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NCAN Benchmarking Breakdown: Which Services Matter Most?

ANALYSIS IN PARTNERSHIP WITH THE TRACHTENBERG SCHOOL OF
PUBLIC POLICY AND PUBLIC ADMINISTRATION

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EXECUTIVE SUMMARY

Our team worked with the National College Access Network (NCAN) to analyze a 300,000-student dataset to determine which college access services, and service pairs, offered by NCAN members lead to an increased likelihood of postsecondary enrollment and/or completion for the students receiving the services. This report examines four specific analysis projects:

1. Create a snapshot of the sample students' enrollment and completion statuses;
2. Determine service effectiveness for recipients of NCAN member services;
3. Examine whether service effectiveness varies across different student demographics; and
4. Identify service pairings and their subsequent correlation with enrollment and completion.

This report is as an addition to NCAN's 2016 Benchmarking Report and informs college access service providers which services matter the most to help NCAN and its membership work toward their collective goal of increasing college access for underrepresented students. The analysis team from The George Washington University's Trachtenberg School of Public Policy and Public Administration consists of five graduate students, Richard Livingstone, Janette Martinez, Callie McLean, Catherine Sangster, and Maxwell Tingle, supervised by Dr. Lori Brainard, Dr. Dylan Conger, and Kathryn Yeager.

Scope and Methods

The team conducted this analysis by: consulting with NCAN to receive the dataset and determine the scope of the research project; developing methodology for statistical analysis; and analyzing findings to make data-driven recommendations for NCAN and its membership.

Key Findings

1. The sample of students receiving services from NCAN member organizations has an enrollment rate above the national average for high school graduates and a completion rate below the national average.
2. Students receiving FAFSA assistance and/or test preparation in their service mix experience a statistically significant higher likelihood of enrolling, and students receiving postsecondary success services and/or scholarships in their service mix experience a statistically significant higher likelihood of completing.
3. Students across different demographic groups experience different likelihoods of enrolling/completing when they receive FAFSA assistance, test preparation, postsecondary success services, and scholarships in their service mix.
4. No combination of two services correlates with a statistically significant higher likelihood of enrollment and/or completion; a majority of the sample receives five or more services.

Key Recommendations

1. Focus on postsecondary completion and not just enrollment.
2. Include FAFSA assistance, test preparation, and postsecondary success services in a student's service mix, and scholarships as resources allow.
3. Continue considering student demographic differences in service administration.
4. Promote the concept of a service mix, not a silver bullet, to members.

INTRODUCTION

While the need for a college degree increases, college access, enrollment, and completion remain an issue for many students across the United States. As of 2014, only 40.4 percent of working-age Americans had completed at least a two-year degree (Lumina Foundation, 2016). College access encompasses the ways educational organizations attempt to provide equal college-going opportunities for students and services to ensure college access for students, regardless of demographic factors (EdGlossary, 2014). NCAN works with its myriad member organizations to support their collective mission to increase college access. NCAN represents almost 400 college access and success organizations, all dedicated to helping low-income, first-generation students apply to, enroll in, and complete college (NCAN, 2017). NCAN works with the National Student Clearinghouse Research Center (NSCRC) to collect enrollment and completion information about students who receive services from NCAN member organizations. NCAN reports their findings in an annual Benchmarking Report. The annual report helps inform NCAN members of the current effectiveness of their services by measuring rates of student enrollment (when a student enrolls in a postsecondary institution) and completion (if a student receives a bachelor's degree, associate's degree, or certificate). We worked with NCAN to identify the following four research questions to inform the 2017 benchmarking efforts:

1	How do student enrollment and completion statuses vary by type of services received and student demographics among recipients of NCAN-member services?
2	Which services correlate with a higher likelihood of enrolling and/or completing among recipients of NCAN-member services?
3	Which services correlate with a higher likelihood of enrolling and/or completing among recipients of NCAN-member services with similar demographics?
4	Are there services that when paired have a significant correlation with a higher likelihood of enrolling and/or completing among recipients of NCAN-member services?

To explore these research questions, we first investigate the current literature in the higher education field on enrollment and completion, demographic impacts on student enrollment and completion, and the effectiveness of individual services NCAN members provide. Second, we explain our methodological process and outline our regression models. Then, we present our findings from the regression results. Next, we discuss the findings and observed trends before making data-driven recommendations to help NCAN members provide services more effectively. Finally, we determine possible next steps for future research and conclude our paper.

LITERATURE REVIEW

Enrollment and completion are a focus of the higher education field, particularly for underrepresented students. Students of color, men, students from low-income families, and first-generation students benefit from additional services to improve their access to, and ability to stay in, college. In our literature review, we first discuss why college enrollment and completion concern higher education stakeholders. Next, we explore how gender, race, low-income status, and first-generation demographics may create barriers to postsecondary enrollment and completion. Then, we discuss interventions aimed at improving college access: Free Application for Federal Student Aid (FAFSA) help and financial aid education, and college

admissions test preparation (“test prep”). Finally, we discuss the gap in literature on intervention technique combinations.

Higher Education’s Focus on Enrollment and Completion

The growing number of jobs that require college credentials has led to an increased focus on college enrollment and completion. Bettinger and Baker (2014) propose low-income students utilize college credentials to get out of poverty. In 2013, the national enrollment average of high school graduates was 65 percent, while only 46 percent of low-income students enrolled (Norris, 2014; Brown, 2015). Despite increases in college enrollment over the last half-century, it remains a focus for schools and organizations working with students (Bettinger & Baker; NCAN, 2016). A 2015 report found the national completion average to be 55 percent, but it also found that students from low-income high schools had a lower completion average of 24 percent (Shapiro, Dundar, Wakhungu, Yuan, Nathan, & Hwang, 2015; NSCRC, 2016). Foundations, policy makers, and even President Obama, in a 2009 speech, are focusing their attention on increasing college completion, not just enrollment, to produce a competitive American workforce and increase low-income students’ ability to escape poverty (Bettinger & Baker, 2014).

Demographic Impacts on Enrollment and Completion

Students of Color

Students of color are less likely than White students to attend and complete college. A study by Hurtado, Inkelas, Briggs, and Rhee (1997) shows that close to 50 percent of both Black and Latino students do not apply to college. The gaps in preparation, number of colleges applied to, and attendance at a first-choice university between non-White and White students could contribute to the low application rate (Hurtado et al., 1997). In 2014, the six-year graduation rates at four-year institutions were 41 percent for Black, 54 percent for Hispanic, 41 percent for Native American, and 63 percent for White students (The Education Trust, 2017). Among students who first enrolled in 2010, 55 percent completed a credential (NSCRC, 2017). When broken down by race/ethnicity, Asian and White students had completion rates of 63 and 62 percent, respectively, which is higher than the completion rates of Hispanic and Black students of 46 and 38 percent, respectively.

Gender

Women attend and complete college at a higher rate than men. By high school, girls outpace boys in Advanced Placement classes and college preparatory classes (Buchmann, DiPrete, & McDaniel, 2008). Women make up the majority of students at most US colleges and earn 58 percent of the bachelor’s degrees nationally (Buchmann et al., 2008; Jacobs, 1996).

