

Moving from Access to Success:

An Evaluation of Bottom Line's College Access and Success Programs

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EXECUTIVE SUMMARY

Program Overview

For the last 13 years, Bottom Line has provided low-income and first generation prospective college students in the Boston metropolitan area with personalized guidance and support services. Bottom Line's services are designed to help students apply to, enroll in, and graduate from four-year colleges. Its services for students are twofold: it operates a College Access program that provides support to students as they are applying to and choosing colleges and a College Success program that provides one-on-one support to students throughout college. As Bottom Line expands the number of students that it works with and the locations where it works, it will grapple with questions of the extent and success of its programs. A question of particular concern to Bottom Line is how successful it is in helping students obtain a college degree. A 2008 study indicated that only 35 percent of students who graduated from a Boston public high school and enrolled in college in 2000 obtained a post-secondary degree within 6 years, a percentage below the national average of 43 percent (Boston Private Industry Council, 2008). Given these numbers, it is imperative that Bottom Line has additional information on how well it is helping its students enroll in and graduate from college. This evaluation seeks to provide Bottom Line with essential information on the experiences of the students that it serves and the impact of its programs on their lives.

Research Design

Using data on the classes of 2002-2008, this report explores the background of the students served by Bottom Line's College Access program, the types of colleges that these students attend, the persistence of these students in college, the rate at which these students graduate, and

the ways in which their persistence and graduation differ by their background and the characteristics of the schools that they attend. This report also estimates the effect of Bottom Line's College Success Program on the probability that a student graduates from college by attempting to make an apples-to-apples comparison of students who participate only in Bottom Line's College Access Program versus students who participate in both Bottom Line's College Access and College Success Programs. Finally, this report explores the ways in which College Success Program participants who left college describe why and how they left.

Findings

To provide Bottom Line with useful information on the extent and impact of its programs, this evaluation set out to answer three key research questions. The findings to these questions are as follows:

1. What are the post-secondary participation patterns of Bottom Line's College Access-only students?

Who participates in Bottom Line's College Access Program and where are they attending college?

Bottom Line's Access Program serves students who are mostly low-income, first generation college students and students of color. The students commonly attend four-year private non-profit institutions located in suburban or urban areas¹.

What are their persistence patterns?

Twenty-six percent of students who participate only in the Access Program obtain a college degree within four years, and 45 percent obtain a degree within six years. Of the students who leave college, only about half leave by the end of their first year. Enrollment data show that students are leaving college at all points in their post-secondary years.

¹ Data from the Integrated Post-Secondary Education Data System (IPEDS) on the characteristics of the post-secondary institutions attended by Bottom Line's participants is incomplete and may not accurately reflect the characteristics of the institutions that students attend.

What school-level and student characteristics are associated with Access-only students leaving college?

There are no apparent patterns in terms of a student's background or the characteristics of the schools that they attend that are associated with their departure from college.

2. How does the likelihood of graduation differ for students who participate in Bottom Line's College Success program versus students who only participate in Bottom Line's College Access program?

Who participates in Bottom Line's College Success Program and where are they attending college?

Bottom Line's Success Program serves students who are mostly low-income, first generation college students, and students of color. The students commonly attend four-year private non-profit and public institutions located in suburban or urban areas.

What is the effect of Bottom Line's College Success Program on college graduation?

Forty-five percent of students who participated in the Access and Success Programs obtained a college degree in four years and 73 percent obtained a college degree in six years, compared to 26 and 45 percent, respectively, of Access-only students. When comparing students who participated in Bottom Line's College Access and Success Programs to similar students who participated only in Bottom Line's College Access Program, participation in the College Success Program is positively associated with a 17 to 29 percentage point increase in the probability that a student will graduate in 4 years and a 27 to 43 percentage point increase in the probability that a student will graduate from college within 6 years. That is, for every 100 students who participate in both the Access and Success Programs, 42 to 47 will graduate in 4 years and 73 to 82 will graduate in 6 years. For every 100 students who participate only in the Access Program, 23 to 37 will graduate in 4 years and 39 to 48 will graduate in 6 years.

What school-level and student characteristics are associated with the effect of the Success Program?

The effect of Bottom Line's College Success Program on the probability that a student will graduate in 4 or 6 years appears to be the same for different types of students at different kinds of post-secondary institutions.

3. Of the Success students who do not persist to degree completion, what do they report as their reasons for leaving?

Of the 780 students who participated in Bottom Line's College Success Program between 2002 and 2008, 59 of them left college and did not return as of fall 2010. Students described their reasons for leaving college as being related to issues external to their campus life, academic transition, economic frustration, and temporary administrative roadblocks.

Conclusion

Attending and graduating from college has become increasingly important in the lives of young adults who are striving to become full-fledged economic and civic participants in American society. As an organization, Bottom Line prioritizes the success of the young adults who participate in its program. In addition to providing valuable resources to students as they apply to and enroll in college, its efforts to help students succeed in college are clearly paying off. Students who participate in Bottom Line's Success Program graduate from college at markedly higher rates than similar students who participate only in Bottom Line's Access Program. Helping students succeed in and graduate from college is the ultimate goal of Bottom Line's work. The evidence from this report demonstrates that continuing to provide support to students after getting in to college is related to substantially higher rates of success in college. As Bottom Line, and any other organization involved in this work, moves forward, it should consider how to prioritize efforts that best support improving the prospects of youth on the path to adulthood, paying particular attention to the relative effectiveness of programs that are designed to get students into college and programs that are designed to support students through college.

Introduction

For today's students, the amount of schooling required to be a full-fledged participant, economically and civically, in American society extends beyond the traditional K-12 curriculum. The US labor market currently has an hourglass shape, with plenty of high-wage jobs at the top for those with the requisite education and skills and plenty of low-wage, low-skill jobs at the bottom (Murnane & Levy, 1996). In our bifurcated labor market, there is a growing payoff to a college degree. The average annual earnings of a college graduate are 62 percent more than the average annual earnings of a high school graduate, a difference of nearly \$20,000 annually (in 2005 dollars). The costs of not completing college for today's students are clear, though students are not always aware of this reality.

The national portrait of college student success is bleak. Of students who enroll in a 4-year college or university, only 46 percent obtain a bachelor's degree within five years (NCES, 2003). Among those enrolling in 2-year colleges or universities, the problem is even more acute; only 28 percent obtain an associate's degree within five years (NCES, 2004). There are distinct and unequal patterns of college departure among racial and ethnic groups as well as across socio-economic strata. The proportions of students obtaining a bachelor's degree are even lower for students of color, low-income students, and non-traditional students; for example, only 37 percent of African American students obtain a post-secondary degree within 5 years as opposed to 49 percent of White students and only 44 percent of low-income students obtain a post-secondary degree within 5 years as opposed to 53 percent of high-income students (NCES, 2004). Locally, a 2008 study indicated that of the graduates from public high schools in Boston in 2000 who enrolled in college, only 35 percent obtained a post-secondary degree within 6 years (Boston Private Industry Council, 2008). With the monetary payoff to degree completion

increasing as we transition to a “soft skills” economy (Murnane & Levy, 1996), the dynamics of college departure present troubling implications regarding the capacity of different members in society to lead successful adult lives. In addition to monetary rewards, research has shown that post-secondary education has positive effects on one’s health, such as maternal birth weight, and one’s civic engagement, such as voter participation and support for free speech (Curie & Moretti, 2003; Dee, 2004).

Seeking to improve the aforementioned conditions, Bottom Line is dedicated to increasing the number of low-income and first generation students who attend and complete college. For the last 13 years, Bottom Line has provided low-income and first generation prospective college students in the Boston metropolitan area with personalized guidance and support. This evaluation seeks to explore the impact of Bottom Line on the lives of its participants through examining their post-secondary educational experiences.

Program Overview

In 1997 Bottom Line started in a small office in New Mission High School and served 25 students that year, providing them with individualized guidance and support in their College Access Program. Today, Bottom Line has its own offices in the Jamaica Plain neighborhood and serves over 500 high school seniors at 38 high schools in the greater Boston area and 125 in Worcester through its College Access Program as well as over 750 college students through its College Success Program at colleges throughout Massachusetts. Despite Bottom Line’s rapid expansion over the past 13 years, there is still a surplus demand for its services among prospective college students; every year they turn away hundreds of students, but remain committed to expanding their organization.

