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Fueling success: An experimental evaluation of a community college meal voucher program

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March 2020

Food Insecurity Among Community College Students

Food insecurity among college students is a serious problem, likely undermining public investments in higher education. Recent research estimates that approximately half of community college students are food insecure, meaning they lack reliable access to sufficient nutritious food due to a lack of resources.¹ Very low food security is often associated with physical sensations of hunger, but food insecurity at all levels are associated with reduced academic performance as well as compromised health and well-being.²

The price of attending community college has increased in recent decades, creating a barrier to academic achievement and attainment for students from low- and moderate-income families.³ After financial aid is accounted for, 18% of students attending public community colleges face a net price higher than their family's total income.⁴ In part due to these financial pressures, fewer than four in ten community college students earn a credential within three years and only six in ten persist to the second year.⁵

Colleges across the nation are actively seeking strategies to reduce food insecurity on campus.⁶ The most common response is a campus food pantry and the College and University Food Bank Alliance now has more than 800 members.⁷ Pantries fill a critical need by responding quickly and reactively in emergency situations, but they do little to prevent food insecurity or address its root causes. Other approaches to reducing food insecurity on campus include connecting eligible students with public benefits like SNAP (Supplemental Nutrition Assistance Program) and meal voucher or "swipe" programs.

Meal voucher initiatives seek to provide students facing food insecurity with access to free meals from their college cafeteria. Some community colleges operate home-grown programs while a few are part of a national effort called Swipe Out Hunger.⁸ According to one study, 59% of 102 participating public two-year colleges indicated that they have some type of campus voucher program that helps students with meals, transportation passes, books, or other materials. In the majority of these institutions, students are required to complete and submit a voucher application and the average voucher distribution value is under \$500. These programs tend to be small and primarily communicate with students via word of mouth; just 16% of these institutions use data to proactively identify students who may benefit from such resources.⁹ Some colleges that offer meal plans fund meal vouchers with students' donation of unused "swipes" whereas others fund meal vouchers using student fees or program budgets. Participating students generally report that these programs help them to get enough to eat, feel better and more connected to their college, and succeed academically.¹⁰

This report evaluates the efficacy of a meal voucher program at Bunker Hill Community College in Boston, Massachusetts. The meal vouchers were first distributed to students in Fall 2017, and this first report rigorously estimates impacts on academic outcomes and student well-being through Spring 2018.

Meal Vouchers at Bunker Hill Community College

Bunker Hill Community College (BHCC) is located in the Greater Boston area and includes multiple campuses. The open-access institution is the largest and one of the most diverse community colleges in Massachusetts. It serves approximately 12,000 students, of which over two-thirds identify as students of color and 57% are women. Most of the students at BHCC work while enrolled in college. The average age of the student body is 26 years old and one-third attend BHCC full-time (Table 1).¹¹

Suffolk County, where BHCC is located, has a 13.7% household food insecurity rate, higher than the average rate of 9% for the state of Massachusetts and the national average rate of 12.5%.¹² Two prior studies indicate that at least half of BHCC students are food insecure. Most come from low- or moderate-income families with 58% of first-time full-time students and 49% of all students receiving a federal Pell Grant.¹³ As the state of Massachusetts has diminished support for public higher education, just 29% of BHCC's budget comes from state appropriations while 56% comes from tuition and fees.¹⁴ In 2017, the total cost of full-time attendance for in-state students was \$17,330 including \$4,224 in tuition and fees and an estimated \$13,106 needed to pay for room and board, books and supplies, and other college-related expenses like transportation.¹⁵



Since need-based grant aid has not kept pace with the rising price of college, BHCC students who are eligible for financial aid are required to come up with more than \$7,000, on average, to cover the annual net price of attendance, while those who do not qualify for financial aid face much higher prices.¹⁶

BHCC has been recognized by the Achieving the Dream initiative, the Bill and Melinda Gates Foundation, and others for its commitment to improving student success and equity.¹⁷ College leaders have long known about the problem of food insecurity at their campus and have actively engaged in addressing the issue. They have had a Single Stop office, open to all BHCC students, on campus for several years. Single Stop offers students access to a mobile market and food pantry, discounts for public transportation, assistance with waiving health insurance requirements, aid in completing the Free Application for Federal Student Aid (FAFSA), and workshops on financial literacy. The office also provides academic and career services like

reminders and assistance on transferring to four-year institutions, scholarships, job opportunities, and resume writing.¹⁸

A cross-functional “Hunger Team,” consisting of the Single Stop director; a transfer counselor; executive directors from Institutional Research, Communications and the College Foundation; and the Dean of Students leads efforts to ameliorate basic needs insecurity on campus. In Spring 2016, they launched the One Solid Meal (OSM) pilot program with support from the Bunker Hill Community College Foundation. The program identified and provided 30 students with paper meal vouchers that they used to obtain a free meal daily in the college cafeteria.¹⁹ The Hunger Team worked to improve program implementation by conducting focus groups with OSM students and coordinating with the campus cafeteria to improve food distribution processes.²⁰ The students were followed for three semesters, through Spring 2017, and all but one of the 30 students persisted or graduated. That initial effort spurred further program iteration and this evaluation.



Evaluating the Meal Voucher Program

BHCC offers the Meal Voucher Program (MVP) in order to promote student success and well-being. As one BHCC student reported, “I know that when you don’t eat, you can’t concentrate at school.” A growing body of research supports this intuitive understanding of the relationship between food insecurity and academic success in college. Food insecurity is not only associated with lower grades and higher risk of withdrawing from courses, but it also affects students’ health and well-being.²¹ Students who are food insecure are more likely to report experiences of depression, anxiety, and suicidal ideation when compared to their food secure peers. These mental health challenges are also predictive of lower GPA and persistence rates, and higher inconsistent enrollment patterns.²² Furthermore, students who are food insecure are more likely to feel isolated, shameful or that they do not belong at college, compounding barriers to academic success and persistence.²³

The MVP is designed to help students stretch their budgets and increase their chances of making ends meet by offering on-campus meal assistance. Since many students are short on time – juggling multiple school, work, and family commitments – the cafeteria meal vouchers offer quick ready-to-eat meals that do not require advance preparation or kitchen facilities.²⁴ Beyond the physiological impact of helping students get more food to eat, the program encourages students to be a part of their college community, eating in the campus cafeteria alongside peers, which can promote social integration and strengthen a sense of belonging.²⁵ Moreover, the college’s overt acknowledgement of students’ food insecurity challenges may help to build trust by communicating to them that the school is willing to address their food insecurity and that they matter.²⁶



The MVP differs from BHCC’s pilot meal initiative in two important ways. First, the college grew the size of the program to serve four times as many students and second, they changed outreach efforts to reach students early in their college career. The MVP is designed to proactively identify first-year students who may be at risk of food insecurity rather than wait for them to come forward in need. This approach ensures that students who are comfortable in seeking out additional support as well as those who are not natural help-seekers are served by the program.

Rather than employing paper vouchers, the MVP provided a debit card to students to purchase food of their choice from the campus cafeteria or café. The cafeteria

serves breakfast, lunch, and dinner, including a salad and soup bar, made-to-order sandwiches, grill items, pizza, and a daily special, Monday through Friday, 7:30 am-6 pm whereas the café features quick-service items like hot and cold sandwiches, salads, soups, pastries, and snacks, Monday through Thursday, 7 am-9 pm and Friday through Sunday until 2 pm.²⁷ This approach was designed to reduce stigma and ease the administrative burden. Students were offered a card worth \$300 in the Fall 2017 semester and \$400 in the Spring 2018 semester.²⁸ Initially, the hope was to distribute those dollars \$25 per week, but the administrative hassle was high, and instead a single disbursement per term was used. In comparison to other meal programs, which might offer students a few free meals per month, the MVP is relatively generous, enabling students to eat in the cafeteria as often as three to four times a week (the average meal price was \$7).

The MVP also connected students with Single Stop staff by email, text, or phone. While all BHCC students can access Single Stop programs and resources, MVP students had to visit the Single Stop office at least once to pick up their debit cards. Moreover, students who spent very little, or a lot, from their debit cards were sometimes contacted by Single Stop staff to check-in and give guidance on card usage.