Students from Low-Income Families

Low-income students face various challenges in college enrollment and completion. Between 2008 and 2013, higher education enrollment dropped 10 percentage points for students in the bottom 20 percent of family incomes (Brown, 2015). The enrollment drop may reflect financial issues: a stronger economy post-2010 (students choosing available jobs over attending college), the increase in tuition, or a belief that higher education has lower economic value (American Council on Education [ACE], 2015). Low-income students take several financial components into consideration when deciding whether to enroll in college. Many low-income students do not want to risk taking out loans or wait for more employable job skills that come later during college education (Brown, 2015).

First-Generation Students

First-generation students, whose parents did not attend college, face many obstacles in

enrolling and completing college. First-generation students experience similar barriers to enrollment and completion as students of color and low-income students (Engle, 2007). First-generation students are less likely to make it through their first year, stay enrolled, and obtain their degree (Pascarella, Pierson, Wolniak, & Terenzini, 2004). First-generation students have less knowledge of the college education system and available financial aid and less actual financial and familial support and academic preparation (Pascarella et al., 2004). Interventions aim to improve college access for underrepresented students and prepare them to enroll, and stay, in college.

Intervention Techniques to Improve College Enrollment and Completion

FAFSA Assistance and Financial Aid Education

Providing FAFSA completion assistance and financial aid education are common services among college access and success programs. Given that many low-income, first-generation students rely on financial aid to access and complete college, these services are necessary to help these students overcome financial obstacles that would impede their postsecondary progress. Bettinger, Long, and Oreopolous (2012) assert that students do not apply for financial aid due to the confusion and complexity around financial aid availability. When students and parents received FAFSA-filing help, students were 16 percent more likely to apply to college and eight percent more likely to attend than students who did not receive help (Bettinger et al., 2012). Furthermore, helping students with their FAFSA increases the probability of college completion (Caspar, 2014/2015).

Test Prep

Test preparation enables students to navigate the various testing requirements for college admission and to learn how to earn good test results. According to Briggs (2009), evaluations of test preparation programs show that coaching has small but positive effects on SAT scores, with a larger impact on math (10 to 20 points) than reading (5 to 10 points) (Briggs, 2009). Test preparation may be more necessary for students of color, low-income, or first-generation students who may have a gap in their scores relative to White students due to issues such as cultural biases and unfamiliarity with testing (Walpole, McDonough, Bauer, Gibson, Kanyi & Toliver, 2005; Vargas, 2004). One longitudinal study found that exposure to either ACT or SAT prep courses reduced the likelihood of students dropping out of college by 42 and 55 percent respective to their second and third years (Ishitani & Snyder, 2006).

Postsecondary Education Success Services

Postsecondary success services give students the necessary tools and resources to enroll and persist in college. These non-cognitive, soft skills include perseverance, discipline, inquisitiveness, grit, and self-assurance (Tough, 2013). According to Nagaoka et al. (2013), non-cognitive skills comprise five categories: academic behaviors, academic perseverance, social skills, learning strategies, and academic mindset. Academic behaviors include attending class regularly and class engagement. Students with academic perseverance remain focused on their work and have “grit” (p.47). Social skills improve relationships between students and teachers. Students use learning strategies to help in studying and learning. An academic mindset gives students confidence and a sense of belonging to that academic community. Bettinger and Baker (2014) found that students who received life skills coaching, and other success services, had greater persistence. Coaches helped students learn to prioritize tasks and plan, covering personal time commitments, care-giving responsibilities, and finances. Students receiving coaching were between 3 and 5 percent more likely to persist than their peers (Bettinger & Baker, 2014).

Advising also helps students to enroll and persist in college by helping students choose classes and define life and career goals (Filson & Whittington, 2013). Advisors provide ways for students to build personal connections on campus and stay in school (Drake, 2011). When done well, advising boosts engagement and learning outcomes (Filson & Whittington, 2013).

Scholarships/Grants

Financial aid packages with grants help increase enrollment. Financial aid, grant funding, and university-specific resources can help increase low-income student enrollment (Caspar, 2014/2015). Linsenmeier, Rosen, and Rouse (2006) examined the impact of different types of financial aid packages on college enrollment and completion. The results confirmed an increase in the matriculation of low-income minority students with a grants-only financial aid package compared to a financial aid package that also included loans. (Linsenmeier et al., 2006).

Gaps in the Literature

The literature lacks analysis of intervention pairings and whether specific pairings correlate with a higher likelihood of enrolling and/or completing. Page and Scott-Clayton’s (2016) meta-analysis on college enrollment found that many of the barriers to college overlap, and schools and policies must address all barriers to improve college access. They state that while focusing policy decisions on one barrier may improve access, it may not be the most beneficial use of resources. Though not a full-scale service mix, Vargas (2004) argued for a multi-faceted method to provide college information to students and parents.

METHODOLOGY

The four research questions examined in this report correspond with the selected analysis projects in Table 2. We selected the first three projects because Appalachian State University identified them in a review of NCAN’s Benchmarking Project dataset as having the highest potential impact on NCAN’s mission and short-term goals (Cazier and Bergman, 2016). We selected the fourth project per NCAN’s project proposal asking our team to identify effective service combinations.

Table 2: Selected Analysis Projects and Corresponding Research Questions	
Analysis Project	Research Question
1 Enrollment & Completion Snapshot	How do student enrollment and completion statuses vary by type of services received and student demographics among recipients of NCAN-member services?
2 Service Effectiveness	Which services correlate with a higher likelihood of enrolling and/or completing among recipients of NCAN-member services?
3 Student-Level Comparisons	Which services correlate with a higher likelihood of enrolling and/or completing among recipients of NCAN-member services with similar demographics?
4 Service Pattern Identification	Are there services that when paired have a significant correlation with a higher likelihood of enrolling and/or completing among recipients of NCAN-member services?

NCAN Benchmarking Project Overview

NCAN collects a convenience sample of postsecondary enrollment and completion data for students receiving services from NCAN member organizations (NCAN, 2016). At a minimum, members must have access to a student’s graduation year, first name, last name, and date of birth to include them in the dataset. The National Student Clearinghouse Research Center (NSCRC) aggregates data from all participating member programs through the National Student

Clearinghouse’s StudentTracker service and then sends NCAN de-identified program- and student-level data. The enrollment and completion rates aggregated from members’ data comprise an “NCAN Benchmark” against which programs can measure their own outcomes.

Dataset

Our research included student and program information from the second and third years (Rounds 2 and 3) of the Benchmarking Project. This covered a total sample of 293,000 students from the high school classes of 2008, 2009, 2010, and 2014 (Round 2) and 2009, 2010, 2011, and 2015 (Round 3). The dataset includes variables that capture student demographics (graduation year, gender, race, and first-generation (“first-gen”) status), services received, and postsecondary enrollment and completion outcomes. Table 1 includes a brief description of the demographic, service, and outcome variables included in the dataset. The outcome variables in the dataset capture students’ enrollment and completion statuses within the six academic years following high school graduation. Higher education research typically assesses completion at 150 percent of the time it takes to finish a credential.

