REPORT

FINAL REPORT

Working Students Success Network (WSSN): Final Outcomes Evaluation Report

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I. BACKGROUND ON THE WORKING STUDENTS SUCCESS NETWORK STRATEGY AND EVALUATION

The Working Students Success Network (WSSN), an expansion of the Working Families Success Network into community colleges, represents an innovative, comprehensive strategy for supporting low-income students and students of color. The WSSN strategy brings together and integrates access to a full range of services and supports to help students improve their financial knowledge, budgeting skills and choice of financial products, and develop and implement achievable career plans, putting students on a path to securing marketable postsecondary credentials and achieving economic success. From 2014 to 2017, WSSN was collaboratively funded by the Annie E. Casey Foundation, Lumina Foundation, W.K. Kellogg Foundation, Kresge Foundation, MetLife Foundation, and Bank of America, and managed by the national reform network, Achieving the Dream (ATD). Nineteen community colleges in four states—Arkansas, California, Virginia, and Washington—received financial and implementation support to develop and provide services and to move toward sustainability of the WSSN strategy following the end of the grant period.

Although it was expected that implementation of the WSSN strategy would vary across participating institutions, the strategy's underlying theory of change emphasized a few key features (Figure 1). ATD documented these features and disseminated them in a set of common definitions and design elements to be employed by the participating colleges (Achieving the Dream 2015). Among these program features are the following:

- At the *state level*, the state college system should play a role in developing and implementing policies to support the WSSN strategy and its targeted students, disseminating information on promising practices, and supporting collection and use of relevant student data.

- At the *community college level*, the focus should be on equity and inclusion, driving toward broader institutional cultural change that yields a positive, supportive orientation toward serving low-income students and students of color. By permanently integrating WSSN supports into their offerings, the ultimate goal is to close the gap in academic and employment outcomes between targeted students and their more advantaged peers. Guidance from ATD specified that these groups should be targeted by the strategy, but colleges were given the flexibility to use their own definition of low-income. Nonetheless, colleges were expected to articulate quantifiable goals for serving both groups.

- At the *WSSN program level*, services should be integrated across pillars and targeted to each student's individual needs. According to guidance from ATD, integration is the intentional selection of services across at least two of the pillars, delivered either simultaneously or in sequence in a way that is tailored to help meet each student's needs.

  - The three service pillars are (1) *employment and career advancement,* (2) *income and work supports,* and (3) *financial services and asset building.* ATD defined employment and career advancement services as those that focus on education, job readiness, and job placement. Income and work supports help students gain access to student financial aid, public benefits, tax credits, and free tax assistance. Last, the financial services and asset-

building pillar focuses on financial education and coaching linked to affordable products and services to help families stabilize their finances and become more economically competitive (Achieving the Dream n.d.[a]).

- The mode of service delivery should include both high-touch and low-touch offerings within each pillar, with students who are identified as needing *high-touch* services ideally receiving at least one such service. High-touch services are those involving intensive, one-on-one interactions between students and service provider staff. Low-touch services were defined as standardized services that reach a broad range of participants in a group setting.

As shown in Figure 1, the WSSN strategy theorized that receipt of integrated services across pillars, delivered in a supportive state and college setting, would improve students' academic, employment, and financial success in the short term, laying a foundation for long-term economic success.

Figure 1. WSSN strategy for integrated service delivery
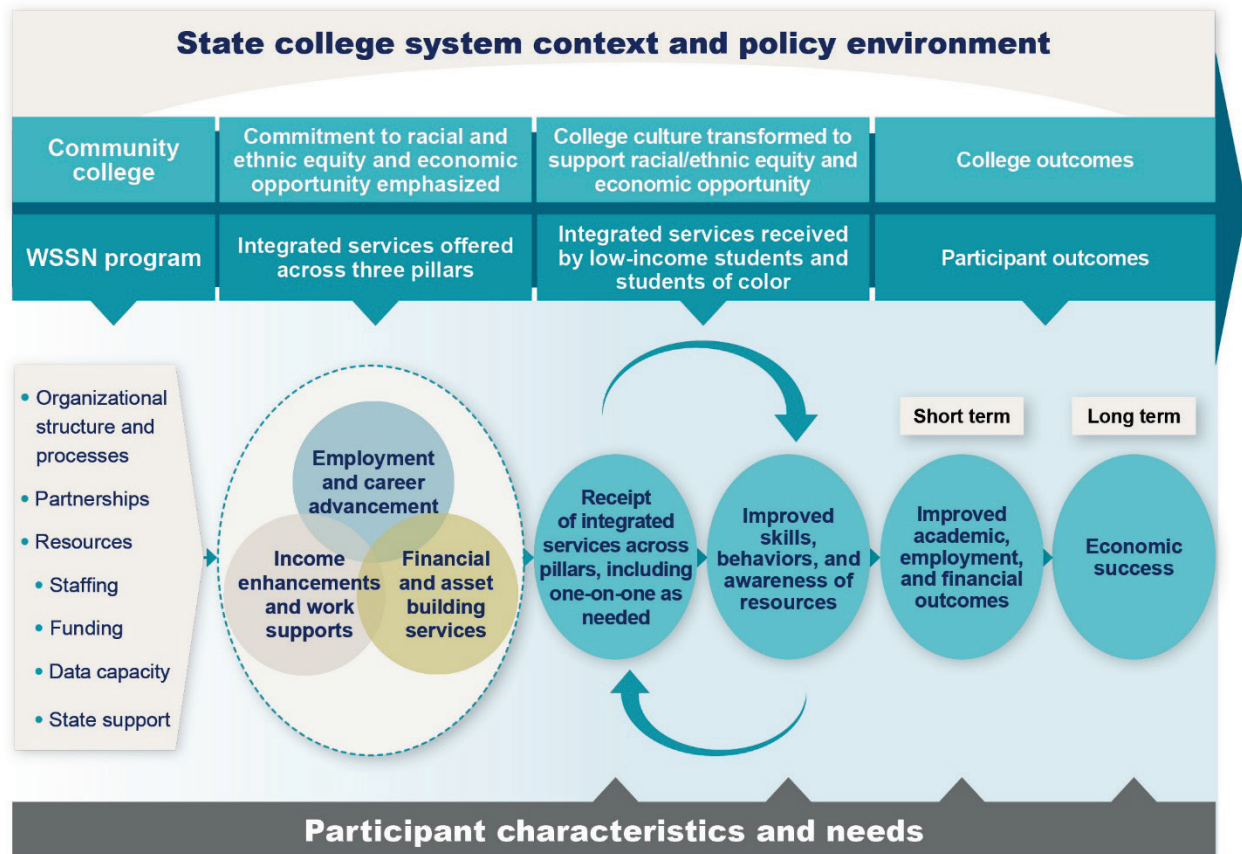
In general, colleges were given leeway to implement the WSSN strategy to best fit with their state and college system structures, demographics, and culture. They were expected to set their own WSSN implementation milestones and expand services over time to reach their own targets (Achieving the Dream n.d.[b]). For example, ATD's guidance specified that, at a minimum, the colleges' definition of low-income would be the Pell-eligible population, but if another

mechanism for defining low-income students was in place, colleges could choose to use that definition. Similarly, although colleges were expected to offer high-touch services in all three pillars, it was up to the colleges to figure out how these services would be combined, delivered, and targeted to meet the needs of individual students. Furthermore, colleges were responsible for identifying which students were in need of high-touch services to inform their service goals. This flexibility in implementing WSSN was limited only by two requirements: colleges had to provide (1) high-touch financial coaching and (2) low-touch financial literacy and benefits access information through a student success course designed to help new students transition to and succeed in college. Given the flexibility that ATD's program design guidance afforded colleges in articulating their own goals, a high degree of variation in implementation would be expected across colleges.

In April 2015, Mathematica Policy Research and its partner DVP-PRAXIS were selected to design and execute an independent evaluation of the WSSN strategy. The evaluation included an implementation study and an outcomes study, as well as technical assistance to support colleges' administrative data collection and reporting for the outcomes evaluation. The implementation study was designed to document key aspects of WSSN implementation and measure progress toward sustaining the strategy beyond the grant period. The team reviewed background documents and annual reports, conducted telephone interviews with all colleges, and led in-depth site visits at eight colleges to support this analysis. To complement the implementation study, the outcomes evaluation was designed to analyze participant characteristics and service receipt in the WSSN colleges, as well as the relationship between participant service receipt and academic outcomes, overall and by participant subgroups targeted by the strategy.[1] The team analyzed the administrative data that 18 colleges provided from student records for the fall 2015 through spring 2017 academic terms.[2]

This report presents the findings of the outcomes evaluation. The evaluation's primary research questions were as follows:

1. Who was served through the WSSN strategy during the grant period?

2. What types of services did participants receive?

3. What are the outcomes for WSSN participants?

We found that more than 50,000 students were served across the participating colleges, with large shares from low-income households (as measured by Pell grant receipt) and traditionally underrepresented racial and ethnic groups, in line with the strategy's focus on low-income students and students of color. We also found that despite emphasis on integrated services and high-touch services in the theory of change, 32 percent of students received services in multiple pillars, and 33 percent received at least one high-touch service. Nonetheless, receipt of services in multiple pillars was positively associated with persistence (though negatively associated with

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[1] Although we considered analyzing nonacademic outcomes—for example, benefit receipt, employment data, and indicators of financial well-being such as credit scores—data were not available to support a robust analysis.