Given these supports, meal vouchers may have several benefits for students. This evaluation examines that hypothesis by considering several questions:

1. How did students use the Meal Voucher Program?
2. How did the Meal Voucher Program affect students' well-being, including food security, physical and mental health, and sense of belonging?
3. How did the Meal Voucher Program affect students' academic success, including the number of credits attempted and completed, GPA, and persistence?

Assessing Program Eligibility and Evaluating Impact

In order for programs to effectively deliver supports, they must do effective outreach to the intended students, those students must possess awareness of the available supports and how they can be useful to them, and of course students must utilize the services. None of these conditions are easy to meet in large urban community colleges where students live off-campus; juggle work, family, and school; and where financial constraints on the college itself limit capacity to perform the necessary functions. To complicate matters further, basic needs security programs are new to higher education and there are few established best practices.

To examine program implementation, we use a mixed methods approach, drawing on data from interviews as well as student surveys and administrative records. We interviewed program staff and conducted three site visits to the college and the cafeteria at varying times. During these visits, we conducted three focus groups and 15 additional interviews with MVP students. We also fielded extensive surveys of both the recipients and the comparison group. Finally, we collected administrative records from the program and from BHCC. This report includes information collected from the program's inception in October 2017 through May 2018.²⁹ The Appendix contains more information on the data used in this report.

There is a large potential pool of BHCC students who could benefit from meal vouchers—with an estimated 1 in 2 community college students experiencing food insecurity in a given month, BHCC might need to support as many as 6,000 students at a time. For purposes of the initial program, a pilot, program administrators decided to focus on a smaller group of students, identifying them using administrative records to avoid the potential for disappointment that might occur if the program were broadly advertised and students with need were turned away.

Therefore, at the start of the Fall 2017 term, BHCC used administrative records to identify students who were eligible for the MVP. Eligibility was based on economic need—the goal was to target students at risk for or on the margins of food insecurity, rather than only support those already experiencing food insecurity. All of the students were domestic students, age 18 or older, enrolled in their first semester at BHCC in Fall 2017, and taking at least one credit-bearing course at the Charlestown campus (where the cafeteria is located). They either indicated on a pre-treatment survey that they experienced food insecurity³⁰ or had an expected family contribution (EFC) of \$0 and an adjusted gross income less than or equal to \$24,000, according to FAFSA.



Since there were 598 students eligible for the MVP and only 126 vouchers available, administrators randomly assigned students to the MVP program.³¹ These students were then sent emails and a letter letting them know that they needed to come and pick up a card they could then redeem for meals.

Students who utilize college support programs are systematically different from those who do not. Perhaps most importantly, they are help-seekers, the sort of individuals who come forward to embrace an opportunity—this often means they have more access to information, stronger social networks, and/or a greater sense of self-efficacy. These characteristics promote academic success; thus, it is important to distinguish between the impacts of a program's services and the impact of who a program serves. To identify the independent impacts of adding the MVP to

BHCC’s array of student supports, we needed to identify a proper comparison group—students who would have been offered the program if only more vouchers were available. In this case, the 472 students who were not selected for the program serve as the comparison or control group. Administrative data were collected on the full comparison group. In addition, a randomly selected subset of 120 comparison group students were also included in surveys.

Eligibility Criteria for Meal Voucher Program

Students were required to meet all of the following criteria in order to be eligible for the MVP:

- Expected Family Contribution of \$0 and an adjusted income of \$24,000 or less, OR indicated food insecurity on a pre-treatment survey
- New students enrolled in at least one course at the Charlestown campus
- At least 18 years old
- Domestic residents (no international students)

These criteria are risk factors for food insecurity, but that does not mean that at the time of selection these students were food insecure or recognized themselves as such. This is a common challenge facing public health initiatives that do preventative work before individuals are in crisis.

Student Characteristics

Since randomization rather than student application determined admission to the program, the program and comparison groups (i.e., treatment and control groups) should be quite similar before being offered the MVP. We confirmed this with a series of statistical analyses, which indicate that any post-treatment differences are attributable to the MVP. In addition, we show how students eligible for the program compare to the full population of BHCC students.

Since there are no meaningful or statistically significant differences between the treatment and control groups, we describe student characteristics for the analytic sample of all MVP-eligible students and Table 1 displays characteristics by group. Nearly 6 in 10 students identify as female and the average age is 23 years old. Thirty-five percent identify as Latino or Hispanic, 34% as African American or Black, 13% as white or Caucasian, 6% as Asian or Asian-American, 4% as multiracial, 1% as American Indian or Alaskan Native, and 1% as Cape Verdean; the remaining 7% of students declined to answer. Almost all students in the sample had an EFC of \$0, meaning that their families were not expected to financially contribute to their college expenses, and 36% were financially independent according to the FAFSA (Table 1).

Because the full BHCC student body was not eligible to participate in the MVP, the analytic sample is not representative of all BHCC students. In particular, MVP-eligible students are younger than the typical BHCC student (23 vs. 26), likely because the MVP only served students in their first semester. MVP-eligible students are also more likely than all BHCC students to identify as Black or Hispanic (34-35% vs. 24-25%), and less likely to identify as White (13% vs. 21%). There is no difference between the groups by sex (57% vs. 57%) (Table 1).

TABLE 1. Baseline Characteristics of Administrative Analytic Sample by MVP Assignment

Characteristic		All BHCC students	All MVP-eligible students (analytic sample)	Control group	MVP treatment group	ES
Sex (%)	Female	57.0	57.4	58.2	54.1	-0.10
Race/Ethnicity (%)	White or Caucasian	21.0	13.0	12.2	16.3	-0.20
	African American or Black	25.0	33.9	34.1	33.4	
	Hispanic or Latino	24.0	35.0	34.8	35.9	
	Other Races	20.0	11.3	11.7	9.8	
	No Report or Decline to Answer	10.0	6.7	7.2	4.6	
Age (years)		26.0	22.8	22.7	23.0	-0.05
Financial Status (%)	Independent Student	N/A	36.1	35.7	37.6	0.05
Expected Family Contribution (%)	Zero EFC	N/A	98.5	98.7	97.8	0.32
	Non-Zero EFC	N/A	1.5	1.3	2.2	
High School Diploma (%)	H.S. Diploma	N/A	92.7	93.5	89.4	-0.33
Reading Placement (%)	College-Ready	N/A	37.1	35.3	44.3	0.23
	Not College-Ready	N/A	41.3	42.3	37.4	
	Did not take the test	N/A	21.6	22.4	18.3	
Math Placement (%)	College-Ready	N/A	10.5	10.8	9.4	-0.09
	Not College-Ready	N/A	83.3	82.9	85.1	
	Did not take the test	N/A	6.2	6.3	5.5	

TABLE 1. Baseline Characteristics of Administrative Analytic Sample by MVP Assignment (Cont.)

Characteristic		All BHCC students	All MVP-eligible students (analytic sample)	Control group	MVP treatment group	ES
Writing Placement (%)	College-Ready	N/A	42.2	41.9	43.4	0.04
	Not College-Ready	N/A	48.3	47.9	50.5	
	Did not take the test	N/A	9.5	10.3	6.1	
N		11,881	590	467	123	

Notes: Data for all BHCC students come from the 2017 release of the Integrated Postsecondary Education Data System (IPEDS) in National Center for Education Statistics. Data for eligible students come from students' administrative records except for sex and race/ethnicity, which come from a combination of students' administrative data as well as their self-reported survey data. No imputation is performed for missing data items unless noted below. All data are adjusted by the sampling weight.

"Other races" includes Alaskan Natives or American Indians (0.87% T & 0.88% C), Asian or Asian-American (6.12% T & 6.06% C), Cape Verdean (0.87% T & 0.71% C), and multiracial as indicated by students (3.80% T & 3.66% C).

The relatively large effect sizes on EFC and HS Diploma may reflect the fact that both groups are close to 1 and the standard deviation is small rather than a meaningful difference between groups.

We assigned the average age of the sample to 4 students who were missing information on age. The status of four students who had missing information on financial status was predicted following the federal requirements for independent students' status using students' supplemental information on age, marriage status, veteran status, and having legal dependents other than spouse.