Bottom Line requires that students be either low-income or of the first generation in their family to attend college to be eligible for its College Access Program. Since 2007 Bottom Line has required that students have a minimum high school grade point average of 2.5 so that the organization can provide support to students who have demonstrated, by this measure, a certain level of college readiness. To support students during the 2009-2010 school year, Bottom Line employs a staff of 23 at its Boston and Worcester locations, 17 of whom work directly with students as counselors. The same counselors who work with students in Bottom Line's College Access Program also work with students in Bottom Line's College Success Program.

College Access Program

Starting in the spring of their junior year up until the fall of their senior year, prospective college students sign up for Bottom Line's College Access Program. The program usually reaches capacity sometime in late September. During this time, students come into Bottom Line's offices to have a 75 minute "intake" meeting. During this meeting, students provide Bottom Line's counselors with an extensive array of information about their interests and backgrounds. The primary purpose of this first meeting is for students to generate a college list, which they will then research and bring the results of that research to their next meeting.

During the second meeting that students have with Bottom Line, counselors use the research that students have done on the colleges on their list to have a conversation about their admissions chances and how each college might be a good or bad fit for a student's interests, abilities, and life situation. In this second meeting, counselors also go over filling out the common application, soliciting teacher recommendations, and starting the essay writing process. The next meeting, and potentially next few, between a Bottom Line counselor and student

focuses on the essay writing process. The final meeting(s) of the fall semester are oriented around wrapping up and sending out student applications.

Students also come in for additional meetings in the early spring regarding financial aid, scholarships, and filing out the FAFSA. The final meeting that students have with Bottom Line in the spring is centered on the college decision making process. Throughout this whole time, each interaction that a student has with a Bottom Line staff member is tracked in Bottom Line's database, which keeps extensive records on students' backgrounds and notes on staff interactions.

College Success Program

At select four-year colleges² and universities in Massachusetts (18 such schools in 2009-2010, and 22 in 2010-2011), Bottom Line facilitates a cohort-based student success program. In the summer following their senior year, students in Bottom Line's College Access Program who will attend one of those colleges or universities are invited to participate in Bottom Line's College Success Program. Over the course of the summer, students invited to the program are required to attend four transition events in order to help get them ready to succeed on campus. The College Success Program focuses on four categories around which one-on-one counseling sessions are organized: Degree, Employability, Aid, and Life (DEAL). Based on these sessions, counselors rate students on a series of indicators for each category and if a student is at-risk by any indicator, counselors provide students with strategies on how to improve their chances of success. Counselors travel to a student's campus and arrange one-on-one meetings with students. Counselors contact students roughly twice a month, sometimes meeting with them during their

² Bottom Line serves students at a limited number of two-year institutions as well.

campus visits and other times connecting with them via email, or phone. As with the College Access Program, all interactions with students are tracked in Bottom Line's database.

The program operations of Bottom Line's College Access and Success programs are designed to provide students with the critical supports and resources that they need to enroll in and graduate from college. In describing the College Success Program's theory of action, one staff member said:

I think we can enhance the experience of students. We help them get a degree and get employment. There are little things that we see time and time again that could inhibit students. The sharpest students face obstacles that we try to remove. We make sure that they are getting a lot of support from the school. Some of the biggest complaints are that students don't feel like they belong or fit in. I think that having that lifeline to someone who does understand what they are going through is important. They know that they always have someone. I think we try to hire counselors who care enough about students that they would do anything to help that student succeed. It's a huge emotional and time investment. But you see the payoff every day.

As research literature suggests and as the findings below will demonstrate, Bottom Line's College Success Program does provide students with resources that support their success in college.

Literature Review

There is a constellation of factors that contribute to a student's departure from college, and this knowledge can be divided into two competing explanations: the attribution that student departure from college is largely a result of background characteristics, such as inadequate prior academic preparation, and the theory that student departure from college is determined by a student's social and academic experiences in college. In the former paradigm, the persistence of a student can be seen as a product of a student's background. In this line of reasoning, the aspects of a student which are shaped prior to entering college such as race, gender, socio-economic

status, academic ability, family background, high school academic performance, college entrance exam scores, and high school curriculum matter most in determining whether or not a student will persist (Adelman, 1999).

Students in the U.S. are enrolling in higher education unprepared for the academic rigors of post-secondary work; 20 percent of all students who enroll in public four-year colleges are required to complete remedial coursework (NCES, 2003). Even though their reasons for leaving college are myriad, only 46 percent of four-year college students obtain a bachelor's degree within five years (NCES, 2004). The effects of remediation on student persistence are equivocal (Bettinger & Long, 2007), and remediation comes at a cost. Often times, remedial coursework is not credit bearing and students must pay for these non-credit bearing courses. There is an institutional cost to remediation as well; it is estimated that public colleges spend 1 billion dollars every year on remedial education (Breneman & Harlow, 1997).

Research suggests that there is a fundamental mismatch between the post-secondary educational aspirations of high school students and the academic pathway that they pursue in secondary school; in an era of open enrollment at many community colleges and the mantra of "college for all", many students are unaware of the type of course work necessary to prepare them for college work (Rosenbaum, 2001). Academic preparation in middle and high school is critical to a student's ability to persist in college and move towards degree completion (Adelman, 1999). Still, the standard high school graduation requirements do not prepare students for the rigors of college level work at most institutions (Venezia, Kirst, & Antonio, 2003).

Recent scholarship focusing on public four-year institutions, however, has challenged the idea that students enroll in post-secondary institutions which are too challenging for them. In

their study of four-year flagships, William Bowen, Matthew Chingos, and Michael McPherson (2009) find that many students, particularly low-income students and students of color, actually enroll in institutions that are less selective than the ones which they are otherwise qualified to attend, a phenomenon that they refer to as “undermatching”. Though this phenomenon may seem paradoxical given the aforementioned literature on college preparedness, it makes more sense when one considers the extent to which many low-income and first generation college students are under informed about their college choices (Cushman, 2006a; Cushman, 2006b).

Furthermore, low-income students are particularly sensitive in their college-going decisions with respect to cost, an issue that can be exacerbated in the face of misinformation (Kane, 1999).

Unfortunately, the phenomenon of “undermatching” may only illustrate that many students have a difficult experience in choosing a college that is a good fit (NPEC, 2007).

Some scholars argue that what happens to students *after* they arrive at college matters most in determining whether or not they persist after the first year of college. In this paradigm, it is how well a student acclimates to the social and academic environments of a school that matters most in a student’s persistence. Working from others’ empirical research to develop a theory of student departure from college, Tinto (1993) draws upon Arnold Van Gennep’s anthropological study of rites of passage in society and Emile Durkheim’s theory of suicide to explain college departure. He posits that students are likely to depart from college if they cannot successfully integrate and establish membership within the communities of the college. Tinto then theorizes that there are two systems of the college, the academic and social systems, in which students, faculty, and staff engage in formal and informal interactions and that it is into both of these systems that students must integrate lest they depart.

Other literature challenges and expands upon the framework that Tinto set forth for examining students' post-secondary experiences with reference to their success in college. In their 1991 study, Nancy Christie and Sarah Dinham examine student persistence by looking at the institutional and external influences on social integration in the first year of college among traditional and non-traditional students at a single institution. They find that, contrary to Tinto's theories, external influences can have a profound impact on a student's academic trajectory. Other scholars have complicated the framework set for by Tinto, primarily because it is grounded in literature that no longer represents the diversity of today's college students. Sean Harper (2008) does exactly that in his study of high-achieving African American male students, which focuses on the resiliency of students that Tinto frames as at-risk.

What this literature suggests about Bottom Line's programming is twofold. First, the College Access Program may mitigate students' lack of information about college and help students attend a college that is an appropriate fit, academically and financially. Second, Bottom Line's College Success Program may help students navigate the complex social and academic systems of college, which could reduce their risk of leaving before graduation. The following research questions examine whether or not the unique programmatic elements of Bottom Line's services facilitate students' success in college.

1. What are the post-secondary participation patterns of Bottom Line College Access students?
 - a. Who participates in Bottom Line's College Access Program and where are they attending college?
 - b. What are their persistence patterns?
 - c. What school-level and student characteristics are associated with Access students leaving college?
2. How does the likelihood of graduation differ for students who participate in Bottom Line's College Success program versus students who participate only in Bottom Line's College Access program?