[2] One WSSN college did not provide usable data for the evaluation so they are not included in these analyses.

credential completion), and receipt of a high-touch service was positively related to both persistence and completion.

In addition to analyzing colleges' administrative data, we also draw upon the final WSSN implementation study (Price et al. 2018) to contextualize the findings presented here. In particular, the implementation findings help us understand the specific approaches colleges used to integrate services and the ways in which some customized services were able to meet student needs. It merits noting, however, that the time periods covered by the various qualitative and quantitative data used in the two studies are not completely aligned. Taken together, the implementation report and outcomes evaluation offer a few key considerations detailed in the discussion section:

- *Receiving a high-touch service may matter more than receiving services across multiple pillars.* The results of the outcomes evaluation show a mixed relationship between cross-pillar services and outcomes, but they do indicate that high-touch services are positively related to outcomes, as suggested by findings from the implementation report.

- *Colleges may reach more students with low-touch services delivered in group settings, but high-touch services are designed to be targeted, more intensive services aligned with individual student needs and goals (Achieving the Dream 2015).* Given the value of services customized to student needs, it is worth considering how best to connect students to these services.

- *A high-touch service delivery approach may not be the only way to target services to meet individual participant needs.* Colleges could consider data-driven strategies such as real-time targeting and outreach triggered by student behavior or data, or predictive analytics to model which services might benefit different types of students. Colleges could also consider the "hub" model which allows students to drop by a single location when they have a need.

II. OVERVIEW OF DATA AND ANALYTIC APPROACH

In line with WSSN grant requirements, participating colleges were asked to provide participant-level data for the outcomes evaluation. A participant was defined as anyone who received at least one WSSN service at any time between fall 2015 and spring 2017. Colleges provided administrative records to document participant characteristics, including race/ethnicity,[3] gender, age, and whether the participant was married, had any dependents, or received a Pell grant.[4] The administrative records also contain student course information and credential completion data. Section A of the appendix provides more details on our data and analytic methods.

Colleges were also responsible for collecting and reporting the type of service each participant received, as well as specifying the pillar (or pillars) addressed by each service and the service delivery mode (low- or high-touch). Importantly, although the WSSN strategy emphasizes the intentional combining or sequencing of services, the data do not capture this intentionality. For example, students may have received a single high-touch service in one pillar, which triggered the college to refer them for a service in a different pillar based on their needs; therefore, although these students received an "intentional" combination and sequencing of services from the college, we can only observe that they received two services in two different pillars. Given this data limitation, we constructed two main service variables for our analyses: receipt of services in multiple pillars and receipt of at least one high-touch service.

Because of the WSSN strategy's emphasis on promoting equity by focusing on serving low-income students and students of color, we also drew on data from the Integrated Postsecondary Education Data System (IPEDS), which covers the composition of the student body at the colleges. We used IPEDS data from fall 2015 (the first term of WSSN implementation) as a

> **Colleges:** 19 colleges that received funding to implement the WSSN strategy (four in Arkansas, seven in California, four in Virginia, and four in Washington)
>
> **Participants:** 53,019 participants who received at least one WSSN service between fall 2015 and spring 2017 (could include for-credit and noncredit students)
>
> **Data:** administrative data from colleges on participant characteristics; services received, classified by pillar and mode (low- or high- touch) by the college; coursework; and academic completion
>
> **Methods:** descriptive analyses, including regression models
>
> **Key outcomes:** term-to-term persistence and completion of a degree or certificate
>
> **Key explanatory variables:** indicator variables for (1) receipt of services in two or more pillars, (2) receipt of at least one high-touch service, and (3) receipt of *both* services in two or more pillars and at least one high-touch service.

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[3] Although we collected data on all traditionally underrepresented racial and ethnic groups (including American Indian/Alaska Native, Native Hawaiian/Pacific Islander, and mixed-race), we focus on results for blacks and Hispanics throughout the report due to small sample sizes for the other groups. We use the terms black and Hispanic as those are the category names reported in IPEDS.

[4] Pell grant receipt is the only proxy for economic disadvantage available in the administrative data. This indicator provides some information about household socioeconomic status, but it is imperfect. Many students who would be eligible for Pell do not apply for a number of reasons, such as being unaware of aid opportunities, not having the required documents, facing legal or immigration issues, or believing they do not need the aid.

benchmark to assess whether colleges were serving higher or lower proportions of these types of students over the grant period relative to the student body.

Because this was the first major expansion of an integrated service delivery approach in community colleges, the evaluation was not designed to measure the effectiveness of WSSN. It was designed to document participant characteristics, receipt of services, and outcomes, as well as to analyze the relationships between them. As such, the analysis uses descriptive methods—including means, percentages, correlations, and regression analyses—to address the research questions. We tabulated participant characteristics (research question 1) and used tabulations and logistic regression to examine service receipt (research question 2) and participant outcomes (research question 3). We conducted all analyses first in the aggregate, reporting findings across all colleges. Given the variation in WSSN implementation across colleges that was documented in the implementation study, we disaggregated findings by college, as appropriate, to provide context for interpreting our findings. Finally, because the WSSN strategy focuses on improving economic opportunity and equity and inclusion, we highlight findings for low-income students and students of color and sometimes conduct subgroup analyses.

III. OUTCOMES EVALUATION FINDINGS

In this section, we present the outcomes evaluation findings for the three primary research questions articulated in the introduction. Because we conducted multiple analyses to address each primary research question, we organize our discussion around detailed subquestions within each. Throughout the section, we call out key findings in blue text boxes.

### 1. Who was served through the WSSN strategy during the grant period?

The WSSN strategy was designed to serve low-income students and students of color and to scale up the initiative to meet participation targets over the grant period. To examine who was served through the WSSN strategy, we first tabulated the characteristics of all WSSN participants from the background data that colleges provided. Forty-three percent of WSSN participants were white, 30 percent were Hispanic, and 12 percent were black; over one-third of participants received a Pell grant. On other dimensions, we found that a majority of participants were under age 25 (61 percent), just over half (55 percent) were female, 73 percent were unmarried, and half had a dependent (Appendix Table B.1). We also calculated overall participation rates and found that more than 53,000 students were served by WSSN in the first two years of the strategy's implementation (our window of observation). We examine below how these participation patterns compare with patterns for those targeted by the strategy.

> *How do participant characteristics compare with those of the colleges' overall student populations?*
>
> **Relative to their student bodies, the majority of colleges served larger shares of blacks, Hispanics, or Pell grant recipients, in line with the strategy's focus on low-income students and students of color.**

To determine whether colleges were targeting low-income students and students of color, we used a two-sample t-test for each college to compare the composition of WSSN participants with that of students at the same colleges in fall 2015. Because efforts to target particular student groups under the WSSN strategy were developed and implemented at the college level, it is important to examine these questions about participant characteristics by college. We found that the majority of colleges served significantly higher or similar proportions of the groups targeted by WSSN (Figure 2). Twelve of 18 colleges served significantly higher proportions of black students than their student body, and one college served a lower proportion. The percentage of Hispanic students served relative to the student body was larger at 7 of 18 colleges and smaller at two. Looking at the overlap of these two targeted groups, we find that 16 of 18 colleges served a significantly larger share of blacks or Hispanics relative to percentages of those groups in their respective student bodies, and three of those colleges served a larger share of both groups (Appendix Table B.2). With respect to low-income students, 9 of 17 colleges served a significantly larger share of Pell grant recipients relative to the share of recipients in the student body. Recall that Pell grant *receipt* is a proxy for low-income status and may undercount the number of low-income students, as it does not capture students who may have been eligible for a Pell grant but did not receive one. These results suggest that although some of the colleges could do more to serve the various types of students targeted by the WSSN strategy, a majority of colleges are serving the targeted student groups at a rate higher than might be expected, given their respective student populations.

Figure 2. Proportion of WSSN participants compared with students at the same colleges, by targeted group

Black

Hispanic

Pell grant recipient

■ Larger ■ Similar ■ Smaller
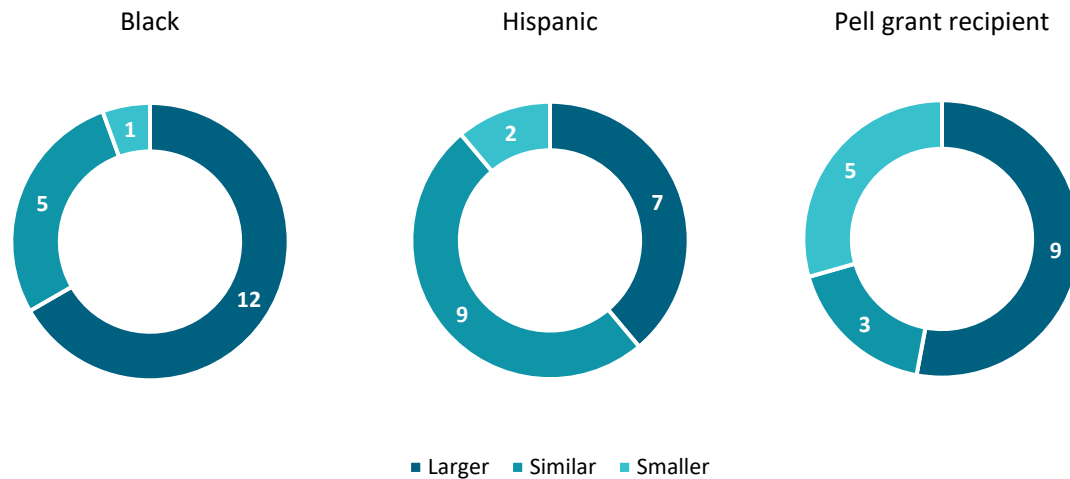
Source: WSSN administrative data files and IPEDS.