Non-zero EFC includes students who were selected from a pre-treatment food security survey and who had EFC larger than zero, as well as the students who did not have an EFC reported. All students have a traditional high school diploma or GED.

§p<0.1 *p<0.05 **p<0.01 ***p<0.001



Program Implementation

The MVP program aims to help students in two ways: by providing food to eat and by promoting belonging through a message of caring and inclusion. In order to successfully achieve these goals, students needed to do the following things:

1. Receive and internalize information that they were eligible for the program.
2. Respond to the invitation and pick up the meal card.
3. Use the food to promote their own well-being.

We therefore examine program implementation in term of activities related to outreach, awareness, and utilization.

Program Outreach and Awareness

The cross-functional Hunger Team led program outreach and invited selected students to participate in the MVP via an email from the Single Stop Director. They also sent students a paper copy of the same letter to their home address, on official college letterhead, as shown below in Figure 1. One week after the initial invitation letter was sent to students, and again at the two-week mark, the team sent out additional reminder emails to those who had not yet picked up their debit card. As shown in Figure 2, these emails were similar to the initial invitation and one was sent from the Dean of Students, who may have more authority with some students.

Four days after students were invited to participate in the MVP, Single Stop staff also began calling students who had not yet picked up their cards. The phone script mirrored the language in the invitation letter and provided an opportunity for students to ask any questions they may have had about the program. This is important because some students were concerned that the program was a scam. For example, a student emailed the Single Stop Director, “I recently received a BHCC email about being eligible for a \$300 award amount through the Meal Voucher Program to help pay for food costs... I find this highly suspicious and was wondering if this is spam, scam or any other type of phishing email. Any response regarding the legitimacy of this program would be appreciated.” The Director assured the student that it was indeed a legitimate program and he received his MVP debit card. Other students were not sure that they needed or deserved the meal voucher, noting peers who have it worse than them and wondering if they could transfer their card to another student in need. With encouragement and reassurance from Single Stop staff, almost all opted to take the MVP card, but it appears that a couple of students did not participate in the program because they did not believe that they needed the extra support.³²

FIGURE 1. Letter inviting students to participate in the Meal Voucher Program

[BHCC Letterhead]

Dear [Student],

Affording food while attending college can be difficult. We get it and we want to help.

We'd like to offer you support for meals on campus to reduce your need to spend money on food while you attend Bunker Hill Community College.

You're being offered this opportunity because of a special pilot program we are trying out called the Meal Voucher Program (MVP). You will get \$300 per semester on a card that you can use at all BHCC food service locations.

All you need to do in order to participate is stop in and pick up your loaded MVP card.

Go here >>>

Single Stop Office

Room D206 on the Charlestown Campus

Monday - Friday: 8 a.m. - 4 p.m.

You should have also received an email with this same information.

Any questions? Let us know at (617) 228-3330.

Thanks,

[Signature details, Director of Single Stop]



FIGURE 2. Email reminding students to participate in the Meal Voucher Program

Dear BHCC Student,

We are writing to remind you to come into Single Stop (D206) to pick up your FREE Meal Voucher Program (MVP) Card. The MVP card is part of a pilot program to help first-year students pay for food on campus.

The MVP card is a type of debit card loaded with \$300 for you to use at BHCC food service locations including the main cafeteria on the 4th floor of the E-building, the cafe in the B-building lobby (2nd floor) and the coffee kiosk in the lobby of the G-building. This program comes to you from a team of BHCC staff who work with local and national funders to help community college students pay for food on campus!

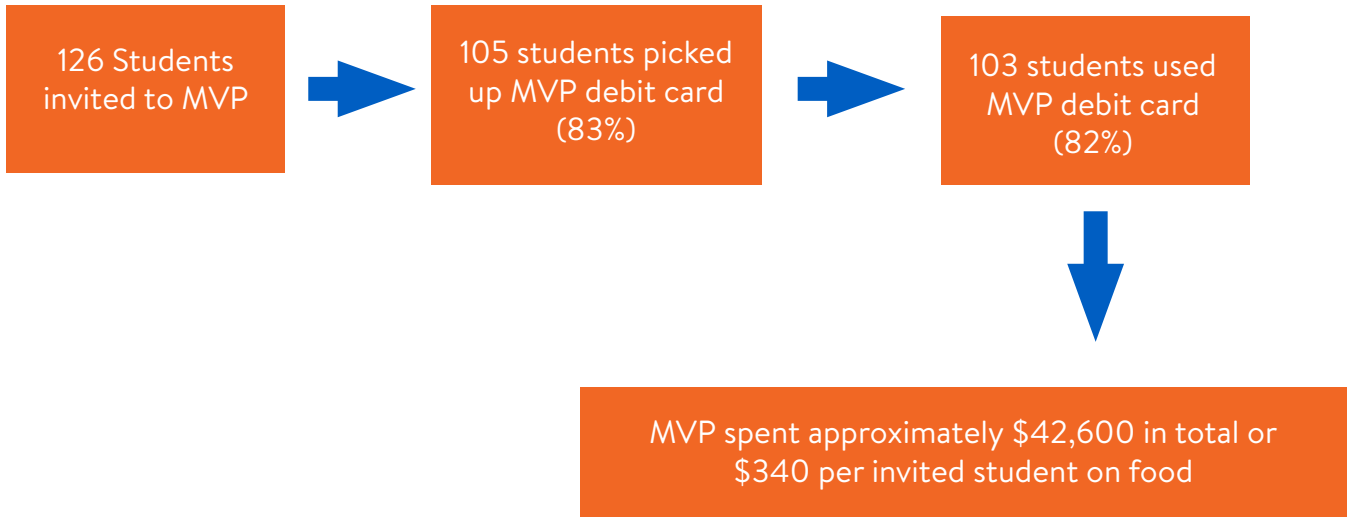
Affording food while attending college can be difficult. We get it and we want to help. You can pick up your MVP card, learn more about the program and other services at

Single Stop Office
 Room D206 on the Charlestown Campus
 Monday - Friday: 8 a.m. - 4 p.m.
 (617) 228-3330

Best,
 [Signature details, Dean of Students]

Extensive outreach by Single Stop staff was required and some students still did not pick up their MVP cards. Overall, we can confirm that 105 of the 126 invited students or 83% picked up their MVP debit card and 103 or 82% used their card at least once. This is a conservative estimate since meal card data was not available for three students, and we categorize them as not picking up or using the card. On average, MVP spent approximately \$340 per invited student or \$42,600 in total on food (Figure 3). Of the 21 students who did not pick up the MVP card, most of them had already withdrawn or stopped out of college by the time the program started in late September, while others could not be reached because of communication issues like discontinued phones. Single Stop also repeatedly tried to contact students who picked up their card, but did not use it or used it very little. Given the significant effort exerted to establish program uptake and the immediate needs of many students, Single Stop staff tended to focus on getting students started with the MVP rather than emphasize the academic year-long nature of the program.

Figure 3. MVP Utilization



We compared the background characteristics of students who used their MVP debit card at least once to those who were invited, but never used their meal card. The sample sizes are very small, but we do not find any evidence that those who used the card were systemically different than those who did not. Similarly, we explored if spending patterns varied by students’ background characteristics. Among students who used their card, we compared those who spent more than the average amount to those who spent less than average. Again, we do not find any evidence of systemic differences in spending by background characteristics (i.e., sex, race/ethnicity, age, financial status, and expected family contribution).³³



Program Utilization

Among the 83% of students who picked up the meal card, 98% used it at least once (i.e., 82% of all students invited to participate in the program). Students were allocated \$300 for the first semester and \$400 for the second semester. Students who used the card spent an average of \$185 in semester one, and an average of \$411 across the year. This means that students spent nearly 60% of the food dollars they were allotted (Figures 4-5).