Table 3: Variables included in Dataset	
Variable	Description
Demographic Variables	
First-Gen Status	Student is first-generation according to each program’s preferred definition (Y=Yes, N=No, U=Unknown)
Gender	Student’s gender (M=male, F=female, U=unknown)
Graduation Year	Student’s high school graduation year (2008, 2009, 2010, 2011, 2014, 2015)
Hispanic Status	Student’s Hispanic status (Y=Yes, N=No, U=Unknown)
Race	Student’s race (AM=American Indian, AS=Asian, BL=Black or African-American; UK=Unknown Race; MU=Multiracial; PI=Pacific Islander; WH=Caucasian or White)
Service Variables	
Admissions Counseling	Student received postsecondary admissions counseling (Y=Yes, N=No, U=Unknown)
FAFSA Assistance	Student received assistance in completing and submitting the FAFSA (Y=Yes, N=No, U=Unknown)
Financial Aid Education	Student received financial literacy/aid education (Y=Yes, N=No, U=Unknown)
High School Academic Advising	Student received academic support/counseling/advising while in high school (Y=Yes, N=No, U=Unknown)
Information to Parents	Student’s parent(s) was/were provided targeted information by the program (Y=Yes, N=No, U=Unknown)
Life Skills Curriculum	Student received specific curriculum and/or activities designed to encourage grit, persistence, non-cognitive, other social/emotional/life skills (Y=Yes, N=No, U=Unknown)
Postsecondary Success Services	Student received success/completion/retention services while in postsecondary education (Y=Yes, N=No, U=Unknown)
Scholarship	Scholarship support provided by a program to the student in the first year of postsecondary education (exact amount, rounded to the nearest dollar with no dollar sign, no commas, no period, no cents)
Test Preparation	Student received college admissions test preparation courses and/or materials (Y=Yes, N=No, U=Unknown)
Outcome Variables	
Completed	Student completed a credential - bachelor’s, associate’s, or certificate - after enrolling at any point within the six-year window following high school graduation (Y=1, N=0)
Enrolled	Student had a postsecondary enrollment at any point within the six-year window following high school graduation (Y=1, N=0)
Source: NCAN’s Benchmarking Round 2 and 3 Data File Codebook	

Enrollment & Completion Snapshot Methodology (Research Question 1)

We compiled descriptive statistics for the sample to determine services received and outcomes by student demographics. The descriptive statistics include the number of students who received each service and of those students, by service, how many enrolled and completed. The descriptive statistics also include the number of students in each demographic category,

and of those students, by demographic, how many enrolled and completed. We first compiled descriptive statistics for the 293,000 students that made up the entire dataset. Then we compiled descriptive statistics for the 23,574 students from the graduating high school classes of 2008 and 2009 whose full six-year window after graduating was captured by the dataset.

Service Effectiveness Methodology (Research Question 2)

We employed a regression to observe the correlation between services received and the likelihood of enrolling in college and/or completing a credential. We selected a service variable (financial aid education), a gender variable (unknown gender), and a race variable (unknown race) to serve as reference variables, since the dataset does not have a control group. Our model also included a program-year fixed effect, which controlled for differences between programs and graduation years. Table 4 describes the regression specification we use to address research question two.

Table 4: Service Effectiveness Regression Model	
$Y_{\text{outcomes 1-2}} = \beta_0 + \beta_{\text{services 1-8}} + X_{\text{gender}} + X_{\text{race}} + X_{\text{first-gen}} + a_f + \epsilon$	
$Y_{\text{outcomes 1-2}}$	Enrolled, completed
$\beta_{\text{services 1-8}}$	Admissions counseling, FAFSA assistance, high school academic advising, information to parents, life skills curriculum, PSED success (only included for “completed” outcome variable), scholarship, test preparation
X_{gender}	Gender demographic variables
X_{race}	Race demographic variables
$X_{\text{first-gen}}$	First-generation demographic variable
a_f	Program-year fixed effects control

For this regression and the following regressions for research questions three and four, we ran the regression model for two different samples - the “enrollment sample” and the “enrollment and completions sample.” We ran the regression for the “enrolled” outcome variable with the first sample, and for the “enrolled” and “completed” outcome variables with the second sample. More details on the two samples follow.

Enrollment Sample

The enrollment sample consists of the 192,238 students in the dataset with complete data. Because all the students in the dataset are eligible for postsecondary enrollment, the first regression employs this sample to examine the variables’ correlation with the likelihood of enrolling in college. We arrived at this sample by restricting the initial 293,000-student sample to exclude services with high percentages of missing data,¹ and then the regression automatically dropped any remaining students with missing data.

We initially included admissions counseling, high school academic advising, and life skills curriculum as service variables in the regression model. However, when analyzing the initial

¹ The services also included in the dataset but excluded from the enrollment sample, and their percentage of missing data, are 1) receiving a Pell grant (93%), 2) expected family contribution for the first year of postsecondary education (84%), 3) receiving a scholarship (56.3%), 4) parents receiving targeted information by a college access program (55.83%), and 5) success/completion/retention services received while in post-secondary education (52.83%).

results, we observed modest effects for the three services and issues with collinearity. We removed these three services from the model and ran the regressions again with a new reference group that includes the three services in addition to financial aid education. The results for FAFSA assistance and test preparation in Table 3 show the correlation of receiving each of these services in addition to one or more of the reference group services. The tables included in the findings section report the output of the subsequent regressions we ran with the new reference group.

Enrollment and Completion Sample

The enrollment and completion sample is restricted to the 10,304 students with complete data from the graduating high school classes of 2008 and 2009. These students' full six-year window after graduating high school is captured by the dataset. Because we can observe these students full six-year window, we employ this sample in our regression to examine the variables' correlation with the likelihood of enrolling in college and/or completing a credential.

We initially included all the service variables in the regression model, except for financial aid education, because it serves as the reference group. However, when analyzing the initial results, we observed modest effects and/or collinearity issues for all services except for scholarship and FAFSA assistance when examining the "enrolled" outcome variable.² We also observed modest effects and/or collinearity issues for all services except for scholarship and postsecondary success when examining the "completed" outcome variable. We therefore took the services with modest effects and collinearity issues out of the model and ran the regressions again with those services as part of the reference group.

The tables included in the findings section report the output of the subsequent regressions we ran with the new reference group. The results shown for scholarship, FAFSA assistance, and postsecondary success report the correlation of receiving each service in addition to one or more of the reference group services.

Student-Level Comparisons Methodology (Research Question 3)

We developed three regression models for the three student demographics captured in the NCAN dataset: gender, race, and first-generation status. For each model, we omitted the corresponding demographic control variables from the model and restricted the sample to the observed demographic group. For gender demographics, we restricted the dataset three times: male, female, and unknown gender. For race demographics, we restricted the dataset seven times: American Indian, Asian, Black or African-American, Hispanic, Multiracial, Pacific Islander, and White. For the first-generation demographic, we restricted the dataset to only first-generation students. These restrictions allowed us to observe the effects of receiving specific service interventions within each demographic (i.e., among male students, which services were most correlated with enrollment and completion; among Hispanic students, which services were most correlated with enrollment and completion). Table 5 describes the regression specifications we used to address research question three.

² Postsecondary success services is not included in the model as a service variable when testing the "enrolled" outcome variable because the services occur after enrollment in a postsecondary program.