Note: Participants consist of people who received services in any term (fall 2015, winter 2016, spring 2016, summer 2016, fall 2016, winter 2017, and/or spring 2017) and may include for-credit and noncredit students. The proportion of participants at colleges in the "larger" and "smaller" categories are significantly different from students at the same college at the $p \leq .05$ level, using a two-tailed t-test. The "similar" category denotes results that were not significantly different. One college did not report Pell grant recipient status, so the college-level sample size for that analysis is 17 rather than 18.

How many participants received WSSN services?

Colleges served more than 53,000 unique participants between fall 2015 and spring 2017.

Colleges implementing the WSSN strategy were expected to provide services to new and current students in accordance with their own participation targets for the grant period which fluctuated as the strategy evolved. Over the first two academic years (between fall 2015 and spring 2017), the number of participants served increased steadily. In aggregate, the colleges served a cumulative total of more than 53,000 unique participants by spring 2017 (Figure 3). Participants could begin receiving services in any term. The largest numbers of participants were reported in the fall terms, which likely reflects community college enrollment patterns and the timing of student success courses. The numbers for winter terms are small, given that only colleges on the quarter system report for winter term. The number of participants served varied widely, from 101 participants at one college to 19,808 participants at another (Appendix Table B.3).

Figure 3. Number of unique participants, cumulatively and by academic term
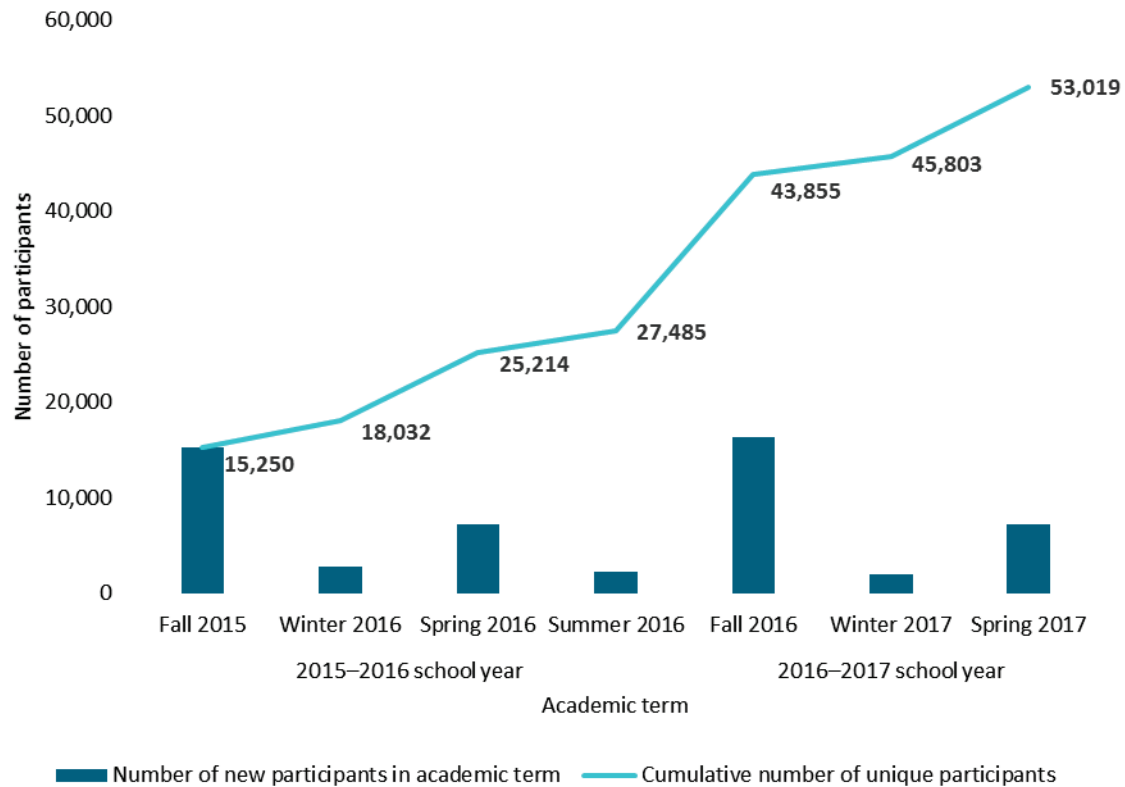
Note: Participants consist of people who received services in any term (fall 2015, winter 2016, spring 2016, summer 2016, fall 2016, winter 2017, and/or spring 2017) and may include for-credit and noncredit students.

2. What types of services did participants receive?

The WSSN strategy was designed to deliver integrated services across pillars, as the theory of change suggests that services will work best if they are offered in an intentional combination or sequence. In the previous section, we considered all participants who received any type of service regardless of the pillar combination or mode. In this section, we use the administrative data to document what percentage of students received services in two or more pillars versus a single pillar. We also examine the service mode, as colleges were expected to provide high-touch services to those students identified as needing them. As previously noted, the data do not allow us to examine the extent to which services were intentionally combined or whether students who received high-touch services were identified as needing them or sought out services themselves.

What percentage of participants received services across multiple pillars, high-touch services, and both cross-pillar and high-touch services?

About 32 percent of participants received services in two or more pillars, and just over 33 percent received at least one high-touch service. Seventeen percent of participants received both services in multiple pillars and one or more high-touch service.

The WSSN strategy emphasized offering integrated services, and the data show that 32 percent of participants received services across two or more pillars (Figure 4). The most common pillar received was the financial services and asset building pillar, which may reflect the strategy's requirement that participating colleges embed financial literacy content in student success courses. High-touch services were much less common than low-touch services: just over 33 percent of participants received at least one high-touch service, whereas 67 percent received only low-touch services. In examining the proportion of participants that received both services across multiple pillars and at least one more-intensive high-touch service, we found that 17 percent of participants received this service combination that was posited to improve outcomes in the theory of change.

Figure 4. Services received, by pillar and mode
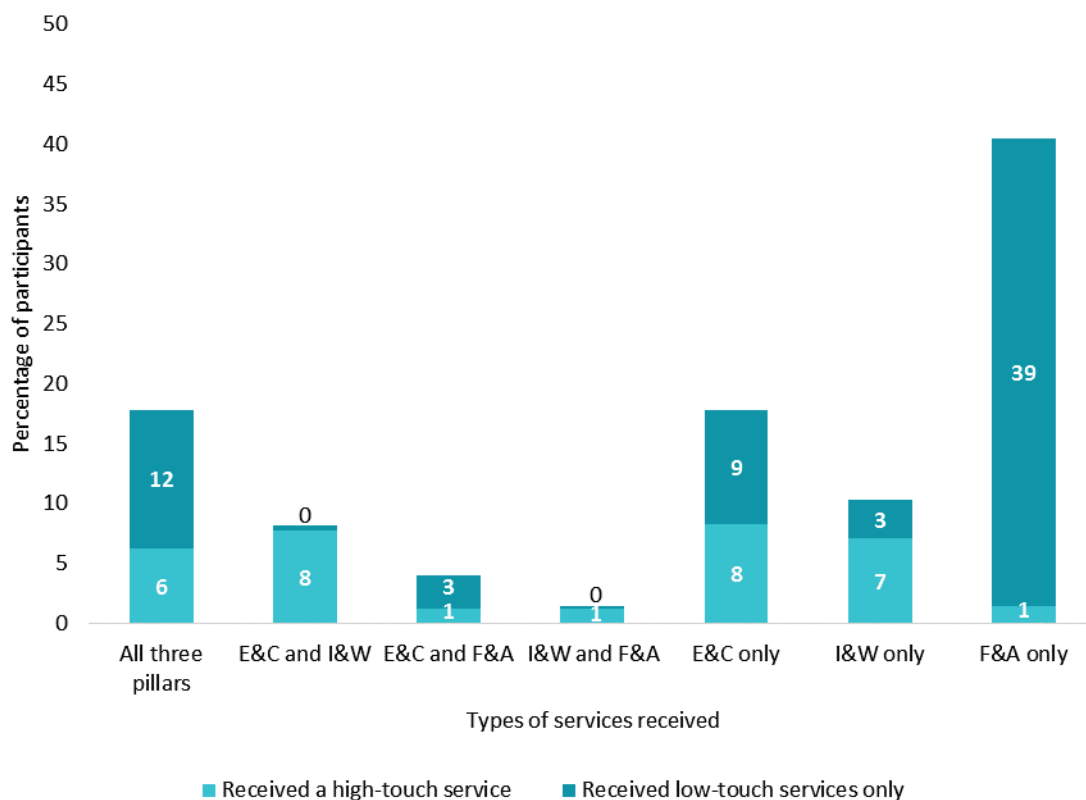
Source: WSSN administrative data files.