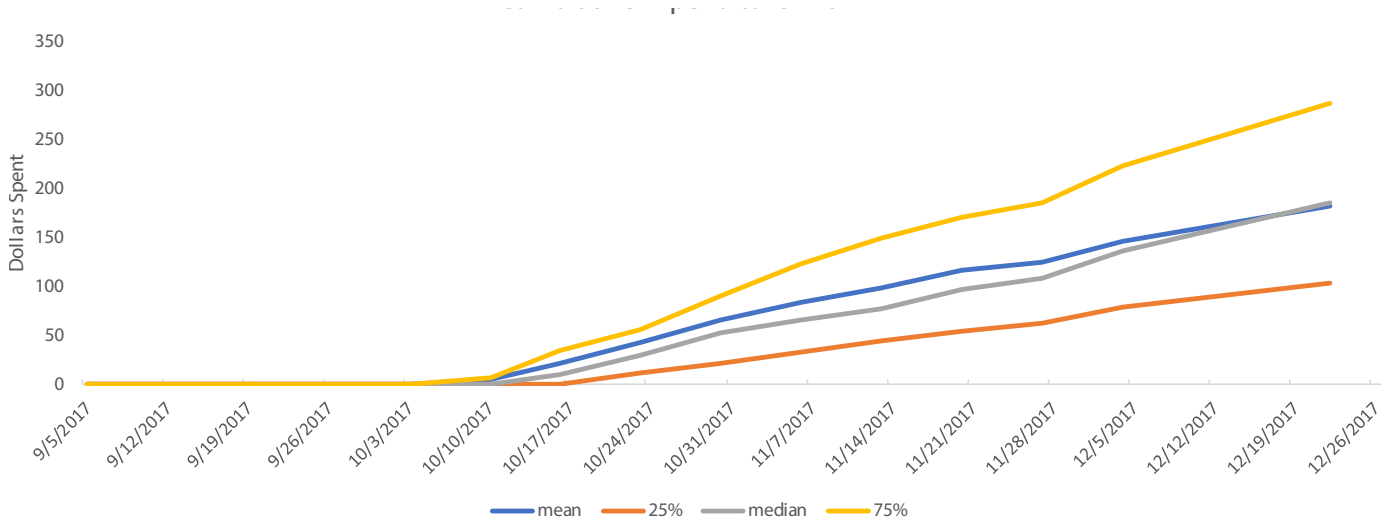
Corresponding to the spending pattern, the program increased the number of meals that MVP students ate on campus. At the time of the first follow-up survey (end of semester one), 87% of MVP students said that they typically ate in the BHCC cafeteria or café, compared to about 35% of students in the control group ($p < .001$) (Table 2). This is important since eating on campus can promote social integration and a sense of belonging, which further supports students' academic success.³⁴

Most students who ate on campus consumed one to five meals per week. Specifically, 62% of students in the MVP group reported that they ate 1-5 meals from the BHCC cafeteria or café in a typical week, 15% ate 6-10 meals per week, and 9% ate 11 or more meals per week. Among students in the control group, 29% ate 1-5 meals from the BHCC cafeteria or café in a typical week, nearly 4% ate 6-10 meals per week, and less than 3% ate 11 or more meals per week. In other words, the offer of the meal voucher also induced students to eat on campus more frequently (Table 2).

MVP students were also significantly more likely than students in the control group to visit the Single Stop office on campus, where they were required to pick up their meal card³⁵, and to report that they received food support from BHCC ($p < .001$). Results from the first follow-up survey indicate that 79% of MVP students reported they had received food support from BHCC compared to 18% of students in the control group. Similarly, 77% of MVP students versus 28% of control group students indicated that they had received BHCC food support in the second follow-up survey (end of semester two). This indicates that even though the Single Stop office and other food support initiatives, like the mobile food pantry, were available to all BHCC students, the Meal Voucher Program and associated outreach resulted in a greater share of students receiving food support (Table 3).

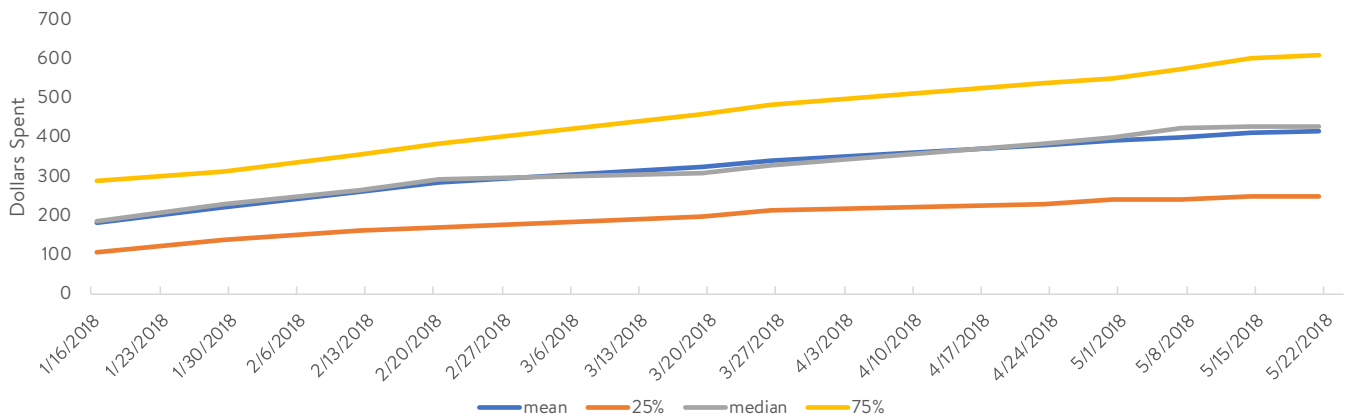


FIGURE 4. MVP Students' Cumulative Meal Card Usage: Fall 2017



Notes: The dates at the bottom of the figure indicate the weekly estimate based on data from 12 data collection points during the semester. The colored lines show the 25, 50, and 75 cumulative card usage percentiles and the mean card usage among MVP students who used the meal card.

FIGURE 5. MVP Students' Cumulative Meal Card Usage: Spring 2018



Notes: The dates at the bottom of the figure indicate the weekly estimate based on data from 11 data collection points during the semester. The colored lines show the 25, 50, and 75 cumulative card usage percentiles and the mean card usage among MVP students who used the meal card.

TABLE 2. Number of Campus Meals in a Typical Week by MVP Status (Fall 2017)

	Control	MVP	Treatment difference
I never eat there (%)	64.8	13.2	-51.6
1-5 meals per week (%)	28.7	62.2	33.5
6-10 meals per week (%)	3.7	15.1	11.4
11-15 meals per week (%)	0.0	7.3	7.3
16 or more meals per week (%)	2.8	2.2	-0.6

Notes: Descriptive statistics are weighted with no imputation for item missingness (N=93, control=40, MVP=53). In a covariate-adjusted regression analysis that includes measures of sex, race/ethnicity, reading- math- writing-placement, age, high school degree, independent status, expected family contribution status, and report of EFC on FAFSA, there is evidence of a statistically significant difference in BHCC cafeteria/café use by MVP status (b=2.33, se=.52, p<.001).

TABLE 3. Single Stop Visits and Food Support by MVP Status (2017-2018)

	Follow-up 1			Follow-up 2		
	Fall 2017			Spring 2018		
	Control	MVP	Treatment difference	Control	MVP	Treatment difference
Single Stop Visit Sign-in (%)	27.5	66.9	39.4	17.3	24.5	7.3
N	467	123	590	467	123	590
	January 2018			May 2018		
	Control	MVP	Treatment difference	Control	MVP	Treatment difference
Received BHCC Food Support (%)	18.4	79.1	60.7	27.9	76.6	48.7
N	40	52	92	41	66	107

Notes: Descriptive statistics are weighted with no imputation for item missingness. In a covariate-adjusted regression analyses that include measures of sex, race/ethnicity, reading- math- writing-placement, age, high school degree, independent status, expected family contribution status, and report of EFC on FAFSA, there is evidence of a statistically significant difference in BHCC food support use by MVP status in Fall 2017 (b=3.77, se=.86, p<.001) and Spring 2018 (b=2.99, se=.61, p<.001) as well as in Single Stop Visit Sign-ins in Fall 2017 (b=1.77, se=.24, p<.001). There is no evidence of statistically significant difference in Single Stop sign-ins in Spring 2018 (b=.42, se=.26, p>.10).