- a. Who participates in Bottom Line’s College Success Program and where are they attending college?
 - b. What is the effect of Bottom Line’s College Success Program on college graduation?
 - c. What school-level and student characteristics are associated with the effect of the Success Program?
3. Of the Success students who do not persist to degree completion, what do they report as their reasons for leaving?

Methodology

Sample

The data for this evaluation primarily come from Bottom Line’s databases on its Access and Success students. For the purposes of this evaluation, two groups of students were examined: those who participated only in the Access Program and those who participated in the Access and Success Programs. There are 2068 students from Bottom Line’s 2002-2008 cohorts used in the analyses: 1288 students participated only in the Access Program and 780 students participated in both the Access and Success Programs.

Table 1. Participants in Bottom Line’s College Access and Success Programs by cohort (n=2068).

Class	Access Only	Success	Total
2002	118	90	208
2003	118	68	186
2004	145	67	212
2005	293	98	391
2006	215	143	358
2007	209	143	352
2008	190	171	361
Total	1288	780	2068

Data from Bottom Line's databases provides a rich set of background variables for each participating student, including high school GPA, SAT scores, low-income and first generation status, race/ethnicity, and college attended. Using students' social security numbers, Bottom Line has linked students' records with their post-secondary enrollment status using data from the National Student Clearinghouse. To supplement this data, information on the characteristics of the colleges and universities that students attended, from the Integrated Postsecondary Education Data System (IPEDS), was also used. For each student, there is a variable for his or her college's graduation rate, tuition, admissions rate, Historically Black College or University (HBCU) status, enrollment, level (four-year v. two-year), control (public v. private), and urbanicity.

Linking student records to the National Student Clearinghouse is somewhat of an imperfect science and the post-secondary enrollment and graduation statuses of some students in Bottom Line's records are missing. However, due to the diligent efforts of Bottom Line in tracking down post-secondary enrollment data on their participants, there is a relatively complete picture of how participants have fared in post-secondary education. For the subsequent analyses, post-secondary enrollment and graduation data were available for seventy-three percent of the students who participated only in the Access Program and ninety-eight percent of the students who participated in the Access and Success Programs. Analysis of mean differences in the background characteristics of students who have missing data and students who do not have missing data can be found in Appendix 1.³

³ Data on student background characteristics and college characteristics was also missing for some students. This issue is dealt with through regression imputation. For more information on regression imputation, see Alison (2002).

Analysis of Students who Participated Only in the Access Program

The background characteristics of students who participated only in the Access Program and the characteristics of the colleges that they attended were examined. To understand when students who participated only in the Access Program leave college, if they do leave, discrete time survival analysis is used to look at the conditional probability of a student “surviving” to a semester of college (Singer & Willett, 2003).⁴ Discrete time survival allows the use all of the data from the cohorts of 2002-2008 in examining the post-secondary trajectories of students. That is, discrete time survival analysis gives the probability of leaving college in a given semester in college, conditional on having made it to that semester. This method deals with the fact that certain individuals in the dataset are censored; for example, students in the cohort of 2008 do not have data on whether or not they departed school in their 6th semester of college). The relationship between a student’s background and a college’s characteristics and the probability of leaving college in a given semester is also examined. Finally, a linear probability model⁵ using ordinary least squares regression (OLS) is fit to look at the probability of graduating in 6 years for the 2002-2004 cohorts and the probability of graduation in 4 years for the 2002-2006 cohorts, and to see if the probability of graduating differs by student or school characteristics. A Heckman two-step correction is used to test for the sensitivity of estimates to missing outcomes data.⁶

⁴ For all estimates, Huber correction to the standard errors are used to account for clustering of students in schools.

⁵ A linear probability model is used for ease of interpretation. Estimates do not differ substantially from those produced with a logit or a probit model. For more explanation of the linear probability model, please see Angrist & Pischke (2009) pp. 94-99.

⁶ For more information on the Heckman two-step selection correction, see Berk (1983).

Analysis of Students who Participated in the Access and Success Programs

Like the students who participated only in the Access Program, the background characteristics of students who participated in the Access and Success Programs and the characteristics of the colleges that they attended are examined. To obtain an estimate of the Success Program's effect on the probability that a student graduates from college, nearest neighbor propensity score matching is used to match students who participated in the Access and Success Programs to similar students who participated only in the Access Program (Morgan & Winship, 2007). Propensity scores are used to match students on all available background and college characteristics. Students who participated in the Access Only program were ineligible to participate in the Success Program by virtue of the fact that they attended a school that was not served by Bottom Line's Success Program. Thus, the students who participated only in the Access Program make a reasonable apples-to-apples comparison group for students who participated in the Access and Success Programs as they never had the option of participating in the program but are generally similar on unobservable characteristics, such as motivation, to the College Success students. When one has a rich set of covariates on which to match and knows how students were assigned to the treatment (in this case, by not attending a college served by Bottom Line), propensity score estimates approximate those obtained under experimental conditions (Dehejia & Wahba, 1999; Diaz & Handa, 2006). As a sensitivity check to the propensity score nearest neighbor matching specification, the probability of graduating in 6 years for the 2002-2004 cohorts and the probability of graduating in 4 years for the 2002-2006 cohorts is examined and the effect of the program on the probability of graduating is estimated by fitting a linear probability model using OLS regression. The effect of the Success Program on the probability of graduating is also analyzed to determine if it differs by a students' background characteristics or the characteristics of the school that they attend.

Examining Students' Explanations for Leaving College

Using data from Bottom Line's database on its Success students, students' descriptions of why they left college are examined. Notes between counselors and students who left college are coded to look for themes in students' explanations (Maxwell, 2005). Grounded theory is used as a framework to analyze these themes for a better understanding of why the participants in Bottom Line's Success Program who leave college do so (Glaser & Strauss, 1967).

Analysis and Findings

Students who Participated Only in the Access Program

Because of Bottom Line's rapid growth in recent years, students who participated only in the Access Program were unevenly distributed across cohorts. As shown in Table 2, around 10 percent of the sample is in each of the classes of 2002-2004 and 15 to 20 percent is in each of the classes of 2005-2008. Students had an average high school GPA of 3.0 and the average SAT score for students was around 890 for the cohorts who took the SAT when it just had math and verbal sections and around 1320 for the cohorts who took the new SAT with math, reading, and writing sections. Roughly 60 percent of students are low-income and almost 80 percent are first generation college students. The students that participated only in Bottom Line's Access Program are overwhelmingly female (71 percent) and students of color; 51 percent of students identify as Black or African American, 26 percent as Hispanic or Latino, and 12 percent as Asian or Asian American.

Table 2. Background characteristics of participants in Bottom Line’s College Access Program (n=1288).

Variable	n	Mean/Percent
Class of 2002	1288	9.16%
Class of 2003	1288	9.16%
Class of 2004	1288	11.26%
Class of 2005	1288	22.75%
Class of 2006	1288	16.69%
Class of 2007	1288	16.23%
Class of 2008	1288	14.75%
High school GPA	1068	2.97
SAT score (2002-2005)	436	892.26
SAT score (2006-2008)	515	1324.93
Percent low-income	1288	61.41%
Percent first generation	1288	78.80%
Percent male	1287	28.98%
Percent Black or African American	1259	51.07%
Percent White	1259	6.43%
Percent Hispanic or Latino	1259	26.21%
Percent Asian or Asian American	1259	11.52%
Percent Native American	1259	0.24%
Percent other race	1259	4.53%

The average student who participated only in Bottom Line’s Access Program attended an institution that graduated about two-thirds of its students⁷, as shown in Table 3. The average

⁷ Data from the Integrated Post-Secondary Education Data System (IPEDS) on the characteristics of the post-secondary institutions attended by Bottom Line’s participants is incomplete and may not accurately reflect the characteristics of the institutions that students attend.

sticker price tuition faced by students in 2006 was about \$20,000. The average student attended a school that could be considered selective, admitting slightly over half of the students that applied. About 9 percent of students who participated only in the Access Program attended an HBCU. Most students attended mid-size schools with enrollments between 1000 and 10,000 students. Ninety-six percent of students attended a four-year college. A little over two-thirds of students attended a private non-profit institution and a little under one-third attended a public institution. Most students went to college in a city or suburb and only a small minority of students went to school in a rural area.