Note: Participants consist of people who received services in any term (fall 2015, winter 2016, spring 2016, summer 2016, fall 2016, winter 2017, and/or spring 2017) and may include for-credit and non-credit students.

E&C = employment and career advancement services; I&W = income and work supports; F&A = financial services and asset building.

> *Do the types of services received differ by college?*
>
> **Service receipt varied widely across colleges. Receipt of services across multiple pillars varied from below 5 percent at some colleges to above 90 percent at others, and the same range applied for receipt of at least one high-touch service.**

Given the colleges' flexibility to determine service offerings, we also analyzed receipt of different types of services separately by college. We show the results for a sample of six colleges in Figure 5 for illustrative purposes (for the full results, see Appendix Table B.4). We found a great deal of variation in service receipt patterns across colleges based on the administrative data. At some colleges, participants received almost no cross-pillar or high-touch services while at others, almost every participant received cross-pillar or high-touch services. For example, at one large multicampus college (College M), only 2 percent of participants received cross-pillar services and 3 percent received at least one high-touch service. Conversely, at one small college (College N), 94 percent of participants received cross-pillar services and 100 percent received a high-touch service. There were also schools between these extremes—for example, at one small college (College B), 69 percent of participants received cross-pillar services, and 23 percent received any high-touch service. Receipt of both cross-pillar and high-touch services similarly varied across colleges, ranging from one percent (College M) to 94 percent (College N) among these six colleges.

Figure 5. Services received, by college, pillar, and mode
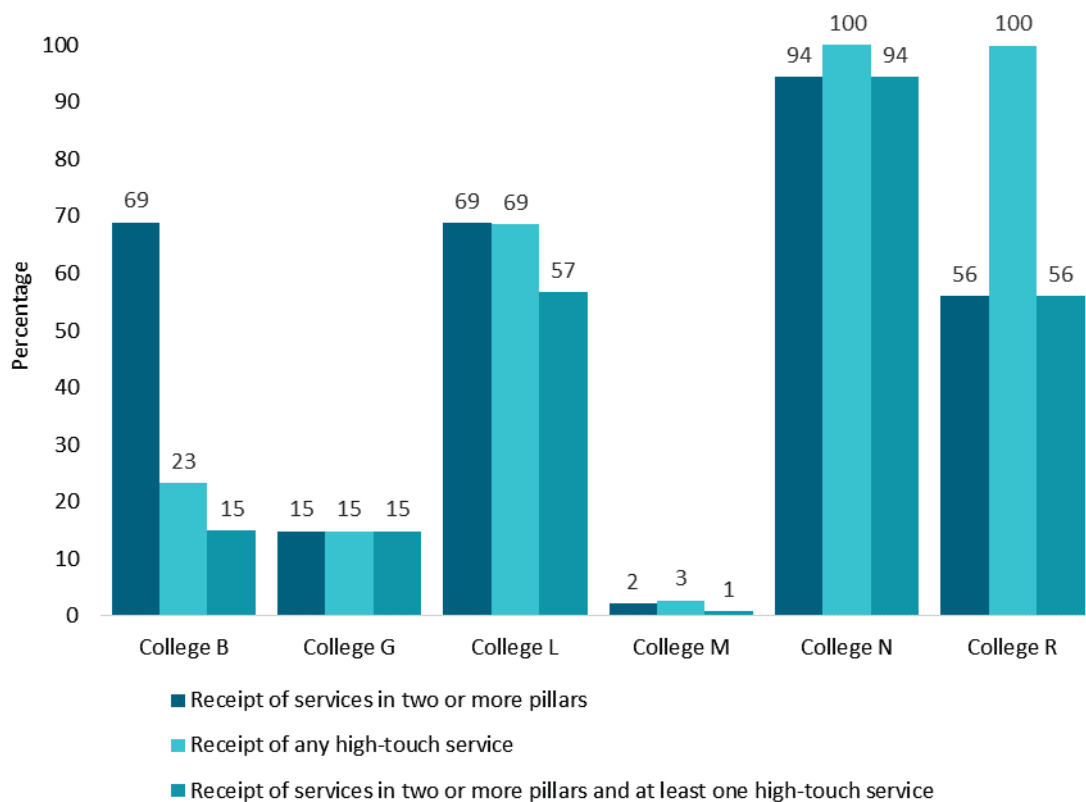
Source: WSSN administrative data files.

Note: Participants consist of people who received services in any term (fall 2015, winter 2016, spring 2016, summer 2016, fall 2016, winter 2017, and/or spring 2017) and may include for-credit and non-credit students.

The wide variation in service receipt across the colleges is perhaps unsurprising, given that the implementation study found differences in colleges' approaches to service provision. For example, at one end of the spectrum, some colleges instituted a "hub" model, which served as a one-stop shop for students to receive customized services or referrals across pillars through high-touch engagement; at the other end of the spectrum, most colleges relied primarily on low-touch student success courses to deliver predetermined WSSN service packages to large numbers of students. But the implementation study also identified variation in the student success course approach. For example, one college provided low-touch services across all three pillars through a student success course and required students to meet with a financial coach (a high-touch service). Another college provided low-touch services across all three pillars in a student success course as well as an orientation, and then identified a set of students who were referred to a series of workshops that provided information across all three pillars (Price et al. 2018). In comparing the results from the implementation and outcomes studies, however, it is unclear that one WSSN model supports the integration of services across pillars more than others.

> *Do the types of services received differ by participant characteristics?*
>
> **Pell grant recipients were more likely than non-Pell recipients to receive services in multiple pillars. Pell grant recipients and black participants were more likely to receive high-touch services than their counterparts, whereas Hispanics were less likely.**

Because the WSSN strategy targeted low-income students and students of color, and it emphasized that services be intentionally combined across pillars—in part through delivery of high-touch services, as needed—we explored the extent to which targeted students were more likely than their counterparts to receive these types of services. In this section, we present subgroup differences in the type of services received based on logistic regression models with college fixed effects (see Equation A1 in Appendix A and Appendix Table B.5).

Within colleges, Pell grant recipients were more likely to receive both cross-pillar and high-touch services while results for students of color were mixed. Pell grant recipients were 7 percentage points more likely than non-Pell recipients to receive services in two or more pillars, whereas blacks and Hispanics received services in two or more pillars at about the same rate as whites (Figure 6). In terms of receipt of high-touch services, blacks and Pell recipients were more likely than their counterparts to receive at least one high-touch service (by 4 and 1 percentage points, respectively). In contrast, Hispanics were 1 percentage point less likely than their counterparts to receive high-touch services. Although we cannot directly measure the intentionality of service packages received, these findings suggest that low-income students (as measured by Pell grant receipt) are receiving targeted services in line with the intent of the WSSN strategy. This finding—especially when considered together with the mixed direction or lack of differences in service receipt among the different racial and ethnic groups—also aligns with the implementation study, which suggested that colleges were approaching WSSN implementation more through a poverty lens than a racial equity and inclusion lens.

Figure 6. Marginal differences in the rate of cross-pillar and high-touch service receipt among targeted and nontargeted subgroups (Equation A1)
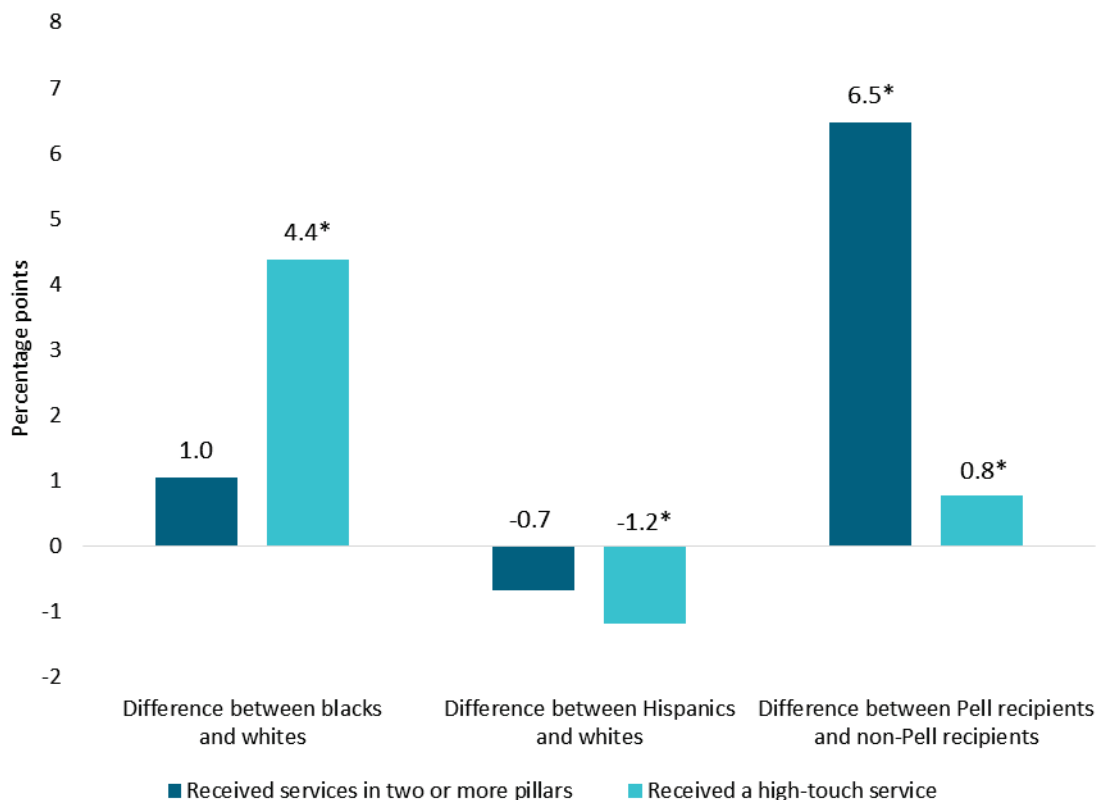
Source: WSSN administrative data files.

