



Connecting College Students to Alternative Sources of Support

The Single Stop Community College Initiative and Postsecondary Outcomes

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For more information on this publication, visit www.rand.org/t/RR1740

Library of Congress Cataloging-in-Publication Data is available for this publication.

ISBN: 978-0-8330-9691-3

Published by the RAND Corporation, Santa Monica, Calif.

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Preface

Higher education in the United States faces challenges surrounding low rates of degree completion, particularly among low-income populations. Students face unmet financial needs and a lack of support in such critical areas as transportation and child care that can deter their chances for success in college. This report examines the effectiveness of a program that aims to improve college success by facilitating access to wraparound supports and alternative sources of financial resources. The report should be of interest to policymakers and institutions that are looking to programs that can better support college students and improve educational outcomes.

Single Stop U.S.A.'s Community College Initiative assists college students—at no cost to them—with applications for public benefit programs and other wraparound services that can provide support for housing, food, taxes, child care, legal services, and other essential resources. Under a Social Innovation Fund (SIF) grant provided by the Corporation for National and Community Service to New Profit (an organization that provides financial support to Single Stop U.S.A.), Single Stop services were funded at four community college systems: Bunker Hill Community College, City University of New York (established as separate sites at six institutions), Delgado Community College, and Miami Dade College. This report serves as an independent impact evaluation of the SIF-funded program. We examine the relationship between use of Single Stop services and key postsecondary outcomes, including credit accumulation and persistence in college. A prior implementation study of the program was published by Sara

Goldrick-Rab and colleagues in 2014 and should be referenced for findings regarding implementation.

This research was conducted by RAND Education, a unit of the RAND Corporation, under a contract with Single Stop U.S.A., a non-profit organization that provides coordinated access to the safety net and connects people to the resources they need to attain higher education, obtain good jobs, and achieve financial self-sufficiency. Funding to support the evaluation was provided by New Profit, a national nonprofit venture philanthropy fund, under a grant from the SIF. The SIF is a program of the Corporation for National and Community Service, a federal agency that engages millions of Americans in service through its AmeriCorps, Senior Corps, and Volunteer Generation Fund programs and leads the President's national call to service initiative, United We Serve. The SIF empowers organizations to identify and support sustainable solutions that are already making a significant impact in transforming communities. For more information, visit www.nationalservice.gov.

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Summary

The success rates of community college students are low, with fewer than one-third of students graduating or transferring within three years (U.S. Department of Education, National Center for Education Statistics, 2015). Community colleges are searching for ways to better support their students and improve success rates. Yet colleges are often ill-equipped to deal with the range of nonacademic barriers to college completion that their student populations face. Advising departments are underresourced and focused on academic issues (Gallagher, 2010;

Key Findings

- In a study of first-time-in-college students at four community college systems during fall 2014, Single Stop use was associated with an increase in college persistence of at least 3 percentage points.
- Single Stop users attempted more credits than comparable students who did not use Single Stop.
- Use of Single Stop's tax assistance services was associated with particularly positive outcomes in terms of persistence and credits earned.
- Findings were particularly positive for Single Stop users who were adult learners (age 25 and older), independent students, and nonwhite students.
- Single Stop use was associated with improved postsecondary outcomes at all but one of the institutions in the study.

Karp, 2013). Institutional and community support services are often dispersed, and it can be challenging for students to navigate the broad range of options (Karp, O’Gara, and Hughes, 2008; Nodine et al., 2012). Many of the issues that students face are financial in nature, yet there are few programs that help students to access alternative sources of financial support through public benefit programs that provide access to food stamps, health care coverage, housing subsidies, and other essential resources. Financial programs, such as aid and tax credits, can help to cover costs but leave about half the price of college uncovered (Calahan and Perna, 2015). For students with low incomes, this unmet need can present a significant obstacle to attaining higher education and associated improvements in life circumstances. To address this shortcoming, there has been a call for improved access to and use of benefits among students (Goldrick-Rab, Broton, and Eisenberg, 2015; U.S. Department of Housing and Urban Development, 2015).

This study examined Single Stop U.S.A.’s Community College Initiative, a program designed to improve the well-being of low-income communities by connecting individuals to public benefits and other institutional and community resources to address nonacademic barriers to college completion. Through offices located on community college campuses, Single Stop provides students with a range of free services, including screenings and applications for public benefit programs; tax services, financial counseling, and legal services; and case management with referrals to a wide variety of resources and support programs across the institution and community. This report presents an evaluation of the Single Stop program and its impact on students’ postsecondary outcomes.

Programs that provide wraparound services (e.g., mental health counseling, social service programs) to college students have the potential to improve postsecondary outcomes by helping students address non-academic barriers to success and facilitating access to alternative sources of financial support. Studies of wraparound support programs suggest that they lead to improved postsecondary outcomes (Castleman and Goodman, forthcoming; Scrivener et al., 2008; Scrivener et al., 2015). The research also shows that financial support programs play an important role in student success (see Dynarski and Scott-Clayton, 2013, for

a review). In addition, programs that help college students access existing resources and complete important administrative requirements have been shown to positively affect student outcomes (Castleman and Page, 2016; Castleman, Page, and Schooley, 2014). However, Single Stop's program differs from these other programs in a number of important ways, including its accessibility to all students in an institution, its focus on nonacademic supports, and its particular focus on facilitating access to public benefits. This report helps to build evidence on an approach to student support that shows the potential to improve postsecondary outcomes for community college students.

Study Approach

We examined the Single Stop program at four community college systems: Bunker Hill Community College, City University of New York, Delgado Community College, and Miami Dade College. Our analysis—which used data on program use from Single Stop's database and administrative data from the respective institution—focuses on first-time-in-college students in fall 2014. We examined the relationship between Single Stop use and postsecondary outcomes through two methodological approaches: multiple regression and coarsened exact matching. These approaches allowed us to compare Single Stop users with their peers at the same institutions who are similar in terms of demographics and financial resources. We examined five postsecondary outcomes: persistence into a second semester (one-term persistence), persistence into a second year (one-year persistence), credits attempted in the 2014–2015 academic year, credits earned in the 2014–2015 year, and ratio of earned to attempted credits. In addition, we analyzed outcomes for three definitions of Single Stop use. We first looked at all Single Stop users, individuals who were registered as clients with Single Stop. We then looked at individuals who received two of the primary services offered by Single Stop, benefit screenings and tax services. In addition to examining the outcomes for all students in our sample, we conducted several subgroup analyses. We calculated institution-specific estimates to

determine whether the results are consistent despite variation in implementation and context. We also looked at particular student subgroups to determine whether the program impact is greater for certain types of students. Specifically, we examined estimates for adult learners (25 or greater), students of varying races and ethnicities, and student dependent status.

Single Stop Use and College Success

Our analysis indicates that use of Single Stop was associated with improved postsecondary outcomes. Students who used Single Stop were more likely to persist into their second and third semesters of college relative to similar students who did not receive Single Stop services. These results were consistent across methodological approaches and robust to changes in model specifications. There was also a positive association between Single Stop use and attempted and earned credits, with results varying somewhat across models.

We examined outcomes for all Single Stop users, outcomes for individuals who received benefit screenings, and outcomes for individuals who received tax services. Across the full sample, the results were positive for all three groups of Single Stop users. The results for students who received tax services were particularly large; students who used these services were estimated to persist at rates nearly 15 percentage points higher than comparable students who did not receive tax services. When we examined results by institution, the findings were consistently positive for two of the institutions, mixed for one of the institutions (i.e., large, positive estimates for credits but no significant estimates for persistence), and null for one of the institutions (i.e., neither persistence nor credit estimates were statistically significant). These results suggest that aspects of implementation or unaccounted for differences in the student populations or other contextual factors might be related to the effectiveness of Single Stop in improving postsecondary outcomes. When we examined the estimates for various student subgroups, we found that the results were more positive and statistically significant for adult learners (ages 25 and older), independent stu-

dents, and nonwhite students. This aligned with expectations, because these students might have been more likely to qualify for public benefits and tax credits.

Together, these findings suggest that having a “one-stop shop” for nonacademic wraparound services and alternative sources of financial support can play a valuable role in promoting student success in college. Students can benefit from an office that assesses student needs, directs students to available resources, assists with application processes, and brings valuable services to campus. The positive outcomes of the program were consistent across program services, suggesting that students might have benefited regardless of the particular services they used. Variation in outcomes across student subgroups suggests that programs such as Single Stop might be particularly beneficial to older, independent students and nonwhite students. However, variation in the results by institution suggests that implementation and institutional context might have an impact on the ability of the Single Stop program to deliver outcomes for students. Given limitations in data and research design, we could not pinpoint the reasons for differences across institutions.

Limitations and Future Research

Our findings provide evidence of a strong relationship between use of Single Stop and postsecondary outcomes and represent important preliminary evidence for the impact of this coordinated approach to wraparound services. We are hesitant to conclude that these estimates indicate that Single Stop *caused* the outcomes, because the methodology used in this study does not permit such causal inferences. We accounted for many of the relevant observable differences between Single Stop users and nonusers in our methodological approaches, but there might be other factors that are related to Single Stop use and postsecondary outcomes that are not accounted for. For example, we were unable to account for motivation in our analysis, and we were limited in our ability to incorporate measures of financial need. Given these limitations, we are cautious in our interpretation of the find-

ings. More-rigorous studies of impact can provide additional evidence on the effectiveness of programs like Single Stop; experimental studies of the Single Stop program are currently ongoing. In addition, the return on investment of the program should be assessed and compared with other programs intended to support college students to determine which programs should be scaled to improve postsecondary success rates.

Single Stop's Community College Initiative is consistently associated with positive outcomes for college students. A next step would be to investigate how the program achieves these outcomes. More research is needed to unpack the program's mechanisms and understand how students are using various services and why the program might be effective. First, we are unable to examine some activities because of data limitations. Single Stop's data system does not collect data on all activities provided by Single Stop staff, and other services are tracked with varying reliability, so we cannot examine the relationship of these services to student outcomes. A more complete accounting of activities would be valuable in identifying the relative effectiveness of different services and understanding how combinations of services may work together to improve outcomes. This research could help Single Stop and institutions to refine their efforts and focus on the services with the highest impact.

It would also be useful to understand more about what the program delivers in terms of financial value to students. For example, Single Stop makes a strong effort to collect data on confirmed benefits for clients (e.g., benefit amount is reported through letters from some public benefit providers), but the total financial value is difficult to determine because not all clients who receive these benefits are confirmed in the system; therefore, the estimate might be lower than the actual value. Future analysis that includes government data on the recipients of public benefits would provide more-reliable evidence on the value of Single Stop services in terms of benefits delivered. These data would also improve analytic methods by allowing researchers to account for pretreatment receipt of benefits.

Finally, it would be valuable to understand more about how implementation and context are related to outcomes. Single Stop's national

office is providing sites with increasing autonomy, so implementing outreach and student services and integration into the institution may vary to a great extent. Additional cross-site analysis that incorporates measures of implementation could provide evidence around best practices that affect student outcomes.

Acknowledgments

We would like to thank the staff of our sponsor, Single Stop U.S.A., who provided support with data transfer and program information. We also thank the institutional research department. We also thank the institutional research departments at participating institutions for data transfer. We thank Ben Master, an external reviewer, and Cathy Stasz for their valuable feedback in reviewing this document. The authors alone are responsible for any errors within.

The Importance of Effective College Support Programs

The Role of Financial Assistance and Wraparound Service Programs in Supporting College Students

College completion is a challenge for the U.S. postsecondary system. Fewer than two-thirds of enrollees at four-year colleges graduate within six years, and fewer than one-third of students at two-year colleges graduate or transfer within three years (U.S. Department of Education, National Center for Education Statistics, 2015). Completion rates are a particular challenge for low-income students. Only 45 percent of college enrollees in the bottom income quartile attained a degree or certificate within six years of enrollment, compared with 68 percent of college enrollees in the top income quartile (Radford et al., 2010). Although academic preparation plays an important role in determining whether students will succeed in college, students also face a number of nonacademic barriers to success. According to the Community College Research Center (2013), these nonacademic barriers include such concrete barriers as transportation issues and lack of child care, as well as more-subtle barriers, such as a lack of social capital to navigate college bureaucracies or a lack of confidence in one's ability to succeed.

The departments responsible for advising and support services at many community colleges are not equipped to effectively serve the nonacademic needs of their students. Advising is often underresourced, with student-to-adviser ratios as high as 1,500 to 1 (Gallagher, 2010). Advisers are primarily trained to deal with academic issues, while such nonacademic support services as financial aid and mental health ser-

vices are often managed under different departments and are scattered across offices throughout the institution (Karp, 2013). Students and advisers struggle to navigate the complex web of resources that many institutions have available to meet the needs of low-income students (Karp, O’Gara, and Hughes, 2008; Nodine et al., 2012). Students might benefit from more-effective ways to access the full range of wraparound services (e.g., mental health counseling, social service programs) and programs that use a systematic approach to connect individuals to the resources they need.

Many wraparound supports address financial issues for low-income students, providing assistance with needs that include food, housing, health care, and transportation. Financial aid and tax credits play an important role in helping to cover costs, but national data indicate that grants and loans from federal, state, and local programs cover only 51 percent of the costs of college (Calahan and Perna, 2015). Students and their families are typically required to cover the remaining costs, and low-income families often have insufficient resources to cover the costs, referred to as *unmet financial need*. In 2012, students in the lowest income quartile faced an average of \$8,221 in unmet financial need, compared with a surplus of \$13,950 for students in the top income quartile, and these financial barriers for low-income students have been growing; the average amount of unmet need for the poorest students doubled between 1990 and 2012 (Calahan and Perna, 2015).

Unmet financial need can negatively affect college success in several ways. If students are unable to cover the costs of tuition and other living expenses, then they may choose to reduce their level of enrollment or withdraw from college. Students who are facing financial barriers may also be more likely to seek outside employment while enrolled. More than half of all students enrolled at community colleges work more than 20 hours per week (Saunders, 2015). Studies suggest that outside employment during college is associated with lower levels of academic success (Ehrenberg and Sherman, 1987; Levin, Montero-Hernandez, and Cerven, 2010; McCormick, Moore, and Kuh, 2010). Finally, students facing unmet financial need might also face challenges with meeting their basic living needs, such as housing and food. There are physical and psychological consequences associated with

food and housing insecurity (Evans, Wells, and Moch, 2003; Goldrick-Rab, Broton, and Eisenberg, 2015; Melchior et al., 2009), which might harm academic performance. For example, Maroto, Snelling, and Linck (2015) found that food insecurity is associated with lower grade point averages (GPAs) among community college students. A 2010 survey of City University of New York (CUNY) students found that more than two in five reported housing-insecurity issues, including not having enough money to pay rent and being evicted (Tsui et al., 2011). Approximately the same number reported challenges with food insecurity, and many students reported facing both (Freudenberg et al., 2011).

