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One-Stop Approach to Supporting the Nonacademic Needs of Community College Students

An Evaluation of Single Stop's Impact in North Carolina

Community college students in the United States face major challenges with college completion. More than two-thirds of those who enroll at community colleges do not end up completing a degree or certificate (Snyder, de Brey, and Dillow, 2018). Low-income students experience particularly high rates of dropout; in one study, only 33 percent of community college enrollees from low-income families completed degrees or certificates, compared with 42 percent of community college enrollees from high-income families (Radford et al., 2010).[1] To address these high rates of dropout, community colleges are searching for academic and nonacademic reforms and interventions to better support the success of their students.

Background

There are many factors driving low rates of completion among community college students. Academic readiness plays a critical role, and low-income college enrollees are more likely to enter with low levels of academic readiness (Wilkinson, 2014). Yet there are wide-ranging nonacademic issues that act as

KEY FINDINGS

- The findings for one-year persistence among Single Stop users across the four community colleges were small and not statistically significant. However, these pooled results masked substantial variation in results by college.

- The estimates for the impact of Single Stop at three colleges were positive (though not statistically significant).

- Use of Single Stop was associated with an increase in credit accumulation.

- Results suggested potentially larger benefits for certain types of students: There were large, statistically significant impacts for students who were older or claimed themselves as independent for purposes of financial aid reporting.

- Estimates were slightly larger and statistically significant for nonwhite students—but probably not meaningfully different from estimates for white students.

barriers for low-income students. A lack of financial resources can present major challenges to college enrollment, and although financial aid does provide some relief, it is not sufficient to cover the full costs of tuition and room and board for community college students. Students in the lowest-income households averaged more than $8,000 in unmet financial need after accounting for federal financial aid (Calahan and Perna, 2015).[2] As a result, some community college students are struggling to meet basic needs. In a survey of 70 institutions across 24 states, researchers found that 14 percent of students reported that they were homeless sometime within the past year, and 33 percent reported facing the highest levels of food insecurity (Goldrick-Rab, Richardson, and Hernandez, 2017). Low-income students may also face challenges with transportation, childcare, limited social capital to navigate college, and a lack of confidence in one's ability to succeed, among many other barriers (Community College Research Center, 2013).

Most community colleges are not equipped to support students with the wide range of nonacademic issues they might face. Counseling and advising departments are often understaffed, with ratios of 1,500 students to 1 adviser (Gallagher, 2010), and advisers often must prioritize academics. There may be institutional, governmental, and community resources available to help these students, but the students and their advisers do not have the capacity to navigate this complex web of resources (Karp, O'Gara, and Hughes, 2008; Nodine et al., 2012). Many colleges have developed early-alert systems to better identify students at risk of dropout and

provide them with academic and nonacademic support (Noel-Levitz, 2013). But these early-alert interventions rarely connect students to the broad range of wraparound services they might need, such as food stamps, health care, public housing, and legal services. Evidence suggests that only one in five community college students facing housing insecurity or food insecurity receives public support to address these needs (Goldrick-Rab, Broton, and Eisenberg, 2015). To improve the likelihood of student success, community colleges are trying to identify ways to better help students to navigate and access nonacademic supports that might be helpful in supporting their continued enrollment and success in college.

Single Stop's College Initiative

The goal of Single Stop's College Initiative is to offer a "one-stop shop" that connects students to nonacademic resources that may help them to address many of the challenges they face. When college students enter the Single Stop office, staff assess the students' needs and provide them with case management support that aims to connect them with existing governmental, institutional, and community resources.

Benefits screenings have been a central component of the Single Stop initiative; these screenings are a required service across all Single Stop sites and are the service that students most commonly receive across sites (Daugherty, Johnston, and Tsai, 2016; Goldrick-Rab, Broton, and Frank, 2014). The Single Stop software takes basic information about students and assesses their eligibility for a range of public benefits. Advisers then assist eligible students with navigating the application process. Many Single Stop sites also facilitate access to one or more community resources, with tax assistance, legal support, and financial counseling being the most-common services offered by sites. Sites may also connect students to other resources available from the institution or community, such as transportation assistance and emergency aid. The exact services offered by a site depend on institutional and site staff decisions and efforts to identify resources, as well as the resources available in the community.

Single Stop began providing services to low-income individuals nearly two decades ago and was

Abbreviations	
ASAP	Accelerated Study in Associate Programs
CPCC	Central Piedmont Community College
CUNY	City University of New York
JSCC	James Sprunt Community College
NCC	Nash Community College
NSC	National Student Clearinghouse
WTCC	Wake Technical Community College