Table 3. Characteristics of the college and universities attended by participants in Bottom Line’s College Access Program (n=1288).

Variable	n	Mean/Percent
Graduation rate	1007	64.90%
Tuition in 2006	871	\$19,787.66
Admissions rate	940	54.21%
Percent HBCU	1008	9.33%
Percent enrollment <1000	1008	3.27%
Percent enrollment 1000-5000	1008	50.30%
Percent enrollment 5000-10,000	1008	24.40%
Percent enrollment 10,000-20,000	1008	10.71%
Percent enrollment >20,000	1008	11.31%
Percent two-year	1008	4.46%
Percent four-year	1008	95.54%
Percent private for-profit	1008	0.20%
Percent private non-profit	1008	71.43%
Percent public	1008	28.37%
Percent urban	1008	45.24%
Percent rural	1008	8.83%
Percent suburban	1008	45.93%

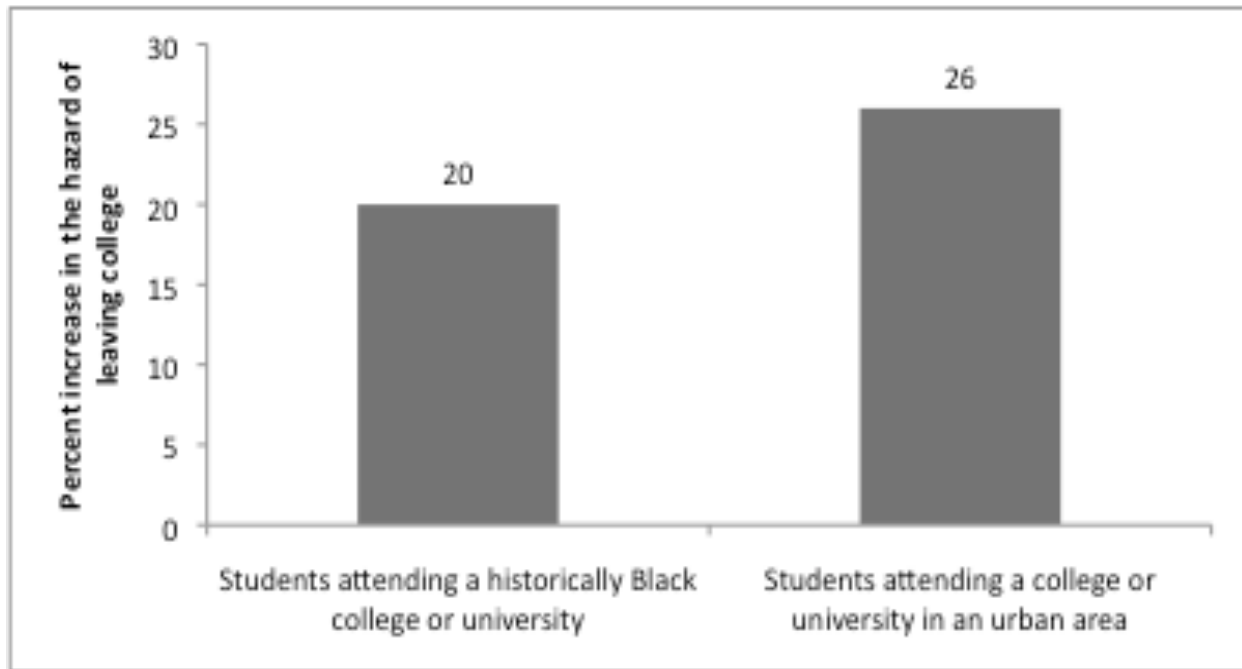
Of the students who left college, 24 percent left prior to completing their first semester and 26 percent left in their second semester. An additional 36 percent of students who left college have left by the end of their second year. What this demonstrates is that, of the students who leave college, only half do so in their first year, roughly a third do so in their second year, and the remaining do so throughout their post-secondary pathways. That student departure happens, in a large part, beyond the first year is confirmed by discrete time survival analysis of a student's conditional probability of surviving to the next semester of college. This analysis suggests that students who participated only in Bottom Line's Access Program leave college at many points in their college careers, not just in their first year, and that one's probability of surviving declines greatly during the middle years of college. Appendix 2 displays the sample survival probabilities for students who participated in Bottom Line's Access Program.

There is some evidence that the hazard of leaving college varies by characteristics of students' backgrounds and the college that they attended. Exhibit 1 below presents the subgroups for which there is a greater hazard of leaving college. Based on the discrete time survival model of the hazard of leaving college in a given semester conditional on making it to that semester, students attending an HBCU have a 20 percent greater hazard of leaving college than students who don't and students who attend a college or university located in an urban area have a 26 percent greater hazard of leaving college than those who don't. Appendix 3 presents hazard ratios for all subgroups of students. There was also some evidence that Asian or Asian American students have a lower hazard of leaving college than White students. However, this hazard ratio falls to 1 – that is, there is no greater or lesser hazard of leaving college – when using imputed⁸

⁸By imputed data, I am referring to data that is regression imputed. That is, I use the existing non-missing data on a student to predict the value of their missing data and run the analysis with these predicted missing values to test the extent to which missing data may be biasing my estimates.

data for student background and college characteristics, suggesting that this finding may be an artifact of missing data.

Exhibit 1. Percent increase in the hazard of leaving college for selected subgroups of students (n=1288).



Of students in the classes 2002-2006, about 27 percent graduated⁹ within 4 years.

Appendix 4 presents the extent to which the probability of graduating may differ, on average, for students with different characteristics and attending different types of schools. Specifically, the probability of graduating is significantly associated with high school GPA, high school class, low-income status, and attending a private for-profit institutions. However, all of these estimates are sensitive to the presence of missing data, with the notable exception of high school GPA. For high school GPA, a one point increase in a student's high school GPA is estimated to correspond to a 14 percentage point increase in the probability of graduating in six years.

⁹ Graduation here refers to degree completion, not necessarily baccalaureate degree completion.

Of the students in the classes of 2002-2004, the six-year graduation rate overall is 45 percent. Appendix 5 presents the extent to which the probability of graduating in 6 years may differ, on average, for students with different characteristics and attending different types of schools. Specifically, the probability of graduating is significantly associated with high school GPA, low-income status, the graduation rate of the college one attends, and college enrollment. However, like the 4-year graduation rates, when estimating these parameters using Heckman's two-step procedure to account for missing outcomes data, these relationships attenuate to zero suggesting that they are an artifact of missing college enrollment data.

Students who Participated in the Access and Success Programs

Bottom Line has also been ramping up its Success Program in recent years and so there is an uneven distribution of students who participated across cohorts. As shown in Table 4 around 10 percent of the sample is in each of the classes of 2002-2005 and around 20 percent of the sample is in each of the classes of 2006-2008. Students who participated in the Success Program had an average high school GPA of 3.2, which is substantially higher than the minimum GPA standard of 2.5 that was initiated in 2007. The average SAT score for students was around 850 for the cohorts who took the SAT when it just had math and verbal sections and around 1360 for the cohorts who took the new SAT with math, reading, and writing sections. Seventy-six percent of students were low-income and 88 percent were first generation college students. Students who participated in the Success Program were overwhelmingly female and students of color; 49 percent of students identified as Black or African American, 30 percent of students identified as Hispanic or Latino, and 13 percent of students identified as Asian or Asian American.

Table 4. Background characteristics of participants in Bottom Line’s College Access and Success Programs (n=780).

Variable	n	Mean/Percent
Class of 2002	780	11.54%
Class of 2003	780	8.72%
Class of 2004	780	8.59%
Class of 2005	780	12.56%
Class of 2006	780	18.33%
Class of 2007	780	18.33%
Class of 2008	780	21.92%
High school GPA	673	3.17
SAT score (2002-2005)	256	852.30
SAT score (2006-2008)	433	1366.86
Percent low-income	777	75.68%
Percent first generation	777	88.29%
Percent male	778	22.88%
Percent Black or African American	778	48.84%
Percent White	778	1.54%
Percent Hispanic or Latino	778	29.95%
Percent Asian or Asian American	778	12.98%
Percent Native American	778	0.00%
Percent other race	778	6.68%

The average student who participated in Bottom Line’s Success Program attended an institution that graduated slightly more than half of its students, as shown in Table 5. The average sticker price tuition faced by students in 2006 was about \$18,000. The average student attended a school that could be considered selective, admitting slightly over half of the students that applied. There is a fairly even distribution of students across schools of different enrollment

levels. Ninety-two percent of students attended a four-year college. Slightly more than half of students attended a private non-profit institution and slightly less than half attended a public institution. Most students went to college in a city and only a small minority of students went to school in a rural area.