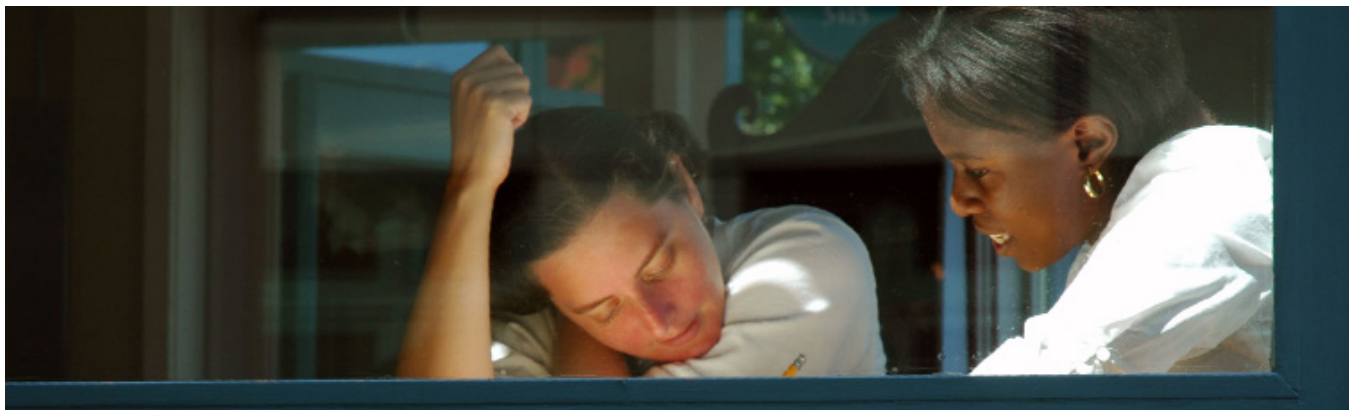
Why did some students not use the program at all, and most not use all of the dollars allocated? Some practitioners operating campus food programs worry that students will treat free food without sufficient respect and exhaust all available resources. These results do not lend support for that assumption. Rather, two critical factors appear to drive program under-utilization of food supports: perceptions of scarcity and limited time spent on campus.

A great deal of psychological research points to rationing as a behavioral response to scarcity; in other words, experiences of having too little makes individuals more likely to save whatever they have for a rainy day.³⁶ Several students mentioned in interviews that they budgeted their MVP card use and tried “to make it last.” One student who struggled with affording rent and lived on his own noted that he checked the remaining balance on the card to make sure “there is a good amount left.” Another student mentioned that she “bought enough” to still have some money left on the card. One student who grew up in a very difficult home environment and still struggled to make ends meet reported that he saved his MVP card to help give him “peace of mind,” using it only as a last resort:

Student: I came to think that that [MVP card] was a part of my way of obtaining savings. I thought, “Okay, since I’m saving now, in a couple of weeks from now I wouldn’t be able to...” I try to manage the money that I’ve been given, the money that I’ve been earning, and the things that they’ve been doing for me at Bunker Hill. I’ve been trying to manage my money ... just saving up. So times that I really did need it, like today, I did need it actually today. But that’s why I came in...today was one of them days that I didn’t want to spend money because I’m in a hard spot...since I haven’t ate for almost a day and a half.

Interviewer: I see. So you are saying that it’s not like, “Every week I’m going to spend \$25 on this card.” You were like, “If I get a paycheck, and things are going well, I’m going to save it, because if I hit a patch where things are not going so well, that card is like my safety net. I can go use that card to get something to eat.” Is that my understanding?

Student: Correct.



Even though this student did not exhaust the funds on his MVP card and still struggled with food insecurity, he explained that the way in which MVP proactively reached out to students in need showed that BHCC cared about him and his peers.

Student: Ever since then [receiving the program], I felt that people was able to believe in me to attend my semesters here... I really think that people was here to help me, or anyone else, rather, which I thought that was important, because, high school, they gave people support, as much support as they could give. Coming to college, it was real stressful because as soon as I came to college, they gave you a schedule flat. Then books, you've got to go pay for out of pocket. That experience shocked me. Yeah, that's another reason why I thought it was a great idea for them to attack the students with offers like helping out around their education.

In this case, it appears that the lasting symptoms of trauma and poverty influenced how this student interacted with BHCC and MVP, in particular. At the same time, he explained that the MVP was more than money on a meal card – it was about someone caring and believing in him.

Students' perceptions of scarcity may have been compounded by program communications that emphasized the immediate benefits of the MVP card, rather than the ability to obtain funds in future semesters. For example, the initial invitation explained that the program provides students with "\$300 per semester on a card that you can use at BHCC food service locations," but reminder emails, for those who had yet to pick up their MVP card, were shortened and simply stated, "the MVP card is a type of debit card loaded with \$300 for you to use at BHCC food service locations." Similarly, some students did not understand the program's rules and were unsure if they would continue to receive additional funds in the future or rollover unused funds. One student explained, "I honestly didn't even realize that I would get it again. I thought it was over. And then I was pretty excited to find that I did have it again. It was refreshed actually. And whatever I had left was added. So that was pretty awesome." Like at most community colleges, BHCC program staff explained that the cost of services they would like to provide to students outstrips available resources. The reliance on grant dollars, rather than a dedicated budget, may also constrain staffs' ability to speak with confidence to the future of the program. In this case, at least some program staff were unsure about the future of the program

Second, interviews suggest that students often used the MVP card when they had classes and thus card use varied with their campus schedules. A student told us that due to her class schedule, she was only on campus two days each week, but regularly used the MVP card on those two days. Another student who was on campus four days each week explained that she only ate on the two days when she was at school all day long and really needed it. Moreover, the timing and type of classes may have influenced students' card usage patterns as well. For example, one student mentioned not getting food because she had a four-hour class in chemistry to which she could not take food. Another student highlighted a 6-hour morning baking class from 8:30AM-2:30PM that sometimes did not include breaks and often left her hungry. Others were able to arrange their transportation and class schedules so that they could pick up breakfast prior to their first class of the day or before they left campus.

TABLE 4. Relationship between Time Spent on Campus and MVP Card Utilization

	Number of reporting periods in which MVP card was used		Total dollars spent on MVP debit card	
	B (SE)		B(SE)	
	Model 1	Model 2	Model 1	Model 2
Fall 2017				
Number of Attempted Credits	0.4*** (0.1)	0.5*** (0.1)	13.1*** (1.4)	15.38*** (3.3)
Number of Classes	1.3*** (0.3)	1.5*** (0.3)	39.7*** (9.2)	46.0*** (9.1)
Spring 2018				
Number of Attempted Credits	0.4*** (0.1)	0.5*** (0.1)	16.5*** (2.1)	18.4*** (2.1)
Number of Classes	1.4*** (0.1)	1.5*** (0.1)	55.1*** (6.1)	60.1*** (6.2)
Controls	No	Yes	No	Yes

Notes: This table presents covariate-adjusted predicted probabilities. The dependent variables measure students' card expenditures using reported administrative data from the BHCC cafeteria or café at several time periods. We calculated the "Total dollars spent on MVP debit card" by subtracting the amount remaining on students' cards on January 2nd 2018 (for Fall 2017 semester) and on May 21st 2018 (for Spring 2018 semester) from the amount credited to their cards. The dependent variable "Number of reporting periods in which MVP card was used" was calculated by counting the number of reporting periods in which students used their MVP card at least once, regardless of the amount spent. Reporting periods are typically 1-2 weeks in length; there were 10 reporting periods in each semester. All missing values for dependent variables were set to zero since they indicate no record of card use in the administrative records.

For each semester and outcome, we ran separate regressions in which the independent variables of interest were Number of Attempted Credits and Number of Classes. For each independent variable of interest, Model 1 includes no pre-treatment control covariates and Model 2 includes the following pre-treatment covariates: sex, race/ethnicity, reading- math- writing-placement, age, high school degree, independent status, expected family contribution status, and report of EFC on FAFSA. Standard errors are shown in parentheses. Number of Attempted Credits and Number of Classes are both interval variables. Attempted Credits ranged from 3-16 during Fall 2017 and 0-16 during the Spring 2018 semesters. Number of Classes ranged from 0-5 during both semesters.

The total MVP sample size is 126 and the analytic sample size for this analysis is 123 for all models. Consistent with the analytic sample described in the text, we removed 3 observations that had missing values on some of the covariates from our analysis. All data are adjusted by the sampling weight.