By providing students with financial support, offering assistance with other life challenges, and fostering a strong sense of belonging within the college, Single Stop has the potential to increase a student's likelihood of completing a college degree or certificate.
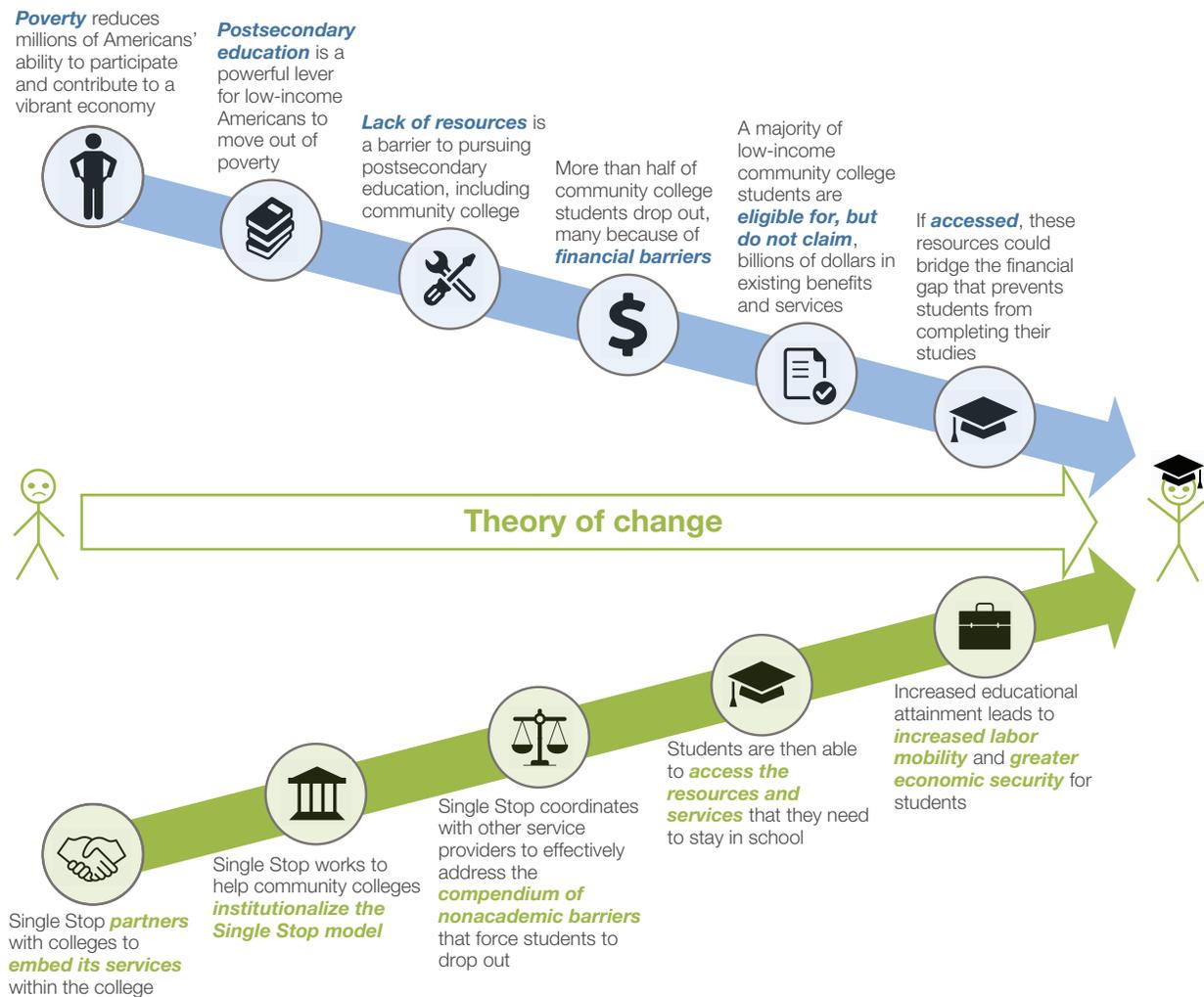
first established as a national organization in 2007. Single Stop launched its College Initiative in 2009, and, according to conversations with Single Stop leadership, the program was operating at 34 sites across 29 community colleges across the country as of 2018. Single Stop offices are embedded in college campuses alongside other departments that deliver support services, such as financial aid and counseling. These sites receive strong support from the Single Stop office, commit to adopting Single Stop's model of support and outreach, and use common software and data systems for case management and benefits screenings. However, each site operates independently and hires staff locally, and Single Stop outreach and services are not coordinated in any way across campuses. The centers are staffed with individuals trained in social work and counseling.

There is a range of different ways that Single Stop sites bring students in for services. In some cases, outreach is informal, with students hearing about Single Stop from faculty, advisers, or other students. Referrals are an essential source of clientele for Single Stop sites. Staff at the sites also launch informational campaigns to eliminate stigma around use of public benefits and to connect students to services; these efforts may include signs and handouts, social media, and informational sessions. Some colleges may choose to target outreach to specific populations of students, such as newly entering students and students who may be more likely to benefit from the support. Local staff decisions play an important role in driving marketing and outreach approaches, so there is wide variation across sites.

Figure 1 presents Single Stop's theory of change, both from the perspective of the student and from the perspective of the college. As discussed, many students struggle to overcome financial barriers and can benefit from receiving assistance to address these barriers. And although there are large numbers of federal, state, and local programs and benefits that students might be eligible for, many students have not been utilizing these resources (Goldrick-Rab, Broton, and Eisenberg, 2015). Single Stop staff can help students access these benefits in a range of ways, including (1) identifying the range of governmental and community resources available to students, (2) providing students with information about these benefits and services, (3) screening students for eligibility, (4) helping students complete complex applications, (5) providing referrals to community services, and (6) otherwise facilitating access to benefits (e.g., hosting a food pantry on campus).

Although the theory of change emphasizes Single Stop's aim to bridge financial gaps, Single Stop services may offer nonfinancial benefits as well, such as helping students address legal issues or improving the ability of students to care for their health. For example, a prior implementation report suggested that Single Stop staff may help students feel connected to and supported by the college in a more general way (Goldrick-Rab, Broton, and Frank, 2014). By providing students with financial support, offering assistance with other life challenges, and fostering a strong sense of belonging within the college, Single Stop has the potential to increase a student's likelihood of completing a college degree or certificate.

FIGURE 1

Single Stop's Theory of Change

Poverty reduces millions of Americans' ability to participate and contribute to a vibrant economy

Postsecondary education is a powerful lever for low-income Americans to move out of poverty

Lack of resources is a barrier to pursuing postsecondary education, including community college

More than half of community college students drop out, many because of **financial barriers**

A majority of low-income community college students are **eligible for, but do not claim**, billions of dollars in existing benefits and services

If **accessed**, these resources could bridge the financial gap that prevents students from completing their studies

Theory of change

Single Stop **partners** with colleges to **embed its services** within the college

Single Stop works to help community colleges **institutionalize the Single Stop model**

Single Stop coordinates with other service providers to effectively address the **compendium of nonacademic barriers** that force students to drop out

Students are then able to **access the resources and services** that they need to stay in school

Increased educational attainment leads to **increased labor mobility** and **greater economic security** for students

Evidence on Nonacademic Support and Student Success in College

RAND conducted a prior evaluation of Single Stop's impact in four community college systems: Bunker Hill Community College (in Massachusetts), City University of New York (CUNY), Delgado Community College (in Louisiana), and Miami Dade College (in Florida). The study used a matching approach to create a comparison group of non–Single Stop users who looked similar to Single Stop users (similar to the methods used for this study) and found that students who used Single Stop had better postsecondary outcomes when compared with similar students who did not use Single Stop, especially for older students (Daugherty, Johnston, and Tsai,

2016). Across the four colleges, Single Stop students had one-year persistence rates that were 3 percentage points higher than their peers (55 percent, versus 52 percent for nonusers). Results varied by institution, and Single Stop users at CUNY saw particular success, with increases in persistence rates of 6 percentage points. The study also identified positive impacts on credits earned at several of the colleges.

Prior research suggests that, although the program provides students with critical support that they need to be successful in college, sites varied widely in implementation, and many implementation factors might help or hinder the ability of sites to effectively deliver services (Daugherty, Johnston, and Tsai, 2016; Goldrick-Rab, Broton, and Frank,

2014). Goldrick-Rab, Broton, and Frank (2014) found that case-management services were an important area for expansion and improvement, according to some stakeholders. Implementation researchers also found significant room for improvement in terms of the data collected about the services and benefits received by students, but these factors also varied from institution to institution.