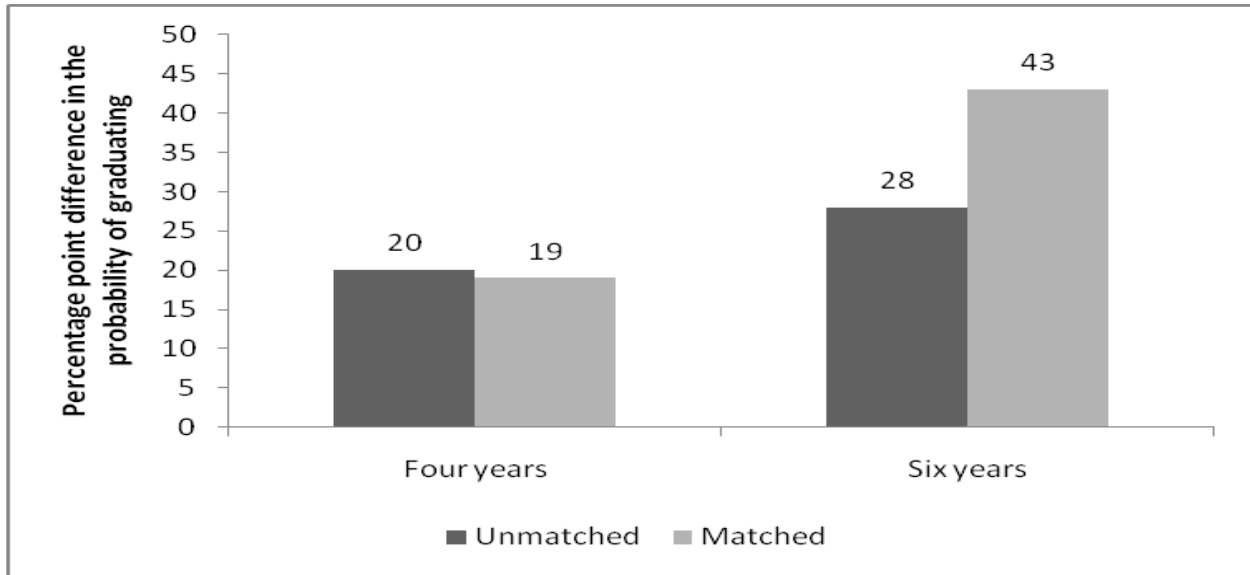
Table 5. Background characteristics of participants in Bottom Line’s College Access and Success Programs (n=780).

Variable	n	Mean/Percent
Graduation rate	711	57.15%
Tuition in 2006	710	\$18,020.17
Admissions rate	644	55.01%
Percent HBCU	711	0.56%
Percent enrollment <1000	711	2.53%
Percent enrollment 1000-5000	711	20.39%
Percent enrollment 5000-10,000	711	21.80%
Percent enrollment 10,000-20,000	711	32.49%
Percent enrollment >20,000	711	22.78%
Percent two-year	711	7.74%
Percent four-year	711	92.26%
Percent private for-profit	711	0.28%
Percent private non-profit	711	50.07%
Percent public	711	49.65%
Percent urban	711	59.78%
Percent rural	711	0.42%
Percent suburban	711	39.80%

Nearest neighbor matching on propensity scores for participation in the Success Program allows a comparison between the probability of graduating for students who participated in Bottom Line’s College Access and Success Programs and the probability of graduating for

similar students who only participated in the College Access Program. Exhibit 2 presents estimates of the effect of the Success Program on the probability of graduating in 6 years for the classes of 2002-2004 and the probability of graduating in 4 years for the classes of 2002-2006, and compares these estimates to the unmatched differences probability of graduating for Access only and Success participants. Participation in Bottom Line's Success program is associated with a large increase in the probability that a student will graduate in 4 or 6 years. For the classes of 2002-2006, 45 percent of students who participate in the Access and Success Programs graduate in 4 years as opposed to 27 percent of students who just participate in the Access program, an unmatched difference of 18 percentage points in the probability of graduating in 4 years for these two groups of students. For the classes of 2002-2004, 73 percent of students who participate in the Access and Success Programs graduate in 6 years as opposed to 45 percent of students who just participate in the Access program, an unmatched difference of 28 percentage points in the probability of graduating in 6 years for these two groups of students. Using nearest neighbor matching, Bottom Line's College Success Program increases the probability that a student will graduate in 4 years by 19 percentage points and the probability that a student will graduate in 6 years by 43 percentage points. Standard errors and other inference statistics are in Appendix 6.

Exhibit 2. Matched and unmatched percentage point differences in the probability of graduating in four and six years for students who participated only in the Access Program and Students who participated in the Access and Success Programs, estimating with nearest neighbor matching on the propensity score for participating in the Success Program.

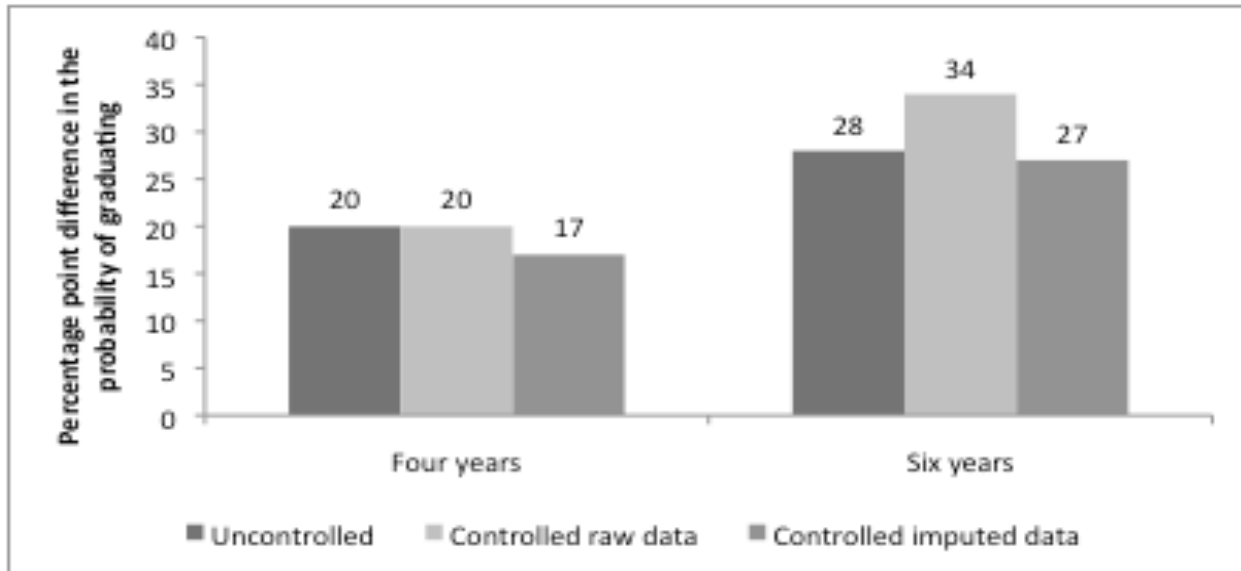


Linear probability models were fit as a check to these large estimates of the program’s effect on a student’s probability of graduating. These models show a student’s probability of graduating as a linear function of their background characteristics and the characteristics of the school that they attend. Linear probability models were also fitted with imputed¹⁰ data to gauge sensitivity to the presence of missing data. There is a 20 percentage point difference in the uncontrolled probability that students who participate in the Success Program will graduate in 4 years compared to students who participate only in the Access Program, as displayed in Exhibit 4 below. Controlling for relevant background and school characteristics, this estimate remains stable around 20 percentage points. There is a 17 percentage point increase in a student’s probability of graduating within 4 years when the model is fitted with imputed data. There is no

¹⁰ Here I am again referring to regression imputed data, a technique that uses non-missing data to estimate the values of missing data on a student’s background and college characteristics.

evidence that the effect of the Success Program on the probability that a student will graduate in 4 years differs by student or school characteristics.