§ p<0.1 * p<0.05 ** p<0.01 *** p<0.001

We predicted program utilization using several proxy measures for the time that students spent on campus, including the number of attempted credits and total number of classes taken. We found that credit and course loads contributed to the extent to which students used the program, including the total dollar amount spent and the number of reporting periods in which they used their MVP card, in both Fall 2017 and Spring 2018 semesters. Even after accounting for students' background characteristics, the more time that students spent on campus, as measured by their credit and course loads, the more often they used their card, and they spent down more of the available funds (Table 4). There is no evidence that students who reported high levels of food security at the end of the first semester used their card less than food-insecure students during the spring term.



Impacts of Offering the Meal Voucher Program

Was the level of program utilization sufficient to improve students' food security, health and belonging, and academic performance?

Food Security

Consistent with prior research described above, the majority of BHCC students who participated in our surveys reported that they were food insecure. One semester after the program started, on average 60% of respondents were food insecure over the past 30 days, with 29% at the very lowest level of food security. A semester later, 55% of respondents were food insecure.

The sample sizes for the analysis are small, but the mean differences suggest a potential reduction in the severity of food insecurity associated with program eligibility at the time of the second follow-up survey (Table A1). When assessed fairly shortly after the program began (follow-up 1), there were no clear differences in overall rates of food insecurity according to whether or not students were offered the MVP program, but a greater proportion of MVP students were at the very lowest level of food security, compared to the lowest level (32% vs. 27% for the MVP group, and 24% vs. 37% for the control group). However, one semester later (follow-up 2), the reverse occurred, as the incidence of very low food insecurity dropped by almost 3 percentage points for the MVP group, while increasing 11 percentage points for the control group (Table 5). These results should be interpreted as suggestive, as they may be due to chance.

TABLE 5. Food Security by MVP Status

	Follow-up 1			Follow-up 2		
	January 2018			May 2018		
	Control	MVP	Treatment difference	Control	MVP	Treatment difference
High Food Security (%)	24.3	21.8	-2.5	30.5	25.0	-5.5
Marginal Food Security (%)	14.5	19.6	5.1	13.5	20.4	6.9
Low Food Security (%)	36.8	26.8	-10.0	20.3	26.0	5.7
Very Low Food Security (%)	24.3	31.8	7.5	35.6	28.6	-7.1
N	41	55	96	42	67	109

Notes: Descriptive statistics are weighted with no imputation for item missingness. Food security is measured and defined according to the U.S. Department of Agriculture over the past 30 days. In covariate-adjusted regression analyses that include measures of sex, race/ethnicity, reading- math- writing-placement, age, high school degree type, independent status, expected family contribution status, and report of EFC on FAFSA, there is no evidence of a statistically significant difference in food security level by MVP assignment. (Jan 2018 $b=.17$, $se=.43$, $p>.10$; May 2018 $b=-.15$, $se=.40$, $p>.10$). These findings are consistent in unadjusted models and across different operationalizations of food security. See Table A1 for more information.

There are several factors that may limit the program’s ability to reduce food insecurity. As shown in the program utilization analysis above, many students appear to only be eating while they are at school, that is about 1-5 meals per week, even though there are typically 21 meals per week. We do not know if they would consume more if explicitly encouraged to do so, but our analyses suggest that perceptions of scarcity also impacted their card use and may need to be overcome.

Additionally, students share food resources with friends and family, including children, and this appears to have been more common among program participants—who had access to more food. The first follow-up survey revealed that MVP students were more likely than those in the control group to buy food on campus for family or friends (52% MVP vs. 21% Control, $p < .01$).³⁷ Among MVP students who bought food for others, 36% said that they did so once per week or more, 31% did so 2-3 times per month, while the rest did so less frequently.

Like rationing, financial reciprocity is a known adaptation to scarcity. It brings both tangible and intangible benefits.³⁸ In this case, the sharing of food resources may help generate goodwill and trust such that others are more likely to share material or non-material resources, like information or connections, with you. Importantly, this reciprocal relationship may extend over time, acting as a sort of informal insurance, which is particularly useful given variable or cyclical access to resources. For instance, a student who worked about 60 hours every two weeks noted that when he had enough money to eat from his own earning, he would not use the MVP card. He explained:

“I didn’t think [using MVP] would be a great idea for me because I was already making money, and I didn’t want to take it — I wanted someone else to have that sometimes. But sometimes I did want it, to go spend money on food, either for myself or people that didn’t know about this, the Single Stop. I did help people too.”

This student empathized with other students facing food insecurity. At times, he used his MVP card to buy food for others and he also believed that if he did not spend down the full monetary value of his card, then BHCC could use those funds to support other students in need. The ethos of buying food for friends and family – and even classmates that the students did not know particularly well – was resonant in other interviews as well. A student who lived in a shelter and faced food insecurity mentioned in his interview that he would also buy food for friends. This participant spoke about how he felt when sharing resources:

Student: And if I see my friends or someone, then I will pay [for] them [to get] something to eat.

Interviewer: Tell me more about that. Why do you want to help out a friend get something to eat?

Student: Maybe if they haven’t eaten, they haven’t had a breakfast or something like that. I know how it feels. So, I would buy [for] them. Why not?

Interviewer: How does it feel?

Student: Good. It actually feels good. Sharing is caring.

In a college community where most students come from low- and moderate-income backgrounds, these students felt for others who were facing similar conditions, implicitly acknowledged the resource limitations of their institution, and reciprocated the acts of giving when they had resources to share. We do not have evidence as to whether MVP participants shared food with students in the control group, which could improve their outcomes but make it more difficult to detect program effects. However, the control group is relatively small, while students' circles of friends and family are quite large, making this less probable.

It is also possible that for some students, the program offered insufficient support. For example, we interviewed a student who suffered from diabetes and needed to eat very regularly. Since she attended BHCC Monday through Thursday and needed multiple meals every day; she ran out of credit on her MVP card quickly. Her food insecurity may have been reduced in the short term, but did not last beyond the end of the MVP support.

Health and Belonging

In interviews, students regularly spoke to the program's benefits on their physical and mental health and general well-being. One student explained,

“I feel very grateful just because without [MVP], I know I had a problem in the first couple of days or weeks since school started. I really didn't have the MVP program, and I wasn't eating. I tried to apply for food stamps, but I guess they say I make too much money. They won't give me that, so this [MVP] definitely helps me. It's very important to me... I'm very grateful to have it. It definitely helps me out a lot.”

This sense of relief from having access to food via the MVP card was a common theme in our interviews. During the first few weeks of the semester, before receiving the MVP card, some students avoided eating on campus in order to save money. Sometimes, this had physical implications. A student told us, “hunger is painful in a way...it's distracting and it drains my energy. Sometimes I get headaches and if I'm dehydrated, I feel like I'm going to yak.” When explaining what it was like before the MVP card, another student said, “I just wait till I get home [to eat], or I just drink a lot of fluids,” which is a common coping strategy to ward off feelings of hunger.³⁹ Across interviews, students explained how these strategies and coping mechanisms affected their college experiences, noting that hunger deterred their attentiveness or focus in the classroom while others mentioned nausea and headaches, and appreciated how MVP ameliorated these negative experiences.

For some students, a lack of food was so severe that it resulted in unwanted weight loss. One student said,

“I would say [MVP] saved me from my first semester — the meal replacement card really saved me because I was really going underweight and stuff.”

The student went on to explain that prior to receiving the MVP card, she was officially underweight, but with the help of the program she was now in the normal BMI (Body Mass Index) category.

In the survey, we asked students if they had unwanted weight loss and in the first follow-up survey, 25% of students in both groups reported that they had lost weight in the last month because there was not enough money for food. In the second follow-up survey, however, just 14% of MVP students reported unwanted weight loss compared to 24% of students in the control group. This suggests that the program may have helped students get enough to eat to avoid unwanted weight loss, but the sample sizes are small and this difference may be due to chance (Table 6).