Table 5: Student-Level Comparisons Regression Model	
Baseline: $Y_{\text{outcomes 1-2}} = \beta_0 + \beta_{\text{services 1-8}} + X_{\text{gender}} + X_{\text{race}} + X_{\text{first-gen}} + a_f + \epsilon$ Gender: $Y_{\text{outcomes 1-2}} = \beta_0 + \beta_{\text{services 1-5}} + X_{\text{race}} + X_{\text{first-gen}} + a_f + \epsilon$ Race: $Y_{\text{outcomes 1-2}} = \beta_0 + \beta_{\text{services 1-5}} + X_{\text{gender}} + X_{\text{first-gen}} + a_f + \epsilon$ First-Gen: $Y_{\text{outcomes 1-2}} = \beta_0 + \beta_{\text{services 1-5}} + X_{\text{gender}} + X_{\text{race}} + a_f + \epsilon$	
$Y_{\text{outcomes 1-2}}$	Enrolled, completed
$\beta_{\text{services 1-8}}$	Admissions counseling, FAFSA assistance, high school academic advising, information to parents, life skills curriculum, PSED success (only included for “completed” outcome variable), scholarship, test preparation
X_{gender}	Gender demographic variables
X_{race}	Race demographic variables
$X_{\text{first-gen}}$	First-generation demographic variable
a_f	Program-year fixed effects control

Service Pattern Identification Methodology (Research Question 4)

We included services that students could have received as variables in the model to examine their correlation with eventual enrollment and/or completion. We created dummy variables to observe whether the services received alone or with one other service had a significant correlation with a higher likelihood of enrolling and/or completing. The dummy variables were created for each service received exclusively and for each two-pair combination of the six services. Table 6 describes the regression specifications we used to address research question four.

Table 6: Service Pattern Identification Regression Model	
$Y_{\text{outcomes 1-2}} = \beta_0 + \beta_{\text{services 1-9}} + \beta_{\text{dummy variables 1-19}} + X_{\text{gender}} + X_{\text{race}} + X_{\text{first-gen}} + a_f + \epsilon$	
$Y_{\text{outcomes 1-2}}$	Enrolled, completed
$\beta_{\text{services 1-9}}$	Admissions counseling, FAFSA assistance, financial aid education, high school academic advising, information to parents, life skills curriculum, PSED success (only included for “completed” outcome variable), scholarship, test preparation
$\beta_{\text{dummy variables 1-19}}$	Dummy variables of all six service variables being received exclusively and in every possible combination of two services
X_{gender}	Gender demographic variables
X_{race}	Race demographic variables
$X_{\text{first-gen}}$	First-generation demographic variable
a_f	Program-year fixed effects control

Potential Limitations

As with any study, the analysis is not without limitations. The largest limitation to our analysis is sampling bias as the data was collected through a convenience sampling process where members volunteered information. Due to the selection bias, we cannot guarantee that the dataset is the most accurate and representative sample of all students receiving NCAN member services. Additionally, most of the service data in the NCAN dataset is trichotomous and coded as “yes,” “no,” or “unknown.” Qualitative information about the dosage, frequency, or delivery method of these services is not collected from NCAN’s respondents. Lastly, because NCAN members primarily serve low-income and first-generation students, our findings are not generalizable to other demographic groups.

FINDINGS

Below are the results of the regressions defined in the methodology section. For all the regressions, we compare estimated changes to the reference group, which includes students who receive financial aid education, grit life skills curriculum, high school academic advising, and admissions counseling. The results below are all statistically significant. We used an alpha level of 0.05 to determine significance, meaning there is a 5-percent chance or lower that the result is not statistically significantly different from 0.

Descriptive Statistics (Research Question 1 Findings)

Table 7 shows enrollment rates for the 293,000 students in the dataset by student demographics and services received. The table shows the percentage of students who received each service and who later enrolled. Seventy-five percent of students enrolled in postsecondary education. Students most commonly received financial aid education, at 89 percent. Based on descriptive statistics alone, scholarship recipients had the highest enrollment rate at 89 percent. However, only 13 percent of students in the sample received a scholarship.

Table 7: Complete Sample Descriptive Statistics - Number of Students Receiving Service and Number of Students who Enrolled for each Service

Service	Students	Enrolled
Financial Aid Education	260,695 89%	198,200 76%
Admission Counseling	225,424 77%	169,127 75%
Test Preparation	192,565 66%	144,952 75%
High School Academic Advising	191,117 65%	144,741 76%
FAFSA Assistance	190,369 65%	149,490 79%
Grit/Life Skills	186,098 64%	142,036 76%
Information to Parents	62,400 21%	50,287 81%
Postsecondary Success Services	57,455 20%	48,090 84%
Scholarship	37,381 13%	33,405 89%
All Students	293,000 100%	219,965 75%

Source: Authors' Tabulations

Table 8: Complete Sample Descriptive Statistics - Number of Students in Each Demographic Group and Number of Students who Enrolled for Demographic Group

Demographic	Students	Enrolled
Gender		
Female	170,142 58%	131,263 77%
Male	105,289 36%	77,154 73%
Unknown Gender	17,569 6%	11,548 66%
First-Generation		
First-Generation	140,519 48%	105,723 75%
Race		
Unknown Race	137,871 47%	100,528 73%
Hispanic	108,853 44%	80,119 74%
Black	70,559 24%	54,240 77%
White	48,451 17%	37,065 77%
Asian	20,089 6%	16,333 81%
Multi-Racial	13,325 5%	9,982 75%
American Indian	1,484 1%	1,015 68%
Pacific Islander	1,121 0%	802 72%
All Students	293,000 100%	219,965 75%

Source: Authors' Tabulations

Table 8 breaks down the sampled students based on gender, race, and first-generation status. The table also provides the percentage of students in each demographic group who enrolled in college.

Table 9 shows descriptive statistics for the 23,574 students who could have enrolled in college and completed a credential in six years by 2015. Among those students, 50 percent completed a credential. Students most commonly received financial aid education, at 74 percent. Of the 10,331 scholarship recipients, who made up 44 percent of the sample, 91 percent enrolled in college, and 57 percent of those who enrolled completed a credential. Table 10 breaks down the sampled students who could have completed a credential based on gender, race, and first-generation status. The table also provides the percentage of students in each demographic group who completed.

Table 9: Descriptive Statistics for Students Eligible for Enrollment and Completion - Number of Students Receiving Service and Number of Students who Completed for each Service

Service	Students	Enrolled	Completed
Financial Aid Education	17,460 74%	14,523 83%	7,712 53%
Information to Parents	14,267 61%	12,257 86%	6,584 54%
Postsecondary Success Services	12,345 52%	10,926 89%	6,038 55%
Admissions Counseling	11,762 50%	9,219 78%	4,634 50%
Scholarship	10,331 44%	9,378 91%	5,332 57%
FAFSA Assistance	10,307 44%	8,465 82%	4,376 52%
Test Preparation	8,964 38%	6,965 78%	3,698 53%
High School Academic Advising	8,362 35%	6,781 81%	3,272 48%
Life Skills Curriculum	7,842 33%	6,498 83%	3,432 53%
All Students	23,574 100%	19,283 82%	9,734 50%

Source: Authors' Tabulations

Table 10: Descriptive Statistics for Students Eligible for Enrollment and Completion - Number of Students in Each Demographic Group and Number of Students who Completed for Demographic Group