Exhibit 3. Uncontrolled and controlled percentage point differences in the probability of graduating in four and six years for students who participated only in the Access Program and Students who participated in the Access and Success Programs, estimated with linear probability models of a student's probability of graduating.



In terms of students' six-year graduation rates, there is a 28 percentage point difference in the uncontrolled probability that students who participate in the Success Program will graduate in 6 years compared to students who participate only in the Access Program. Controlling for relevant background and school characteristics, this estimate increases to a 34 percentage point difference and is a 27 percentage point difference when using imputed data. There is no evidence that the effect of the Success Program on the probability that a student will graduate in 6 years differs by student or school characteristics. The full details on these models are presented in Appendices 7 and 8. In addition to the relative differences presented in the exhibits above, Table

6 below presents the raw and estimated four-year and six-year graduation rates for Access and Success Students¹¹.

Table 6. Raw and estimated graduation rates for students in Bottom Line’s College Access and Success Programs.

	Success	Access	Difference
<u>Unmatched</u>			
Six-year grad rate	73%	45%	28%
Four-year grad rate	45%	27%	18%
<u>Matched</u>			
Six-year grad rate	81%	39%	43%
Four-year grad rate	42%	23%	19%
<u>Controlled raw</u>			
Six-year grad rate	82%	48%	34%
Four-year grad rate	57%	37%	20%
<u>Controlled imputed</u>			
Six-year grad rate	73%	46%	27%
Four-year grad rate	46%	29%	17%
Unmatched	Compares actual graduation rates of all students with available data		
Matched	Compares actual graduation rates of similar students with available data		
Controlled - raw	Compares the graduation rates of all students with available data, controlling for relevant characteristics of students and the schools that they attend		
Controlled - imputed	Compares the calculated graduation rates of all students including those without available data, controlling for relevant characteristics of students and the schools that they attend		

¹¹ Matching and linear probability model estimates differ because they rely on different assumptions about the nature of the data. Specifically, matching is non-parametric so it does not rely on assumptions of functional form for valid inferences. However, it excludes cases for which there is not common support, i.e. for which there is no match in the comparison group. Linear probability model estimates rely on the assumption that there is a linear relationship between the control variables and the probability of graduating as well as other assumptions that are required for valid inferences from OLS regression.

Students' Explanations for Leaving College

Of the 780 students who participated in Bottom Line's College Success Program between 2002 and 2008, 59 left college and did not return as of fall 2010. Because Bottom Line keeps a record of each interaction that staff members have with students in the Success Program, there is a rich resource of information on how students describe their departure from college. In analyzing these records, several salient themes emerged about why students were leaving college. A discussion of these themes is broadly organized as follows: issues external to a student's campus life, academic transition, economic frustration, and temporary administrative roadblocks.

Issues External to a Student's Campus Life

Many Bottom Line counselors reported that students were engaged with issues outside of their life at college that affected their experience in college. Some students made decisions about their post-secondary careers influenced by a significant other. Other students had home lives beset with troubles. This could be a particularly difficult obstacle for students who relied on their parents for financial assistance or lived with their parents while they commuted to school. One counselor describes a student's trouble at home as such:

Amy lives with her mother, the mother charges her rent and when Amy does not obey her (goes out and comes backs really late, parties too much) the mother tells her that she will kick her out of the house. As of now everything is going well, we'll see what happens in the future.¹²

¹² Pseudonyms are used in place of students' names throughout this section to protect student anonymity.

Academic Transition

Counselors indicated that there was a mismatch between the level of work that students thought was required of them and the level of work that their college level classes actually demanded. Before beginning college, many students spoke of feeling unchallenged academically in their high school classes. While in college, many students did not understand how grades on their assignments would translate to their final course grades. Though there was ample evidence that counselors tried to push students to think more about their academic progress in their classes, many students did not expect to fail a course. For example, one student, Arturo, reported to his counselor midway through the semester that he expected to get all “Bs” in his courses. When his grades for that term came in, he had failed two of his courses, one of which he had not completed the work for. His counselor noted that, “His professor states that he is missing quite a few assignments, but Arturo states that he has them.”

Economic Frustration

College is an investment in one’s future. Students are expected to invest their time in the present into something that will pay off far in the future. However, in late adolescence, many students have what economists would call a “high discount rate”; they value benefits in the immediate future more than benefits that accrue farther down the line, like those from a college degree (Kane, 1999). Among the Success students who left college, there was some evidence that they were exhibiting a high discount rate. Students were leaving college to take jobs that were immediately accessible or they were spending their part-time employment earnings on

things other than their education. A counselor's notes about Kim represent this phenomenon among Success students who left college:

Kim is not doing well...she had to drop out of school. She paid for her classes, but then she could not afford the books. The interesting thing is that she bought a car. I asked her about that investment and her education. She just kept complaining that her parents are not helping her. She promised me that next semester she will take one class and will save money for books. She said that she needs to return to school because she does not want to end up with a bad job.

Temporary Administrative Roadblocks

Much of Bottom Line's Success Program's counselors' time is spent helping students navigate the complex and various impediments presented by college life. Many students found tasks such as registering for a restricted class, submitting immunization forms, or making sure that their balance at the bursar's office was filled to be daunting. Though Bottom Line counselors presented students with strategies to overcome these barriers, their occurrence was salient throughout the records of students who left college. For one student, a small balance on his student bill caused him to leave school for the semester in 2007 and as of the fall of 2010 he had not returned:

He is not in school this semester because he's still getting his financial aid set. He plans to be back in school in January. He turned in his mother's tax forms and made any necessary corrections on line. He's started paying [his school] back out of pocket; it's only \$1200 and should be able to pay it off this semester before he's back in school.

Discussion

It is not known how students who participated only in Bottom Line's College Access Program would have fared in college had they not participated in the program. These students were not compared to a similar group of students who did not participate, and so this report's findings cannot speak to the effect of this program on college persistence and graduation.

However, the information on what colleges students from the program attend and what their post-secondary trajectories look like is useful to both Bottom Line and the colleges that its students attend. Students from Bottom Line's Access program are going to predominantly four-year colleges and to mostly private non-profit schools. The schools that they attend can be considered selective, and these schools, on average, graduate roughly about two-thirds of the students that they enroll. As Bottom Line contemplates the counseling that it gives to students around college going, it should keep in mind the positive relationship between a school's selectivity and the success of the students who attend, especially among four-year institutions (Bowen, Chingos, & McPherson, 2009). That is, even when one takes into account the types of students that attend selective institutions, more selective institutions are better at graduating students. Likewise, given that, on average, the schools that students in Bottom Line's Access Program attend graduate roughly about two-thirds of the students that they enroll, Bottom Line would be wise to continue to track the success rate of the schools in which its Access students enroll.

Students who participate only in Bottom Line's College Access Program leave college at all points in their post-secondary trajectories. This finding is important because much of the literature on college success emphasizes the extent to which students leave college in the first year (Tinto, 1993). This is not the case with Bottom Line's Access Program's students. Only about half of the students who leave do so in their first year, about a third leave in their second year, and the likelihood of their continuation in college actually declines in the middle years of college. As Bottom Line thinks about how to best support their Access students in college, it should bear in mind that exclusively frontloading programming in the first year of college might not align with the reality of how students experience college departure.

Bottom Line's Success Program has had much success itself in helping students graduate from college. When comparing students who participated in Bottom Line's College Access and Success Programs to similar students who participated only in Bottom Line's College Access Program, participation in the College Success Program is estimated to be positively associated with a 17 to 20 percentage point increase in the probability that a student will graduate in 4 years and a 27 to 43 percentage point increase in the probability that a student will graduate from college within 6 years. This estimate of the College Success Program's impact is large by any measure, especially for an educational intervention, and thus should be interpreted with caution. Although the offer of enrollment in the Success Program is arguably unrelated to a student's post-secondary outcomes, there could be other confounding factors that are not accounted for in this analysis. Propensity score matching can yield valid estimates of a program's impact with a rich set of matching variables and a strong understanding of the process by which students were assigned to the treatment (Dehejia & Wahba, 1999; Diaz & Handa, 2006). It is possible that the right set of covariates was not examined or that the assignment process is not understood well enough to produce an unbiased estimate of the Success Program's impact. Bottom Line may want to consider other methods for assigning students to the Success Program and evaluating effectiveness in the future, particularly methods that would allow for clearer estimation of a causal impact of the program.