Note: Participants consist of people who received services in any term (fall 2015, winter 2016, spring 2016, summer 2016, fall 2016, winter 2017, and/or spring 2017) and may include for-credit and noncredit students.

*Coefficients are significantly different from zero at the $p \leq .05$ level, using a two-tailed t-test.

3.   What are the outcomes for WSSN participants?

The WSSN theory of change emphasizes the role of postsecondary credentials in achieving economic success. Given the relatively short window of observing credential completion, the evaluation also examined participants' term-to-term persistence which is a leading indicator for completion. Among the first cohort of participants—those who first received services from fall 2015 through spring 2016—we found that term-to-term persistence was 73 percent.[5] For the same cohort, 12 percent completed a degree and 4 percent had completed a certificate as of spring 2017 (Appendix Table B.6). These findings are similar to those for community college student outcomes nationwide, where year-to-year retention (the institutional corollary of

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[5] To maximize the window of observation for these outcomes, we consider only the first cohort of WSSN participants—that is, those who first received services from fall 2015 through spring 2016. Even so, the evaluation's window of observation represents a short time for completing a degree or certificate. For example, at colleges on a semester system, we observed students who first received services in fall 2015 for just three subsequent semesters, and those who first received services in spring 2016 for only two semesters.

individual persistence) stands at just over 60 percent and credential completion at about 20 percent for first-time, full-time, credential-seeking students (Snyder et al. 2016).

> *What is the relationship between service receipt (receipt of at least one high-touch service and receipt of services in multiple pillars) and academic outcomes (term-to-term persistence and credential completion)?*
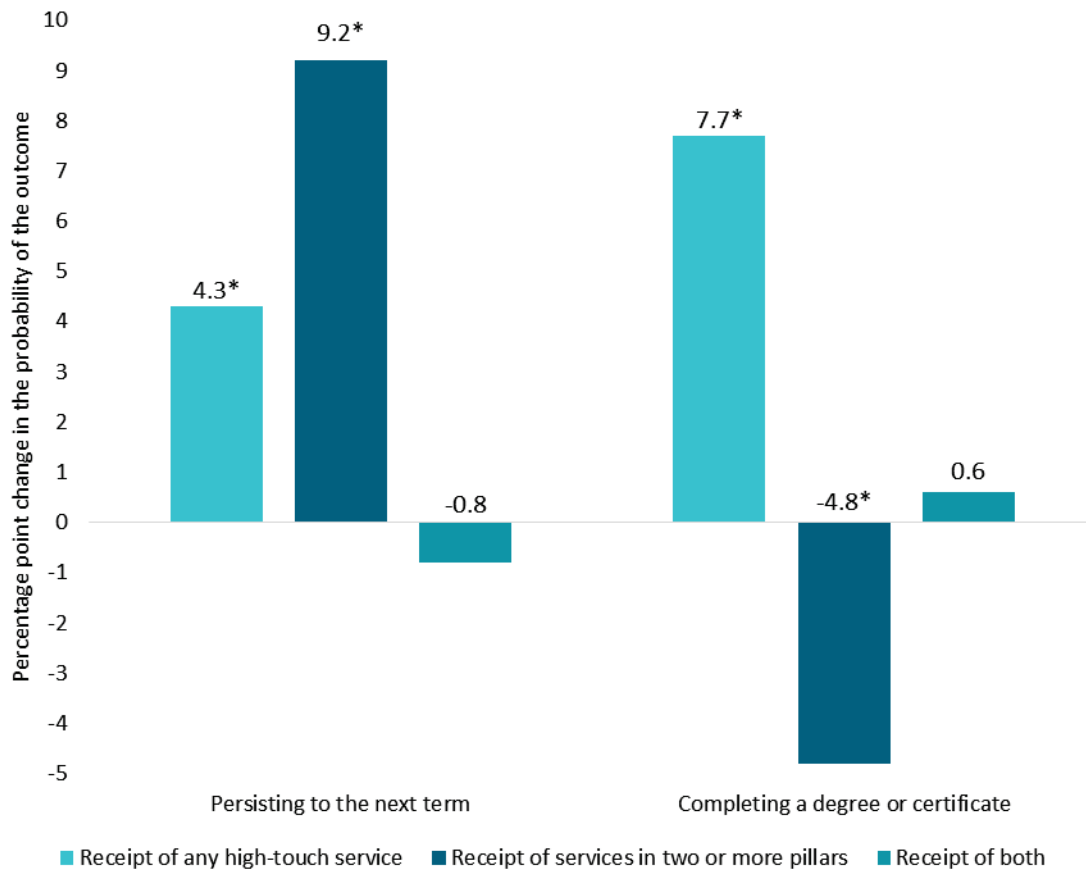>
> **Receipt of at least one high-touch service was associated with improved persistence and credential completion; service receipt in two or more pillars was associated with improved persistence but decreased completion.**

Using a regression framework, we examined the relationship between participant characteristics, service receipt, and academic outcomes. In particular, we tested the hypothesis implied by ATD's guidance that receipt of services in multiple pillars would lead to better outcomes than would services in a single pillar; we also examined whether receipt of high-touch services might improve outcomes more than receipt of low-touch services only. Finally, we examined whether any additional benefit was associated with receipt of both services across multiple pillars and high-touch services. The data do not include information on frequency or dosage of service receipt, so the model includes binary indicators for receipt of services in two or more pillars and receipt of a high-touch service, as well as the interaction term between the two. In addition to these indicators, the model included variables controlling for a host of student characteristics, as well as college fixed effects (see Equation A2 in Appendix A and results in Appendix Table B.7).

For the average WSSN participant, receipt of at least one high-touch service was associated with a 4 percentage point increase in the likelihood of persisting to the next term, relative to receipt of low-touch services only. Similarly, receipt of a high-touch service was associated with an 8 percentage point increase in the likelihood of completing a degree or certificate. Both of these associations were statistically significant (Figure 7). This suggests the potential importance of personalized assistance to address such basic needs as food, housing, and child care.

While the regression results suggest that receiving a high-touch service is positively associated with both outcomes, the pattern is not as clear for receipt of services in two or more pillars. We found a positive association between receipt of services in multiple pillars and persistence but a negative relationship with credential completion. This may reflect a mismatch between students' needs and services received when services are prepackaged across pillars, rather than tailored to students' need. It is also possible that those who have been identified as needing services in many pillars may persist but take longer to complete a degree or certificate, leading to the negative association. Recall that Pell recipients were more likely to receive services in multiple pillars, so it is also possible that participants who selected into or were identified as needing services in multiple pillars are disadvantaged in other ways that are not captured in the administrative data—that is, the negative association is reflecting an attribute not accounted for in the model. It is worth noting that these unobservable or unmeasured attributes could also be driving the positive associations we found. For example, participants who receive high-touch services may have sought out those services because they are motivated to complete their credential, and their motivation also led them to have better outcomes. Or WSSN staff may have suggested that participants just on the cusp of earning a credential receive a high-touch service to give them the extra support needed to be successful.

Figure 7. Regression estimates of the marginal effects of different types of service receipt on academic outcomes (Equation A2)

Source: WSSN administrative data files.

Note: Participants consist of people who first received services between fall 2015 and spring 2016 and may include for-credit and non-credit students.

*Coefficients are significantly different from zero at the $p \leq .05$ level, using a two-tailed t-test.

We also tested whether the interaction term between receipt of services in two or more pillars and receipt of at least one high-touch service was associated with improved academic outcomes. The marginal effect of the interaction term was close to zero for both term-to-term persistence and academic completion; neither association was statistically significant. These results do not support the theory that a combination of cross-pillar and high-touch services will improve outcomes. However, as noted before, it may be that students receiving this combination were disadvantaged in ways not measured in the data.

IV. CONSIDERATIONS FOR FUTURE EFFORTS

In addressing its central research questions, the outcomes evaluation of the WSSN strategy provides a host of new information about service receipt and academic outcomes among participating WSSN community college students. During the grant period, more than 50,000 students were served across the 19 participating colleges, including a substantial number of low-income students and students of color, in line with the WSSN strategic focus. The services these students received, however, did not always align with expectations for the strategy documented by ATD, insofar as a minority of students received services in more than one pillar, a high-touch service, or both. Nevertheless, students participating in WSSN services experienced academic outcomes that were not dissimilar from those for recent cohorts of first-time, full-time, credential-seeking community college students nationwide—a group likely more advantaged, on average, than WSSN participants (Snyder et al. 2016).