Single Stop is just one of many initiatives emerging to provide case management and wraparound services for community college students. For example, Accelerated Study in Associate Programs (ASAP), first offered and studied at CUNY, provides additional advising and financial aid resources, instruction in study skills, and instructional reforms to math and English coursework. Researchers found that ASAP led students to earn nine additional credits over three years, and rates of degree completion for students randomly assigned to the program doubled (Scrivener, Weiss, et al., 2015).

Another early program that aimed to provide broad support to students was Opening Doors, which included learning communities; financial aid; and enhanced advising, monitoring, and connecting of students and support services (Brock and Ritchburg-Hayes, 2006; Scrivener, Bloom, et al., 2008; Scrivener and Au, 2007; Scrivener and Pih, 2007). Impacts of the program on student persistence and credit accumulation were not detected until three semesters after completing the program; at that time, participants persisted at rates that were 5 percentage points higher and earned 0.7 additional credits (Scrivener, Bloom, et al., 2008). Various other interventions that connected students to enhanced advising and support have also demonstrated positive impacts on postsecondary outcomes (Avery, 2013; Barr and Castleman, 2016; Castleman and Goodman, 2018).

Financial aid programs have also been increasingly supplemented with wraparound supports (e.g., mental health counseling and social service programs), and these combined programs have demonstrated success in improving postsecondary outcomes. A study of the Carolina Covenant program indicated that the program's effectiveness was enhanced when a financial aid program was supplemented with a broad suite of academic and nonacademic wraparound services (Clotfelter, Hemelt, and Ladd, 2018). In the Dell Scholars program, financial aid recipients were monitored by program staff and provided with as-needed wraparound supports, such as assistance with childcare and help managing stress. Research indicated that the program led to a 25 percent increase in graduation rates (Page et al., 2017).

Single Stop differs from the programs described above in several notable ways. These other programs typically combine nonacademic support with direct financial aid, instructional interventions, or academic supports, providing wide-ranging, intensive (and oftentimes costly) support to students. Access to these programs is typically restricted, and students must apply and meet certain criteria to receive the support. Single Stop focuses exclusively on nonacademic supports and is unique in its focus on leveraging government social service programs to offer nonacademic support to students, whereas the programs above primarily rely on traditional financial aid and on institutional and community-provided support services. In addition, Single Stop aims to embed its offices on the campus and gain visibility as a core support service that is broadly available to all students in the college—although staff do make efforts to explicitly target outreach to students who face the greatest challenges. Given that Single Stop differs from these other programs in terms of the breadth of services and the population served, we might anticipate differences in impacts. However, the other programs serve as useful comparisons because there is some crossover in services with Single Stop, and the programs serve similar populations of community college students. In addition, with limited resources for student support services, some college administrators might need to make decisions between these more intensive, targeted programs and wider-reaching support services, such as Single Stop.

The Aims of This Report

Single Stop and the John M. Belk Endowment were interested in understanding whether new Single Stop sites established in four North Carolina community colleges could demonstrate impacts similar to those found for Single Stop users at other community colleges in a prior RAND study (Daugherty, Johnston,

and Tsai, 2016). The study described in this report focused on three research questions:

1. What is the overall impact of Single Stop use across the four North Carolina community colleges on persistence and credit accumulation?
2. Do the impacts of Single Stop vary across sites or colleges?
3. Do the impacts of Single Stop vary for students with different characteristics?

We consider the first question, pertaining to the overall impact of Single Stop, as the primary (or confirmatory) research question. We consider the second and third questions as exploratory (or secondary) because small sample sizes mean that we do not have the statistical power to identify differences across the groups. Based on prior findings, we anticipate that we might find larger estimates for older students, because these students might have had higher rates of need and eligibility for Single Stop services. We had limited information about the individual sites and implementation, so we did not have any a priori hypotheses about how findings might vary across sites.

To assess the impact of Single Stop use, we identified Single Stop users and compared outcomes for these students with a group of their peers who were enrolled in the same college at the same time but did not use Single Stop. The key challenge was to find peers who were as similar as possible, so that the only differences between the Single Stop users and this comparison group were their interactions with Single Stop.

In the remainder of this report, we provide a description of the North Carolina Single Stop sites included in the study, a description of the data used for the study, and our key measures of Single Stop use and postsecondary-success outcomes. Then we describe our weighting approach to developing a comparison group of non–Single Stop users. We conclude with a discussion of findings and key takeaways from these results. A technical appendix that provides additional detail about the data and methods is available online at http://www.rand.org/pubs/research_reports/RR2767.html.

Single Stop Study Sites in North Carolina

The four community colleges included in the study were Central Piedmont Community College (CPCC), Nash Community College (NCC), James Sprunt Community College (JSCC), and Wake Technical Community College (WTCC). The colleges were diverse: two large urban colleges, a small suburban college, and a small rural college.

Table 1 displays summary statistics for students who were enrolled in spring 2016 or fall 2016. Student characteristics varied across the four colleges, but each of the colleges had large populations of students who were likely to face nonacademic challenges and had the potential to benefit from Single Stop services. Enrollees had household incomes that were less than half of the median household income in the United States in 2016 (Guzman, 2017). More than one in four students at each college had dependent family members they were providing for, and at CPCC, nearly half of all students had dependents. Fewer than a third of students were enrolled full time across the four study colleges.

Of the four colleges, NCC was the first to open a Single Stop site, in late October 2015, followed by WTCC in November 2015 and CPCC in February 2016. JSCC's Single Stop site opened in May 2016 and did not start providing benefits screenings until after the spring 2016 semester. WTCC discontinued its work with Single Stop in the spring 2016 semester, although it has continued with some of the referral services first introduced under Single Stop. Sites at the other three colleges continued to operate as of fall 2018.

Table 2 describes the services or referrals that students were reported to have received at each of the four sites during the first two full semesters of operation, spring 2016 and fall 2016. Most students who interacted with Single Stop received benefits screenings, and nearly a quarter of students were referred to tax services across sites.[3] Sites varied in whether they offered referrals to tax, legal, financial, and transportation assistance. In addition to these core Single Stop services, sites identified other institutional and community resources that could be accessed. For example, NCC's site was also able to offer some Single

