in the study of the CUNY ASAP program.

these differences were not statistically significant. Further, the intent to treat effects of the program on fall enrollment, spring enrollment, and full-time fall enrollment are only statistically significant for the high school student subgroup. This could be driven by the larger size of the high school student subgroup or the lower control group means for this group, providing more room for improvement by the program. The fact that the program appears to have only improved fall term enrollment for high school students is perhaps not surprising as the current community college students had already navigated the initial enrollment process.

Table 3. Intent to Treat Effects for High School and Continuing Community College Students

Outcome	High School Students			Current Community College Students			Difference
	N	Control Mean	ITT	N	Control Mean	ITT	
Fall Enrollment	2,534	0.617	0.069** (0.0198)	1,723	0.759	0.020 (0.0231)	0.049
Spring Enrollment	2,534	0.537	0.069** (0.0200)	1,723	0.699	0.027 (0.0220)	0.042
Fall full-time enrollment	2,534	0.382	0.061** (0.0189)	1,723	0.475	0.040 (0.0237)	0.021
Spring full-time enrollment	2,534	0.297	0.048** (0.0152)	1,723	0.414	0.034+ (0.0187)	0.014
Persistence	2,534	0.498	0.070*** (0.0193)	1,723	0.644	0.048* (0.0226)	0.022
Full-time Persistence	2,534	0.252	0.049*** (0.0132)	1,723	0.317	0.036+ (0.0198)	0.013

NOTES: Robust standard errors in parenthesis. *** p<0.001, ** p<0.01, * p<0.05, + p<0.1. All regressions include randomization block fixed effects. Control covariates include baseline characteristics listed in Table 1.

The subgroup differences are even more notable when looking at the treatment on the treated effects. The take-up rates differed substantially between the two subgroups. Of the 1,036 current community college students in the analytic sample who were offered a spot in the One Million Degrees program, 497 enrolled in the program (48 percent). By contrast, only 20 percent of the high school students in the analytic sample offered a spot in the program ultimately enrolled (229 out of 1,133). Assuming the program only affects those that actually enroll, this means that the already bigger ITT

effects that we see for high school students were driven by a smaller portion of the sample than the ITT effects we observe for the current community college students. As such, the treatment on the treated effects across all outcomes, detailed in Table 4, are substantially larger for the high school students in our sample. All of these differences are statistically significant at conventional levels.

Table 4. Treatment on the Treated Effects for High School and Continuing Community College Students

Outcome	High School Students			Current Community College Students			Difference
	N	Control Complier Mean	TOT	N	Control Complier Mean	TOT	
Fall Enrollment	2,534	0.515	0.376*** (0.102)	1,723	0.860	0.044 (0.0481)	0.333**
Spring Enrollment	2,534	0.411	0.377** (0.117)	1,723	0.788	0.06 (0.0465)	0.318*
Fall full-time enrollment	2,534	0.400	0.329** (0.103)	1,723	0.582	0.086+ (0.0483)	0.243*
Spring full-time enrollment	2,534	0.310	0.262*** (0.0653)	1,723	0.485	0.074+ (0.0411)	0.188*
Persistence	2,534	0.381	0.38*** (0.109)	1,723	0.719	0.104* (0.0467)	0.276*
Full-time Persistence	2,534	0.255	0.266*** (0.0551)	1,723	0.371	0.079+ (0.0424)	0.187**

NOTES: Robust standard errors in parenthesis. *** p<0.001, ** p<0.01, * p<0.05, + p<0.1. All regressions include randomization block fixed effects. Control covariates include baseline characteristics listed in Table 1.

Discussion

This paper presents early findings from a randomized controlled trial studying the effectiveness of a comprehensive support program designed to address the financial, personal, academic, and professional barriers community college students face in attaining their associate's degree. We find that the program significantly increases students' enrollment and full-time enrollment in college as well as their persistence and full-time persistence to spring term. The estimated magnitudes of these effects exceed those found in a randomized controlled trial of a similar comprehensive program, CUNY ASAP. While we need to wait until we are able to measure the effects of the program on graduation before we

make our final conclusions about the efficacy of the One Million Degrees program model, the fact that the ASAP study found that that program ultimately doubled the three-year community college graduation rate underscores our optimism about these early findings. Future work will examine the effect of the program on credit attainment, campus service utilization, three-year associate's degree attainment, transfer rates, bachelor's degree attainment, and employment outcomes.

Our early findings included some surprises even for the One Million Degrees program team. First, the program has traditionally conceptualized their model as a college support and persistence program, rather than a college access program, as the bulk of support services students receive are available only when students arrive on campus. However, the effects of the program on enrollment, driven primarily by high school students, has led the team to rethink what the active ingredients of the program are and when the program treatment truly begins. Once students are accepted into the One Million Degrees program, for example, program staff persistently engage them over the summer, welcome them to the community, and provide supportive nudges to help ensure that they register for classes and submit needed financial aid forms. Further, in order to be fully accepted to the program, prospective students must attend an in-person intake meeting with OMD staff and attend a celebratory OMD Scholar Orientation with other admitted scholars from their cohort. While the program team traditionally viewed these activities as recruitment, the early results from the study have led them to see how high-touch engagement during this period has been essential for ensuring graduating high school seniors complete critical college enrollment tasks. By serving as a trusted bridge and linkage for students during a period of potential disengagement, OMD is providing resources to help ensure that students enroll in college at all.

Further, engaging high school students has historically been viewed as more challenging for the OMD team. Given lower program take-up rates and lower overall success in college for this group, program staff were unsure about the magnitude of impact the program would have; however, the early

findings from our study have led the program team to rethink this assessment and consider how to differentiate the way they serve this unique group of students.

Assuming these early findings are indeed predictive of significant program effects on degree attainment, we believe this study contributes to a broader literature demonstrating the effectiveness of comprehensive interventions designed to address the multiple barriers to degree attainment that community college students face just before and during their time in school. By demonstrating the effectiveness of this type of programming in a new setting and with a new management structure (i.e., programming run by a non-profit organization rather than the college itself), we hope to provide evidence of alternative approaches to bringing these supports to scale.

Like any comprehensive program, early evidence of the effectiveness of the OMD program has raised questions about which program component or components are most critical to success. Future work will begin to explore this question, drawing on data from student surveys and college administrative records of service uptake and course-taking patterns. However, the growing body of evidence of comprehensive program effectiveness, relative to the more meager evidence of the effectiveness of programs that just address one barrier students face, suggests that the comprehensive nature of these programs may be critical. As one scholar put it, *“For me, it’s not just one thing, it’s all things. They all seem to work together. Without the development sessions, you wouldn’t have a coach, and everything touches everything. It comes full circle.”* Future work should continue to explore the most effective and cost-effective bundle of services that can substantially move outcomes for community college students.

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