Even as the outcomes evaluation makes important contributions to describing service uptake and outcomes for participating students, its combination with the implementation study points to several considerations for both the funders and colleges as they think about how to move forward with this work (Price et al. 2018). Drawing on these implementation findings, as well as those from the outcomes evaluation, we offer some considerations for colleges seeking to better serve low-income students and students of color in the future.

Receiving a high-touch service may matter more than receiving services across multiple pillars. Although the evaluation was not designed to measure the effectiveness of WSSN, and outcomes may reflect dissimilar students selecting to participate in different services, our regression results indicate that receiving a high-touch service is, on average, related to positive academic outcomes, including both persistence and credential completion. Conversely, the relationship between receipt of services in two or more pillars and academic outcomes was mixed, with persistence increasing but completion decreasing. Although the administrative data used here could not speak to the *intentional* combining or sequencing of WSSN services across pillars, these mixed results may reflect a mismatch between student needs and services received when services are prepackaged across pillars, rather than tailored to students' needs. The results might also suggest that students requiring services in multiple pillars may need more time to earn a credential. The implementation findings highlight the importance of one-on-one, personalized assistance to address students' basic needs such as food, housing, and child care, which is consistent with the positive association we found in the outcomes evaluation between receipt of high-touch services and academic outcomes.

Colleges may reach more students with low-touch services delivered in group settings, but high-touch services are designed to be targeted, more intensive services aligned with individual student needs and goals (Achieving the Dream 2015). Offering services in group settings based on typical student needs may be easier and less resource intensive to implement than customizing services for individual students through high-touch avenues, and doing so may reach more students, supporting longer-term goals of scaling and sustainability. Indeed, the implementation study showed that many colleges were including WSSN-related content within existing college success courses, often as a predetermined combination of services across multiple pillars. Although ATD guidance urged colleges to find ways to use student success courses to identify students in need of high-touch services, the implementation findings indicated that some colleges

did so, whereas others simply added a financial literacy workshop to the student success course, which did not always result in student referrals to high-touch services such as coaching. Given the value of customized services for students and the potential difficulty of offering such services in a group setting, it is worth considering mechanisms beyond student success courses for connecting students to the customized services they need.

A high-touch service delivery approach may not be the only way to target services to meet individual participant needs. Implementation guidance from ATD suggests that high-touch service delivery may help students in part because it targets more customized supports to the students who need them the most. By affording colleges flexibility in determining which students needed high-touch services and how many students could be provided such intensive services, ATD allowed colleges to use their resources as they saw fit to implement WSSN. While high-touch services appear to be associated with positive outcomes, some colleges may need to explore less resource intensive approaches to addressing individual student needs. For example, colleges could monitor student behavior in real time and service referrals could be triggered by specific events (such as withdrawing from a course). Some colleges around the nation have turned to predictive analytics to identify which services are needed by specific groups of students based on their behavior and history. Such data-driven strategies may require some up-front costs but, over time, could be a way of customizing services without assigning a counselor or coach to every student in the face of resource constraints. Nonetheless, for colleges that remain committed to taking a personalized approach to assessing student needs—and have the resources to do so—the WSSN implementation study demonstrated the promise of the "hub" model. A hub is essentially a single location, designed for easy access by students, that offers a comprehensive array of services and provides referrals to other services, as needed. With staff members on hand to engage with individual students, this one-stop approach allows the college to assess and then address the student's particular needs efficiently. It can also create synergies across internal and external resources that support various aspects of student well-being.

Taken together, the findings from the implementation and outcomes studies of the WSSN strategy suggest that community colleges can mobilize to address the needs of low-income students and students of color. At the same time, the evaluation raises additional questions. Future implementation and outcomes analyses could help the WSSN funders and colleges better understand the promise of the strategy. For example, further qualitative data collection could investigate whether high-touch services were used to determine the appropriate customization of services across pillars and how the WSSN fits within the larger ecosystem of related programs available across academic, workforce, and student services. It would also be useful to understand how colleges match services to students' needs since this is a particular challenge colleges must address. For example, it would be useful to know how colleges approached intentionally integrating services across pillars and to disentangle which types of students sought out services versus those that were specifically targeted for services by the college. In tandem, a more rigorous impact analysis could be designed to study whether WSSN services improve student outcomes relative to services otherwise available at the colleges, and whether one-on-one, personalized services lead to better outcomes for students in the target population.

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APPENDIX

This appendix provides additional information on the outcomes evaluation. Section A describes the data, data sources, data elements, and analytic approaches used to answer the research questions throughout the report. Section B contains supplemental tables that were referenced but not included in the main body of the report.

A. Data and analytic approach

The outcomes evaluation draws on individual-level administrative data on Working Students Success Network (WSSN) participant characteristics, service receipt, and outcomes as well as institution-level data from the Integrated Postsecondary Education Data System (IPEDS). The sources of the administrative data include colleges' student information systems, financial aid data systems, and supplemental data collection systems. All participant data came directly from college records.

The data used in the outcomes evaluation includes participants who received at least one WSSN service at any point between fall 2015 and spring 2017 at colleges that received funding to implement the WSSN strategy. Four of the colleges are in Arkansas (College of the Ouachitas, East Arkansas Community College, North Arkansas College, and Phillips Community College); seven are in California (Cabrillo College, Cañada College, East Los Angeles College, Los Angeles Harbor College, Los Angeles Southwest College, Porterville College, and Skyline College); four are in Virginia (Danville Community College, Eastern Shore Community College, Northern Virginia Community College, and Patrick Henry Community College); and four are in Washington (Big Bend Community College, Clark College, Highline College, Walla Walla Community College). Each college offered a set of WSSN services based on the guidance provided by Achieving the Dream, and each college was asked to provide administrative data for the outcomes evaluation.

The evaluation team provided colleges with technical assistance to support the submission of accurate, consistent, and comprehensive data. The team's key activities included conducting individual phone meetings with college representatives; conducting two webinars with all colleges; preparing and distributing a technical brief, in collaboration with MDRC, that described best practices for collecting and storing data; sending college-specific data request memos that defined each data element; and creating an Excel template to collect the requested data if a college did not have a case management system.

1. Process for collecting college administrative data and the data elements used

Colleges provided three primary types of data for the evaluation four times over the course of the 39-month evaluation period: (1) background demographic and financial information, (2) service data, and (3) participants' program of study and their outcomes for coursework and credential completion. Each type of data typically came from a different source at the colleges and was generally submitted in a separate file based on its source. At the beginning of data collection, the evaluation team assessed each college's data capacity and how data were stored to determine the most efficient way to collect the data. Based on its findings, the team worked individually with 14 colleges (4 in Virginia, 4 in Arkansas, and 6 in California) and with the Washington State Board of Community and Technical Colleges to collect data on behalf of its 4 WSSN colleges. In addition, the team downloaded data from IPEDS to support comparisons between WSSN participants and their peers at the same colleges.

The following subsections describe each of these types of data and how the team defined the variables for analysis.[6]

Background demographic and financial information were used to understand the student populations that received WSSN services and to create covariates for the regression analyses (Table A.1). These data were typically provided by the colleges' financial aid offices. At some colleges, certain background elements such as number of dependents were captured on program intake forms rather than in financial aid records, and these data were provided in a separate file.

Table A.1. Background demographic and financial information of participants

Data element	Definition
Date of birth	Participant's month, day, and year of birth (used to calculate age at time of WSSN entry)
Gender	Participant's gender (binary variable)
Race	Participant's race (binary variables calculated for each racial category including American Indian/Alaska Native, Asian, black, Native Hawaiian/Pacific Islander, white, mixed-race; also created single binary variable to capture American Indian/Alaska Native, Asian, Native Hawaiian/Pacific Islander, or mixed-race to support comparisons to blacks and whites in regression analyses)
Ethnicity	Participant's Hispanic or Latino status (binary variable)
Number of dependents	Number of dependents in participant's household (used to calculate binary variable to reflect whether participant had any dependents)
Marital status	Participant's marital status (binary variable created to capture unmarried, other [including married, divorced, widowed or domestic partnership], or missing status)
Pell grant receipt	Indicator for whether participant received federal Pell grant assistance (binary variable capturing whether a Pell grant was received within the dates of each term, after accounting for dates of Pell grant receipt)

Service data were used to understand the services that WSSN students received (Table A.2). Colleges were responsible for reporting the type of service each participant received between fall 2015 and spring 2017. Each college developed its own classification of services with regard to pillar designation (employment and career advancement, income and work supports, and/or financial services and asset building) and service delivery mode (low- versus high-touch services), based on guidance from Achieving the Dream. From the service data, we created two binary variables: whether the participant received services in two or more pillars and whether the participant received at least one high-touch service. We also requested dates of

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[6] The evaluation team attempted to collect data on nonacademic outcomes for WSSN participants because WSSN's theory of change targets these outcomes. But ultimately we were not able to collect or include these data in the evaluation. We worked with the colleges' state partners to assess the possibility of providing individual-level workforce and public assistance data, but resource constraints and other barriers prohibited all but three Virginia colleges from providing these data. These three colleges were able to provide unemployment insurance data for their participants, including information on quarterly earnings before and after service receipt for the first cohort of participants in the three schools. We opted not to present any results based on these analyses, however, because 95 percent of participants in these three colleges received services in a single pillar only, and 95 percent received low-touch services only. Because there is so little variation in service receipt, the data don't support analysis of the relationship between service receipt and earnings outcomes. Furthermore, the largest college in Virginia approached WSSN largely through embedding services in an existing student success course, making it difficult to say that any observed outcomes are related to WSSN or just to participation in the course.

service receipt to appropriately match services to terms. Colleges used their own case management system or an Excel template provided by the evaluation team to track and provide these data. Service data were typically provided by the department running the WSSN program at the college.