TABLE 1
Characteristics of the Study Sample

Characteristic	CPCC	NCC	JSCC	WTCC	Total
Students in sample (#)	28,783	4,880	1,236	30,821	65,720
Student demographics					
Female	55.1%	57.0%	66.7%	54.8%	55.3%
Age (average)	25.7	26.0	23.1	26.4	26.0
White	43.6%	54.0%	46.6%	51.1%	47.9%
Black	30.8%	34.1%	28.6%	25.1%	28.3%
Hispanic	13.1%	4.9%	21.5%	10.8%	11.6%
Asian	5.0%	1.1%	0.2%	3.8%	4.0%
Family makeup					
Has dependent	48.8%	40.0%	37.6%	27.0%	34.9%
Is dependent	48.5%	41.8%	42.8%	45.1%	46.3%
Financial resources					
Financial aid receipt	44.8%	99.0%	97.7%	37.0%	45.8%
Annual household income	<$35,000	$26,913	$24,627	$27,244	$27,149
Enrollment characteristics					
First time enrolled at college	30.2%	33.1%	42.5%	31.3%	31.1%
Full time	30.3%	39.5%	41.0%	24.1%	28.2%
Prior academic performance					
High school GPA	2.59	—	2.71	2.69	2.65
Cumulative college GPA	—	2.75	—	—	2.75
Cumulative credits attempted	23.4	25.6	26.6	19.7	21.9
Cumulative credits earned	35.2	19.6	20.5	18.5	25.9

NOTES: This table presents summary statistics for all students in the sample: spring 2016 and fall 2016 enrollees at CPCC, NCC, and WTCC and fall 2016 enrollees for JSCC. Measures of prior academic performance were calculated at the time of first enrollment within these two semesters (i.e., at start of fall 2016 for those not enrolled in spring 2016 and at start of spring 2016 for all others). — = data were not available.

TABLE 2
Percentage of Students Receiving Some Support from Single Stop Staff, by Service

Type of Service	CPCC	NCC	JSCC	WTCC	Total
Benefits screenings	99.5%	87.9%	75.9%	84.8%	88.3%
Tax services	7.1%	43.4%	47.4%	13.9%	24.3%
Legal assistance	7.1%	N/A	3.0%	2.6%	3.8%
Financial services	3.5%	N/A	9.0%	N/A	3.3%
Transportation assistance	23.2%	N/A	1.5%	N/A	8.3%

NOTES: Data were pulled from Single Stop data system records for all usage during the spring 2016 and fall 2016 semesters. Percentages represent the percentage of enrollees who had some type of interaction with Single Stop at the four study colleges, by type of service. Interactions range from referrals to provision of services and do not imply that benefits or services were actually received. N/A = not applicable (the service was not offered).

Single Stop users were more likely to be female, older, and low income and were more likely to have dependents.

Stop users resources from a "Blue Love fund" that offered emergency aid, usually in the form of gas or grocery cards.[4]

At each of the study colleges, Single Stop sites attempted to serve all of the students who stepped into the Single Stop office. However, students varied in their ability to benefit from Single Stop services, depending on whether they faced substantial nonacademic barriers, qualified for the services offered, or were not already receiving benefits. Single Stop sites engaged in a range of efforts to market their services to students, including outreach to faculty and staff to encourage referrals, signs and handouts posted across campus, posts on social media, and informational sessions. Yet just 2 percent of students were served across sites during the first two full semesters of operation. The percentages of students served varied by college, with WTCC and CPCC reaching just 1 percent of students, while NCC and JSCC served 4 and 16 percent of enrollees, respectively. In RAND's prior study, services reached 5 to 23 percent of first-time enrollees (Daugherty, Johnston, and Tsai, 2016). Differences in percentages of students reached might have been driven by the need for these sites to build capacity, integrate into the campus, and engage in outreach in the early semesters after sites were first established (whereas some of the sites in the prior study had been operating for a number of years at the time of evaluation). In addition, the prior study focused on first-time students, and first-time

enrollees might have used Single Stop at higher rates if outreach efforts were targeted to these students.

Table 3 compares the average characteristics of students who did and did not use Single Stop across the four colleges, confirming that Single Stop users were more likely to be first-time enrollees than the overall student population. Students using Single Stop were different from the average non–Single Stop user other ways as well: Single Stop users were more likely to be female, older, and low income and were more likely to have dependents. These patterns were expected, as students with these characteristics were more likely to need and be eligible for the services offered by Single Stop. In addition, Single Stop users were more likely to be enrolled full time, which might have been due to exposure and opportunity to access Single Stop services.

Our Approach to Evaluating Single Stop's Impact

To determine the impact of Single Stop on student success in college, we needed to compare students who used Single Stop with similar students who did not use Single Stop. Yet, as Table 3 indicates, Single Stop students were different from the overall student population along a range of factors related to the likelihood of success in college; for example, these students had fewer resources and family responsibilities that might have acted as barriers to success and had lower levels of academic achievement, signaling potential academic barriers. There might have been other differences between students who used Single Stop services and students who did not use Single Stop that were not reflected in Table 3. For example, struggling students who sought out help from Single Stop might have been more motivated than their peers who were also struggling but did not seek out Single Stop services. And there were aspects of financial need that were not fully captured by household income, such as whether a student had a reliable place to live and enough food to eat.

TABLE 3
Characteristics of Students Who Did and Did Not Use Single Stop

Characteristics	Single Stop Users	Non–Single Stop Users	Difference
Student demographics			
Female	72.0%	55.2%	0.338***
Age (average)	29.8	26.0	0.397***
White	24.7%	48.1%	0.470***
Black	56.4%	28.1%	0.630***
Hispanic	9.9%	11.6%	0.053
Asian	1.7%	4.1%	0.118**
Family makeup			
Has dependent	47.1%	34.7%	0.261***
Is dependent	27.0%	46.6%	0.393***
Financial resources			
Financial aid receipt	87.5%	45.4%	0.846***
Annual household income	$18,275	$27,264	0.219***
Enrollment characteristics			
First time enrolled at college	41.7%	31.0%	0.230***
Full time	47.4%	28.1%	0.430***
Prior academic performance			
High school GPA	2.34	2.76	0.361***
Cumulative college GPA	2.43	2.65	0.343***
Cumulative credits attempted	21.2	21.9	0.028
Cumulative credits earned	20.6	25.9	0.175***
Number in sample	578	65,142	—

NOTES: This table presents summary statistics for all enrollees in the spring 2016 and fall 2016 semesters, comparing students who used Single Stop in their first semester of access to the services with students who did not use Single Stop in their first semester of access. Values in the Single Stop user and nonuser columns represent averages, while differences are reported as standard errors. — = data were not available.

*** $p < 0.001$; ** $p < 0.01$.

To isolate the impact of Single Stop from all these other factors, we needed to identify a comparison group that was more similar to Single Stop users on factors we observed (e.g., race, gender) and factors we could not observe (e.g., motivation, homelessness). We next describe the data, measures, and sample used for this analysis, as well as the three-step process used to select our comparison group.

Data and Key Measures

We relied on three data sources for the analysis: Single Stop case management records, administrative data from the four study colleges, and National Student Clearinghouse (NSC) data. Single Stop provided student-level data, which consisted of all records of Single Stop use from the time the sites were opened through fall 2017. We received data from

the study colleges that had demographic, financial, and educational data on all enrollees at the colleges between the fall 2015 and spring 2017 semesters. We provide additional detail on these data and the key variables used for the analysis, with additional detail provided in the technical appendix.