Still, it is important to note the direction in which estimates of the effect of Bottom Line's Success Program move when controlling for factors that might upwardly bias them. That is, estimates of the impact of Bottom Line's Success Program actually *increase* when students are matched or when controlling for the characteristic of students and the schools that they attend. Normally, we would expect the estimates to *decrease* with this type of control. This suggests two

things. First, there is a certain amount of assurance that the impact of the Success Program above and beyond the Access Program on the probability of graduating is large and positive. The second is that Bottom Line's Success Program is actually helping students graduate more than one would expect. Further, since there are no differences in the effect of the Success Program by the characteristic of students or the schools that they attend, the Success Program is serving all of its participants equally well. The Success Program is no less effective for students who did well in high school than it is for students who did not do as well in high school; it is no less effective for students who attend selective private colleges than it is for students who attend less selective public institutions.

Another consideration that comes forth from this study is that students who participate in Bottom Line's Success Program graduate from college at markedly higher rates than those who participate only in Bottom Line's Access Program. It is not reasonable to conclude that students who participated only in Bottom Line's Access Program are not receiving any benefit from the program in terms of graduating from college; they could actually have been graduating at a lower rate. There is, however, a large improvement to the graduation rate of students who participate in the Success Program above and beyond the Access Program. If Bottom Line's ultimate goal is to help students graduate from college, it might want to consider the effectiveness of these two programs in helping students graduate from college.

Students leave college for a variety of reasons. The examination of Bottom Line's student records of its Success Program participants opens a window into the experiences of students who leave college. Although the themes that emerged from the analysis of this data cannot be interpreted as what *caused* students to leave college, they increase understanding of the factors that might contribute to a student's departure. Bottom Line's existing framework for helping

support students, DEAL, already encompasses much of what came forth from their records as salient in students' explanations of their departures, such as issues external to a student's campus life, academic transition, economic frustration, and temporary administrative roadblocks.

Hopefully, a stronger understanding of the key experiences of Success Program participants who left college will prove fruitful to Bottom Line as it evaluates how it organizes and prioritizes the DEAL framework, and, more broadly, the supports and resources that it provides to its participants.

Conclusion

Now more than ever college is an important step in achieving a socially, civically, and economically fulfilled adult life in the United States. In our current hourglass economy, there are highly-paid, high-skilled jobs at the top and low-paid low-skilled jobs at the bottom, with fewer and fewer opportunities to earn a middle-class wage without a college degree. The benefits to attending college extend beyond earnings into health, well-being, and civic participation (Curie & Moretti, 2003; Dee, 2004). For a long time, our national dialogue on higher education has centered on ensuring that all students have the opportunity to attend college. As an organization, Bottom Line has always been committed to helping students obtain a post-secondary degree, and continues today to fulfill this mission through its College Access and Success Programs. The national conversation about college has shifted recently and those involved with higher education are starting to place more emphasis on students actually succeeding in college. Because of the manifold economic, civic, and intellectual benefits that come from college success, it is important to promote the persistence and graduation of all the students that make it to college. In its commitment to improving the prospects for young adults, Bottom Line has recognized that it needs to do more than just help students get into college; it needs to help students finish college.

Moving from Access to Success

The evidence from this report demonstrates that continuing to provide support to students after getting in to college is related to substantially higher rates of success in college. The support that Bottom Line provides through its College Success Program has been key in this absolutely critical endeavor of helping students complete a college degree.

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Appendix 1

Table A1. Mean differences on observable characteristics for participants missing post-secondary enrollment data Bottom Line’s College Access and Success Programs (n=2068).

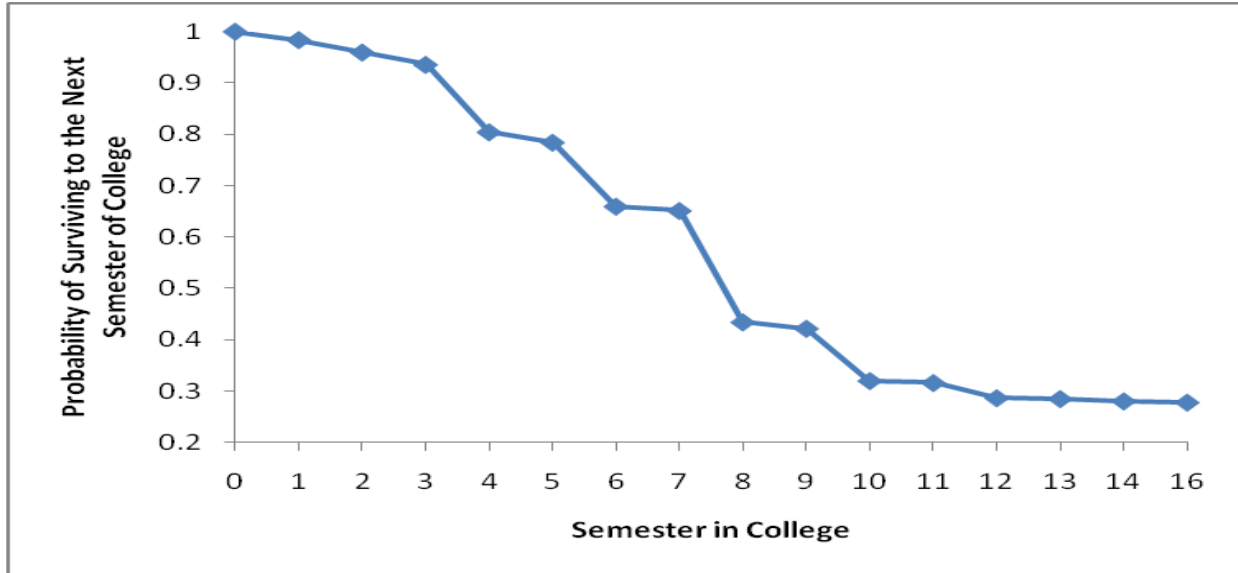
Variable	Access	Success
Percent low-income	-0.06* [0.03]	-0.00 [0.01]
Percent first generation	-0.15** [0.03]	-0.04* [0.02]
Percent Male	0.10** [0.03]	0.02 [0.01]
Percent Black or African American	-0.02 [0.02]	-0.00 [0.01]
Percent White	-0.00 [0.05]	0.15** [0.04]
Percent Hispanic or Latino	0.08** [0.03]	-0.00 [0.01]
Percent Asian or Asian American	-0.10** [0.04]	-0.02 [0.02]
Percent Native American	-0.26 [0.25]	0.00 [0.00]
High school GPA	-0.05** [0.02]	-0.00 [0.00]

Standard errors in brackets

* significant at 5%; ** significant at 1%

Appendix 2

Exhibit A1. Sample survivor function of not leaving college for participants in Bottom Line’s College Access Program (n=1288).



Appendix 3

Table A2. Fitted discrete time hazard models that display the fitted risk that a student leaves college as a function of a student’s background characteristics and the characteristics of the school which a student attends.

Variable	Hazard Ratio
High school GPA	1.00 [0.06]
Low-income	1.08 [0.05]
First generation	1.12 [0.08]
Male	0.93 [0.05]
Black or African American	0.89 [0.07]
Hispanic or Latino	0.87 [0.09]
Asian or Asian American	0.84* [0.06]
Native American	0.96 [0.20]
Other race	0.82 [0.14]
HBCU	1.20 [0.12]
Enrollment 1000-5000	1.20 [0.25]
Enrollment 10,000-20,000	1.18 [0.26]
Enrollment >20,000	1.05 [0.20]
Enrollment 5000-10,0000	1.26 [0.27]
Two-year	0.90 [0.17]
Private for-profit	1.46 [0.36]
Private non-profit	0.96 [0.06]
Urban	1.26** [0.06]

Moving from Access to Success

Rural	1.05 [0.10]
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Standard errors in brackets

* significant at 5%; ** significant at 1%

*Appendix 4***Table A3.** Linear probability model estimates of the effect of student's background characteristics and the characteristics of the colleges that they attend on the probability of graduating in 6 years for participants in Bottom Line's College Access Program in cohorts 2002-2004.