To address concerns about unmet financial need among college students, governments can offer benefits that act as alternative sources of financial support. Public benefit programs that students could benefit from include (1) Supplemental Nutrition Assistance Program (SNAP), the primary food stamp program; (2) Women, Infants, and Children (WIC), a supplemental nutrition program for low-income pregnant women and young children; (3) Medicaid, health insurance for low-income individuals; (4) housing assistance through the Housing Choice Voucher Program; (5) Temporary Assistance for Needy Families (TANF), the cash assistance program commonly known as welfare; (6) the Supplemental Security Income (SSI) and Social Security Disability Insurance (SSDI) programs, which provide cash assistance to disabled individuals; (7) child care assistance; (8) unemployment insurance; (9) state and local transportation assistance programs for low-income and disabled individuals; (10) utility assistance for low-income individuals through the Low Income Home Energy Assistance Program; and (11) tax credits, including the Earned Income Tax Credit for low-income individuals and the American Opportunity Tax Credit for college enrollees. Students who meet eligibility criteria and complete applications can receive cash and noncash benefits from these programs that can be used to cover college costs or other living expenses.

However, despite the abundance and apparent value of public benefit programs as alternative sources of financial support, they are underutilized by students. A survey of ten community colleges across the country found that only one in five students with low levels of food security received food stamps, and only one in five students with low

levels of housing security received public housing support (Goldrick-Rab, Broton, and Eisenberg, 2015). Underutilization of public benefits is not unique to college students; estimates indicate that a quarter of eligible families across the United States do not access any of the public benefits they qualify for (Zedlewski et al., 2006).

There are a number of reasons individuals might not access public benefits, including ineligibility because of program constraints, a lack of information about eligibility and the processes for application, and stigma associated with the use of public benefits. Even when students are well informed about and eligible for public benefit programs, the process of registering for benefits can be challenging and resource intensive. Individuals might need to visit a number of different offices and complete a range of applications, and low-income students who are busy with school, work, and other life responsibilities might not have the time to navigate these complex processes. To address barriers to the use of public benefits among college students, stakeholders have called for efforts to improve students' access to benefits and increase use among students (Goldrick-Rab, Broton, and Eisenberg, 2015; U.S. Department of Housing and Urban Development, 2015).

Single Stop U.S.A.'s Community College Initiative (hereafter referred to as Single Stop) is a program that was created to act as a one-stop shop for wraparound services, with a particular focus on addressing, through public benefit programs, financial barriers that many low-income students face. By embedding offices on community college campuses and staffing them with site coordinators who can provide differentiated support based on student need, the program facilitates access to public benefit programs and other institutional and community resources. Single Stop's primary services include assistance with screening and application for public benefit programs; provision of free tax services, financial counseling, and legal services; and case management to connect students to other programs and resources that are needed for support (e.g., mental health counseling, textbook-funding programs). Single Stop's effort to offer comprehensive benefit screenings to college students is unique; we are aware of no other programs

that provide this level of service.¹ And although colleges often offer wraparound services, the Single Stop model is unique in pulling all of these resources together with the benefit screenings in a single place.

By facilitating access to public benefit programs and institutional and community resources, Single Stop aims to address nonacademic barriers to college and help students feel supported. When financial barriers are overcome and students feel supported, we expect to see improved postsecondary outcomes, including increased course-taking and course success, as well as improved rates of college persistence and graduation. Single Stop also aims to more broadly enhance benefit access by providing individuals with lifelong knowledge and skills around benefit program use and encouraging the development of networks within colleges that are designed to better support a range of student needs.

Prior Research on Wraparound Support Programs and Financial Supports

There are many emerging programs that offer wraparound supports for college students, and the evidence regarding the effectiveness of these programs is growing. For example, the Opening Doors intervention placed students in learning communities, provided students with financial aid, and enhanced student services through advising and monitoring. A series of experimental studies demonstrated that the program had positive impacts on time of enrollment and credit accumulation (Brock and Ritchburg-Hayes, 2006; Scrivener, Bloom, et al., 2008; Scrivener and Au, 2007; Scrivener and Pih, 2007). Another

¹ There are a few programs at colleges that focus on improving access to a particular benefit, but these programs are distinct from Single Stop in that they do not offer comprehensive benefits screening and focus on one need rather than attempting to act as a one-stop shop for many potential needs. An example of a narrower intervention focused on public benefits for college students, described by the U.S. Department of Housing and Urban Development (2015), is a partnership between the Tacoma Housing Authority and Tacoma Community College to provide housing to students who meet certain criteria. In addition to an exclusive focus on housing, the program is substantially smaller than the Single Stop program, serving just 21 families in the fall 2014 semester.

multifaceted support intervention that was recently evaluated was the Accelerated Study in Associate Programs (ASAP) program, designed to enhance advising and financial aid resources, as well as requiring linked coursework and instruction in study skills. An experimental evaluation of the program conducted on CUNY campuses found that it led to increased credit accumulation and degree completion (Scrivener, Weiss, et al., 2015).

A second set of recently evaluated programs initiate wraparound supports even earlier, targeting services to students in both high school and college. The Bottom Line and College Possible programs provide one-on-one coaching at the high school and college levels around a range of academic and nonacademic topics, such as financial literacy, college application and transfer, and career search. Several evaluations of Bottom Line indicated positive impacts of the high school component on the decision to enroll, college choice, enrollment intensity, and persistence (Barr and Castleman, 2016; Castleman and Goodman, forthcoming). A recent experimental study of the College Possible program found similarly positive impacts on college enrollment for the high school component of the program (Avery, 2013). There has not yet been any research published on the components of these programs that serve college students.

While wraparound support programs often focus on providing high-touch case management services to students, another group of emerging interventions are designed to support college enrollment and success through low-touch, low-cost information-sharing. These interventions rely on text messaging to target information to students at key times, encouraging students to engage in enrollment-related activities or reach out to student support providers for additional high-touch assistance. To the degree that these interventions can connect students to important wraparound services with the institution, they have the potential to address nonacademic barriers to success. In experimental studies, these text-messaging interventions have demonstrated positive impacts on enrollment and persistence (Castleman and Page, 2016; Castleman, Page, and Schooley, 2014). However, the evaluated interventions largely focused on preenrollment outreach and were primarily

focused on admissions and enrollment requirements rather than connecting students to wraparound supports.

Overall, the emerging research on programs that connect college students to wraparound supports indicate positive impacts on postsecondary outcomes. However, the programs evaluated in the literature differed in important ways from the Single Stop program. Programs such as Opening Doors and Bottom Line require applications from students and focus efforts on small cohorts of students who are applying to a number of different colleges. ASAP was also targeted to specific students within the CUNY system, limited to full-time students with citizen status; summer assistance is budget dependent, and students must attend all ASAP programming to receive financial benefits. Students participating in these programs were required to meet such criteria as “being interested in enrolling in a four-year bachelor degree program” or being “enrolled full-time.” In contrast, Single Stop sites are often accessible to all students in a college. Marketing of the program and services may be targeted toward certain populations (e.g., first-time-in-college [FTIC] students, low-income students, students in other support programs), but the program is intended to provide an office for support to all students rather than an intensive cohort-based support program. Another area of distinction between the programs described earlier is use of various supports. While the other programs focus on regular, ongoing support to students at similar levels of intensity across a cohort of participants, Single Stop is designed to provide services that vary in type and intensity on an as-needed basis. For example, some students may visit the office a single time and receive a referral for one particular need, while other students may regularly work with site staff to apply for a range of benefit programs and address other potential needs. Finally, Single Stop focuses primarily on nonacademic wrap-around support, while many of the previously evaluated programs provide support around academic and nonacademic issues.

Because Single Stop’s wraparound supports are largely focused on addressing financial barriers to college success by providing students with access to public benefits, the broad literature on the role of financial support in improving postsecondary outcomes is also relevant. Our review of the research on state and federal financial aid pro-

grams found strong evidence regarding the impacts of financial aid on enrollment, with college enrollment rates increasing by approximately 4 percent for every \$1,000 of grant aid (Dynarski and Scott-Clayton, 2013). Somewhat fewer studies have examined the impact of financial aid on postenrollment outcomes, such as persistence, credit accumulation, and graduation, and the findings across studies are mixed. Some studies found no impact of financial aid programs on persistence (Bruce and Carruthers, 2014; Scott-Clayton, 2011; Sjoquist and Winters, 2012), while others found a positive impact (Bettinger, 2004; Dynarski, 2008; Goldrick-Rab et al., 2016; Richburg-Hayes et al., 2009). With regard to credit accumulation and college GPA, several studies found positive impacts (Bartik, Hershbein, and Lachowska, 2015; Scott-Clayton, 2011). Looking across studies, Dynarski and Scott-Clayton (2013) argued that the positive impacts of financial aid programs on postenrollment outcomes might be limited to those programs with explicit academic requirements. We might anticipate participation in public benefit programs such as Single Stop, as alternative sources of financial support, to have similar impacts on postsecondary outcomes.

The process of applying for public benefits can be complex, and one of the central services that Single Stop provides is assistance with public benefit enrollment. A recent study on the Free Application for Federal Student Aid (FAFSA) process provided evidence on the potential value of efforts to assist with complex application processes for government assistance. Bettinger et al. (2012) evaluated an H&R Block program that helped low-income families complete FAFSA as part of the company's tax assistance services. By prepopulating information based on tax returns and walking students and their families through the forms, the program aimed to connect more students to the resources that were available to them. A randomized control study of the program found that it led to higher rates of Pell Grant receipt, higher rates of enrollment, and increased time in college (Bettinger et al., 2012). Single Stop aims to achieve similar outcomes through its simplification of the application process for public benefits.

To our knowledge, there have been no studies that examine the impact of programs that facilitate access to public benefits for college

students. Several recent reports described the Single Stop program and assessed the implementation of the program at various campuses (Goldrick-Rab, Broton, and Gates, 2013; Goldrick-Rab, Broton, and Frank, 2014). Researchers found that Single Stop users who received public benefits averaged approximately \$5,400 in benefits received, but the studies did not attempt to attribute outcomes to Single Stop, and they did not examine postsecondary outcomes. The U.S. Department of Housing and Urban Development identified Single Stop's program as a model that could be replicated to address benefit-access issues for students (U.S. Department of Housing and Urban Development, 2015). However, the report did not identify any research on the impacts of the program.

Evaluating Single Stop's Community College Initiative

This study was conducted to assess the effectiveness of the Single Stop Community College Initiative. We examined whether students who accessed Single Stop services had improved postsecondary outcomes, adding to the broad literature on the impact of wraparound service programs and financial supports. Specifically, we addressed the following research questions:

1. Is use of Single Stop associated with improved postsecondary outcomes in terms of persistence and credit accumulation?
2. Is use of a public benefit screening associated with improved postsecondary outcomes in terms of persistence and credit accumulation?
3. Is use of tax services associated with improved postsecondary outcomes in terms of persistence and credit accumulation?
4. Do the relationships between Single Stop use and postsecondary outcomes vary across student subgroups?
5. Do the relationships between Single Stop use and postsecondary outcomes vary across institutions?

The analysis focused on FTIC students entering four community college systems in fall 2014: Bunker Hill Community College (BHCC), CUNY, Delgado Community College, and Miami Dade College (MDC). Single Stop has sites at six community college sites at CUNY and on three campuses at MDC, and we include all campuses with Single Stop sites in our analysis. We compared students who used Single Stop services with similar students who did not use Single Stop services through a matching approach. The analysis included data from the Single Stop program, administrative data systems at the four community college systems, and national college data from the National Student Clearinghouse (NSC). We examined outcomes for three semesters (fall 2014 through fall 2015), including one-semester and one-year persistence, credits attempted and earned, and the ratio of earned to attempted credits.

We next provide some additional detail about the Single Stop model and describe variation in implementation and context across the four community colleges. This is followed by a discussion of the data and methods for the study. After presenting the results, we conclude with a discussion of the implications of our findings and study limitations.

Describing the Single Stop Program

In this chapter, we start by describing the Single Stop model and summarizing findings from a prior study that assessed the implementation of Single Stop (Goldrick-Rab, Broton, and Frank, 2014). We then discuss variation in context and implementation across Single Stop sites. Focusing on the four community college systems included in this study, we provide information about the student population, operational details for the sites, use of various Single Stop services, and the availability of benefits.

The Single Stop Model

Single Stop U.S.A. was officially established as a national organization in 2007, although the program began providing services nearly a decade earlier. The program first initiated sites in community-based organizations, such as food pantries and health clinics, and now operates more than 132 sites across the United States, serving more than 200,000 individuals in 2015. In 2009, the program launched its Community College Initiative with just three pilot sites. The colleges selected for the launch of the program were chosen based on characteristics of the student population, especially financial need and the size of the institution (Goldrick-Rab, Broton, and Frank, 2014). As the program matured, it served a broader set of institutions and expanded to 31 sites across nine states in 2015. Program data suggest that 41,760 households were served by Single Stop in the 2015 calendar year across the 31 sites.

Program Services

Single Stop establishes an office on a college campus that is intended to provide a range of services at no cost to students, acting as a one-stop shop for support related to financial and nonfinancial needs. Students entering the office meet with a site coordinator who collects basic information about the student to assess needs and register the student in the program's case management system. The site coordinators then have information and tools and provide active and differentiated case management to connect students to a wide range of programs and services, including the following:

- **Benefit screening and application:** The most common service provided by Single Stop is screening for public benefits through a tool called the Benefits Enrollment Network (BEN). By collecting some basic information from students, the tool can determine likely eligibility for a range of public programs, including TANF, SNAP, Medicare, and housing assistance programs. After determining whether students are eligible, site coordinators will work with students to prepare and submit applications and in some cases to confirm benefit receipt.
- **Tax preparation:** The Single Stop program has established relationships with local tax service providers to come to campus and provide one-on-one assistance with tax preparation for students. Tax assistance ensures that students maximize returns through the tax credits they qualify for (e.g., Earned Income Tax Credit).
- **Financial counseling:** Similar to tax preparation, Single Stop contracts with financial counseling organizations to provide one-on-one assistance with financial planning services, working with students on such issues as debt reduction and credit improvement. In some cases, the financial advisers may also offer group workshops on particular issues of interest.
- **Legal services:** Local legal service providers also contract with Single Stop to provide one-on-one legal advising to students. Attorneys assist students with a range of noncriminal legal issues such as immigration, child support issues, eviction, and benefit cases.

- **Case management and referrals to wraparound support services:** Single Stop site coordinators aim to be broadly informed about other resources that are available to support students, including both on-campus resources such as counseling and financial aid and off-campus resources such as child care, transportation, and mental health services. Site coordinators can then refer students to these programs depending on needs. Beyond providing referrals, Single Stop offices have facilitated the provision of particular on-campus services, such as food pantries and health insurance enrollment.