Data and Measures of Single Stop Use

The data used to identify Single Stop users were drawn from a common case management software system that was used across all Single Stop sites. Single Stop staff used the software to document interactions with students and services received and, in some cases, captured financial and in-kind benefits students received through interactions with Single Stop. All students who entered the Single Stop office were asked to sign into the system or had data entered by a Single Stop staff member, and this system tracked students by their name or student ID. We used names, birth dates, and student IDs to match Single Stop data to administrative data but were unable to. Because use of Single Stop by noncollege students is rare, the primary explanation for mismatches is that there were errors in the identifying information collected by the Single Stop sites.[5] Given these challenges, there might have been some students who were mistakenly included in the comparison group despite having used Single Stop services.

For the purposes of this study, we defined Single Stop users broadly, including all students who had any Single Stop record within a semester. Although Single Stop potentially connected users with an array of services, we viewed the "treatment" as visiting Single Stop for screening or referrals, as opposed to the receipt of public benefits or receipt of services from community providers. There were pros and cons to defining Single Stop in this way. By defining Single Stop use broadly, we accounted for all of the benefits Single Stop might offer, including general support and case management that might not translate into a financial benefit. On the other hand, we might have included some students who received very limited services. We were constrained to focusing on the broadest definition of Single Stop for two reasons: We had small sample sizes, and therefore might not have been able to detect impacts with subsamples of

users, and the comprehensiveness of data collection varied by service, so it was difficult to know with certainty which services and benefits were received.

## Data and Measures for Postsecondary-Success Outcomes

The study focused on three outcomes: continued enrollment, transfer, or completion (referred to collectively as *persistence*); credits attempted; and credits earned. To define the persistence measure, we used administrative data from study colleges, as well as NSC data on transfer and graduation at other nonstudy colleges.[6] For students enrolled in study colleges, credits earned might have included credits earned prior to enrollment through dual credit, Advanced Placement testing, or enrollment at other colleges. However, attempted credits were restricted to those attempted within our study colleges.[7] We did not include summer semesters in our measure of persistence or completion but did consider credits earned over the summer in our cumulative measures.

Results from our prior study of Single Stop indicated that the impacts of Single Stop on persistence and credit outcomes might not show up for as long as one year after students first used Single Stop (Daugherty, Johnston, and Tsai, 2016). This makes sense, because some of the benefits or services offered by Single Stop may take time to translate into tangible benefits for students, and there may be extra time required for these additional resources to translate into improved educational outcomes. As a result, we focused on outcomes one year from the beginning of the semester in which Single Stop was first used.

Sample and Timeline

We included all enrollees at the four colleges in our sample, first-time college students and continuing enrollees, as well as enrollees across all programs offered in the institution.[8] Figure 2 provides an illustration of the sample and timeline for observing outcomes. Spring 2016 was the first full semester that Single Stop sites delivered services at study colleges, so we decided to focus on cohorts of students who were enrolled in our study colleges in spring 2016 or later. JSCC did not provide any services to students

FIGURE 2
Sample and Timeline
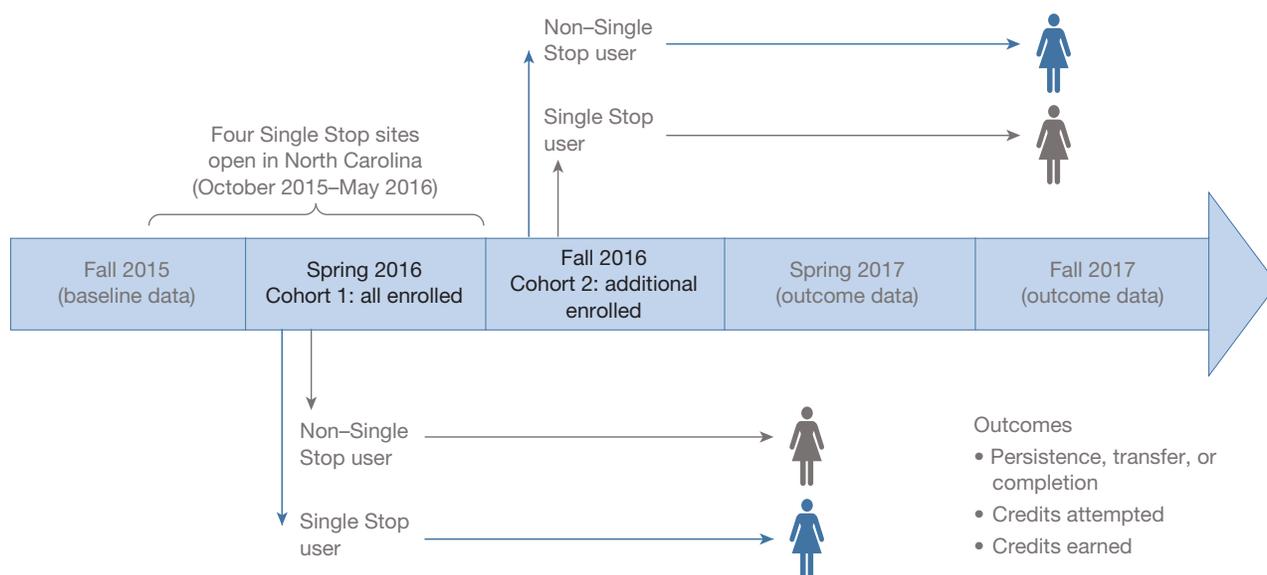
during the spring 2016 semester, so those students were not included in the sample until fall 2016. Our data included credits earned through spring 2017 and enrollment status for the fall 2017 semester. Because we needed to focus on outcomes at least one semester out from the first semester of treatment (i.e., one-year outcomes), we focused on a sample that included spring 2016 and fall 2016 enrollees across the four study colleges and defined treatment according to whether students used Single Stop within that first semester of access. We broke our sample into two cohorts of students: those enrolled in spring 2016 who had access when the sites first opened and students who were not enrolled in spring 2016 but were enrolled in fall 2016 and had access to Single Stop that semester.

Approach to Identifying a Comparison Group

To be certain that differences in college-success outcomes were due to the use of Single Stop rather than other differences, we relied on a three-step analysis process, described briefly below. We provide additional detail on our methods in a technical appendix.

1. **We identified the key observable differences we wanted to account for.** It was important to account for student-level factors that met two criteria: (1) the factors associated with whether students used Single Stop and (2) the factors associated with likelihood of success in college. We identified the five types of characteristics that we had access to in the data and that met both of these criteria: demographic data (e.g., gender, age), family makeup (e.g., whether a student reports having dependents), financial need (e.g., household income), prior academic achievement (e.g., high school GPA, credits earned), and enrollment characteristics (e.g., full-time or part-time enrollment).