Table A.2. Service data

Data element	Definition
Initial date of service encounter	The date that the service encounter began (used to map service encounters to academic terms)
End date of service encounter	The date that the service encounter ended, which may be the same as the initial date (used to map service encounters to academic terms)
Mode of service-delivery encounter	The mode in which a service was provided to the participant or how the participant took part in the service—for example, through one-on-one counseling or a workshop (defined as low- or high-touch)
WSSN pillar(s)	The WSSN pillar or pillars to which the dated service encounter applies (employment and career advancement, income and work supports, and/or financial services and asset building)

Participants' program of study and their coursework and credential outcomes were used to create two binary outcomes: whether the participant was enrolled in the term following initial service receipt (term-to-term persistence) and whether the participant had completed a degree or certificate as of spring 2017 (Table A.3). Term-to-term persistence for schools on the semester system is defined as persisting between fall 2015 to spring 2016 or spring 2016 to fall 2016. For schools on the quarter system, term-to-term persistence is fall 2015 to winter 2016, winter 2016 to spring 2016, or spring 2016 to fall 2016. These data were typically provided by the colleges' registrar offices.

Completion of a degree or certificate was defined as any degree or certificate completed during or after the term of initial service receipt and before the end of spring 2017. Degrees or certificates earned up to 28 days after the official end of the college's spring 2017 term were counted as spring 2017 outcomes.

Table A.3. Program of study and coursework and credential outcomes

Data element	Definition
Enrollment status	Indicates whether student was enrolled either full time or part time during each term (binary variable, where full-time status is defined as 12 or more credit hours per term, and part-time status is defined as fewer than 12 credit hours per term)
Course start date	Date the participant started course
Course end date	Date the course ended or participant exited course (if participant withdrew or exited for another reason)
Credits possible for course	Total number of credit hours possible for completing the course
Course credit hours completed	If credit course, credit hours received by participant upon completion of course
Course exit reason	Reason for course exit (for example, dropped, withdrew, credit awarded, credit not awarded)
Type of credential awarded	Type of credential awarded to participant (for example, associate's degree, bachelor's degree, certificate)
Date credential awarded	Date each credential was awarded

2. IPEDS data collection and elements

IPEDS data were used to compare WSSN participants to the student body at each college. The U.S. Department of Education's National Center for Education Statistics conducts IPEDS each year by surveying postsecondary institutions that participate in federal student financial aid programs. The IPEDS data used in this report come from fall 2015 (the most recent year of final release data available and the first term of WSSN implementation at colleges). The data elements used from IPEDS include total enrollment and counts of students based on race, ethnicity, gender, age, and receipt of a Pell grant. Total enrollment included all undergraduate students enrolled for credit in fall 2015. Race and ethnicity were reported in IPEDS as mutually exclusive categories which consisted of American Indian or Alaska Native, Asian, black or African American, Hispanic, Native Hawaiian or other Pacific Islander, white, or two or more races. The percentages we report were measured as the count of students in each category divided by the count of all undergraduate students that had a non-missing value for race or ethnicity. For gender, only data on males and females were reported in IPEDS, and we report the share of undergraduate women as a proportion of the total undergraduate enrollment. Two age categories ("under 25" and "25 and over") were reported in IPEDS, and the percentage we report is measured as the count of students in the "under 25" category divided by the total number of undergraduate students with non-missing age data. Receipt of a Pell grant was measured as the number of undergraduate students awarded Pell grants divided by the financial aid cohort for the 2014-2015 school year. The numerators of these measures were summed across all 18 colleges and divided by the summed denominators to create aggregate measures across all colleges included in this report.

3. Analytic approach

The evaluation team standardized and combined the data files from each college and created a single analytic file. During this process, the team asked follow-up questions of the colleges, as needed, about content and data quality. Specifically, we asked colleges to provide additional information on the following: (1) the assignment of a service description to a single pillar or multiple pillars; (2) the determination of whether the service was high-touch, low-touch, or both; (3) the proper interpretation of missing values; and (4) the presence of incongruities across files or years. In response, college representatives clarified the structure of the data file or provided a replacement file for analysis. Only one college was unable to provide the requested data, so the final dataset includes participants who received services between fall 2015 and spring 2017 at 18 of the 19 WSSN colleges.

If services were reported to have occurred between academic terms, we assigned those services to the closest term.[7] We also allowed any credential received within 28 days of the official end of the college's spring 2017 term to count as being received in spring 2017, the final term for which we collected data.

Though the evaluation team worked closely with colleges to help them submit complete and consistent data, not every college could provide useable data for every data element requested for

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[7] The analytical start date for a term was the midpoint between the listed start date of that term and the listed end date of the previous term. The analytical end date for a term was the midpoint between the end date of that term and the start date of the next term.

every participant. For example, information on Pell grant receipt was collected from 17 of 18 colleges, and ultimately 78 percent of participants had a non-missing value for this data element. There were no missing data on services or outcomes, as we focused our technical assistance efforts on collecting these critical data.[8] Table A.4 presents the completeness of the data for the background characteristics used in the analysis. Data elements that were missing were included in the multivariate analysis (Equation A2 below) by setting the value of the variable that was missing to 0 and including a binary missing indicator.

Table A.4. Completeness of data at the college and participant level

Background characteristic	Number of colleges providing data on the background characteristic	Percentage of colleges providing data on the background characteristic	Number of participants with data on the background characteristic	Percentage of participants with data on the background characteristic
American Indian or Alaska Native	18	100.0	45,047	85.0
Asian	18	100.0	45,047	85.0
Black	18	100.0	45,047	85.0
Hispanic	18	100.0	45,047	85.0
Native Hawaiian or other Pacific Islander	18	100.0	45,047	85.0
White	18	100.0	45,047	85.0
Multiple races	18	100.0	45,047	85.0
Younger than 25 years	18	100.0	47,355	89.3
Female	18	100.0	48,140	90.8
Unmarried	14	77.8	17,477	33.0
Has a dependent	14	77.8	17,711	33.4
Received a Pell grant	17	94.4	41,412	78.1

Source: WSSN administrative data files.

Note: Participants consist of people who received services in any term (fall 2015, winter 2016, spring 2016, summer 2016, fall 2016, winter 2017, and/or spring 2017) and may include both for-credit and non-credit students.

The team used descriptive methods to answer the research questions. For the first two research questions (*Who is served through the WSSN strategy?* and *What types of services do participants receive?*), we tabulated the data and calculated the means and percentages of variables in the aggregate and by college. To examine service-receipt patterns by subgroup, we used a logit model to predict whether a participant received services in two or more pillars (and separately whether a participant received at least one high-touch service) as a function of whether the participant belonged to a particular subgroup. Because participant demographics reported in the administrative data vary by college—and WSSN implementation differs widely

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[8] One college could not provide coursework and credential data for the spring 2017 term. Because our outcomes analyses only focus on the first cohort of participants, term-to-term persistence is not missing for any participants. Credential completion is also not missing for any participants, but it was only measured through fall 2016 rather than through spring 2017 for this college.

by college, as reported in the implementation study—our model also controlled for the college attended by the participant. The regression equation we estimated is described by Equation A1:

$$logit(p_i) = \ln\left(\frac{p_i}{1 - p_i}\right) = \beta_j + \delta characteristic_i \quad (Equation\ A1)$$

where p_i is the probability that participant i received services in two or more pillars or the probability that participant i received at least one high-touch service; β_j is a fixed effect for the college j attended by the participant; and $characteristic_i$ is an indicator variable for whether participant i has a particular characteristic, such as being a Pell grant recipient. Each specification includes one characteristic at a time; the four characteristics we tested are black (versus white), Hispanic (versus white), Pell recipient (versus non-Pell recipient), and had a dependent (versus did not have a dependent). δ represents the association between having a particular characteristic and service receipt. We present the marginal effect of each of the four characteristics on both service types – receipt of services in multiple pillars and receipt of at least one high-touch service.