Between 2010 and 2012, tax preparation services formed the greatest portion of confirmed benefits for students across Single Stop's community college sites, accounting for approximately one-third of all confirmed benefits (Goldrick-Rab, Broton, and Gates, 2013). According to program staff, tax services are particularly valuable in terms of confirmed benefits because students save a potentially pricey tax preparation fee, and a substantial percentage of Single Stop users qualify for the Earned Income Tax Credit, allowing sites to confirm a substantial benefit and making it possible for students to complete the FAFSA and apply for financial aid. Other public benefit programs tend to have more eligibility and application requirements, and in many cases it can be hard for site coordinators to confirm that benefits have been received because the coordinators must rely on student self-reporting. Health insurance benefits accounted for the second-largest portion of Single Stop's confirmed benefits between 2010 and 2012, followed by food stamps, legal services, and financial services (Goldrick-Rab, Broton, and Gates, 2013).

Key Program Resources

Site coordinators are a critical resource for the program and have responsibility for advising students, working with a network of institutional and community stakeholders to identify resources and market the program, and coordinating with the national office. According to Goldrick-Rab, Broton, and Frank (2014), these individuals are expected to have experience and education in social work or

counseling, although they are not required to have experience working on college campuses. Other skills considered in the application process include communication skills, commitment to students with low incomes, experience with computers, and bilingual abilities. Site coordinators receive training from the national office on the specific activities they engage in and strategies for success. The trainings are workshop-based and interactive, focusing on opportunities to prepare site coordinators to deal with various scenarios that they might face with students (Goldrick-Rab, Broton, and Frank, 2014).

Technology is another important resource for the Single Stop program, with BEN acting as a tool to facilitate case management and quickly screen students for a wide range of benefit programs. Students are entered into the BEN system the first time they visit the Single Stop office or receive services from Single Stop. The system tracks data on student characteristics, services provided and referrals made to services, and benefits confirmed. With regard to benefit screening, the system first uses a short list of background questions to identify federal, state, and local benefits that an individual might qualify for. BEN then offers more-detailed screenings for the benefit programs flagged in the initial screening. When students are identified as eligible through the more detailed screening, site coordinators can work with them on application materials, and these can sometimes be filed electronically.

Relationships with the institution and external stakeholders were also mentioned by Single Stop staff in a recent implementation report as a key resource (Goldrick-Rab, Broton, and Frank, 2014). These relationships serve two purposes: broadening the network of resources and support programs for students and providing marketing and outreach for the Single Stop program. Site coordinators work to build relationships with the institution, government agencies, and community organizations to identify additional resources for students and learn more about the programs. These efforts broaden the network of support and improve the guidance that coordinators are able to provide. With regard to marketing and outreach, Single Stop has focused on developing relationships with faculty, advisers, and other program staff in the institution.

Outreach to Students

Students may hear about Single Stop through formal outreach or informal word of mouth from school staff and peers. These informational campaigns aim to inform students of the services provided by Single Stop and reduce the general stigma around the use of public benefits. To advertise the program, Single Stop posts signs and other program resources around the campus, uses social media, and holds informational sessions in classrooms and at school events, such as new student orientations. In addition, program staff network with instructors and campus staff (e.g., those in the registrar and financial aid offices) to facilitate referrals to Single Stop. Some sites maintain outreach campaigns throughout the year, although many concentrate outreach at particular times, such as early in the semester (especially the fall semester) and at times when specific services are particularly relevant, such as deadlines for tax filing and FAFSA submission (in April and June, respectively).

Outreach is generally provided to all students, although some colleges specifically target new students and students who might be more likely to be eligible for public benefits, including those in economic-opportunity programs. However, there are no specific requirements for meeting with a Single Stop site coordinator beyond enrollment in the college, and in some cases (e.g., tax services) Single Stop assistance is also available to an enrollee's family. Depending on the service, the program may allow for both walk-ins and appointments, but there is always staff available during office hours to provide students with some level of assistance.

Findings from a Prior Implementation Study

An implementation study of Single Stop was conducted in winter 2013 and spring 2014 across 11 sites, including sites at CUNY, Delgado, and MDC (Goldrick-Rab, Broton, and Frank, 2014). In addition to helping us describe the Single Stop program, the report had several findings that were useful to consider in the design of our study and the inter-

pretation of results. We describe these important findings below and discuss the implications for the study.

Community colleges face substantial challenges with supporting the nonacademic needs of their students, especially those in poverty, and Single Stop was viewed as extremely valuable in providing a structured way of addressing these needs by connecting students to a network of resources and services. Goldrick-Rab, Broton, and Frank (2014) found that although institutions did have some resources available to support the nonacademic needs of their students prior to establishing a Single Stop site, they did not have a systematic way of pulling these resources together. By providing a one-stop location for assistance, and by marketing the program broadly to students, Single Stop reduced barriers to accessing these wraparound supports. According to the researchers, “the greatest accolades for Single Stop came when people spoke of the program’s case management services,” whereby the individual needs of students were assessed and “triaged” with the appropriate supports. In addition to providing an essential service to individual students, school administrators felt that the Single Stop had helped their institutions to better understand the importance of wraparound supports for ensuring student success in college. The findings from Goldrick-Rab, Broton, and Frank (2014) indicated whether evidence on student outcomes aligned with the anecdotal evidence on Single Stop’s effectiveness. However, because we compared students within an institution who did and did not use Single Stop, we were unable to examine the institution-wide impacts of a program like Single Stop.

Some stakeholders believe that case management services are extremely important and are underemphasized as a core component of the Single Stop model. Based on a long history of poverty-reduction efforts, the national Single Stop office believes that the program will be most effective if site staff focus their efforts on ensuring that as many students as possible receive the formal services provided by Single Stop, especially benefit screenings. The BEN system was designed with a focus on tracking these major services, and evaluation and funding were primarily tied to metrics on benefit screenings. Individualized case-management efforts, while useful, were reportedly viewed as less

cost-effective by the national office. Site staff and school administrators, on the other hand, reported concerns that case-management services had been undervalued and should be incorporated into evaluation and funding to a greater extent. In this study, we captured the value of case-management services in our primary measure of *treatment* as we examined outcomes for all students who interacted with Single Stop, averaging across various services received. We were able to examine outcomes for students who received two of Single Stop's primary services—benefit screenings and tax assistance—but we were unable to assess the use and usefulness of case-management services because data are not systematically collected on these services in the BEN system.

Variation in service delivery across institutions may have implications for evaluations of program impact. Although the national office trained site staff and set the standards for how services should be delivered in some respects, implementation of these services varied in some important ways that may drive variation in student outcomes across institutions. For example, some sites screened as many students as possible, regardless of whether the students were likely to be eligible for benefits, and this broad screening was often done by individuals with little training, as opposed to other core staff. Other sites only screened students who were likely to be eligible, and the screening was accompanied by a one-on-one discussion with a trained staff member to provide case-management support. The estimated impact of a benefit screening is likely to be larger in institutions where the services are targeted to students in need. We examine some of these areas of variation for our study institutions in the next section, but we are limited in our ability to relate outcomes to aspects of implementation because we were unable to collect implementation data for our institutions.

Variation in data-collection practices across institutions may have implications for evaluations of program impact. Goldrick-Rab, Broton, and Frank (2014) found that sites used the BEN system in varying ways to track data. For example, some sites conducted initial benefit screenings on paper and did not enter students into the BEN system unless they were likely to be eligible for benefits. Institutions were incentivized to do this because they were sometimes evaluated

and funded based on the proportion of screenings that resulted in confirmed benefits. Referrals were also reported differently across institutions, with some institutions recording all referrals made and others reporting only those referrals where it could be confirmed that a student followed through. The underreporting of benefit screenings and referrals means that some students may be included in the comparison group when in fact they did receive some level of treatment by Single Stop, and, to the degree that these students may have benefited from these services, estimates of the programs impact may be biased downward. In addition, it is unclear what treatment is being measured when these data elements represent different levels of treatment across institutions. In response to this finding, the national Single Stop office provided additional training in summer 2014 to the institutions included in this study to ensure that data were being collected in a standard way. Given this, we have somewhat greater confidence in the quality of data collected in the 2014–2015 academic year for our study institutions. In the next chapter, we discuss several methodological decisions we made to address concerns about BEN data quality.

The Single Stop model is evolving as the program is scaled to a larger set of institutions. There were a number of changes to the Single Stop program that took place over recent years, including changes to the funding model, changes to training, and changes to the services provided. When the early Single Stop sites were established, the national office played a central role in identifying funding and holding sites accountable for meeting certain goals in terms of implementation and impact. Because of Single Stop's role as an intermediary between funders and institutions, there were incentives to ensure that institutions were conforming to a common model and focusing on similar goals. As Single Stop grows to serve a larger group of institutions, these institutions are encouraged to take the leading role in establishing the sites, ensuring both sustainable funding and integration into the institution's structure for providing student supports. In terms of training, the Single Stop model has moved to more of a consultancy, offering a range of services to provide support to institutions as they establish and maintain their sites, as opposed to the previous focus on holding sites accountable to funders and monitoring performance. According

to the Goldrick-Rab, Broton, and Frank (2014), Single Stop was also adapting BEN and other services to more systematically service a larger group of students within each institution and track the broader range of case-management services that were provided at many sites. Our study focused on sites that were established early on under the initial models for funding, training, and services, so our findings are specific to this model. Additional research might be needed to determine how implementation and outcomes differ as Single Stop has evolved.

Variation Across Study Institutions

The institutions in this study were expected to establish and run Single Stop sites according to standards and programmatic requirements set out in Single Stop's site manual and their grant agreements. For example, the institutions needed to offer benefit screening and some level of wraparound services support, and they were required to use the BEN system for screening and case management. Although the core services were provided at all of the institutions, the availability of services varied because of community resources and grant funding. There might also have been variation in student experiences across institutions because differences in the context (e.g., student population, the generosity of state benefit programs), implementation (e.g., targeted outreach, staffing, office location), and access to additional wraparound services inside and outside the institution (e.g., grants for textbooks, food pantries).

Although a full implementation study was outside the scope of our research, we did have access to some information that shed light on context and implementation across sites. To describe the institutional context, we used the Integrated Postsecondary Education Data System (IPEDS) to access data on student characteristics, college costs, and student success rates (Table 2.1). In addition, study data from the BEN system and institutions allowed us to describe how recipients of Single Stop services compared with the overall student population and to examine the use of specific services among Single Stop users (Table 2.2). Finally, the national Single Stop office collected information from site coordinators in summer 2015 on a variety of different

Table 2.1
Characteristics of Study Institutions

Characteristic	BHCC	CUNY Borough of Manhattan	CUNY Bronx	CUNY Hostos	CUNY Kingsborough	CUNY LaGuardia	CUNY Queensborough	Delgado	MDC
Student characteristics									
Total enrollment	14,253	26,606	11,506	6,985	17,758	20,231	16,182	17,152	66,046
Female	57%	57%	56%	65%	54%	57%	54%	67%	58%
White	26%	10%	2%	2%	32%	11%	15%	32%	6%
Black	27%	27%	28%	26%	29%	18%	23%	45%	16%
Hispanic	23%	44%	64%	64%	21%	45%	32%	9%	68%
Other race/ ethnicity	24%	19%	8%	8%	18%	26%	30%	14%	10%
Age 25+	47%	22%	34%	30%	20%	29%	17%	49%	34%
Part-time enrollees	68%	36%	41%	42%	42%	46%	41%	59%	41%
Expenses and financial aid									
Total expenses (in state, without family)	\$15,984	\$24,802	\$24,838	\$24,839	\$24,834	\$24,850	\$24,824	\$17,310	\$37,227

Table 2.1—Continued

Characteristic	BHCC	CUNY Borough of Manhattan	CUNY Bronx	CUNY Hostos	CUNY Kingsborough	CUNY LaGuardia	CUNY Queensborough	Delgado	MDC
% receiving Pell	51%	68%	68%	68%	49%	48%	49%	56%	54%
Average Pell received	\$3,233	\$4,089	\$3,934	\$4,030	\$4,048	\$3,893	\$4,068	\$5,024	\$3,937
Success rates									
2nd year retention full-time students	67%	65%	61%	60%	67%	66%	69%	48%	N/A
2nd year retention part-time students	52%	54%	50%	57%	47%	39%	50%	32%	N/A
Graduation rate (150% time)	11%	16%	11%	13%	24%	16%	18%	10%	33%
Transfer-out rate	18%	18%	13%	11%	15%	12%	19%	16%	10%

SOURCE: Data on student characteristics, expenses, financial aid, and success rates were obtained from the IPEDS database (U.S. Department of Education, National Center for Education Statistics).

NOTES: *Student characteristics* refer to all enrollees in fall 2014. Expenses and financial aid refer to the 2014–2015 academic year. Retention rates were calculated for FTIC students in fall 2013 returning in fall 2014. Graduation rates were calculated for first-time, full-time students in the fall 2011 cohort and are three-year graduation rates. CUNY campuses are listed separately because they report as separate institutions. N/A = not available.