2. **We created a weighted comparison group.** Within each college and cohort, we identified students who used Single Stop within that first semester and students who did not use Single Stop in that semester, and we used the characteristics selected in step 1 to assign weights to each non–Single Stop user according to how similar these nonusers were to Single Stop users. A nonuser who looked very similar to Single Stop students received a weight close or equal to one, while a nonuser who looked very different received a weight close or equal to zero. Table 4 indicates that, after weighting, this new weighted comparison group had

TABLE 4
Characteristics of Single Stop Users Versus the Weighted Comparison Group

Characteristic	Single Stop Users	Weighted Comparison Group	Difference
Student demographics			
Female	72.0%	68.4%	0.077
Age	29.8	28.8	0.092
White	24.7%	27.3%	0.060
Black	56.4%	54.9%	0.031
Hispanic	9.9%	10.4%	0.016
Asian	1.7%	1.8%	0.007
Family makeup			
Has dependent	47.1%	45.9%	0.023
Is dependent	27.0%	28.5%	0.032
Financial resources			
Financial aid receipt	87.5%	87.2%	0.006
Annual household income	$18,275	$19,334	0.047
Enrollment characteristics			
First time enrolled at college	41.7%	42.9%	0.025
Full time	47.4%	47.1%	0.006
Prior academic performance			
High school GPA	2.34	2.33	0.005
Cumulative college GPA	2.43	2.43	0.006
Cumulative credits attempted	21.2	20.2	0.035
Cumulative credits earned	20.6	19.4	0.047
One-year outcomes			
Cumulative credits attempted	42.1	39.2	0.098
Cumulative credits earned	36.6	33.8	0.107
Persistence	49.8%	49.0%	0.017

NOTES: This table presents summary statistics for all enrollees in the spring 2016 and fall 2016 semesters, comparing students who used Single Stop in their first semester of access with students who did not use Single Stop in that same semester. The values in the Single Stop user and nonuser columns represent the percentage of students with a characteristic or characteristics of the average student, while differences are reported as standard errors. In the technical appendix, we provide tables of unweighted and weighted differences for the modified sample and weights developed for the credit analysis. We also provide baseline equivalence tables for each college, since the weighting was done within college and cohort. No differences were statistically significant.

characteristics that were very similar to Single Stop users, and the observable differences present in Table 3 were substantially reduced and were no longer statistically significant.

3. **We used a regression analysis to account for remaining differences.** Using data from Single Stop users and the weighted comparison group, we conducted a regression analysis to estimate the differences in persistence and credit accumulation. The regression analysis included all of the variables listed in Table 3, as well as college-by-cohort fixed effects to account for differences across colleges and over time. The "Results" section uses data derived from this regression analysis.

The hope is that this three-step process eliminated all differences between Single Stop students and comparison students, including the factors that were accounted for in the weighting and regression analysis and other unobservable differences that might have been important to determining Single Stop use and student success in college. Under this assumption, we were able to interpret that our results estimate the causal effect of Single Stop use on student persistence and credit accumulation.

Limitations to Our Approach

There were several limitations to our analysis worth highlighting. First, although our analytic strategy accounts for a range of observable differences between Single Stop users and nonusers, there may be some unobserved differences that we were not able to fully account for, and these might have biased our estimates. For example, we lacked comprehensive academic achievement data in terms of high school and college GPA, which could capture academic motivation. To the degree that students who sought out Single Stop were more motivated or academically prepared than their peers, they would have been more likely to stay in college even if they never received any benefits from using Single Stop. In addition, we were unable to account for other measures of financial resources beyond household income, such as levels of food or housing insecurity, or other financial resources available to students. To examine the

degree that students who faced the greatest financial constraints were the ones who made the effort to seek out Single Stop, we might have compared Single Stop users with more-advantaged peers, and we would expect these more-advantaged non–Single Stop users to be more successful in college.

Second, the lack of comprehensive data on off-site Single Stop use and the inability to merge some Single Stop records with administrative data likely led us to misclassify some Single Stop users as nonusers. In this case, we would be comparing Single Stop users with other students who actually did receive some Single Stop services, which might lead us to underestimate the true impact of Single Stop use.

Another limitation that may lead us to underestimate the effects of Single Stop's presence on a campus overall is that we focus on students' use of Single Stop in the first semester they had access to the services. We therefore include students who used Single Stop in later semesters in the comparison group. If the later use of Single Stop for these students delivered immediate impacts, it might have diluted the comparison. We adjust for this in the technical appendix and find that results were similar when accounting for these students.

It is also worth noting that we encountered small sample sizes, particularly for our estimates for individual colleges and student subgroups, which limited our ability to detect statistically significant impacts for subgroups and prevented us from being able to test directly for differences in findings across subgroups. Given that sites had just opened, they might have been serving relatively small numbers of students. As mentioned above, error-prone identifying data that prevented matching with administrative data and the underreporting of the use of Single Stop services provided off-site also diminished sample sizes.

Lastly, our focus on a limited set of short-term outcomes was not optimal. Although some Single Stop services may deliver immediate benefits to students, there may be a lag for other services, and it may take time for the benefits that students receive from Single Stop to translate into real changes in academic outcomes. In addition, it would be ideal to understand more about the benefits Single Stop delivers to students in terms of financial resources,

in-kind benefits, and other types of support. However, the data on benefits receipt for Single Stop students were often self-reported and were not comprehensive, and we did not have data on benefits for the comparison group.

Results

In this section, we summarize our findings regarding the impact of Single Stop on persistence and credit accumulation. We start by describing overall and college-specific findings for persistence and credit accumulation. We then describe subgroup estimates for student populations of particular interest. More-extensive findings are detailed in the technical appendix.

Results for Persistence Were Not Statistically Significant

Overall, the findings for one-year persistence among Single Stop users across the four community colleges were small and not statistically significant (Figure 3). However, these pooled results masked substantial variation in results by college. Our exploratory college-level analysis indicated that the estimates for the impact of Single Stop at three colleges were positive (though not statistically significant).[9] Findings were

FIGURE 3

Estimates of the Impact of Single Stop on Persistence over One Year
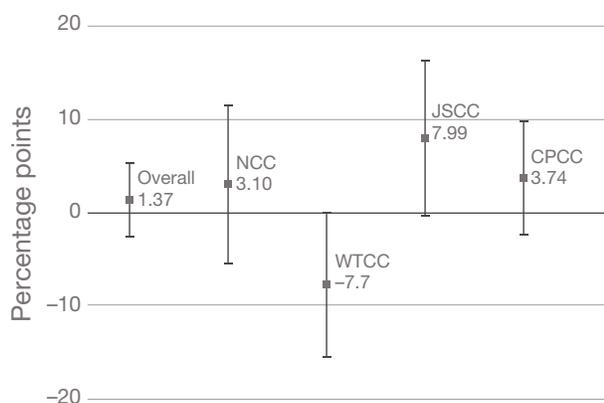
NOTES: The squares signify the estimates for Single Stop's impact, while the lines signify the confidence intervals. When the lines do not cross 0, we conclude that the estimated difference between Single Stop users and our comparison group is statistically significant.

negative and statistically significant for WTCC, indicating that persistence rates were approximately 8 percentage points lower for Single Stop users relative to their peers.