Demographic	Students	Enrolled	Completed
Gender			
Female	13,097 56%	10,873 83%	5,925 54%
Male	8,161 35%	6,499 80%	2,948 45%
Unknown Gender	2,316 10%	1,911 83%	861 45%
First-Generation			
First-Generation	7,934 34%	6,660 84%	3,310 50%
Race			
Unknown Race	8,868 38%	6,929 78%	3,570 52%
Black	8,010 34%	6,735 84%	2,819 42%
White	4,524 19%	3,789 84%	2,209 58%
Hispanic	3,050 13%	2,472 81%	1,140 46%
Asian	1,448 6%	1,280 88%	877 69%
Multi-Cultural	597 3%	449 75%	198 44%
American Indian	105 0%	81 77%	47 58%
Pacific Islander	22 0%	20 91%	14 70%
All Students	23,574 100%	19,283 82%	9,734 50%

Source: Authors' Tabulations

Service Effectiveness Regression Results (Research Question 2 Findings)

Tables 11 through 14 include descriptive statistics of the two samples used in our regression. Tables 11 and 12 show the descriptive statistics of all students who graduated high school, regardless of ever enrolling, and Tables 13 and 14 show the descriptive statistics of all students with a postsecondary enrollment. These tables summarize the descriptive statistics of the samples we analyze in our top-level findings. We only list the services that have statistically significant results.

Table 11: Enrollment Sample Descriptive Statistics - Number of Students Receiving Service and Number of Students that Enrolled for each Service

Service	Students	Enrolled
FAFSA Assistance	156,611 81%	119,545 76%
Test Preparation	145,441 76%	114,261 79%
All Students	192,238 100%	147,119 77%

Source: Authors' Tabulations

Table 12: Enrollment Sample Descriptive Statistics – Number of Students in Each Demographic Group and Number who Enrolled for Each Demographic Group

Demographic	Students	Enrolled
Gender		
Female	119,238 62%	93,455 78%
Male	71,285 37%	53,541 75%
Unknown Gender	1,224 1%	825 67%
First-Generation		
First-Generation	118,324 62%	88,557 76%
Race		
Hispanic	92,459 48%	68,993 75%
Unknown Race	91,197 47%	67,940 75%
Black	42,229 22%	33,500 79%
White	31,149 16%	24,415 78%
Asian	15,260 8%	12,598 83%
Multi-Racial	10,270 5%	7,876 77%
American Indian	1,134 1%	789 70%
Pacific Islander	999 1%	703 70%
All Students	192,238 100%	147,119 77%

Source: Authors' Tabulations

Table 13: Enrollment and Completion Sample Descriptive Statistics - Number of Students Receiving Service and Number of Students who Enrolled and Completed for each Service

Service	Students	Enrolled	Completed
Financial Aid	10,245	9,101	4,946
Education	99%	89%	54%
Postsecondary Success Services	9,416	8,482	4,647
	91%	90%	55%
Information to Parents	8,956	7,997	4,316
	87%	89%	54%
Scholarship	7,444	6,820	3,684
	72%	92%	54%
FAFSA Assistance	5,417	4,645	2,522
	53%	86%	54%
Admissions Counseling	4,931	4,175	2,205
	48%	85%	53%
Life Skills Curriculum	4,645	3,956	2,134
	45%	85%	54%
High School Academic Advising	4,257	3,547	1,798
	41%	83%	51%
Test Preparation	3,042	2,590	1,432
	30%	85%	55%
All Students	10,304	9,135	4,961
	100%	89%	54%

Source: Authors' Tabulations

Table 14: Enrollment and Completion Sample Descriptive Statistics - Number of Students in Each Demographic Group and Number of Students who Enrolled and Completed for Demographic Group

Demographic	Students	Enrolled	Completed
Gender			
Female	6,373	5,686	3,216
	62%	89%	57%
Male	3,925	3,446	1,744
	38%	88%	50%
Unknown Gender	6	3	1
	0%	50%	33%
First-Generation			
First-Generation	5,092	4,481	2,284
	49%	88%	51%
Race			
Black	4,502	4,021	1,921
	44%	89%	48%
White	2,451	2,224	1,422
	24%	91%	64%
Unknown Race	2,094	1,751	855
	20%	84%	49%
Hispanic	2,016	1,681	808
	20%	83%	48%
Asian	1,012	930	652
	10%	92%	70%
Multi-Cultural	174	154	80
	2%	89%	52%
American Indian	63	48	25
	1%	76%	52%
Pacific Islander	8	7	6
	0%	88%	86%
All Students	10,304	9,135	4,961
	100%	89%	54%

Source: Authors' Tabulations

FAFSA assistance and test preparation correlate with the largest increase in the likelihood of enrolling compared to the reference group. Table 15 shows the results of our regression to determine the services correlated with an increased likelihood of enrolling. First, receiving FAFSA assistance correlates with a 15.6-percentage point increased likelihood of enrolling. Second, receiving test preparation correlates with a 14.3-percentage point increased likelihood of enrolling. Together, they have a 29.9-percentage point increased likelihood of enrolling. Both services statistically add value to the likelihood of enrolling.

Table 15: Service Effectiveness Regression Model Results for the Enrollment Sample

Services	Likelihood of Enrolling
FAFSA Assistance	0.156*** (0.00256)
Test Preparation	0.143*** (0.00535)
N	192,238
Source: Authors' Tabulation; Standard errors in parentheses; * p < 0.05, ** p < 0.01, *** p < 0.001; Reference Group: Admissions Counseling, Financial Aid Education, High School Academic Advising, and Life Skills Curriculum; Control Variables: Unknown Gender, Unknown Race, & Program-Year Fixed Effects	

Table 16: Service Effectiveness Regression Model Results for the Enrollment and Completion Sample

Services	Likelihood of Enrolling	Likelihood of Completing
Scholarship	0.154*** (0.01469)	0.100*** (0.02296)
FAFSA Assistance	0.093** (0.03035)	-
Postsecondary Success Services	-	0.167*** (0.03940)
N	10,304	10,304
Source: Authors' Tabulation; Standard errors in parentheses; * p < 0.05, ** p < 0.01, *** p < 0.001; Likelihood of Enrolling Reference Group: Admissions Counseling, Financial Aid Education, High School Academic Advising, Life Skills Curriculum, PSED Success, and Test Preparation; Likelihood of Completing Reference Group: Admissions Counseling, FAFSA Assistance, Financial Aid Education, High School Academic Advising, Life Skills Curriculum, and Test Preparation; Control Variables: Gender, Race, & Program-Year Fixed Effects		

Receiving a scholarship and postsecondary success services both strongly correlate with an increased likelihood of completing compared to students who received other services. Table 16 compares the service effectiveness results among students in the enrollment and completion sample. Receiving postsecondary success services correlates with a 16.7-percentage point increase in the likelihood of completing. Receiving a scholarship correlates with a 10-percentage point increase in the likelihood of completing.

We ran a separate regression using an interaction term for FAFSA assistance and test preparation to test whether providing the two programs together correlates with an increased likelihood of enrolling. For enrollment, receiving the two services together reveals no statistically significant additional increase in the likelihood of enrolling. However, we can add the correlated likelihoods of enrolling for each service together for students receiving both services. Thus, receiving both services correlates with a total 29.9-percentage point increase in the likelihood of enrolling.