Table 2.2
Characteristics of Single Stop Sites

Characteristics	BHCC	CUNY Borough of Manhattan	CUNY Bronx	CUNY Hostos	CUNY Kingsborough	CUNY LaGuardia	CUNY Queensborough	Delgado	MDC
Student characteristics									
Total Single Stop users	7,593	8,654	4,939	8,333	7,542	7,678	4,953	3,742	22,249
Female	62%	63%	70%	69%	63%	62%	62%	71%	58%
White	18%	9%	1%	1%	20%	9%	9%	24%	6%
Black	36%	41%	37%	32%	48%	24%	33%	64%	31%
Hispanic	23%	33%	55%	59%	20%	44%	31%	7%	61%
Other race/ ethnicity	23%	16%	7%	8%	13%	23%	27%	6%	4%
Age 25+	49%	47%	55%	60%	49%	57%	37%	62%	35%
Part-time enrollees	43%	21%	18%	24%	14%	19%	16%	21%	21%
Operational details									
Program launch	January 2012	January 2010	January 2010	January 2010	January 2009	January 2010	January 2010	January 2012	October 2010 ^a
FTE core staff (spring 2015)	1	2	1	1	1	1	1	1	3

Table 2.2—Continued

Characteristics	BHCC	CUNY Borough of Manhattan	CUNY Bronx	CUNY Hostos	CUNY Kingsborough	CUNY LaGuardia	CUNY Queensborough	Delgado	MDC
FTE support staff (spring 2015)	2	2	2	2	1	1.5	2	2	3
Office hours per week	40	45	40	44	40	41	40	40	52.5
Total Single Stop users (summer 2014–fall 2015)	3,371	2,613	1,055	2,933	2,587	2,517	1,515	1,433	6,817
Use of services (summer 2014–fall 2015)									
Screened for benefits	82%	89%	83%	83%	96%	84%	81%	88%	91%
Received tax services	45%	61%	49%	42%	34%	44%	38%	41%	14%
Received legal services	0%	10%	13%	10%	4%	6%	13%	28%	3%
Received financial services	7%	7%	11%	8%	5%	8%	12%	19%	10%
Received referrals	52%	71%	63%	88%	56%	70%	33%	85%	47%

Table 2.2—Continued

Characteristics	BHCC	CUNY Borough of Manhattan	CUNY Bronx	CUNY Hostos	CUNY Kingsborough	CUNY LaGuardia	CUNY Queensborough	Delgado	MDC
State benefit program characteristics									
Benefits generosity ranking	2nd highest	4th highest	4th highest	4th highest	4th highest	4th highest	4th highest	10th lowest	5th lowest
Medicaid eligibility limit, ages 19–20	150%	150%	150%	150%	150%	150%	150%	N/A	30%
Medicaid eligibility limit, ages 21–64	133%	133%	133%	133%	133%	133%	133%	N/A	N/A
Extensions to SNAP student eligibility	Yes	No	No	No	No	No	No	No	Yes

SOURCES: Data on characteristics of Single Stop users were drawn from Single Stop’s BEN data system and include all enrollees identified as a Single Stop client. Data on use of specific Single Stop services were limited to new Single Stop users (clients from June 2014 to August 2015) to capture the suite of services obtained in the first year as a Single Stop client. Operational details and details on state benefit programs were provided by Single Stop in fall 2015 and refer to the 2014–2015 academic year. Benefit generosity rankings come from Sauter, Hess, and Frohlich, 2014.

NOTES: Percentages for the Medicaid eligibility limit refer to the maximum income allowable for eligibility as a percentage of the federal poverty level. There are a number of federal extensions to SNAP student eligibility, such as working 20 hours per week or having a child. Extensions to SNAP student eligibility data refers to additional extensions offered by the state beyond the federal extensions. FTE = full-time equivalent.

^a Two of the three existing MDC sites opened in October 2010. The third site opened in October 2011..

aspects of implementation at the sites, and these site descriptions were used to provide additional context (Table 2.2).

We summarize key details around context and implementation across our study institutions in four areas:

- **Population served:** Characteristics of the student population served by a Single Stop site are determined by the makeup of the institutional population, the targeting of Single Stop services to particular groups of students, and individual decisions to seek Single Stop services. We present data on the characteristics of the overall student population and Single Stop users. We also discuss information provided by the sites regarding outreach and the targeting of services and the overall penetration rate of the program (i.e., the percentage of students served).
- **Operational details:** The quality and availability of Single Stop services might have varied across sites because of implementation decisions that include staffing, integration of Single Stop into the institution, and fidelity to the Single Stop operational standards set by the national office. Although we did not have the implementation data that allowed us to directly examine quality or fidelity of services, we provide available information on program history, staffing, and office hours.
- **Use of services:** Although all Single Stop offices provide the full range of services, some sites might have placed a greater emphasis on certain services, or students might have chosen to use Single Stop in different ways. We provide information on the proportion of Single Stop users reported to have received various services at each institution.¹
- **Features of public benefit programs:** The features of public benefit programs varied across states and localities and might have affected the eligibility of college students, the generosity of benefits, and the complexity of processes undertaken to receive ben-

¹ In Chapter Three, we discuss concerns about potential data-quality issues around the tracking of particular services.

efits. We provide some detail on eligibility and the generosity of benefits for the state in which an institution is located.

Given data limitations and the design of the study, we were not able to attribute variation in outcomes to particular aspects of context or implementation. However, by highlighting potential sources of cross-institution variation, we can start to understand the degree of variation in context and implementation across Single Stop institutions, and this may help uncover potential explanations for variation in outcomes that can be explored in future research. In addition, this information sheds light on the representativeness of our study institutions of community colleges across the country.

Bunker Hill Community College

Population Served

BHCC is a two-year public institution located in Massachusetts. As Table 2.1 indicates, enrollment was more than 14,000 students in fall 2014. The student population was diverse by race and ethnicity, and nearly half of the enrollees were adult learners (age 25 or older). More than two-thirds of students were enrolled part time, the highest of all institutions in the study. The total estimated costs for all expenses in the 2014–2015 academic year were nearly \$16,000. To help cover the costs of college, more than half of BHCC students received Pell Grants. The average Pell Grant accounted for approximately 20 percent of total expenses. In 2014, the institution reported one-year persistence rates of 67 percent for full-time students and 52 percent for part-time students, as well as three-year graduation rates of 11 percent.

According to Single Stop data, BHCC has served 7,593 Single Stop clients (Table 2.2). Single Stop users were similar to the overall student population in terms of gender and age but appear to be slightly more likely to be nonwhite and much more likely to be a full-time student. The program served 3,371 new clients during the study period, representing nearly a quarter of all enrollees in 2014–2015.

Operational Details

The Single Stop program at BHCC was established in January 2012, so the program had been in place for a little more than two years when our study sample entered in fall 2014. The program was housed under the Student Services Department, and the office was open Monday through Friday, 9 a.m. to 5 p.m., for a total of 40 hours per week. The office had three full-time equivalent staff members, including one core staff member and two support staff.

Outreach at BHCC was largely targeted to new students at the institution, as well as student leaders who could spread the word through peer networks and at college events. The program also engaged with staff in other student support programs and faculty to facilitate referrals to the program. Program staff reported that referrals from faculty and other students were the most commonly reported way that students heard about the program.

Use of Services

Approximately 82 percent of Single Stop users were screened for benefits (Table 2.2). All benefit screenings at BHCC were done on-site, and screenings were spread evenly across the academic year. Fewer than half of all students received tax services. Data on legal and financial services and referrals might potentially be underreported across Single Stop sites, but more than half of all Single Stop users at BHCC were reported as having received at least one referral. Only 7 percent of new Single Stop users received financial services in 2014–2015, and no students were reported to have received legal services at BHCC during the study period.

Features of Benefit Programs

Massachusetts provided relatively generous benefits for its residents and open eligibility for the benefits when compared with other states. Income eligibility limits for SNAP, Medicaid, and TANF were relatively high. Restrictions on food stamps for students were lifted entirely for Massachusetts community college students as long as they were enrolled in a credit degree or certificate program that the college determines will increase employability. The state extended Medicaid eligibil-

ity to adults without children ages 19–64 and offered a limited general assistance program to provide cash benefits to low-income individuals.

City University of New York

Population Served

CUNY is a public college with seven two-year community college campuses, of which six had up-and-running Single Stop sites at the time this evaluation began (the seventh opened its Single Stop site in 2014). Across the six campuses, there were nearly 100,000 students enrolled in fall 2014. The student populations varied by campus in race and ethnicity and age. For example, at Hostos, nearly two-thirds of students in fall 2014 were Hispanic, 2 percent were white, and 30 percent were adult learners (see Table 2.1). Race and ethnicity at Kingsborough were more mixed, and only 20 percent of students were adult learners. Approximately 40 percent of students were enrolled part time across campuses. Total expenses for in-state CUNY students living without their families were nearly \$25,000. The percentage of students using Pell Grants varied from 48 percent at CUNY LaGuardia to 68 percent at several other CUNY campuses. On-time graduation rates within three years varied from 13 to 24 percent across campuses, and transfer rates also varied.

According to Single Stop data, the CUNY sites have served more than 42,000 clients (Table 2.2). Across CUNY campuses, Single Stop users were more likely to be female, more likely to be black and less likely to be Hispanic, and more likely to be age 25 or older. Single Stop users were also less likely to be part-time students across campuses. Approximately 13,000 new students were served by the program in 2014–2015, representing approximately 13 percent of all enrollees at the CUNY campuses with Single Stop sites. Penetration rates for the year ranged from 9 to 15 percent across the campuses, with the exception of Hostos, where new Single Stop clients accounted for 42 percent of all enrollees.

Operational Details

The CUNY Single Stop offices were among the first established under the Community College Initiative. The Kingsborough program was

established in January 2009, and the other campuses created Single Stop offices in January 2010. The management of the program fell under different offices according to campus, with four campuses locating the program under Student Affairs and the other two locating the program under Enrollment Management. The sites ranged from two to four staff members, although the most common staffing arrangement included one core staff member and two support staff. The office hours varied from 40 to 45 hours per week, with offices typically open from 9 a.m. to 5 p.m.

Outreach across the CUNY campuses was largely provided to the full student population, although in some cases campuses provided additional outreach to new students. Queensborough was the exception by having exclusively targeted Single Stop to new students and students who were participating in specialized support programs, such as College Discovery and CUNYStart. The Kingsborough and Hostos campuses relied on faculty referrals for outreach in 2014–2015, although faculty referrals did not play a major role at the other campuses at that time.

Services Used

Across all CUNY sites, 87 percent of new Single Stop clients were screened for benefits (Table 2.2). However, screening rates varied substantially across campuses, from 84 percent at LaGuardia to 96 percent at Kingsborough. The percentage of Single Stop users who received tax services in 2014–2015 also varied across campuses, from a low of 34 percent at CUNY Kingsborough to 61 percent at the Borough of Manhattan campus. Although somewhat less reliable, the data on other Single Stop services also indicate variation across campuses, particularly with regard to referrals. Across most CUNY campuses, the majority of students received at least one referral. However, CUNY Queensborough was the exception; there, just one-third of Single Stop users received referrals. The percentage of Single Stop users receiving financial and legal services was approximately 8 percent each across CUNY campuses. Single Stop users were slightly more likely to be reported as receiving financial or legal services at the Bronx and Queensborough campuses and somewhat less likely at the Kingsborough campus.

Features of Benefit Programs

Like Massachusetts, New York provided relatively generous benefits, ranked the fourth most generous among U.S. states in January 2014, according to *24/7 Wall St.* rankings (Sauter, Hess, and Frohlich, 2014). Income eligibility limits for SNAP, Medicaid, and TANF were relatively high. New York did not offer any additional exceptions to students for SNAP, but the state offered the Family Assistance program that provided TANF-like cash benefits to low-income individuals who did not qualify for TANF, such as individuals without children. In addition, the state had extended Medicaid eligibility to adults without children, ages 19–64.

Delgado Community College**Population Served**

Delgado Community College is a two-year public institution located in New Orleans, Louisiana. Delgado enrolled approximately 17,000 students in fall 2014, of which 45 percent were African American and 32 percent were white (see Table 2.1). Approximately half of the enrollees were adult learners and more than half were enrolled part time. The total estimated costs for all expenses were more than \$17,000 for an in-state student living without his or her family. More than half of Delgado students received Pell Grants, and the average Pell Grant accounted for approximately 30 percent of total expenses. Retention rates into the second year for full-time and part-time students were 65 and 54 percent, respectively. Approximately one in six students earned a degree or certificate within three years, and 18 percent transferred to other institutions.

According to Single Stop data, Delgado's site has served 3,742 students (Table 2.2). Similar to CUNY, Single Stop users at Delgado were more likely to be female, more likely to be black, more likely to be age 25 or older, and less likely to be a part-time student relative to the overall student population. There were more than 1,400 new Single Stop clients in the study period, accounting for 8 percent of total enrollment.

Operational Details

The Single Stop program at Delgado was established in January 2012. The program was housed under the Student Affairs department and had three staff members, including one core staff member and two support staff. The office was open Monday through Friday, 9 a.m. to 5 p.m., for a total of 40 hours each week.

Although outreach at Delgado was targeted to all students at the institution, there were additional outreach efforts focused on freshman and students identified as being at risk. Single Stop also worked with specialized programs (e.g., the Women's Center, Allied Health, and the TRIO program) to provide outreach, and there were efforts under way during the 2014–2015 academic year to develop a referral system between Single Stop and other student services. Program staff reported that word of mouth and classroom visits were the most common way students heard about the program.

Services Used

Among Single Stop users at Delgado, 88 percent were screened for benefits and 41 percent received tax services (Table 2.2). These rates of service use are similar to those for other institutions. However, with nearly one-third of all Single Stop users receiving legal services in 2014–2015, Delgado Single Stop users were much more likely to have been reported as receiving legal services. This finding is likely related to the fact that the legal services provider at Delgado was very inexpensive and offered many more service hours than legal providers elsewhere. The percentage of Single Stop users reported as having received financial services and referrals was also higher at Delgado than any of the other campuses. Notably, Delgado was the first site that had site coordinators cross-trained to do financial counseling, and this likely contributed to the higher rates of financial services and referrals on this campus.

Features of Benefit Programs

Louisiana was less generous with benefits relative to Massachusetts and New York, ranked the tenth least generous in January 2014 among U.S. states. The maximum income limits for SNAP, Medicaid, and TANF were the lowest among the four states represented in this study. The state did not extend Medicaid to individuals ages 19–20 or to

individuals ages 21–64 without children, as the states of Massachusetts and New York did. There were no additional eligibility exceptions for students for SNAP beyond those set by federal rules.

Miami Dade College

Population Served

Although MDC has traditionally been a two-year public institution, many community colleges in Florida began to offer baccalaureate degrees during the past decade. At the time of the study, MDC was officially classified as a public institution that offers four-year degrees, as well as degrees and certificates that can be earned in two years or less. MDC enrolled nearly 100,000 students in fall 2014, and more than two-thirds of the student population was Hispanic (Table 2.1). Only a third of MDC enrollees were adult learners, and approximately 40 percent were part-time students. The total estimated costs for MDC were the highest of all of the study colleges, at more than \$37,000 for in-state students living apart from their families. More than half of all students received Pell Grants, although the average Pell grant accounted for only 10 percent of total expenses. Approximately one-third of all MDC students earned a degree or certificate, and 10 percent transferred to other institutions.

According to Single Stop data, the MDC sites have served more than 22,000 clients (Table 2.2). Single Stop users at MDC were similar to the overall population in terms of gender and age. However, Single Stop users at MDC were somewhat more likely to be black. And similar to all institutions in the study, MDC Single Stop users were substantially less likely to be part-time students. MDC registered 6,817 new clients in 2014–2015, representing a penetration rate of approximately 10 percent.

Operational Details

Three MDC campuses had Single Stop offices, with offices opened on two campuses in October 2010 and at a third campus in October 2011. The program was housed under the Student Services division, with some centralized management across the three campuses and some cross-campus variation in the way that services were delivered.

The hours that Single Stop offices were open varied across campuses; two provided services 52 hours per week and one provided services 42 hours per week.

Outreach at MDC was primarily targeted to new students at the institution through mandatory orientation sessions. The program also engaged with staff in other student support programs and with faculty to facilitate referrals to the program. Program staff reported that the orientations, referrals from faculty and other students, and classroom presentations were the most commonly reported sources of information about the program.