We also examined students’ mental health outcomes as well as their overall sense of belonging. After the first semester, MVP students were less likely to report experiences of depression, anxiety, and stress and a greater sense of belonging, but these relatively small differences in scale scores may be due to chance and should be interpreted with caution (Table A1). When examining the program’s impact on the likelihood of reporting moderate-to-severe mental health challenges, however, results indicate that just 10% of MVP students experienced generalized anxiety compared to 24% of students in the control group ($p < .10$). MVP students were also less likely to report moderate-to-severe depression (19% MVP vs. 26% control), but this difference may be due to chance. In the second follow-up survey, differences in students’ reported mental health were smaller, but MVP students were 5 percentage points more likely to agree that they felt a sense of belonging in college (50% MVP vs. 45% control), though this difference may also be due to chance given relatively small sample sizes (Table 6, A1).



TABLE 6. Health and Sense of Belonging by MVP Status

	Follow-up 1			Follow-up 2			
	January 2018			May 2018			
	Control	MVP	Treatment difference	Control	MVP	Treatment difference	N
Unwanted weight loss (%)	24.9	25.3	0.3	24.1	13.8	-10.3	107
Moderate-to-Severe Depression (%)	25.7	19.3	-6.4	28.6	31.1	2.4	106
Moderate-to-Severe Generalized Anxiety (%)	23.7	9.7	-14.1	19.9	17.7	-2.3	105
Sometimes-to-Very Often Perceived Stress (%)	81.8	79.3	-2.5	78.3	76.6	-1.7	107
Agree-to-Strongly Agree with Belonging (%)	35.2	35.8	0.5	45.3	50.4	5.1	108

Notes: Descriptive statistics are weighted with no imputation for item missingness. In logit regressions predicting unwanted weight loss, moderate-to-severe mental health problems and strong sense of belonging, as defined below, there is evidence of a statistically significant difference in generalized anxiety level by MVP assignment in follow-up 1 ($b=-1.07$, $se=.63$, $p<.10$); no other outcomes were statistically significant at $p<.10$ level. Please see Table A1 for the covariate-adjusted impact analyses on health and belonging scale scores.

Unwanted weight loss is the share of students who responded in the affirmative to the following question: In the last 30 days, did you lose weight because there wasn't enough money for food? Moderate-to-Severe Depression was coded based on composite depression score of 10 or more affirmative responses on the PHQ-9.⁴⁰ Moderate-to-Severe Generalized Anxiety was coded based on a composite generalized anxiety score of 10 or higher on the GAD-7.⁴¹ Sometimes-to-Very Often Perceived Stress was coded based on composite score of 7 or more affirmative responses on the PSS4, which is when a participant has chosen "sometimes, often, or very often", as an answer to every question within the PSS4.⁴² Agree-to-Strongly Agree with Belonging was coded based on composite score of 20 or larger on the belonging set of questions.⁴³ The threshold of 20 corresponds to when the participant has chosen "Agree" as a response to all belonging questions within the belonging questionnaire. Alternative coding methods yielded substantively similar results.

Academic Achievement and Attainment

Results indicate that offering students the MVP positively impacted their academic trajectories, as shown in Table 7. Over the 2017-2018 academic year, MVP students attempted and completed an average 1.5 and 2.3 more credits, respectively, compared to students in the control group ($p<.05$, $p<.10$). MVP students had a 3.56 percentage point higher fall-to-spring persistence rate compared to peers in the control group (81% MVP vs. 77% control) and a slightly higher GPA, though these differences are not statistically significant and may be due to chance.⁴⁴

The impact of the program appears to be especially important during students' first semester in college, which is a crucial time of transition and predicts retention and later academic success.⁴⁵ During the Fall 2017 semester, MVP students attempted 10.9 credits and completed 9.3 credits in contrast to students in the control group who attempted 10.2 credits and completed 7.7 credits,

on average. Thus, the MVP offer resulted in a 0.7 and a 1.6 average credit advantage in attempted and completed credits, respectively ($p < 0.05$ and $p < 0.10$). The average Fall 2017 GPA of students in the treatment and control groups were 2.3 and 2.1, respectively. While this difference was not statistically significant, the direction of the impact on GPA in each semester and for the overall academic year was positive (Table 7).

Interviews provide further evidence that the MVP improved students' academic experiences and helped them pursue their educational goals. Students often explained that experiences of hunger and food insecurity made it difficult to learn, stating "it's challenging to focus yourself each day" when you are having trouble making ends meet. Another student said that "you need food for your brain, just energy-wise." When we asked her if the MVP can help students reach their educational goals, she responded:

"I think so. Because, like, if you can't like afford to eat at all, if it's very hard for you to get food, you're not going to have energy, you're not going to want to be here [at college]...you can't probably put your best foot forward."

Importantly, students explained that the MVP not only helped them access food so that they could better focus on their studies, but for some students it also helped motivate them to attend classes and persist. A student explained that the program helped him with "the fees for lunch in the times that [he] needed to eat." We followed up by asking him what he thought his college experience would be like without MVP and he responded:

"It would be more tough. I would have less interest, I guess. I want to say that I would have less interest in coming into school knowing that everything's tough and I'm not comfortable. When I got introduced to the lady [from MVP] that helped me, the lady that just left, she helped me out during the few weeks that I attended this school. [Without MVP], I don't think I'd be willing to come to school. I wouldn't want to come to school."

The evidence indicates that the program enabled students to access more food on campus, which likely helped them feel better, enabling them to focus on their schoolwork. Beyond these physiological and cognitive pathways, it appears that for at least some students, the program improved their connection to the college, strengthening the confidence and motivation needed to continue to pursue their educational goals.



TABLE 7. MVP Impacts on Academic Achievement and Attainment

Outcome	Control group	MVP group	Treatment impact	Standard error	p-value
Academic Year 2017-18					
Cumulative Attempted Credits (#)	17.70	19.18	1.48	0.66	0.026 *
Cumulative Completed Credits (#)	12.45	14.72	2.27	1.17	0.053 §
Cumulative GPA (4.0 scale)	1.84	1.97	0.13	0.15	0.367
Persisted to Spring 2018 (%)	77.01	80.56	3.56	0.28	0.437
Fall 2017					
Attempted Credits (#)	10.16	10.87	0.71	0.29	0.015 **
Completed Credits (#)	7.70	9.26	1.55	0.85	0.068 §
GPA (4.0 scale)	2.13	2.28	0.15	0.14	0.298
Spring 2018					
Attempted Credits (#)	7.54	8.31	0.77	0.51	0.127
Completed Credits (#)	4.74	5.46	0.71	0.52	0.169
GPA (4.0 scale)	1.49	1.70	0.20	0.16	0.200

Notes: This table shows covariate-adjusted predicted probabilities. Treatment impact is the difference in predicted probabilities between treatment and control groups. In the regressions, the main predictor was assignment to MVP group and the following pre-treatment covariates were also included: sex, race/ethnicity, reading- math- writing- placement, age, high school degree, independent status, expected family contribution status, and report of EFC on FAFSA Status.

All data are adjusted by the sampling weight. Analytic sample size is 590.

Following Scott-Clayton (2011), we assigned a value of zero for attempted credits, completed credits, and GPA of students who did not complete Fall 2017 since there is no “prior semester” information available. This makes the credit and GPA outcomes appear lower than analyses that exclude students who did not persist. For example, among 461 students who persisted, the 2017-18 cumulative GPA is 2.39 for those in the control group and 2.46 for MVP students, rather than 1.84 and 1.97 as displayed in this table among all 590 students. When excluding students who dropped out, which is no longer an “apples to apples” comparison and should not be interpreted as causal, the covariate-adjusted impact of MVP on Fall 2017 GPA is 0.25 (2.2 vs 2.45, $p < 0.062$) (n=568).⁴⁶

§ $p < 0.1$ * $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$

Conclusions and Recommendations

The Meal Voucher Program aimed to deliver up to \$700 per year in support for on-campus meals to students at risk of food insecurity. The vast majority of students offered the program used it, and spent about half what they were allocated. Clearer program messaging and encouragement to combat mal-adaptations to scarcity may boost spending and enhance impacts.

Students felt supported by the program and there is some evidence that it improved their well-being as the severity of their food insecurity and anxiety was reduced. They also shared the benefits with others, which may have further enhanced emotional well-being and sense of belonging.