Student-Level Comparisons Regression Results (Research Question 3 Findings)

We discuss enrollment and completion outcomes for the race, gender, and first-generation status demographic groups. Although we observed that FAFSA assistance and test preparation services correlate with an increase in the likelihood of enrolling in college, and receiving a scholarship and postsecondary success services correlate with an increase in the likelihood of completing a credential across the three groups, the increase in likelihood varies between these demographic groups. Tables 15 and 16 show the results of the service effectiveness regression using the unrestricted “Baseline” model that includes all demographics. The results displayed in these two tables serves as a baseline of the enrollment sample and the enrollment and completion sample by which we can compare percentage likelihoods.

First-Generation

Tables 17 and 18 show that among first-generation students, FAFSA assistance and test preparation services continue to correlate with a higher likelihood of enrolling and completing. However, as Table 17 shows, the estimated effect of FAFSA assistance on likelihood of enrolling is 17.6 percentage points for first-generation students, which is 2.1 percentage points higher than the enrollment sample results for the service effectiveness regression in Table 15. Table 18 shows that receiving postsecondary success services increases the likelihood of completing for first-generation students compared to the sample of all students with a postsecondary enrollment in Table 16. The correlation between receiving a scholarship and the likelihood of completion is larger for first-generation students than the total sample of enrollees.

Table 17: Service Effectiveness Regression Model Results for the Enrollment Sample, Restricted by First-Generation Status

Services	Likelihood of Enrolling
FAFSA Assistance	0.176*** (0.00339)
Test Preparation	0.157*** (0.00696)
N	118,324
Source: Authors' Tabulation; Standard errors in parentheses; * p < 0.05, ** p < 0.01, *** p < 0.001; Reference Group: Admissions Counseling, Financial Aid Education, High School Academic Advising, and Life Skills Curriculum; Control Variables: Unknown Gender, Unknown Race, & Program-Year Fixed Effects	

Table 18: Service Effectiveness Regression Model Results for the Enrollment and Completion Sample, Restricted by First-Generation Status

Services	Likelihood of Enrolling	Likelihood of Completing
Scholarship	0.168*** (0.02129)	0.129*** (0.03344)
FAFSA Assistance	-0.041 (0.09604)	-
Postsecondary Success Services	-	0.325** (0.11345)
N	5,092	5,092
Source: Authors' Tabulation; Standard errors in parentheses; * p < 0.001; Likelihood of Enrolling Reference Group: Admissions Counseling, Financial Aid Education, High School Academic Advising, Life Skills Curriculum, PSED Success, and Test Preparation; Likelihood of Completing Reference Group: Admissions Counseling, FAFSA Assistance, Financial Aid Education, High School Academic Advising, Life Skills Curriculum, and Test Preparation; Control Variables: Unknown Gender, Unknown Race, & Program-Year Fixed Effects		

Gender

As Tables 19 and 20 show, FAFSA assistance and test preparation continue to be the two services most strongly correlated with an increased likelihood of enrolling compared to the reference group. Receiving these services correlates with a higher increase in the likelihood of enrolling for males than females. However, receiving these services correlates with a higher likelihood of completing for females than males.

Table 19: Student-Level Comparisons Regression Model Results for the Enrollment Sample, Restricted by Gender Demographics

Services	Likelihood of Enrolling		
	Female	Male	Unknown
FAFSA Assistance	0.153*** (0.00327)	0.161*** (0.00416)	0.191*** (0.03239)
Test Preparation	0.139*** (0.00686)	0.148*** (0.00854)	-
N	119,729	71,285	1,224

Source: Authors' Tabulation; Standard errors in parentheses; * p < 0.05, ** p < 0.01, *** p < 0.001; Reference Group: Admissions Counseling, Financial Aid Education, High School Academic Advising, and Life Skills Curriculum; Control Variables: Unknown Gender, Unknown Race, & Program-Year Fixed Effects

Table 20: Student-Level Comparisons Regression Model Results for the Enrollment and Completion Sample, Restricted by Gender Demographics

Services	Likelihood of Enrolling			Likelihood of Completing		
	Female	Male	Unknown	Female	Male	Unknown
Scholarship	0.127*** (0.01866)	0.197*** (0.02408)	-	0.097** (0.02931)	0.106** (0.03606)	-
FAFSA Assistance	0.076 (0.03994)	0.114* (0.04721)	-	-	-	-
Postsecondary Success Services	-	-	-	0.211*** (0.04627)	0.065 (0.06960)	-
N	6,373	3,925	6	6,815	4,259	7

Source: Authors' Tabulation; Standard errors in parentheses; * p < 0.05, ** p < 0.01, *** p < 0.001; Likelihood of Enrolling Reference Group: Admissions Counseling, Financial Aid Education, High School Academic Advising, Life Skills Curriculum, PSED Success, and Test Preparation; Likelihood of Completing Reference Group: Admissions Counseling, FAFSA Assistance, Financial Aid Education, High School Academic Advising, Life Skills Curriculum, and Test Preparation; Control Variables: Unknown Gender, Unknown Race, & Program-Year Fixed Effects

Race – Enrollment Sample

Receiving FAFSA assistance and test preparation correlates with an increased likelihood of enrolling compared to the reference group across all racial groups. However, the size of the increase varies by race. Table 21 below shows all results, but some highlights include:

- **Black students:** Receiving test preparation has a four-percentage point higher correlation with an increased likelihood of enrolling than FAFSA assistance, compared to the results in Table 15.
- **White students:** Receiving test preparation correlates with an additional four-percentage point increase in the likelihood of enrolling compared to the results in Table 15. Additionally, test preparation’s effect is larger than FAFSA assistance.
- **Hispanic students:** Receiving FAFSA assistance correlates with an additional four-percentage point increase in the likelihood of enrolling compared to Table 15 results.

Table 21: Service Effectiveness Regression Model Results for the Enrollment Sample, Restricted by Race Demographics

Services	Likelihood of Enrolling							
	American Indian	Asian	Black	Multi-cultural	Pacific Islander	White	Hispanic	Unknown
FAFSA Assistance	0.0906** (0.0366)	0.0972*** (0.00927)	0.0964*** (0.00627)	0.139*** (0.0109)	0.132*** (0.0364)	0.120*** (0.0062)	0.194*** (0.0036)	0.193*** (0.0036)
Test Preparation	0.1022 (0.0577)	0.0930*** (0.0217)	0.131*** (0.0136)	0.136*** (0.0211)	0.119 (0.0677)	0.195*** (0.0124)	0.138*** (0.0074)	0.136*** (0.0075)
N	1,131	15,260	42,229	10,270	999	31,149	92,459	91,197

Source: Authors' Tabulation; Standard errors in parentheses; * p < 0.05, ** p < 0.01, *** p < 0.001; Reference Group: Admissions Counseling, Financial Aid Education, High School Academic Advising, and Life Skills Curriculum; Control Variables: Unknown Gender, Unknown Race, & Program-Year Fixed Effects

Race – Enrollment and Completion Sample

For most racial groups, receiving a scholarship and postsecondary success services continue to be the two services that correlate with an increase in the likelihood of completing compared to the reference group, as shown in Tables 22 and 23 below. The correlation varies by racial group. Some highlights include:

- **Black students:** Receiving a scholarship and postsecondary success services had a smaller correlation with an increased likelihood of completing for Black students compared to the overall sample. However, unlike most demographic groups, the correlation is statistically significant.
- **Hispanic students:** Receiving a scholarship correlates with a 15.2-percentage point increase in the likelihood of completing. Receiving postsecondary success services correlates with an 18.4-percentage point increase in the likelihood of completing. Both correlations are larger than the results in Table 16.
- **White students:** Receiving postsecondary success services had a 35-percentage point increase in the likelihood of completing, which is larger than the results in Table 16 and the highest among all demographic groups.