Services Used

Approximately 91 percent of new Single Stop users in 2014–2015 at MDC were screened for benefits, among the highest of our study sites (Table 2.2). However, only 14 percent of new Single Stop users received tax services, the lowest rate of any institution in the study. Reported rates of referrals and use of legal services were also lower at MDC than at most of the other institutions in the study. Use of financial services among new MDC Single Stop clients was similar to rates reported for BHCC and the CUNY campuses.

Features of Benefit Programs

According to *24/7 Wall St.*'s January 2014 rankings (Sauter, Hess, and Frohlich, 2014), Florida was the fifth least-generous state in the United States in terms of benefits. The state had relatively low maximum income thresholds for SNAP, Medicaid, and TANF eligibility. Although Medicaid was available to students ages 19–20, they must have had an income of less than 30 percent of the federal poverty line for eligibility. Medicaid was not expanded to poor individuals ages 21–64 without children, as was done in New York and Massachusetts. Florida did extend SNAP to students who qualified for TANF.

Summary

Many aspects of Single Stop are common across colleges, but there was variation in implementation across sites. For example, BHCC, MDC, and certain CUNY campuses focused outreach primarily on new students, while Delgado and other CUNY campuses targeted the full stu-

dent population. There is also variation in penetration rates—or the number of new clients served in 2014–2015 as a percentage of total enrollment—with CUNY Hostos and BHCC accounting for penetration rates of 42 and 24 percent, respectively. All of the other study institutions had new Single Stop client populations that accounted for just 8 to 14 percent of all enrollees. Benefit screening was the most common service across Single Stop sites, with approximately 85 percent of all Single Stop users receiving screenings. However, there were outliers, including CUNY Kingsborough, where 96 percent of Single Stop users received benefit screenings. The percentage of Single Stop users who received tax assistance also varied widely, from just 14 percent at MDC to nearly 61 percent at CUNY Borough of Manhattan. Staffing was relatively similar across sites, ranging from two to four staff members per Single Stop office.

Variation in context across institutions might also have affected the experiences students had with Single Stop. For example, even though the sites were staffed similarly, the sizes of the institutions varied. The staff-to-student ratio across institutions ranged from one Single Stop staff member per 2,328 students at the CUNY Hostos site to one staff member per 11,107 students at MDC. In addition, some institutions had larger low-income populations, so a greater proportion of students at these institutions might have been able to benefit from Single Stop services.

Given that our Single Stop sites are located in different states, they also face widely varying benefit programs in terms of eligibility and generosity. Students at the CUNY campuses and BHCC were eligible for more benefits, and the benefits they received were likely to be more generous than those available to students at Delgado and MDC. In addition, Single Stop sites rely on support resources within the institution and from external organizations to supplement the major services they provide. We did not have data on access to these additional wrap-around supports, but they likely vary across sites.

It is also useful to compare the students in our study institutions with community college enrollees nationally to assess the generalizability of our findings. We found that our study institutions are somewhat comparable to the national population in terms of gender and age,

according to data from the National Center for Education Statistics for 2014–2015 (U.S. Department of Education, National Center for Education Statistics, 2015). Approximately 56 percent of enrollees at our study institutions were female, compared with 57 percent of all community college enrollees nationally. Adult learners (age 25 or older) accounted for 31 percent of our study institution enrollment, slightly lower than the 38 percent in community colleges nationally. However, our study institutions had substantially larger minority populations relative to the national community college population; 51 percent of all community college students were white compared with just 13 percent of students across our study institutions. In addition, our study institutions had somewhat fewer part-time enrollees than the national average (44 percent versus 60 percent nationally). Students in the study institutions were representative of the nation in terms of federal grant aid; 56 percent of students in the study institutions received Pell Grants, compared with 56 percent nationwide. In terms of costs for tuition and room and board, CUNY and MDC were somewhat more expensive than the \$16,370 national average across community colleges (for a full-time student living off campus without their families). Finally, success rates at our study institutions were slightly lower than those nationwide. One-year persistence rates for first-time full-time students were 57 percent across our institutions (excluding MDC), compared with 60 percent of public community colleges nationwide. Graduation rates were 14 percent and 20 percent, respectively. So although our study institutions are similar to the national community college population in some aspects, there were some differences in terms of racial and ethnic makeup, enrollment intensity, and success rates.

Our Approach to Evaluating Single Stop

Data

We used two primary sources of data for our analysis of postsecondary outcomes: program data on students' receipt of Single Stop services and administrative data on student enrollment and performance in college. Single Stop program data are collected as part of normal site operations and stored in Single Stop's BEN system. As described earlier, BEN is a proprietary benefit-screening and case-management tool that identifies the benefits for which a student is eligible and tracks interactions between the student and Single Stop. Administrative student record data were collected from the four partner college systems by Single Stop and provided to RAND for this evaluation. To compile their administrative data files, institutions supplemented data from their student data systems with NSC data that track enrollment for students outside our study colleges.

Single Stop Data

The data in the BEN system were collected by site coordinators and included three types of information: data collected at client intake, such as contact information, student identifications, and demographics; data on services provided to students, including benefit screenings and referrals to various programs; and data collected during follow-up regarding the confirmation of benefits for which the client was approved or denied. The data extracted from BEN were structured into two data files. The client file contained student-level information, such as age, gender, ethnicity, campus, and answers to the benefit screener

for those who received the screening. These data were static in BEN's data structure, although staff might have updated client information at any time and overwritten old information. The event file contained information about Single Stop services, with a unique record for each service and a time stamp for when the services were received. Therefore, a given client might have had multiple records in the event file depending on the number of services received and recorded in the BEN platform. For tax, legal, and financial services, Single Stop contracted with on-site and off-site services providers, and these providers were responsible for collecting and providing data on the students who received their services. Single Stop staff then backfilled these data into the BEN system, so there was a lag in the recording of these data. Given this lag, we waited until all external provider data had been recorded in BEN before extracting the data for our analysis.

In addition to documenting students served and services provided, site coordinators attempted to track benefits received. The processes for confirming benefits varied by benefit program and site. In some states, certain benefit programs allowed for electronic applications, and when Single Stop staff assisted with applications, they might have received confirmations noting receipt of benefits. However, it is more common for Single Stop staff to rely on students to self-report benefits. Despite efforts of the site coordinators to follow up with students and collect this information, there are substantial missing data and likely errors in self-reported data.

Goldrick-Rab, Broton, and Frank (2014) found inconsistencies in how data were entered into the BEN system across sites, noting incidences of underreporting for a number of Single Stop services. In summer 2014, Single Stop's evaluation team conducted additional training and monitoring of the study institutions in response to the findings from that implementation study. The institutions were instructed to ensure that every student who was served by Single Stop in any way was entered into the BEN client file and that every benefit screening was accounted for regardless of a student's likelihood of eligibility for benefits. Single Stop also worked with the staff to improve processes for collection and transfer of third-party data from tax service providers. Because of these efforts, the Single Stop evaluation team reported

confidence in the reliability of three data elements: (1) whether an individual had any interaction with the Single Stop program (as indicated by a record in the BEN client file), (2) whether the Single Stop client received a benefit screening (indicated in the BEN event file), and (3) whether the Single Stop client had received tax assistance services (indicated in the BEN event file). Concerns remained about the quality of other data elements, including legal and financial service records that were collected through external providers, referrals of students to various wraparound services, and the confirmation of benefits received. So although we could identify all students who were served by Single Stop with some certainty, we were limited in our ability to estimate outcomes associated with many of the specific services provided by Single Stop, including those that were not tracked reliably (legal and financial services, referrals, confirmed benefits) and those not tracked at all (some case-management activities).

Institutional Administrative Data

The data provided by the four community colleges included institutional administrative data, such as student demographics, financial aid data, and enrollment and academic data from fall 2014 to fall 2015. These data were primarily drawn from student information systems that warehouse student academic data at the institutions. In some cases, financial aid data were stored in a separate database and were merged with the other student data. Institutions were responsible for matching institutional administrative student records with Single Stop BEN records according to student identification, date of birth, phone number, first letter of first name, and first letter of last name. The institutions then provided Single Stop and RAND with deidentified data.

In addition to data from internal student information systems, the institutions provided data derived from the NSC files they received, which documented the enrollment of their students at other colleges across the United States in spring 2015 and fall 2015. NSC's Student Tracker system provided the most-comprehensive data on postsecondary enrollment that are available to date, including semester-level enrollment data for approximately 94 percent of all institutions, with near-universal coverage of student enrollment at public colleges and

private not-for-profit colleges. There are substantial gaps in coverage in NSC data for for-profit institutions, so students who transfer to these institutions are reported as nonpersisting students. However, we have no reason to suspect that Single Stop users would have enrolled in these colleges at different rates from their peers, so the missing data might not have affected results. Using these data, the four institutions created indicators for enrollment at any institution and/or transfer in the spring 2015 and fall 2015 semesters for each of their fall 2014 enrollees.

Defining the Sample

According to findings from Goldrick-Rab, Broton, and Frank (2014) and discussions with the Single Stop evaluation team, there were concerns about substantial measurement error in program use data prior to summer 2014. Given this, it was challenging to identify which students were Single Stop users when looking at earlier semesters, and the misidentification of Single Stop users as non-Single Stop users would likely lead to downward bias in estimates of the program's impacts. As a result of these data issues, we decided to focus our analysis on students who enrolled at the study institutions only after data began to be reliably collected. Our analysis focused on FTIC students (i.e., first-time freshmen) enrolled in fall 2014, limiting the total sample size to 34,487 across our four institutions. Although this restriction allowed us to have greater confidence in the validity of our estimates, it limited the representativeness of our results to FTIC students.

Key Data Elements

Use of Single Stop

Our main research question of interest was whether interaction with the Single Stop program, regardless of the type and intensity of services received, helps support improved postsecondary outcomes, such as persistence and credit accumulation. We are therefore interested in examining outcomes for all students who interacted with the Single Stop program. As our primary definition of Single Stop use, we included all clients who were registered in the BEN system prior to September 1, 2015. This broad definition of treatment allowed us to examine

outcomes for all students served by Single Stop and accounted for the full range of formal services and informal assistance that students have access to as part of the Single Stop program. Data on our sample of FTIC students are presented in Table 3.1. According to this broadest definition of Single Stop use, the percentage of fall 2014 FTIC students interacting with Single Stop varied from 6 percent at Delgado to 23 percent at MDC.

In addition to examining the relationship between Single Stop and postsecondary outcomes across all served students, we examined outcomes for students who used particular Single Stop services, including benefit-screenings and tax-preparation services. As Table 3.1 indicates, a larger percentage of our sample received benefit screening than tax services at all four of the community colleges. Of those enrolled FTIC in fall 2014 at BHCC, 19 percent of students received benefit screenings and 4 percent received tax services. For CUNY, 9 percent of 2014 FTIC students received benefit screenings and 4 percent received tax services. At Delgado, the percentages of 2014 FTIC students who received benefit screening and tax services were 5 percent and 1 percent, respectively. MDC's Single Stop site provided 22 percent of FTIC students with screenings but provided tax services to fewer than 1 percent of FTIC students. We did not conduct analysis of financial counseling, legal services, and referral data because of the reporting issues described in the previous section.

Postsecondary Outcomes

Using data from fall 2014 through fall 2015, we examined five measures of academic performance as our key outcomes: one-semester persistence, one-year persistence, credits attempted, credits earned, and the ratio of attempted to earned credits. Persistence is defined as enrollment in any college in spring 2015 and fall 2015; NSC data accounted for enrollment at 94 percent of all colleges in the United States. Students are considered to have persisted if they were enrolled at any college for at least one day in any given semester. According to Table 3.1, one-semester persistence rates ranged from 73 percent at Delgado to 85 percent at MDC. One-year persistence rates ranged from 36 percent at MDC to 64 percent at CUNY.

Table 3.1
FTIC/Freshman Characteristics by School: Fall 2014 to Spring 2015

Characteristic	BHCC	CUNY	Delgado	MDC	Total
Student characteristics					
Enrollment	2,050	15,885	2,720	8,356	34,587
Female	52.2%	51.7%	58.3%	51.8%	52.4%
Average age	22.3	20.9	22.9	20.4	21.0
White	18.2%	12.8%	31.7%	5.5%	12.8%
Black	24.8%	29.9%	54.3%	17.8%	28.3%
Hispanic	31.7%	42.0%	0.2%	70.4%	45.5%
Asian	8.9%	14.9%	2.7%	1.1%	9.3%
1st generation	71.5%	N/A	23.1%	46.6%	44.8%
Citizen	94.3%	90.5%	98.3%	92.4%	92.0%
Financial aid receipt	72.6%	72.4%	81.3%	77.7%	74.6%
Annual personal income	\$3,481	\$3,432	\$6,627	\$3,240	\$3,680
Annual household income	\$23,867	\$27,471	\$34,116	\$37,281	\$30,659
Have dependents	17.6%	10.4 %	27.3%	8.3%	11.7%
Dependent	67.5%	80.0%	61.5%	85.5%	79.5%
Outcomes					
Persistence into spring 2015	81.7%	81.8%	72.8%	85.1%	81.9%
Persistence into fall 2015	59.8%	62.4%	42.4%	43.9%	55.5%
Spring 2015 credits attempted	19.5	18.1	22.8	23.6	20.3
Spring 2015 credits passed	15.7	15.3	14.7	18.8	16.4
Ratio of passed/completed	79.3%	81.4%	62.1%	78.7%	78.9%

Table 3.1—Continued

Characteristic	BHCC	CUNY	Delgado	MDC	Total
Single Stop use					
Single Stop user	21.1%	10.5%	5.7%	22.9%	14.4%
Screened for benefits	19.3%	9.4%	5.1%	21.9%	13.3%
Received tax services	4.2%	2.3%	0.9%	0.6%	1.8%

SOURCE: Data on student characteristics, financial aid, and outcomes are from the authors' analysis of Single Stop's BEN data.

NOTE: N/A = not available.

Administrative records provided information on attempted and earned credits at the college where each Single Stop site is located. Our outcome measures account for all credits attempted and earned in the 2014–2015 academic year; we did not include credits earned prior to enrollment in fall 2014 or in fall 2015. Table 3.1 shows that the average number of credits attempted ranged from 18.1 at CUNY to 23.6 at MDC, and the average number of credits earned ranged from 14.7 at Delgado to 18.8 at MDC.