### Use of Single Stop Was Associated with an Increase in Credit Accumulation

Our estimates indicate that, within one year of Single Stop access, Single Stop users across the four colleges had attempted and earned more than one additional credit over a year, relative to similar students who did not use Single Stop (Figures 4 and 5). The exploratory college-specific results suggest that credit outcomes were particularly notable for JSCC, with nearly four additional credits earned by Single Stop users at JSCC relative to their peers, equal to at least one additional course (courses are typically three to four credit hours). Findings for NCC suggest that Single Stop students attempted and earned approximately one and a half additional credits, on average, although the estimate for earned credits is not statistically significant.

Results Suggested Potentially Larger Benefits for Certain Types of Students

Single Stop's services may be particularly attractive to colleges as a tool to support certain subgroups of interest, such as adult learners or students from traditionally underrepresented racial/ethnic groups, so the impacts of Single Stop for these subgroups are of interest. In addition, the benefits of Single Stop services likely varied for students depending on family makeup, financial well-being, and other indicators of need, and it may be important for Single Stop sites to understand this variation to determine how best to target services.

Although we did not have sufficient numbers of students in our sample to test differences between subgroups, our exploratory analysis for key student subgroups suggests that there were large, statistically significant impacts for students who were older or claimed themselves as independent for purposes of financial aid reporting (Table 5). Estimates were

FIGURE 4

Estimates of the Impact of Single Stop on Credits Attempted over One Year
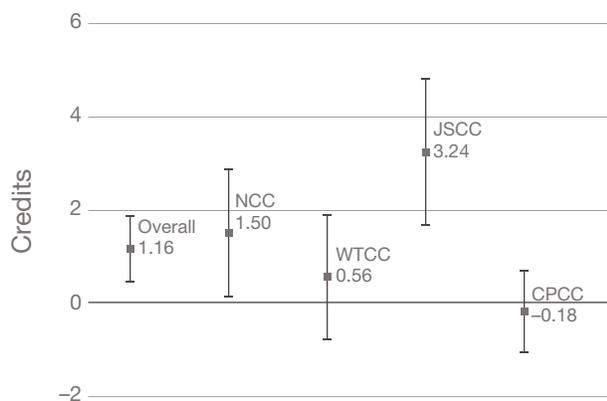
NOTES: The squares signify the estimates for Single Stop's impact, while the lines signify the confidence intervals. When the lines do not cross 0, we conclude that the estimated difference between Single Stop users and our comparison group is statistically significant.

FIGURE 5

Estimates of the Impact of Single Stop on Credits Earned over One Year
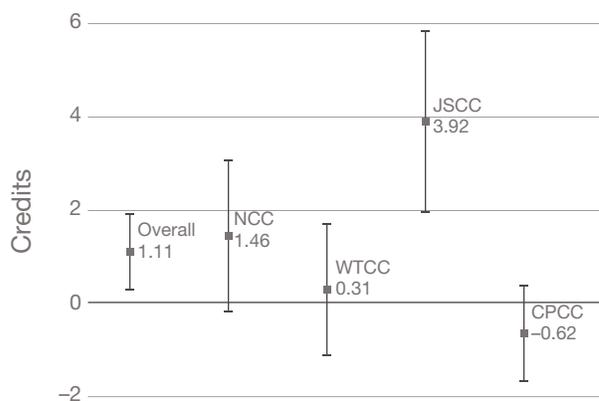
NOTES: The squares signify the estimates for Single Stop's impact, while the lines signify the confidence intervals. When the lines do not cross 0, we conclude that the estimated difference between Single Stop users and our comparison group is statistically significant.

TABLE 5

Estimates of the Impact of Single Stop for Key Student Subgroups

Student Subgroup	Persistence (%)	Credits Attempted	Credits Earned
Younger (≤25)	−1.3	0.100	0.362
Older (>25)	4.1	2.025***	1.638**
Is a dependent	1.9	0.752	1.328
Is independent	5.4	1.480**	1.517**
White	0.8	1.073	0.914
Nonwhite	2.2	1.234**	1.185**

NOTES: The numbers for persistence represent differences in persistence rates associated with use of Single Stop, while the credit estimates represent credit-hour unit differences associated with use of Single Stop.

 ** $p < 0.01$; *** $p < 0.001$.

slightly larger and statistically significant for non-white students—but probably not meaningfully different from estimates for white students.

Single Stop Can Offer Benefits to Students, but a Closer Look at Implementation and Context Would Be Useful

Overall, our findings suggest that Single Stop does have the potential to offer benefits to students. Across

the four colleges included in our study, we found an increase of 1.1 credits earned by Single Stop users. The average comparison student earned 14.3 credits over the year, meaning that an increase of 1.1 credits represents a 9 percent increase in credit accumulation relative to what students would have earned if they had not used Single Stop. Single Stop users at JSCC saw a particularly large increase in credit accumulation; these students earned 3.8 additional credits, which was equivalent to a 19 percent increase in credits earned over one year (based on an average of 20.3 credits earned by comparison students). Our

Community colleges are increasingly interested in finding ways to attract and retain adult learners and improve outcomes for underrepresented minority groups, and our analysis suggests that Single Stop has the potential to benefit these students.

prior study found no overall impact of Single Stop on credits earned, but it did find some statistically significant impacts on credit accumulation of one to three credits per year for certain colleges (Daugherty, Johnston, and Tsai, 2016).

Similar to the prior study (Daugherty, Johnston, and Tsai, 2016), findings for student subgroups suggest that Single Stop might have the greatest potential to benefit students who are older and students who claim independent status for the purposes of financial aid. We found that Single Stop use was associated with an increase of 5 percentage points in persistence rates for independent students, which represents a 10 percent increase in one-year persistence rates relative to the comparison group's average one-year persistence rate of 49 percent. This is comparable to the impact on persistence found in the Opening Doors evaluation (Scrivener, Bloom, et al., 2008). Older, independent students might have been more likely to qualify for public benefits, so we anticipated that these students might have been the most likely to experience large benefits from using Single Stop. For Single Stop sites that are constrained in terms of resources, it may be wise to target services to these students, who are most likely to benefit. In addition, community colleges are increasingly interested in finding ways to attract and retain adult learners and improve outcomes for underrepresented minority groups, and our analysis suggests that Single Stop has the potential to benefit these students.