Table 22: Service Effectiveness Regression Model Likelihood of Enrolling Results for the Enrollment and Completion Sample, Restricted by Race Demographics

Services	Likelihood of Enrolling							
	American Indian	Asian	Black	Hispanic	Multi-Cultural	Pacific Islander	White	Unknown
Scholarship	0.733* (0.329)	0.217** (0.0801)	0.071** (0.0254)	0.284*** (0.0278)	-0.205 (0.167)	-	0.051 (0.0027)	0.288*** (0.0282)
FAFSA Assistance	-	0.142 (0.113)	0.099 (0.0775)	0.124* (0.0496)	0.349 (0.199)	-	0.085 (0.0566)	0.116* (0.0492)
N	63	1,012	4,502	2,016	174	8	2,451	2,094

Source: Authors' Tabulation; Standard errors in parentheses; * p < 0.05, ** p < 0.01, *** p < 0.001; Reference Group: Admissions Counseling, Financial Aid Education, High School Academic Advising, Life Skills Curriculum, PSED Success, and Test Preparation; Control Variables: Unknown Gender, Unknown Race, & Program-Year Fixed Effects

Table 23: Service Effectiveness Regression Model Likelihood of Completing Results for the Enrollment and Completion Sample, Restricted by Race Demographics

Services	Likelihood of Completing							
	American Indian	Asian	Black	Hispanic	Multi-Cultural	Pacific Islander	White	Unknown
Scholarship	0.276 (0.400)	0.107 (0.140)	0.0822* (0.0409)	0.152*** (0.0372)	0.480 (0.247)	-	0.0413 (0.046)	0.148*** (0.0381)
Postsecondary Success Services	-	0.105 (0.0991)	0.141* (0.0622)	0.184** (0.0676)	-	-	0.351* (0.145)	0.188** (0.0685)
N	63	1,012	4,502	2,016	174	8	2,451	2,094

Source: Authors' Tabulation; Standard errors in parentheses; * p < 0.05, ** p < 0.01, *** p < 0.001; Reference Group: Admissions Counseling, FAFSA Assistance, Financial Aid Education, High School Academic Advising, Life Skills Curriculum, and Test Preparation; Control Variables: Unknown Gender, Unknown Race, & Program-Year Fixed Effects

Service Pattern Identification Regression Results (Research Question 4 Findings)

We set out to identify whether service pairs, when received exclusively, correlate with an increased likelihood of enrolling and/or completing. Identifying a minimal, parsimonious service provision achieving the same results as a more robust service mix could save college access and success programs time and resources and allow these programs to serve more students.

When looking at service pairs and their impact on enrolling and completing, our results are inconclusive. We ran our regression looking at every possible service pair and services received alone, but we could not observe statistically significant results because not enough students in the sample receive just two services. Eighty-nine percent of students do not fit into any service pair or single service category. We find that 95 percent of students receive two or more services, and on average, students receive a combination of five services.

Consequently, the correlations between service provision and an increased likelihood of enrolling in and completing a credential identified by the other briefs in this series operate within the context of a service mix and not the exclusive provision of just one to two services. Tables of regression results are available upon NCAN member request.

DISCUSSION

Our literature research and our data analysis findings generally support one another with a few exceptions. Our findings indicate test preparation and FAFSA assistance have the strongest positive relationship to completing and enrolling of all the services, so we focus the discussion on their results below.

NCAN Enrollment Rate Above National Average, Completion Rate Below

National comparisons lend evidence to the positive impact on NCAN members' services to students' enrollment and completion in college. Eighty-two percent of NCAN students enrolled in college, higher than the national average, which is 65 percent (Norris, 2014). Our research found that low-income student enrollment in 2013 was 46 percent. NCAN members have a great success rate in getting their students into college. However, only 50 percent of the students who did enroll completed a credential in a six-year window. That completion rate is 5 points lower than the national average (Shapiro & Dundar, 2016). The national completion average for low-income high schools is 24 percent. Therefore, NCAN member-served students' completion rates are still higher than the latter average (NSCRC, 2016). NCAN-member services have a positive effect on students' past enrollment due to students outperforming other low-income students. When looking at the success of NCAN member students' enrollment compared to completion, we may be seeing the effect of a focus on enrollment over completion from programs.

FAFSA Assistance and Test Preparation Correlate with Higher Likelihood of Enrollment & Scholarship and PSED Success Correlate with Higher Likelihood of Completion

Our findings show an increase in the likelihood of enrollment associated with receiving FAFSA assistance. For the sample of students for whom we have a six-year postsecondary window, receiving FAFSA assistance correlated with a 9-percentage point increase in the likelihood of enrollment. When looking at all of the students in the sample, we found an even larger (15.6 percent) correlation between receiving FAFSA assistance and the likelihood of enrollment. Though previous research was less clear about the effect of test preparation on enrollment, our results found a 14.3-percentage point increase in the likelihood of enrolling for students receiving that service.

Certain factors may be impacting our findings on test preparation and FAFSA assistance. A student's willingness to participate in any test preparation program might indicate a level of motivation that makes the student more likely to find success in college regardless of services provided. Motivation might inflate students' success rates in the literature and our findings. FAFSA assistance does not ensure students will be matched to the institution best suited to them. Test preparation and a student's higher scores may help the student be accepted into and enroll at more selective institutions, which typically have higher graduation rates and more support services for students.

For the completion sample, we found that receiving a scholarship correlates with an increase in the likelihood of enrolling (15.4-percent increase) and completing (10.0-percent increase). We understand that providing every student with a scholarship is not feasible; however, helping students apply for and obtain scholarships through the other services provided is important.

Postsecondary success services may look very different between programs, but providing students with a form of support once they enroll can be beneficial for completion. We found a correlation between receiving postsecondary completion services and a 16.7-percentage point

increase to the likelihood of completing a credential.

Likelihood of Enrollment and/or Completion Varies Across Student Demographics

Overall, FAFSA assistance correlates with a higher likelihood of enrolling for all demographics. However, a one-size-fits-all approach may not be the most effective approach, seeing as the likelihood of enrolling in college and/or completing a credential varies across student demographics. While most demographic groups benefit from FAFSA assistance the most, for Black and White students, test preparation has a higher correlation with an increased likelihood of enrolling. The correlation between FAFSA assistance and an increased likelihood of enrolling was largest for Hispanic students.

The literature supports our finding that a one-size-fits-all approach might not be appropriate for students with varying backgrounds. However, the specific findings of which services might be most useful to each demographic are not consistent. The most glaring inconsistency is our finding that receiving test preparation correlates with the highest likelihood of enrollment for White students. In contrast, the literature indicates that non-White students benefit the most from test preparation due to cultural biases and these students' lack of test familiarity. Still, our findings indicate all demographics benefit from test preparation and Black students have a more positive likelihood of enrollment with test preparation than FAFSA assistance.