Other Key Variables

The basic student demographic characteristics included in the study are gender, age, race, citizenship, and first in family to attend college. Student gender, citizenship, and first in family to attend college were created as binary variables. Only those who were citizens or permanent residents were categorized as having citizenship. As indicated in Table 3.1, more than 50 percent of students in the sample were female across all institutions. The average age of students in the sample ranged from 20.4 at MDC to 22.9 at Delgado, indicating that the sample was not restricted to 18-year-old students coming straight out of high school and includes adult learners. The sample was primarily made up of minority students; only 13 percent of students were white across institutions. The percentage of students reported as first-generation college-goers ranged from 23 percent at Delgado to 72 percent at BHCC. More than 90 percent of the FTIC students were citizens.

We also accounted for financial status and other aspects of family makeup from information provided by students through the FAFSA. Specifically, we included financial aid receipt, personal income, household income, dependent status, and number of dependents. Financial aid receipt and dependent status were created as binary variables. Personal income, household income, and number of dependents were reported as continuous variables. It is important to note that we encountered substantial missing data for some of these variables. Students are not required to file the FAFSA, and those who do complete the FAFSA are not required to answer every question, so this led to missing data. To address missing financial data, we created indicator variables to identify individuals with missing data and replaced missing values with zero values.

Across the institutions, at least 70 percent of students received financial aid. Household income averaged \$30,659 across the sample, with the highest incomes among MDC students. Personal income averaged just \$3,680. CUNY and MDC had substantially more students who were dependents relative to BHCC and Delgado. The percentage of students with dependents also varied across institutions, ranging from just 8 percent at MDC to 27 percent at Delgado.

We also included high school GPA as a proxy for prior academic achievement. The different community college systems utilized different measurement scales for GPA, with some using a traditional four-point scale and others using a 100-point scale, so we binned students into deciles based on their relative rankings at their respective campuses. We did not report GPAs in Table 3.1 because of a lack of comparability of data across campuses.

Methods

To examine the impact of the Single Stop program, we cannot simply compare outcomes for Single Stop users and non-Single Stop users. Students did not use Single Stop services at random; for example, students with unmet financial need were probably more likely to seek out Single Stop services than students without financial issues. This nonrandomness could lead to biased estimates if the students who

used Single Stop services were different from nonusers in ways that are related to postsecondary outcomes. This selection bias could be positive or negative. For example, if more academically motivated students take the initiative to seek out Single Stop services because they are more committed to doing what it takes to stay in college, we may expect that these more academically motivated students will have better postsecondary outcomes. If we do not account for these differences in academic motivation, our estimates of impact might be biased positively. On the other hand, if Single Stop's outreach efforts deliberately target more-disadvantaged students, and if disadvantaged students are less likely to succeed in college, we might anticipate a negative bias if we do not account for all relevant aspects of disadvantage.

To account for these potential biases, we used two methodological approaches: multiple regression analysis and coarsened exact matching (CEM) (Iacus, King, and Porro, 2011). We describe the key components of each method below.

Multiple Regression Analysis

We first conducted multiple regression analysis, the most commonly used selection bias adjustment method. The covariance models adjust for preexisting differences between Single Stop and non-Single Stop students, including, as controls in the model, all observable confounding variables that capture preexisting differences between those students. Given that this approach relies on explicit, model-based controls to adjust estimates, it is primarily useful for addressing overt bias. The resultant models produce estimates of the differences between Single Stop and non-Single Stop students, after controlling for (i.e., holding constant) preexisting observable differences (Rosenbaum, 2002). Unfortunately, considerable research suggests that this method rarely produces estimates that are unbiased and efficient (Achen, 1986) because other, unaccounted for differences may affect results. As such, this approach served simply as a baseline against which to compare more-sophisticated methods.

In our multivariate regression, we estimated regression models of the form $Y_{is} = \beta_0 + \beta_1 T_{is} + \beta_2 X_{is} + \eta_s + e_{is}$, where Y_{is} represents our outcomes of interest (e.g., persistence) for student i in school s , and T_i is

an indicator variable for receiving Single Stop services. The variable X_{is} represents a vector of observable baseline covariates at the student level that have been found in previous research to be associated with postsecondary success and might also be related to the take-up of Single Stop services. These covariates include age, race and ethnicity, gender, financial aid receipt, household income, dependency status, and whether the student is responsible for dependents. Finally, the model includes a vector of campus-level fixed effects η_s and a student-level error term e_{is} .

Coarsened Exact Matching

CEM is a recently developed method of establishing baseline equivalence between treated and control groups in observational studies.¹ CEM represents a data preprocessing step that essentially prunes some unmatched observations from the data so that the remaining data have better balance on key variables (Blackwell et al., 2009). A key feature of CEM is that the bounds of imbalance on matching variables are determined a priori, thus ensuring balance on all variables used in the matching procedure. One key difference between CEM and propensity score methods is that CEM is monotonic imbalance-reducing, which means that the adjustment of balance on one variable has no effect on the balance on another variable. For example, requiring matches be from the same income category will not reduce one's ability to also have matched observations with similar age or gender characteristics.

We implemented CEM in three steps. The first step involved coarsening the variables into researcher-defined bins, thus constricting the amount of possible imbalance that is allowed to exist postmatching. We used the following variables in the CEM algorithm, which were coarsened into bins as follows:

- gender (one bin for female, one for male)
- age (eight bins based on cut points at ages 18, 20, 22, 25, 30, 35, and 40)

¹ Although much of the literature about CEM, as well as some prior empirical work implementing the method, uses terminology related to causal inference, such as *treatment*, *effect*, and so on, we deliberately avoid such terms whenever possible so that this study is strictly observational in nature.

- race and ethnicity (four bins—white, black, Hispanic, and Asian)
- campus of attendance (11 bins based on the 11 campuses in the study)
- household income² (8 bins based on cut points at \$10,000, \$20,000, \$30,000, \$40,000, \$50,000, \$75,000, and \$100,000)
- financial aid receipt (one bin for yes, one bin for no)
- high school GPA (ten bins based on the students' decile ranks at their respective campuses)
- dependency status (one bin for dependent, one bin for independent)
- dependents (one bin for students responsible for dependents, one bin for those who are not)
- first in family to attend college (one bin for yes, one bin for no).

Second, all observations were placed into strata based on the variable binning strategy described above, within which matches were made.

Third, observations were given weights based on their locations in strata that contained matches of both Single Stop users and nonusers. Individuals who were in unmatched strata were given weights of zero, and those in matched strata were given weights as follows: Single Stop users (the treatment group) were given a weight of 1.0, and non-Single Stop users (the control group) were given proportional weights so that their sum added up to 1.0. In other words, if there is a particular stratum that has one Single Stop user and five non-Single Stop users, the nonusers are given weights of 0.2. Individuals in unmatched strata are given weight of 0 and were essentially excluded from the analysis. Thus, the estimates derived in the subsequent analysis apply only to the segment of the population that was successfully matched (Iacus, King, and Porro, 2009).

² Variables that were derived from students' FAFSA filings, such as household income, financial aid receipt, dependency status, and dependent care, all had nontrivial levels of missing data, which underscores a key advantage to using CEM. Observations with partially missing data were preserved in the sample, as CEM treats missing values as a discrete measure of a variable that can be used when creating matches (Blackwell et al., 2009).

Assessing Baseline Equivalence

To ensure that the estimates of our analysis were unbiased, we had to assume that our treatment and weighted comparison groups were similar across all observable and unobservable characteristics. We assessed the baseline equivalence of key observable characteristics across the treatment and comparison groups to test this assumption, comparing the means of the two groups of students after applying the CEM weights to ensure that differences on all baseline covariates were no greater than 0.25 standard deviations (Ho et al., 2007). We also conducted statistical tests of baseline equivalence by regressing each covariate on the treatment variable using the CEM weights, following the recent empirical work by Jenkins et al. (2016).

Second, the exclusion of some observable measures of family background allowed for post hoc balance-checking based on these measures. Because it is not possible to obtain definitive proof of balance on unobservable family characteristics, the removal of what observable data are available allows for the postmatching balance-checking on these variables. Postmatching imbalance on observable information is thus suggestive of imbalance on unobservable information. Furthermore, if imbalance on observable information is detected, then these variables can be incorporated as predictors in the analytic model.

Estimating Outcomes

Matching methods such as CEM are not statistical estimators of outcomes but rather preprocessing algorithms that ensure baseline equivalence. Therefore, an additional analytic step is required to estimate the outcomes of interest. Once the weights were applied and baseline equivalence was assessed, we estimated the associations between Single Stop services and postsecondary outcomes via linear regression techniques. We looked at five outcomes for three definitions of treatment, for a total of 14 estimates.³ For each of these outcome-treatment combinations, we estimated a weighted regression model in which the out-

³ There are technically 15 combinations of treatment multiplied by outcome, but we do not present results for the combination of tax service (treatment) and one-semester persistence (outcome) because in this case the outcome likely occurred before the treatment, so the outcome is likely to be endogenous.

come was regressed on an indicator of receipt of Single Stop service. We ran a number of different regression models that included various combinations of observable demographic and financial characteristics, as well as campus-level fixed effects. Given a lack substantive differences in results across models, and our inclusion of the full range of variables in the matching process that ensured strong balance across observables, we focused on the results from the basic regression model with no additional controls.

In addition to looking at outcomes for the full population of Single Stop users, we estimated associations for several different subgroups of students to see whether the program was particularly beneficial for some demographic subgroups. Specifically, we estimated separate models for younger and older students (based on a cutoff at 25 years of age), students who were dependents and independents, and students who were white and nonwhite. We also examined institution-level variation in the outcomes associated with Single Stop use.

Key Assumptions and Limitations

A key limitation of our analytic approach relates to the finite information we have available about students at baseline. Although we assume that the observable characteristics included in our matching approach account for all possible factors that may influence selection into Single Stop, there may be unobservable characteristics driving selection that we are unable to account for. For example, some institutions target services to particularly vulnerable students, such as those who are homeless. Our rough measures of income from FAFSA data might not have fully accounted for these vulnerabilities, in which case our estimates would be lower than the true impact of Single Stop. On the opposite side, if we think that there are aspects of motivation that are not captured in high school GPA, we might not have fully accounted for the role of motivation in determining use of Single Stop. In this case, our estimates would be higher than the true impact of Single Stop.

The assumption that all selection is accounted for is untestable, so we cannot be 100 percent confident that our results represent causal estimates of the impact of Single Stop services. Nonetheless, we can assess the model's sensitivity to omitted variable bias by deliberately

excluding observable measures from the CEM process and then assess balance afterward. Postmatching imbalance on observable information is therefore suggestive of imbalance on unobservable information. Furthermore, if imbalance on observable information is detected, then these variables can be incorporated as predictors in the analytic models (Sharkey, 2012). In the present study, we conducted this post hoc balance test on the students' citizenship status.

Another limitation to our analysis is our inability to generalize to the larger population of community college students because of our focus on FTIC students at specific institutions. Although the focus on FTIC students allowed us to eliminate the measurement error in treatment because of BEN data issues prior to summer 2014, we cannot speak to the outcomes related to Single Stop use for returning students, a substantial portion of the community college population. The exclusion of non-FTIC students from the analysis may lead to underestimations of the overall impact of Single Stop if non-FTIC students were most likely to have benefited from use of Single Stop. Our matching approach resulted in further limitations to the sample, because Single Stop users who could not be matched to similar students within the institution were dropped from the analysis. So our results are limited in that they speak to the outcomes related to Single Stop use for FTIC students for which matching was possible.

Single Stop and Postsecondary Outcomes

In this chapter, we present the results of a series of statistical models that show the association between Single Stop use and five academic outcomes for FTIC community college students. We found a consistently positive association between use of Single Stop services and the postsecondary outcomes, and this association held whether we were looking at the broadest definition of Single Stop use or specific services, such as benefit screenings and tax return support. Prior to presenting these findings, we begin by assessing the level of baseline equivalence of Single Stop users (the treatment group) and non-Single Stop users (the control group) across our key variables of interest.

Assessing Baseline Equivalence

In Tables 4.1–4.3, we present baseline descriptive statistics for students who used Single Stop services compared with those who did not. Table 4.1 contains data for the use of any Single Stop services, while Tables 4.2 and 4.3 focus on recipients of benefit screenings and tax services. In each table, the three columns on the left present the raw, unweighted means and calculated differences between students who were treated and students who were not treated, while the three columns on the right present the group characteristics and differences after creating a matched comparison group that looks more similar to Single Stop users across observable characteristics. Differences are shown in standard-deviation units, and asterisks next to these measures indicate a statistically significant difference.

Table 4.1
Baseline Characteristics of All Single Stop Users Before and After Matching

Student Characteristics	Unweighted (Pre-CEM)			Weighted (Post-CEM)		
	Treatment (n = 4,163)	Control (n = 24,848)	Difference ^a	Treatment (n = 2,477)	Control (n = 7,144)	Difference ^a
Female	0.565	0.517	0.096***	0.557	0.557	0.000
Average age	21.1	21.0	0.018	20.1	20.1	0.000
White	0.083	0.136	0.158***	0.050	0.050	0.000
Black	0.245	0.285	0.088	0.238	0.238	0.000
Hispanic	0.537	0.442	0.190***	0.641	0.641	0.000
Asian	0.064	0.098	0.116***	0.056	0.056	0.000
Financial aid receipt	0.830	0.732	0.225***	0.832	0.832	0.000
Household income (\$)	27,584	31,218	0.101***	27,858	27,872	0.000
High school GPA decile	5.623	5.363	0.090***	5.686	5.691	0.001
Have dependents	0.112	0.117	0.015	0.005	0.003	0.006
Dependent	0.783	0.780	0.007*	0.893	0.893	0.000
First in family in college	0.495	0.436	0.118***	0.402	0.402	0.000
Citizen	0.930	0.918	0.044**	0.929	0.936	0.025

^a Differences are reported in standard deviation units. *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$.

Table 4.2
Baseline Characteristics of Students Receiving Benefit Screenings Before and After Matching

Student Characteristics	Differences Prior to Matching			Weighted Mean		
	Treatment (n = 3,863)	Control (n = 25,146)	Difference ^a	Treatment (n = 2,383)	Control (n = 6,807)	Difference ^a
Female	0.566	0.517	0.098***	0.556	0.556	0.000
Average age	21.0	21.0	0.000	20.1	20.0	0.018
White	0.083	0.135	0.155***	0.048	0.048	0.000
Black	0.270	0.285	0.033	0.238	0.238	0.000
Hispanic	0.541	0.442	0.198***	0.642	0.642	0.000
Asian	0.063	0.098	0.120***	0.054	0.054	0.000
Financial aid receipt	0.834	0.733	0.232***	0.840	0.840	0.000
Household income (\$)	27,942	31,114	0.088***	27,704	27,535	0.004
High school GPA decile	5.628	5.364	0.091***	5.691	5.698	0.002
Have dependents	0.107	0.118	0.034	0.045	0.045	0.000
Dependent	0.791	0.796	0.012	0.897	0.897	0.000
First in family in college	0.493	0.438	0.110***	0.429	0.429	0.000
Citizen	0.933	0.917	0.058**	0.933	0.939	0.022

^a Differences are reported in standard deviation units. *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$.