Despite this positive evidence, we did not find an overall statistically significant impact on persistence rates across the four colleges. It is important to note that other studies of effective wraparound supports interventions also found limited evidence of early impacts on persistence (e.g., Page et al., 2017; Scrivener, Bloom, et al., 2008); the large, positive impacts of these interventions did not materialize until longer-term outcomes were observed. We found that college-specific estimates for persistence varied widely. Estimates for three of the colleges were positive and similar to persistence estimates from our prior study (Daugherty, Johnston, and Tsai, 2016), though not statistically significant. At WTCC, persistence rates were more than 7 percentage points lower for Single Stop students relative to similar students who did not use Single Stop.

As noted in prior studies (Daugherty, Johnston, and Tsai, 2016; Goldrick-Rab, Broton, and Eisenberg, 2015), it is critical to understand how Single Stop is being implemented, because variation in implementation is likely to be related to the variation we found in our estimates of impact. The Single Stop site at WTCC served a much lower percentage of students relative to NCC or JSCC (1 percent versus 4 and 16 percent, respectively), suggesting that there might have been some differences in implementation. In addition, the Single Stop site at WTCC was closed at the end of the spring 2017 semester, suggesting that there might have been implementation challenges or issues with buy-in at the institution.[10] However, we

did not collect data on implementation as part of this study, so we cannot speak to how implementation issues might have contributed to divergent results across colleges. In addition, the colleges differed in terms of student population and context, so it would have been difficult to pinpoint the role of implementation versus these other differences in driving differences in impact. Single Stop should continue to invest resources to better understand variation in implementation and use this information to target colleges that are committed to the implementation required to ensure effective sites and collect and share best practices for implementation.

Although Single Stop provided guidance and support to sites on data collection practices and encouraged staff to collect comprehensive data, sites had limited purview over data collection from community partners who provided many of the services; therefore, staff faced data limitations in tracking all of the students who received these services. In addition, it remained challenging for sites to comprehensively track benefits received. The study sites also faced challenges with the collection of accurate identifying information, which might have been driven by the introduction of new software as the sites were first opened. These data limitations presented analytic challenges and might have led us to understate the impacts of Single Stop. Single Stop should continue to emphasize the importance of comprehensive and accurate data collection by Single Stop staff to ensure that institutions and Single Stop have the data needed to assess impacts.

Online Appendix Available

For more information about our data and methods, please see Lindsay Daugherty and Tiffany Tsai, *A One-Stop Approach to Supporting the Nonacademic Needs of Community College Students: An Evaluation of Single Stop's Impact in North Carolina; Technical Appendix*, Santa Monica, Calif.: RAND Corporation, RR-2767/1-SSU, 2018, at https://www.rand.org/pubs/research_reports/RR2767.html.

Notes

[1] Low-income households had annual incomes of $32,000 or less, while annual incomes of high-income families were $92,000 or more.

[2] *Unmet need* is the full cost of college attendance, including tuition, fees, and living expenses, less an estimate of what the student's family is able to pay based on income and other factors, less any grants and scholarships the student is offered.

[3] Evidence from Goldrick-Rab, Broton, and Frank (2014) and conversations with Single Stop staff suggest that data collection processes and the comprehensiveness of data for services other than benefits screenings may vary across sites. Although referrals to community services are tracked comprehensively, receipt of tax services may or may not be comprehensively tracked in the data. As a result, variation in percentages across colleges may be driven by differences in service rates and the comprehensiveness of tracking.

[4] NCC now also offers legal and financial services but was not offering them during the semesters studied.

[5] Discussions with Single Stop staff suggested that many of the unmatched records were duplicates of students with correct identifying information elsewhere in the data. On-site staff encountered difficulty updating existing records in the software and created "dummy records" with intentionally incorrect identifying information. In this case, our data may capture most Single Stop users, with mismatches being updates to other matched records.

[6] According to the "Enrollment Coverage Workbook" (an Excel spreadsheet) that NSC regularly updates on its "Working with Our Data" webpage, the data covered 97 percent of all enrollment nationwide in fall 2016 and fall 2017, the period for the study. These data were pulled as of June 29, 2018 (NSC, 2018).

[7] This difference in whether preenrollment credits were accounted for explains why credits earned may exceed credits attempted for some students.

[8] We could not fully observe credits attempted and earned by students who transferred during the study period, because credit data are not included in NSC files. As a result, we limited our sample to exclude transfer students for the credit analysis. We provide more detail on this in the technical appendix.

[9] We examine the pooled effects for these three still-operating sites in the technical appendix and find results that are statistically significant.

[10] We provide overall estimates for the three colleges with sites that remain open in the appendix to inform future funding decisions.

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About This Report

Single Stop's College Initiative aims to address the nonacademic needs of college students, connecting them to governmental, community, and institutional resources that can help to overcome financial barriers and other life issues that lead many students to drop out before completing a credential. This report builds on a prior RAND Corporation evaluation, in which RAND found improved outcomes for Single Stop users at four community colleges (Daugherty, Johnston, and Tsai, 2016). We examined the impact of using Single Stop on postsecondary outcomes for students enrolled between spring 2016 and fall 2016 at four community colleges in North Carolina. Specifically, the aims of the study were to

- estimate the impact of using Single Stop across four community colleges on persistence and completion within one year and credits attempted and earned over one year
- explore whether the effects of Single Stop may vary by college
- explore whether the effects of Single Stop may affect certain groups of students who might be particularly likely to benefit because of high dropout rates or greater need for nonacademic support.

This report is accompanied by an online technical appendix that provides additional detail on data, methods, and findings.

This study was undertaken by RAND Education and Labor, a division of the RAND Corporation that conducts research on early childhood through postsecondary education programs, workforce development, and programs and policies affecting workers, entrepreneurship, financial literacy, and decisionmaking. This study was sponsored by Single Stop USA in partnership with the John M. Belk Endowment. Single Stop's mission is to build pathways out of poverty by leveraging partnerships and technology to connect people to existing resources, all through a unique one-stop shop. John M. Belk Endowment aims to transform postsecondary educational opportunities to meet North Carolina's evolving workforce needs.

More information about RAND can be found at www.rand.org. Questions about this report should be directed to Lindsay Daugherty (Lindsay_Daugherty@rand.org), and questions about RAND Education and Labor should be directed to educationandlabor@rand.org.

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