Students Receive a Service Mix, not a Two-Service Silver Bullet

Our findings and the literature for service patterns are both unclear. Our findings for service patterns do not discern a service combination that correlates with a higher likelihood of enrollment or completion. A large contributor to the lack of correlation is that the majority of students in our sample receive five or more services. Our literature scan did not find an ideal service combination, though Vargas (2004) suggested a multi-pronged approach to providing college information to students and their parents. Mostly, literature focuses on one service at a time, likely for purposes of simplicity and methodology. Comparing service combinations could be difficult as multicollinearity (i.e., if most students are receiving most services, there is not enough variation among students in the dataset to examine the effect of not receiving a service or combination of services) and a lack of consistency in service administration might make such a study difficult to conduct.

RECOMMENDATIONS

Focus on Completion, Not Just Enrollment

The sample of students receiving services from NCAN member organizations has an enrollment rate above the national average and a completion rate below the national average. We recommend NCAN members focus not only on college access, but also on success: aiming toward completing college. NCAN members should include and strengthen services to focus on success and to help students who successfully enrolled complete. Keeping up with students may be challenging once they disperse to college, and colleges have a wide variety of student support services. However, concentrating on improving services for college completion and partnering with colleges to help improve their in-house services may boost the completion rates of students receiving NCAN-member services.

Include FAFSA Assistance, Test Preparation, and PSED Success in Service Mix

To increase a student's likelihood of enrolling in college, we recommend promoting test preparation, FAFSA assistance, and aid in obtaining scholarships to NCAN members and the field. To increase a student's likelihood of completing a credential, we recommend NCAN

members promote scholarships and postsecondary success services. We do not recommend that members eliminate other services but instead suggest that they ensure these four services are part of a service mix that students receive. Although our research does not address this question, continuing to provide FAFSA assistance throughout college may help students to persist given the importance of financial aid for college affordability beyond initial postsecondary enrollment. We also recommend further qualitative research to identify the components of successful FAFSA assistance, test preparation, and postsecondary success programs. Identifying best practices for these services may inform NCAN members on how to best administer FAFSA assistance, test preparation, and postsecondary success services as well as, potentially, other services.

Continue Considering Demographic Differences in Service Administration

We recommend that NCAN members continue to consider differential outcomes across demographic groups and tailor services to interventions that work overall and for specific groups. A one-size-fits-all approach is not best across demographics, but regardless, test preparation, FAFSA assistance, and receiving a scholarship correlate with higher likelihoods of enrolling while scholarship and postsecondary success services correlate with higher likelihoods of completing. For White students, test preparation helps the most. If a member's students are mostly White, test preparation may need more emphasis. Hispanic students experience the largest boost from FAFSA assistance. If a member's students are mostly Hispanic, FAFSA assistance may need more emphasis. Members may want to conduct a study within their program to see which services work the best for their students based on student demographics, geography, and the program's own offerings.

Promote a Service Mix Concept, not a Silver Bullet

We recommend further research and data collection on potential ideal service mixes. Because students on average receive five or more services, we cannot make any conclusions about a service combination that correlates with a higher likelihood of enrolling in college and/or completing a credential. Future studies could analyze service combinations of three to five services, as reality shows us that programs provide multiple services to students. These studies could investigate pre-determined service combinations and observe enrollment and completion rates to see if certain combinations experience higher rates. If there is an ideal combination, organizations would then know the services on which to concentrate efforts, which ones to expand if resources allow, and which ones to retract if resources tighten.

Subsequent Recommendations

The following two recommendations are not directly related to our research questions, but rather are driven by our data analysis experience and subsequent familiarity with the NCAN dataset.

Improving NCAN Benchmarking Data Collection Practices

We recommend improving current NCAN data collection and adding new data points. NCAN members should avoid selecting all services when they submit data to the NSCRC. If they provide one service marginally, not selecting that service could reduce the number of students enrolled in so many services. For future data collections, NCAN could ask members to indicate dosage of services: number and types (texts, face-to-face meetings, classes, etc.). Collecting dosage data will provide insight about the dosage of services that correlates with higher rates of enrollment and completion for members to provide students.

Randomized Control Trial and Cost-Benefit Analysis

We recommend NCAN engage in new research efforts, including a randomized control trial and

a cost-benefit analysis, to enhance its benchmarking metrics for the NCAN membership. We suggest that NCAN partner with a research group to conduct an experimental study, specifically a randomized control trial, and ultimately develop the causal story for service effects on enrollment and completion. We envision a randomized control trial with lottery-selected low-income, first-generation students in control (no services) and treatment (services) groups. With the high internal validity of a randomized controlled trial, NCAN would be able to determine with more certainty which services directly impact student enrollment and completion. Additionally, we suggest that NCAN conduct a cost-benefit analysis of the various services offered by NCAN members to discern each service’s relative cost and benefit. Understanding whether a service is offering a positive or negative net benefit would help NCAN members better determine which services to offer in their service mix.

How does it all connect?

Analysis	Research Question	Key Finding	Recommendation
1 Enrollment & Completion Status Snapshot	How do student enrollment and completion statuses vary by type of services received and student demographics among recipients of NCAN-member services?	Students receiving NCAN-member services have an enrollment rate above the national average and a completion rate below the national average, but above the average of other low-income students.	Focus on completion, and not just enrollment.
2 Service Effectiveness	Which services correlate with a higher likelihood of enrolling and/or completing among recipients of NCAN-member services?	Students receiving FAFSA assistance and test preparation in their service mix experience a statistically significant higher likelihood of enrolling. Students receiving postsecondary success services and scholarships in their service mix experience a statistically significant higher likelihood of completing.	Include FAFSA assistance, test preparation, and postsecondary success services in a student’s service mix, and scholarships as resources allow.
3 Student-Level Comparisons	Which services correlate with a higher likelihood of enrolling and/or completing among recipients of NCAN-member services with similar demographics?	Students across different demographic groups experience different likelihoods of enrolling/completing when they receive FAFSA assistance, test preparation, postsecondary success services, and scholarships in their service mix.	Continue considering student demographic differences in service administration.
4 Service Pattern Identification	Are there services that when paired have a significant correlation with a higher likelihood of enrolling and/or completing among recipients of NCAN-member services?	No combination of two services correlates with a significantly higher likelihood of enrollment and/or completion; a majority of the sample receives five or more services.	Promote the concept of a service mix, and not a silver bullet, to members.

CONCLUSION

NCAN members should include FAFSA assistance, test preparation, and postsecondary success services (and scholarships as resources allow) in their service mix and increase their focus on college success. Our findings indicate that students receiving FAFSA assistance and

test preparation in their service mix have a higher likelihood of enrolling, and students receiving postsecondary success services and scholarships in their service mix have a higher likelihood of completing. The finding holds true across demographic groups and when compared to other NCAN-member services, although the degree of each program's effectiveness varies across demographic groups. Services should be included in a service mix, as we found no two-service silver bullet. Additionally, our findings suggest an opportunity for NCAN members to expand their goals to include improving college success rates, as the completion rate for students receiving NCAN-member services is below the national average (though still well above average low-income high school college completion). Our findings and recommendations can help NCAN and its membership work toward their collective goal of increasing college access and completion for underrepresented students.

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