Table 4.3
Baseline Characteristics of Students Receiving Tax Services Before and After Matching

Student Characteristics	Unweighted Mean			Weighted Mean		
	Treatment (<i>n</i> = 530)	Control (<i>n</i> = 28,479)	Difference ^a	Treatment (<i>n</i> = 312)	Control (<i>n</i> = 1,988)	Difference ^a
Female	0.557	0.523	0.068	0.561	0.561	0.000
Average age	23.3	21.0	0.416***	22.7	21.5	0.217
White	0.098	0.129	0.092*	0.064	0.061	0.008
Black	0.372	0.282	0.199***	0.372	0.372	0.000
Hispanic	0.394	0.456	0.124**	0.468	0.468	0.000
Asian	0.100	0.093	0.024	0.064	0.064	0.000
Financial aid receipt	0.805	0.745	0.137**	0.804	0.804	0.000
Household income (\$)	17,361	30,920	0.376***	16,362	16,217	0.004
High school GPA decile	5.558	5.540	0.006	5.393	5.448	0.019
Have dependents	0.140	0.116	0.074	0.071	0.071	0.000
Student is a dependent	0.612	0.799	0.463***	0.762	0.762	0.000
First in family in college	0.573	0.446	0.255**	0.573	0.573	0.000
Citizen	0.881	0.920	0.143**	0.891	0.908	0.062

^a Differences are reported in standard deviation units. *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$.

In Table 4.1, the unweighted means indicate that Single Stop users were different from nonusers on almost all observable characteristics. Single Stop users were more likely to be female, less likely to be white, more likely to be Hispanic, more likely to be the first in their families to go to college, and less likely to be citizens compared with their classmates who did not use Single Stop. With the exception of gender, all of these differences in observable characteristics suggest that we might expect lower rates of postsecondary success among Single Stop users. There were also notable differences along financial indicators, because Single Stop users were more likely to have received financial aid and had lower average household incomes.

These baseline differences in the unweighted data underscore the need to account for possible selection bias through the use of CEM. When conducting CEM based on the “any service” definition of Single Stop treatment, the CEM process resulted in 13,003 possible strata, with 1,620 of them containing Single Stop users and nonusers. Individuals from the other strata were dropped from the analysis, resulting in an analytic sample of 2,477 in the treatment group and 7,144 in the comparison group (Table 4.1).

The second set of values in Tables 4.1–4.3 allows us to assess the success of CEM. It is apparent that Single Stop users and nonusers were more similar on observed covariates after weighting, and there were no longer statistically significant differences between the treatment and comparison groups. Furthermore, balance improved for the citizenship and FTIC indicators, even though these variables were not used in the matching algorithm, lending additional support to claim that that Single Stop users and nonusers were similar across observable and unobservable characteristics after implementing CEM.

Single Stop Use Is Associated with Improved Postsecondary Outcomes

In Table 4.4, we present the results of models that estimate five different postsecondary outcomes as associated with three different forms of Single Stop services. We first discuss our results for persistence and

Table 4.4
Estimates of the Relationship Between Single Stop Use and Persistence

	One-Semester Persistence		One-Year Persistence	
	Unweighted Regression	CEM	Unweighted Regression	CEM
Single Stop user	0.068***	0.033***	0.055***	0.031**
Benefit screening	0.067***	0.030***	0.049***	0.028*
Tax service	–	–	0.157***	0.144***

NOTE: *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$.

then examine our results on credit accumulation. Under each outcome, we discuss the results for users of any Single Stop service, recipients of a benefit screening, and recipients of tax assistance.

Single Stop Users Persist Longer in College

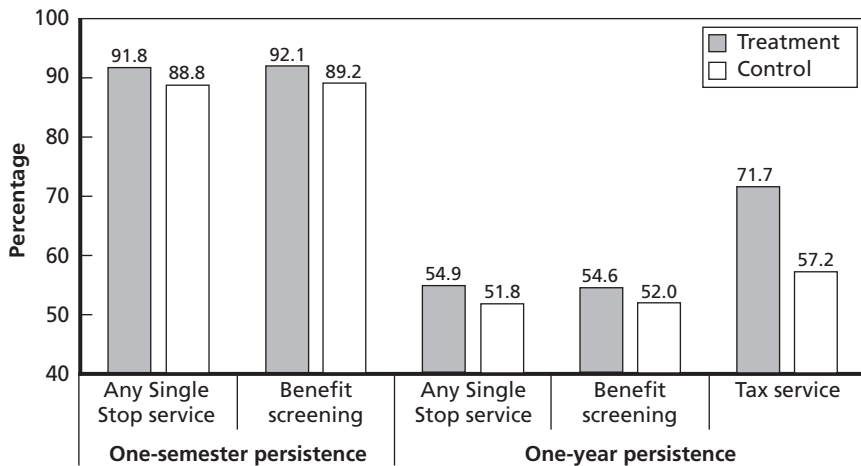
The results in Table 4.4 indicate that use of Single Stop is associated with increased persistence into the following semester and the following year. Although the estimates from our CEM analysis were somewhat more conservative than those estimated from unweighted multivariate regression, all of the results were positive and statistically significant. When we looked at students who received particular Single Stop services, we also found consistently positive results. The estimate for use of tax services is particularly large; students receiving tax services are estimated to persist at rates that are 14 to 15 percentage points higher than those of comparable students who did not receive tax services ($p < 0.001$).¹

To aid in the interpretation of these model estimates, we also calculated the conditional outcome means, which we refer to as the *pre-*

¹ We also assessed whether tax services were independently beneficial even when controlling for the receipt of other services, but the models did not suggest any sort of interaction effect between the tax services and other types of Single Stop support. Results are available from the authors on request.

dicted persistence rates, based on the estimates from our model results.² These persistence rates are presented in Figure 4.1, which shows the estimated percentage of Single Stop users and nonusers who persisted into a second semester and a second year of college enrollment. The vertical lines protruding from the top of the bars represent the 95 percent confidence intervals. This figure underscores the consistent positive association between persistence in community college and Single Stop services, showing a one-semester persistence rate that was approximately 3 percent higher and a one-year persistence rate that was 2.4 percent and 4.5 percent higher depending on the Single Stop service being considered.

Figure 4.1
Predicted Persistence Rates for Single Stop Users and Nonusers



NOTE: Column values represent average predicted values conditional on Single Stop services and using CEM weights.

RAND RR1740-4.1

² These conditional outcomes are also known as *marginal means* and are calculated using the *margins* command in Stata.

Findings for Single Stop Use and Credit Accumulation Are Mixed

Similar to persistence rates, we found positive associations between Single Stop use and credits attempted and earned, although the results were not all statistically significant (Table 4.5). The multivariate results were larger and more likely to be significant, but we focus on the CEM results given our greater confidence in the results of that model. The estimates indicate that Single Stop users attempted 0.38 more credits on average relative to nonusers ($p < 0.05$). The coefficient on earned credits was similar to that for attempted credits, but the relationship was nonsignificant. And there was no relationship between Single Stop use and the proportion of attempted credits earned. Results for benefit screenings are similar to those for Single Stop users overall, with positive significant results for credits attempted and positive nonsignificant results for credits earned. Users of tax services were estimated to earn more than one additional credit in the academic year relative to similar students who did not use tax services ($p < 0.05$). The estimates for attempted credits and the ratio of earned to attempted credits were positive but not statistically significant.

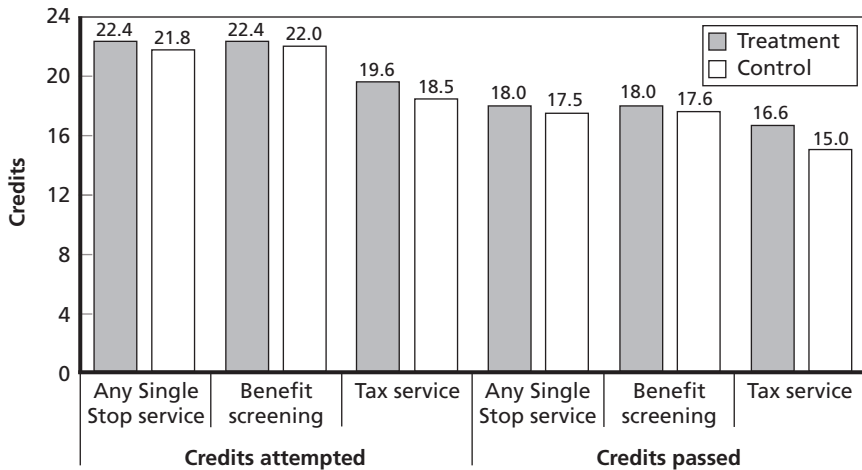
In Figure 4.2, we display average predicted values for Single Stop users and nonusers based on the results of each treatment condition. This plot confirms the differences presented in Table 4.4, with Single Stop users averaging between 0.4 and 1.1 more credits attempted and

Table 4.5
Estimates of the Relationship Between Single Stop Use and Credit Accumulation

	Credits Attempted		Credits Earned		Ratio of Earned to Attempted	
	Unweighted Regression	CEM	Unweighted Regression	CEM	Unweighted Regression	CEM
Single Stop user	1.112***	0.388*	1.170***	0.332	0.014**	-0.001
Benefit screening	1.171***	0.345*	1.199***	0.269	0.013*	-0.003
Tax service	1.158***	0.855	2.034***	1.212*	0.058***	0.023

NOTE: *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$.

Figure 4.2
Predicted Credit Outcomes for Single Stop Users and Nonusers



NOTE: Column values represent average predicted values conditional on Single Stop services and using CEM weights.

RAND RR1740-4.2

between 0.5 and 1.6 more credits earned, depending on the treatment condition being considered.

Positive Outcomes Are Larger for Certain Types of Students

In Table 4.6, we present the results for different subgroups of students, focusing on the estimates from our CEM models. In particular, we were interested in understanding whether results varied for adult learners (those who were 25 or older), independent students, and minority students. We found that the positive relationships between Single Stop user and persistence were primarily found for older, independent students and minority students. Relationships with credit outcomes were only statistically significant for adult learners. Estimates for benefit screenings are similar to those for overall Single Stop use, with a few exceptions. White students who received a benefit screening were

Table 4.6
Estimates of the Relationship Between Single Stop Use and Postsecondary Outcomes by Student Subgroup

	One-Semester Persistence	One-Year Persistence	Credits Attempted	Credits Earned	Ratio of Credits Earned to Attempted
Single Stop user					
Older (>25)	0.121***	0.154***	2.782***	2.953***	0.014
Younger (≤25)	0.025***	0.02	0.234	0.141	-0.003
Dependent	0.018*	0.012	0.296	0.194	-0.002
Independent	0.100***	0.116**	1.196	1.222	-0.009
White	-0.007	0.037	1.522	1.194	-0.033
Nonwhite	0.035***	0.031**	0.33	0.294	-0.001
Benefit screening					
Older (>25)	0.118***	0.172***	2.613***	2.870***	0.027
Younger (≤25)	0.022**	0.015	0.207	0.087	-0.006
Dependent	0.018*	0.008	0.185	0.06	-0.005
Independent	0.090**	0.126***	0.989	1.617*	0.03
White	-0.001	0.028	1.957*	1.808	-0.015
Nonwhite	0.031***	0.028*	0.267	0.2	-0.002
Tax service					
Older (>25)	—	0.262***	2.283	2.333	0
Younger (≤25)	—	0.116***	0.535	0.951	0.028
Dependent	—	0.084*	1.107	1.483*	0.027
Independent	—	0.200***	0.704	-0.16	-0.008
White	—	0.321**	-0.074	1.025	-0.059
Nonwhite	—	0.133***	0.907	1.211*	0.029

NOTE: Estimates are from the CEM model. *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$.

estimated to have attempted nearly two additional credits ($p < 0.05$), and independent students were estimated to have earned an additional 1.6 credits ($p < 0.05$). With regard to use of tax services, there was a strong relationship with persistence outcomes for all student subgroups, with more-positive relationships for adult learners and independent students. Interestingly, there was a more positive relationship between receiving tax services and persistence for white students than for minority students, in contrast to what we saw for the estimates for all Single Stop users. For the most part, the relationships between use of tax services and credit outcomes were nonsignificant. However, dependent students were estimated to have earned an additional 1.5 credits ($p < 0.05$), and nonwhite tax service students were estimated to have earned an additional 1.2 credits ($p < 0.05$).

Postsecondary Outcomes Vary by Institution

When we conducted subgroup analyses by institution, we found varying results (Table 4.7). The estimated outcomes for CUNY were consistently positive and statistically significant, with the exception of the ratio of earned-to-attempted credits. Single Stop users at CUNY persisted at rates that were 6 percentage points higher than comparable students who did not use Single Stop ($p < 0.001$). These students also attempted and earned more than one additional credit on average ($p < 0.001$). When looking at results for the specific services, it appears that the credit outcomes are related to benefit screenings but not tax outcomes, while both benefit screenings and tax services are related to improved persistence outcomes.

We also found large, positive estimates across all outcomes for Delgado; however, because of small sample sizes, some of the estimates were not statistically significant. Single Stop users at Delgado persisted into a second year at rates that were 11 percentage points higher relative to nonusers ($p < 0.05$) and attempted 1.3 additional credits ($p < 0.05$). Although we found positive estimates for both persistence and credit outcomes with regard to benefit screenings and tax services, only the persistence results for these specific services were positive.

Table 4.7
Estimates of the Relationship Between Single Stop Use and Postsecondary Outcomes by Institution

	One-Semester Persistence	One-Year Persistence	Credits Attempted	Credits Earned	Ratio of Credits Earned to Attempted
Single Stop user					
BHCC	-0.058	-0.026	2.234	3.763*	0.075
CUNY	0.063***	0.060***	1.314***	1.222**	0.003
Delgado	0.146**	0.113*	1.373*	1.681	0.044
MDC	0.000	0.000	-0.281	-0.354	-0.007
Benefit screening					
BHCC	-0.059	-0.003	-0.889	-0.308	-0.007
CUNY	0.065***	0.058**	1.420***	1.295**	0.003
Delgado	0.139**	0.117*	1.038	1.170	0.039
MDC	-0.001	-0.003	-0.271	-0.368	-0.008
Tax service					
BHCC	—	0.120	2.392**	3.521	0.079
CUNY	—	0.160***	0.604	0.931	0.017
Delgado	—	0.403**	2.251	0.232	-0.066
MDC	—	-0.091	0.265	0.934	0.042

NOTE: Estimates are from unconditional model. *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$.