For the last research question (*What are the outcomes for WSSN participants?*), we present results from a multivariate logistic regression model that predicts whether a participant persists to the following term (and separately whether a participant completes a degree or certificate) as a function of WSSN service receipt. To maximize the window of observation for the outcomes, these analyses are limited to the first cohort of participants who first received services between fall 2015 and spring 2016. The models control for participant demographics, enrollment status, and the college attended by the participant. The associations we present should be interpreted as correlations and not as the impact of receiving different types of services. The regression equation we estimated is described by Equation A2:

$$logit(p_i) = \ln\left(\frac{p_i}{1 - p_i}\right)$$

$$= \beta_j + X_i\varphi + \gamma_1 Multiple_i + \gamma_2 Hightouch_i + \gamma_3 Multi\_High_i \quad (Equation\ A2)$$

where p_i is the probability that participant i persisted to the following term or the probability that participant i completed a degree or certificate as of spring 2017; X_i is a vector of student demographics, including race, Pell grant recipient status, marital status, presence of dependents, ever enrolled in a for credit course, not enrolled in college at the time services were first received, and enrolled part time at the time services were first received; $Multiple_i$ is an indicator variable for whether participant i received services in two or more pillars; $Hightouch_i$ is an indicator variable for whether participant i received at least one high-touch service; and $Multi\_High_i$ is an indicator variable for whether participant i received services in two or more pillars and at least one high-touch service. The γ coefficients represent the association between service receipt and outcomes. We present the marginal effects of the different types of service receipt as well as the student characteristics on both outcomes – persistence and credential completion.

B. Supplemental tables and figures

Section B provides detailed tables that we used to construct the figures in the main body of the report as well as additional tables with detailed findings. To the extent possible, the headings in this section mirror the headings used in the text of the report, so appendix tables and figures referenced in the text will appear here under the same subsection.

1.   Who is served through the WSSN strategy?

Table B.1. Background characteristics of WSSN participants

Background characteristic	Percentage of all WSSN participants
American Indian or Alaska Native	0.5
Asian	9.7
Black	12.4
Hispanic	29.6
Native Hawaiian or other Pacific Islander	0.7
White	42.9
Multiple races	4.2
Younger than 25 years old	70.9
Female	54.5
Received a Pell grant	36.3
Unmarried	72.6
Has a dependent	50.5

Source: WSSN administrative files for participants and IPEDS data for students at the same colleges.

Note: Participants consist of people who received services in any term (fall 2015, winter 2016, spring 2016, summer 2016, fall 2016, winter 2017, and/or spring 2017) and may include for-credit and non-credit students.

Table B.2. Comparison of percentages of WSSN participants and students at the same colleges who comprise targeted groups, by college

College	Black participants	Black students	Hispanic participants	Hispanic students	Pell participants	Pell students
Arkansas						
College A	50.5*	33.5	3.0	2.3	8.0*	36.6
College B	0.9*	0.3	5.9	5.8	18.3*	59.1
College C	18.4*	11.2	0.0*	4.4	17.0*	36.4
College D	51.1*	47.0	1.8	2.6	57.7*	34.7
California						
College E	1.4	1.3	51.2*	41.2	39.0*	23.7
College F	7.4*	3.0	52.6	52.0	42.8*	15.3
College G	3.4	4.6	77.6	77.3	69.0*	26.6
College H	9.6	11.4	67.1*	59.0	n.r.	33.4
College I	1.0	1.3	79.9*	76.2	31.0*	56.3
College J	7.4*	3.1	22.5*	31.1	67.1*	20.7
Virginia						
College K	35.2*	30.5	3.2	3.4	3.9*	43.2
College L	46.4*	33.1	12.6	9.8	42.4	44.7
College M	19.6*	17.3	24.5*	21.7	27.7	27.2
College N	23.7	21.7	7.9	6.6	49.7	48.8

College	Black participants	Black students	Hispanic participants	Hispanic students	Pell participants	Pell students
Washington						
College O	1.9	1.3	46.0*	35.3	64.5*	43.4
College P	3.1*	2.1	17.1*	9.9	58.8*	35.3
College Q	33.9*	12.9	16.3	14.9	41.7*	26.6
College R	1.9*	6.0	32.2*	18.1	57.1*	32.6

Source: WSSN administrative files for participants and IPEDS data for students at the same colleges.

Note: Participants consist of people who received services in any term (fall 2015, winter 2016, spring 2016, summer 2016, fall 2016, winter 2017, and/or spring 2017) and may include for-credit and non-credit students.

n.r. = data not reported by college.

*Statistically significant difference compared to students at the same college at the p ≤ 0.05 level, using a two-tailed t-test.

Table B.3. Comparison of count of unique WSSN participants and students enrolled at the same college

College	Number of WSSN participants who first received services between fall 2015 through spring 2017	Total college enrollment in fall 2015
Arkansas		
College A	318	1,346
College B	176	1,200
College C	1,500	1,796
College D	1,083	1,661
California		
College E	3,236	13,086
College F	544	6,477
College G	101	37,188
College H	518	10,115
College I	4,660	4,074
College J	1,013	9,681
Virginia		
College K	509	3,561
College L	566	745
College M	19,808	52,078
College N	177	2,594
Washington		
College O	1,688	2,070
College P	8,644	10,477
College Q	3,083	6,560
College R	5,395	4,617
Total	**53,019**	**169,326**

Source: WSSN administrative files for participants and IPEDS data for students at the same colleges.

Note: Participants are people who received services in any term (fall 2015, winter 2016, spring 2016, summer 2016, fall 2016, winter 2017, and/or spring 2017) and may include for-credit and non-credit students. Total enrollment represents the grand total of for-credit students enrolled in the fall 2015 term.

2.   What types of services do participants receive?

Table B.4. Services received, by college, pillar, and mode

College	Percentage of participants who received services in two or more pillars	Percentage of participants who received at least one high-touch service	Percentage of participants who received services in two or more pillars *and* at least one high-touch service
Arkansas			
College A	78.4	17.0	13.1
College B	68.9	23.2	14.9
College C	60.7	100.0	60.7
College D	45.5	88.1	40.2
California			
College E	61.9	26.7	9.5
College F	25.2	38.1	24.6
College G	14.9	14.9	14.9
College H	8.1	9.1	0.6
College I	22.5	23.8	9.8
College J	20.9	52.6	19.6
Virginia			
College K	78.4	17.3	7.3
College L	68.9	68.6	56.7
College M	2.2	2.7	0.9
College N	94.4	100.0	94.4
Washington			
College O	57.7	43.4	18.4
College P	56.9	45.8	19.6
College Q	35.0	64.5	33.3
College R	56.1	99.9	56.1

Source: WSSN administrative data files.

Note: Participants consist of people who received services in any term (fall 2015, winter 2016, spring 2016, summer 2016, fall 2016, winter 2017, and/or spring 2017) and may include for-credit and non-credit students.

Table B.5. Marginal differences in the rate of cross-pillar and high-touch service receipt among targeted versus nontargeted subgroups (Equation A1)

Marginal differences	Received services in two or more pillars	Received at least one high-touch service
Difference between blacks and whites	1.049	4.384*
Difference between Hispanics and whites	-0.684	-1.189*
Difference between Pell recipients and non-Pell recipients	6.473*	0.770*

Source: Data from WSSN.

Note: Participants consist of people who received services in any term (fall 2015, winter 2016, spring 2016, summer 2016, fall 2016, winter 2017, and/or spring 2017) and may include for-credit and non-credit students.

*Coefficients are significantly different from zero at the $p \le .05$ level, using a two-tailed t-test.

3.   What are the outcomes for WSSN participants?

Table B.6. Academic completion outcomes for Cohort 1 through spring 2017

Academic completion outcome	Percentage of participants in the 2015–2016 school year
Completed a degree	11.8
Completed a certificate	4.4
Completed a college-level course but did not complete a certificate or degree	66.7
Completed a noncollege-level course but did not complete a certificate or degree	5.3
Did not complete a course	11.9

Source: Data from WSSN.

Note: Participants in the 2015–2016 school year consist of people who first received services in fall 2015 through spring 2016. They may include for-credit and non-credit students. Participants from one college have course outcomes only through fall 2016.

Table B.7. Regression coefficients for the marginal effects of student characteristics and different types of service receipt on academic outcomes (Equation A2)

	Persisted to the next term	Completed a degree or certificate
Student characteristics		
Black	-0.025*	-0.037*
Hispanic	0.008	-0.027*
American Indian or Alaska Native, Asian, or Native Hawaiian or other Pacific Islander	0.010	-0.025*
Younger than 25 years old	0.012	-0.047*
Female	0.023*	0.023*
Received a Pell grant	0.029*	-0.003
Unmarried	-0.042*	-0.024*
Has a dependent	-0.034*	-0.007
Took any course for credit	0.369*	0.450*
Not enrolled in term when services first received	--	-0.123*
Enrolled part time in term when services first received	-0.123*	-0.070*
Indicators of WSSN service receipt		
Service in two or more pillars	0.092*	-0.048*
At least one high-touch service	0.043*	0.077*
Service in two or more pillars *and* at least one high-touch service	-0.008	0.006
Other		
College fixed effects	Yes	Yes
N	**21,656**	**25,126**

Source: Data from WSSN.

Note: Participants consist of people who first received services in fall 2015 through spring 2016. Participants may include for-credit and non-credit students. Participants from one college only have course outcomes through fall 2016.

*Coefficients are significantly different from zero at the $p \leq .05$ level, using a two-tailed t-test.

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