Variable	Raw Data	Imputed Data
Class of 2003	0.06 [0.14]	-0.05 [0.08]
Class of 2004	0.1 [0.18]	-0.02 [0.09]
High school GPA	0.29** [0.07]	0.33** [0.06]
Low-income	-0.24* [0.10]	-0.14* [0.05]
First generation	0.15 [0.10]	0.12 [0.07]
Males	0.09 [0.08]	-0.06 [0.06]
Black or African American	-0.07 [0.18]	0.04 [0.11]
Hispanic or Latino	-0.02 [0.23]	0.06 [0.15]
Asian or Asian American	-0.22 [0.21]	-0.02 [0.14]
Native American	0 [0.00]	2.09 [16.77]
Other race	-0.32 [0.22]	-0.33 [0.17]
HBCU	-0.32 [0.17]	-0.25* [0.12]
Enrollment 1000-5000	-0.3 [0.22]	-0.17 [0.17]
Enrollment 10,000-20,000	-0.06 [0.19]	0.03 [0.20]
Enrollment >20,000	-0.51* [0.23]	-0.2 [0.19]
Enrollment 5000-10,0000	-0.48* [0.20]	-0.40* [0.16]
Two-year	0.24 [0.15]	0.08 [0.15]

Moving from Access to Success

Private for-profit	0 [0.00]	-26.03 [28.40]
Private non-profit	-0.32* [0.13]	-0.12 [0.07]
Urban	0.15 [0.08]	0.13 [0.07]
Rural	0.06 [0.11]	-0.16 [0.09]
Constant	0.15 [0.41]	-0.25 [0.31]
Observations	117	214
R-squared	0.46	0.35

Robust standard errors in brackets

* significant at 5%; ** significant at 1%

*Appendix 5***Table A4.** Linear probability model estimates of the effect of student's background characteristics and the characteristics of the colleges that they attend on the probability of graduating in 4 years for participants in Bottom Line's College Access Program in cohorts 2002-2006.

Variable	Raw Data	Imputed Data
Class of 2003	-0.25** [0.07]	-0.03 [0.07]
Class of 2004	-0.21 [0.13]	-0.01 [0.11]
Class of 2005	-0.44** [0.08]	-0.21* [0.09]
Class of 2006	-0.65** [0.07]	-0.42** [0.08]
High school GPA	0.14** [0.03]	0.15** [0.03]
Low-income	-0.08** [0.03]	-0.06* [0.03]
First generation	-0.03 [0.05]	0 [0.04]
Males	-0.04 [0.03]	-0.08** [0.03]
Black or African American	-0.02 [0.05]	-0.01 [0.06]
Hispanic or Latino	-0.02 [0.07]	-0.04 [0.06]
Asian or Asian American	-0.09 [0.07]	-0.07 [0.06]
Native American	-0.19* [0.09]	-0.16 [0.11]
Other race	-0.13 [0.10]	-0.16* [0.07]
HBCU	-0.08 [0.07]	-0.1 [0.06]
Enrollment 1000-5000	-0.02 [0.08]	0.02 [0.08]
Enrollment 10,000-20,000	0.1 [0.10]	0.19 [0.09]
Enrollment >20,000	-0.03 [0.09]	0.05 [0.09]

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Enrollment 5000-10,0000	-0.06 [0.10]	-0.06 [0.10]
Two-year	-0.05 [0.06]	-0.02 [0.06]
Private for-profit	-0.23* [0.11]	-0.22* [0.10]
Private non-profit	-0.07 [0.05]	-0.04 [0.04]
Urban	0.05 [0.03]	0.07** [0.02]
Rural	0.09 [0.06]	0.03 [0.06]
Constant	0.42** [0.15]	0.1 [0.15]
Observations	469	611
R-squared	0.29	0.26

Robust standard errors in brackets

* significant at 5%; ** significant at 1%

Appendix 6

Table A5. Mean difference estimates in 4-year and 6-year graduation rates for students who participated in the Access and Success Program versus students who participated only in the Access Program using nearest neighbor matching on propensity scores.

	n treatment	n control	Mean Difference	Standard Error	t statistic
4-year graduation rate	466	346	0.19	0.04	4.29
6-year graduation rate	225	156	0.43	0.10	4.32

*Appendix 7***Table A6.** Linear probability model estimates of the effect of the College Success Program on the probability of graduating in 6 years for the cohorts 2002-2004, controlling for a student's background characteristics and the characteristics of the colleges that they attend.

Variable	Uncontrolled Estimate	Raw Data	Imputed Data
Success participant	0.28** [0.04]	0.34** [0.06]	0.27** [0.05]
Class of 2003		-0.41** [0.09]	-0.03 [0.06]
Class of 2004		-0.40** [0.07]	-0.02 [0.10]
High school GPA		0.16** [0.03]	0.15** [0.04]
Low-income		-0.19** [0.05]	-0.14** [0.04]
First generation		0.06 [0.06]	0.04 [0.05]
Males		0.01 [0.06]	-0.06 [0.06]
Black or African American		-0.14 [0.14]	0 [0.10]
Hispanic or Latino		-0.08 [0.17]	-0.03 [0.13]
Asian or Asian American		-0.09 [0.18]	0.04 [0.13]
Native American		0 [0.00]	1.1 [24.14]
Other race		-0.42* [0.16]	-0.16 [0.12]
HBCU		-0.3 [0.16]	-0.22 [0.12]
Enrollment 1000-5000		-0.07 [0.16]	-0.06 [0.09]
Enrollment 10,000-20,000		-0.17 [0.12]	-0.07 [0.09]
Enrollment >20,000		-0.19 [0.19]	-0.01 [0.11]
Enrollment 5000-10,0000		-0.22 [0.16]	-0.19* [0.08]
Two-year		-0.12 [0.17]	-0.26** [0.09]

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Private for-profit		-0.19	-0.01
		[0.10]	[0.14]
Private non-profit		-0.14*	-0.04
		[0.06]	[0.06]
Urban		0.18**	0.11**
		[0.06]	[0.04]
Rural		0.04	-0.13
		[0.09]	[0.07]
Constant	0.45**	0.76**	0.21
	[0.07]	[0.28]	[0.19]
Observations	422	220	422
R-squared	0.08	0.32	0.21

Robust standard errors in brackets

* significant at 5%; ** significant at 1%

Appendix 8

Table A7. Linear probability model estimates of the effect of the College Success Program on the probability of graduating in 4 years for the cohorts 2002-2004, controlling for a student's background characteristics and the characteristics of the colleges that they attend.

	Uncontrolled Estimate	Raw Data	Imputed Data
Success Participant	0.20** [0.03]	0.20** [0.02]	0.17** [0.03]
Class of 2003		-0.36** [0.07]	-0.02 [0.05]
Class of 2004		-0.38** [0.08]	-0.04 [0.10]
Class of 2005		-0.61** [0.07]	-0.25** [0.05]
Class of 2006		-0.98** [0.05]	-0.59** [0.05]
High school GPA		0.09** [0.01]	0.08** [0.01]
Low-income		-0.05 [0.03]	-0.04 [0.03]
First generation		-0.01 [0.05]	-0.01 [0.04]
Males		-0.05 [0.03]	-0.07** [0.02]
Black or African American		-0.06 [0.05]	-0.02 [0.06]
Hispanic or Latino		-0.04 [0.06]	-0.04 [0.06]
Asian or Asian American		-0.07 [0.07]	-0.02 [0.07]
Native American		-0.27** [0.08]	-0.22* [0.09]
Other race		-0.12 [0.07]	-0.08 [0.07]
HBCU		-0.03 [0.06]	-0.06 [0.06]
Enrollment 1000-5000		-0.01 [0.05]	-0.01 [0.05]
Enrollment 10,000-20,000		0 [0.06]	0.01 [0.06]
Enrollment >20,000		-0.02	0.02

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		[0.07]	[0.06]
Enrollment 5000-10,0000		-0.09	-0.1
		[0.06]	[0.06]
Two-year		-0.04	-0.11*
		[0.06]	[0.04]
Private for-profit		0.27*	0.29
		[0.13]	[0.17]
Private non-profit		0.01	0.02
		[0.03]	[0.03]
Urban		0.04	0.04
		[0.04]	[0.03]
Rural		0.06	-0.01
		[0.07]	[0.06]
Constant	0.26**	0.76**	0.38**
	[0.03]	[0.09]	[0.08]
Observations	1059	795	1059
R-squared	0.04	0.38	0.32

Robust standard errors in brackets

* significant at 5%; ** significant at 1%