Results for persistence and credit outcomes diverged for BHCC. Estimates for persistence were negative and nonsignificant, but estimates for credits were large and positive. Single Stop users at BHCC were estimated to have earned nearly four additional credits relative to similar students who did not use Single Stop ($p < 0.05$). At MDC, we found no relationship between Single Stop use and postsecondary outcomes.

Summary of Findings and Implications

Community colleges are struggling to improve completion rates, and they are looking to better ways to support their students and ensure success. Students face a range of nonacademic barriers to success, and with the costs of college rising, many of these nonacademic barriers to success are financial in nature. Yet community colleges are not equipped to address the range of challenges that students face. Advising departments are typically underresourced and focused on academic issues. Colleges and community organizations might offer a variety of resources to address nonacademic barriers, yet students have difficulties navigating the network of resources and accessing the assistance they need. And although there are financial aid offices in every college, there are few resources devoted to accessing alternative sources of financial support, including the resources offered through public benefit programs. Programs such as Single Stop U.S.A.'s Community College Initiative aim to offer students a better way to access public benefit programs and the broad network of wraparound services that institutions and community organizations provide.

The literature indicates that programs providing wraparound services are successful in improving college outcomes for students (Avery, 2013; Castleman and Goodman, forthcoming; Scrivener, Bloom, et al., 2008; Scrivener, Weiss, et al., 2015), as are interventions that aim to connect students to financial support (Bartik, Hershbein, and Lachowska, 2015; Bettinger, 2004; Dynarski, 2008; Richburg-Hayes et al., 2009; Scott-Clayton, 2011) and interventions that provide information about or assist with complex application processes (Bet-

tinger et al., 2012; Castleman and Page, 2016; Castleman, Page, and Schooley, 2014). However, there is limited research on programs such as Single Stop, which focuses exclusively on nonacademic wraparound support and facilitates access to public benefits and other resources for low-income students. This report contributes to the literature by providing evidence on a unique support program that could be scaled to community colleges across the United States in an effort to address nonacademic barriers to student success.

Single Stop Use Is Associated with Positive Postsecondary Outcomes

We found that students who interacted with Single Stop demonstrated improved postsecondary outcomes relative to their peers who were not clients of Single Stop. Single Stop users were at least 3 percentage points more likely to persist into a second year of community college compared with similar students who did not interact with Single Stop. In addition, Single Stop users attempted at least one additional credit in their freshman years.

These findings align with prior work that shows positive impacts for interventions that connect students to financial resources or provide advising support, with the estimates falling in the range of those found in the literature. Brock and Richberg-Hayes (2006) found that a Louisiana scholarship program increased persistence rates by 6.5 percent, while Bettinger (2004) estimated a reduction of 3 to 4 percentage points in dropout rates for those who received Pell Grants. An intervention that involved direct contact “nudges” for first-year community college students was found to have somewhat stronger impacts, increasing persistence rates by 12 to 14 percentage points (Castleman and Page, 2016).

We were unable to examine some of the services that Single Stop provides—screenings and referrals for tax, financial, and legal services are tracked fairly well, but additional services, such as referrals for substance abuse, are not tracked as easily. Many of the case-management activities were not tracked, and reporting from external financial and

legal providers was not reliable according to Single Stop's evaluation office. However, after efforts to improve data reliability in response to findings on these data issues (Goldrick-Rab, Broton, and Frank, 2014), we were able to examine the subset of Single Stop users who used the two most common services provided by Single Stop: benefit screenings and tax assistance services. We found positive relationships between postsecondary outcomes and use of these two major services, with relationship between tax services and postsecondary outcomes being particularly strong.

It is important to consider why tax services were found to have a particularly strong relationship with postsecondary outcomes. According to Single Stop staff, tax services can be particularly productive in terms of benefits confirmed, meaning that nearly every low-income student who participates in tax assistance receives some money through the Earned Income Tax Credit. Benefit screenings, on the other hand, require students to meet strict eligibility requirements and complete complex applications, so only a portion of students qualify for and receive the benefits. In addition, whereas application for public benefits may carry stigma for some individuals, there is little to no stigma associated with filing taxes. Another factor may be that tax filing is required for FAFSA and Pell applications, so when taxes are filed, students can also apply for those. In addition to a higher likelihood of confirmed benefits, variation in outcome may be driven by the timing of these services. Tax services were largely provided to students in the spring semester, so most students must have already persisted at least one semester to have received these services.

Our analysis of outcomes by student subgroup suggests that Single Stop may offer particularly large benefits for adult learners (age 25 and older), independent students, and nonwhite students. Although we did not explicitly test for differences across student subgroups, the estimates were substantially larger and more likely to be statistically significant for these students. This aligns with what we might anticipate given that these students are more likely to be eligible for public benefits and may have a greater need for such resources as housing and child care. This suggests that our focus on FTIC students might have resulted in estimates that were lower than the true effect across

community college students, because those most likely to benefit from Single Stop were somewhat underrepresented among FTIC students.

Institution-specific analysis indicated variation in the relationship between Single Stop use and postsecondary outcomes. Single Stop users at CUNY and Delgado were found to have higher rates of persistence and increased credit accumulation across most of our models. Results for BHCC Single Stop users were mixed, with strong positive results for credits earned, while there was no statistically significant relationship with persistence. And there were no positive results found for MDC.

Our discussion in Chapter Two suggests that there are a number of reasons we might have expected variation in outcomes across Single Stop sites. Our institutions varied in terms of the population served. At BHCC and MDC, more than one-fifth of all FTIC students were served by Single Stop (Table 3.1). The CUNY and Delgado sites served to just 10.5 and 5.7 percent of their FTIC students, respectively. To the degree that CUNY and Delgado sites are providing more-intensive services to a smaller number of students, we might expect to see more-positive outcomes for the students served. Even if all of the sites were affecting a small group of high-needs students in a similar way, efforts to broadly provide outreach to and screen students regardless of potential need at institutions like BHCC and MDC might have reduced the average estimates across all students served. On the other hand, spreading time and resources across many students may affect the ability of sites to effectively serve their highest-needs students. Additional analysis examining subgroups of students and assessing the package of services students receive could provide evidence on the question of whether the percentage of students served is related to variation in outcomes across institutions.

The makeup of institutional populations and Single Stop clientele also varied across campuses. For example, the student population at Delgado included a greater percentage of adult learners, and students were more likely to have dependents (Tables 2.1 and 3.1). Further, Delgado and several of the CUNY sites served Single Stop client populations that were more than 50 percent adult learners (Table 2.2). Because there were more-positive outcomes for these students, we might expect

the average impact across Single Stop users at those sites. However, BHCC had an older FTIC population and more students with dependents relative to CUNY (Table 3.1), yet CUNY had more consistently positive outcomes, so age and family makeup might not account for all of the variation across institutions.

The sites also varied in terms of operational details. For example, the CUNY sites are the oldest among those examined, so these sites might have had more time to integrate into the institution and map the full network of resources. In addition, the Single Stop staff-to-student ratio was much higher at MDC than at the other institutions. However, without systematic data on implementation, we were unable to directly examine variation in how the sites are run and how they are integrated into the overall institution.

Single Stop users varied across sites in their take-up of specific Single Stop services (Tables 2.2 and 3.1). BHCC provided benefit screenings and tax services to the greatest percentage of FTIC students, and MDC also provided benefit screenings to many FTIC students. In terms of tax services, MDC was somewhat of an outlier in having provided tax services to just 22 percent of all Single Stop users, with many of the other sites providing tax services to more than twice as many Single Stop users. Given that we found a large positive relationship between tax services and postsecondary outcomes, we might anticipate a somewhat smaller improvement in outcomes at MDC relative to the other institutions. According to data recorded by the institutions (which might underidentify use because of incomplete reporting), the site at Delgado provided a greater percentage of all Single Stop users with legal and financial services in 2014–2015 and was more likely to have provided Single Stop users with at least one referral (Table 2.2). There were limited data on services provided, so we could not describe the full treatment provided to Single Stop users in terms of type and intensity of services, and we could not assess the effect of providing a particular service in isolation.

Finally, the support and benefit program landscape varied across sites. Sites in states such as Massachusetts and New York have access to generous public programs, while opportunities are limited in other states. We might therefore have expected BHCC and CUNY to have

the most positive outcomes. Access to public benefit programs does not, however, explain Delgado's strongly positive outcomes given a lack of generous benefits in Louisiana. It may be that CUNY and Delgado also benefited from the institutional and community resources available beyond those that Single Stop provides, allowing site staff to more effectively provide case-management support; we were unable to examine this directly with available data.

This report provides important evidence that is suggestive of positive impacts for Single Stop on college outcomes. It should be noted that concluding a causal relationship is premature. The primary concern is omitted variables that confound the observed association between Single Stop use and student outcomes. For example, more-motivated students might not only be more likely to seek out services from a program like Single Stop, but they may also be more likely to persist and accumulate more credits. Without accounting for this motivation, our estimates may overstate the benefits of the Single Stop program. On the other hand, our ability to account for level of financial need was limited because of substantial missing data and relatively few financial indicators. Assuming that Single Stop attracts the students with the greatest level of financial need, we might not be accounting for this need, and our estimates might understate the benefits of the Single Stop program.

Implications of the Findings for Policy and Practice

Although there were limitations to our analysis, this report provides important evidence on the value of a program that connects students to a network of support programs and provides access to public benefits as an alternative source of financial support. These findings suggest important next steps for policy and practice. We found that community college students who use Single Stop are likely to experience improved postsecondary success. These findings suggest that access to alternative financial resources from government benefit programs alongside a network of institutional and community support programs can offer valuable support to college students. Institutions should con-

sider how they might offer programs such as Single Stop to create a central location for students to access wraparound supports and to provide students with greater access to government benefit programs and other critical services. Even in the cases where institutions do not want to offer additional services, such as benefit screenings, Single Stop's model of a one-stop shop may be useful to consider as a means of integrating existing resources in the institution and reducing the complexity of processes that students must undertake to obtain financial and nonfinancial support. Our results cannot, however, speak to the effectiveness of providing individual services. Although positive outcomes were observed for individuals who received benefit screenings and tax services, we could not account for the other services received and the outcomes that could be attributed to these other services. If institutions are interested in implementing specific services rather than developing a one-stop shop, this report cannot speak to the impacts of implementing these services in isolation.

To facilitate the work of programs such as Single Stop, it is important for policymakers to consider how government benefit programs might be made more accessible to students. By modifying eligibility requirements and simplifying application requirements, public benefit programs can be a more accessible source of support for more college students. In addition, comprehensive tracking of benefit recipients and data-sharing with programs such as Single Stop can help improve coordination of services while also supporting research around the use of benefit programs by students. If programs such as Single Stop work collaboratively with the government, institutions, and community organizations to improve access to public benefits and other support resources, college students will have the support needed to overcome many barriers to success in college.

More Research Needed on Single Stop and Related Programs

This report is just a first step to understanding how Single Stop and similar programs might provide benefits to community college stu-

dents and whether institutions across the United States should adopt similar programs. Our analytic methods were limited at accounting for selection bias, so future studies might employ experimental approaches to estimate the true impact of the program. In addition, our decision to limit analysis to FTIC Single Stop users who could be matched to similar FTIC students who did not use Single Stop limited the generalizability of our findings. Our student subgroup findings suggest that non-FTIC students may be more likely to benefit from Single Stop, so the estimates in this report may underestimate the true impact of Single Stop across all community college students.

To help our understanding of how and why programs such as Single Stop's Community College Initiative may lead to improved postsecondary outcomes, future studies should seek to unpack the mechanisms through which the various Single Stop services may translate into greater persistence rates and higher levels of credit completion. Institutions have considerable autonomy in how they implement the program and how the program is wrapped into the larger set of institutional programs and structures. For example, some institutions rely heavily on faculty referrals to drive student traffic to Single Stop, while other institutions do not make explicit efforts to involve faculty in the program. Additional research that examines a larger set of Single Stop institutions and exploits cross-institution variation in the data could be useful in understanding more about the role of implementation. In addition, more research on implementation can help to identify best practices at the institutions experiencing better outcomes and drive program improvement by making changes at other sites.

It is also important to investigate what drives student outcomes: Is it the receipt of financial resources because of Single Stop? Or do other aspects of the support that Single Stop provides (e.g., feeling welcome at an institution) also play a role in driving student outcomes? Better data are needed on the financial resources and receipt of government benefits among users and nonusers to account for the contribution of Single Stop in terms of additional financial resources. This could help Single Stop sites and similar programs focus resources on the efforts that are most likely to drive improved student outcomes. Additional data on benefits received may shed light on our finding that tax assis-

tance services were associated with more-positive outcomes relative to benefit screenings, as well as the hypothesis of Single Stop staff that the greater effectiveness is due to a greater likelihood of having received confirmed benefits. However, it may also have been the timing of the service or the types of students who accessed the service. In general, additional research is necessary to assess the isolated value of tax services and other services that Single Stop provides. Our study cannot speak to the effectiveness of individual services because incomplete data on the range of services provided.

Finally, interventions such as Single Stop are not the only interventions that have been developed to improve student success in college. We described a range of other programs—including wraparound support programs that combine academic and nonacademic support, financial aid programs, and informational interventions—that help students facilitate completion of registration processes and access to support services. These interventions varied in terms of estimated impacts, and they likely differ in cost as well. To determine which interventions should be adopted by institutions and scaled across the country to address student success in college, it is critical to conduct cost-effectiveness analysis to determine which programs among the universe of student-support interventions improve student outcomes at the lowest cost.

Abbreviations

ASAP	Accelerated Study in Associate Programs
BEN	Benefits Enrollment Network
BHCC	Bunker Hill Community College
CEM	coarsened exact matching
CUNY	City University of New York
FAFSA	Free Application for Federal Student Aid
FTIC	first time in college
GPA	grade point average
IPEDS	Integrated Postsecondary Education Data System
MDC	Miami Dade College
NSC	National Student Clearinghouse
SNAP	Supplemental Nutrition Assistance Program
TANF	Temporary Assistance for Needy Families

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Single Stop U.S.A.'s Community College Initiative was designed to improve the well-being of low-income communities by connecting individuals to public benefits and other institutional and community resources to address nonacademic barriers to college completion. Through offices located on community college campuses, Single Stop provides students with a range of free services, including screenings and applications for public benefit programs; tax services, financial counseling, and legal services; and case management with referrals to a wide variety of resources and support programs across the institution and community. This report presents an evaluation of the Single Stop program and its impact on students' postsecondary outcomes. The authors examined the Single Stop program at four community college systems: Bunker Hill Community College, City University of New York, Delgado Community College, and Miami Dade College. The analysis indicates that use of Single Stop was associated with improved postsecondary outcomes. The findings suggest that access to alternative financial resources from government benefit programs alongside a network of institutional and community support programs can offer valuable support to college students.



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\$16.50

ISBN-10 0-8330-9691-5
ISBN-13 978-0-8330-9691-3