The program also boosted credit attainment, and there is some indication it may also contribute to higher retention and completion rates. Additional follow-up post-treatment will be important to confirming these impacts, though it is unclear if impacts can be expected to last beyond the time of support.

Overall, we find that the program induced students to eat on campus more often, which likely helped them concentrate on their studies. In addition, the program may have changed the way in which students viewed the college and interacted with peers. In interviews, MVP students reported that the program made it feel like BHCC really wanted them to succeed.

We learned several lessons for institutions interested in establishing or improving a meal voucher or swipe initiative on campus.

1. A relatively modest financial investment in meal vouchers, implemented by an existing campus office, positively influenced students' academic trajectory and well-being, illustrating the power of a simple straightforward program design coupled with additional resources in students' pockets.
2. Clearer program messaging and encouragement to use the meal card as they need it may boost spending and enhance impacts. It is not uncommon or unique to this program for students to be confused about program rules, uncertain about the future of a program, or even worry that a support program is a scam.⁴⁷
3. The program proactively targeted and reached out to students who may not have been food insecure, but were at a high risk of food insecurity given their limited financial resources. Though additional research is needed, there is no evidence that program impacts varied according to the way in which students were identified.
4. Since an electronic debit card was used (rather than paper meal vouchers), there was no evidence that students felt stigmatized when participating in the Meal Voucher Program. The way in which the program reached out to students (rather than asking them to come forward in need) and the fact that the MVP card was a year-long support (so students did not have to

repeatedly ask for help) may have also reduced stigma.

5. The impact of the program appears to be especially critical during students' first semester in college, which is a crucial time of transition. Efforts to reach students early in their college career may be particularly helpful.
6. Meal vouchers cannot make up for limitations in campus dining. Though most students did not share criticisms about the college cafeteria when asked – sometimes noting that they were simply thankful for the help and it would be inappropriate for them to complain – a few students mentioned that they had trouble finding food they liked, thought it was too expensive, or wished that healthier options were available.
7. Meal vouchers alone are unlikely to solve the complex problem of food insecurity on college campuses, but they likely play an important part of BHCC's multifaceted strategy to support students' basic needs.

What can the Meal Voucher Program tell us about recent calls to establish a “school lunch” program in community colleges such as those described in Representative Schiff's [D-CA-28] Food for Thought Act of 2019?⁴⁸ These initiatives have a common goal – help college students get more food to eat on campus so that they can focus on learning – but an expansion of the National School Lunch Program (NSLP) to higher education would likely be implemented differently than the Meal Voucher Program, limiting our ability to draw direct comparisons. In the case of MVP, we found that students were hesitant to spend down all of the money on their meal card since it gave them peace of mind and provided a sense of security. To the extent that a NSLP-like program provides consistency and assurance that a meal will be there each and every school day, it may have even larger positive impacts than MVP. Similarly, the MVP did not have any nutritional guidelines and some students ate junk food so if a NSLP-like program offered healthy nutritious food to college students, which is more likely to boost achievement, then that could increase program impacts further. This suggests that the MVP may serve as a lower bound estimate of the potential of such a program. At the same time, students explained that the MVP showed that BHCC understood and acknowledged their struggle to make ends meet and proactively reached out to provide support. If a NSLP-like program loses that caring touch or signal, then a NSLP-like program may have smaller impacts than MVP. Despite differences in program design and implementation, the lessons learned for practice stated above are important to consider in the establishment of any campus meal initiative designed to fight food insecurity on college campuses. Furthermore, institutions like Bunker Hill Community College that already have strong meal voucher programs in place may be ideal settings to evaluate the impact of any future efforts to implement a federal school lunch program for community colleges.

Appendix

Data Used in this Report

With the assistance of M. Davis and Company, we conducted two surveys following the Fall 2017 and Spring 2018 semesters, in January 2018 and May 2018, respectively.⁴⁹ Given resource constraints, we invited a random sample of 120 eligible students who were not selected for the program (i.e., from the control group) and all 126 MVP students to participate in the surveys. Selected students were invited to participate in the online survey via email, text message, and phone and participants received \$30 in the form of a gift certificate to one of several select businesses, including Target, Walmart, or CVS. The surveys yielded 41% and 45% response rates, respectively (Table A2). There are no statistically significant differences on pre-treatment background characteristics by program group in the survey samples ($p > .10$), which suggests that post-treatment differences may be attributable to the program. Yet, the relatively small sample sizes reduce the statistical power necessary to detect differences between groups. The survey instruments included a variety of questions about students' college experiences, including their use of campus food supports, food security status, mental health experiences, and sense of belonging. Specifically, the survey included the U.S. Department of Agriculture's (USDA) 18-item validated food security scale and several validated measures related to mental health including the Patient Health Questionnaire (PHQ)-9 depression scale, Generalized Anxiety Disorder 7-item (GAD-7) scale, and Perceived Stress Scale 4 (PSS-4), and a 7-item Sense of Belonging measure.⁵⁰

Additionally, we conducted three focus groups and 15 interviews with MVP students in November 2017, March 2018, and March 2019. The Single Stop office recruited and arranged for the in-person meetings, resulting in a convenience sample of students who were willing to speak with the research team. Interview and focus group participants received a \$25 Amazon gift card. The interviews and focus groups were semi-structured and covered topics related to students' college experiences, including sense of belonging and financial concerns, as well as the Meal Voucher Program. They were recorded, transcribed by a third party, and open and then axially coded through a constant-comparative process for emergent themes.⁵¹ The interview and focus group data helped us interpret findings from the survey and administrative data by providing additional context about utilization and impacts. These data also contributed to the richness of our analysis by adding nuance and complexity into the narrative.

Finally, to further examine program utilization, we used MVP students' weekly or biweekly debit card spending reports from the college cafeteria and café. In addition, we reviewed the Single Stop computer visitor log sign-ins of all eligible students as a proxy for accessing student support services.

Impact Analyses

We requested administrative data for all eligible students and received nearly complete data for 590 students who make up the analytic sample for these analyses.⁵² First, we examined baseline equivalence across treatment and control groups and found no statistically significant differences between groups ($p > .10$) (Table 1). Given the experimental research design and baseline equivalence, we attribute any differences between the treatment and control groups to the Meal Voucher Program. The impact analyses presented in the report compare the outcomes of students who were invited to participate in MVP to those who were eligible but not selected (i.e., intent-to-treat analyses). Given the relatively high rate of program participation and interest in the impact of the real-world implementation of such a program, we do not present a treatment-on-the-treated or TOT analysis. To increase statistical precision, we include pre-treatment demographic, financial, and academic background variables as explained in table notes. Given the relatively small sample size, we do not explore heterogeneous treatment impacts in this report.⁵³ In all analyses, we applied weights to account for the sampling design. Weights were calculated based on the inverse probability of being selected for the treatment group.⁵⁴

Tables

TABLE A1. MVP Impacts on Well-Being Scale Scores

Outcome	Control group	MVP group	Treatment impact	Standard error	p-value	N
Follow-up 1 Jan 2018						
Food Insecurity	3.84	4.21	0.37	0.69	0.591	96
Depression	6.94	6.19	-0.75	1.09	0.493	91
Generalized Anxiety	5.09	5.15	0.07	1.03	0.949	91
Perceived Stress	8.04	7.47	-0.57	0.39	0.148	88
Sense of Belonging	18.91	19.47	0.56	1.04	0.568	92
Follow-up 2 May 2018						
Food Insecurity	4.23	3.74	-0.49	0.64	0.445	109
Depression	7.04	7.01	-0.03	1.08	0.977	106
Generalized Anxiety	5.29	5.32	0.02	1.07	0.983	105
Perceived Stress	7.61	7.57	-0.04	0.32	0.904	107
Sense of Belonging	19.59	20.26	0.68	0.86	0.434	108

Notes: This table presents covariate-adjusted predicted probabilities. Treatment impact is the difference in predicted probabilities between treatment and control groups. In the regressions, the main predictor was assignment to MVP group. The following pre-treatment covariates were also included: sex, race/ethnicity, reading- math- writing- placement, age, high school degree, independent status, expected family contribution status, and report of EFC on FAFSA Status.

All data are adjusted by the sampling weight. Any observation with missing values were excluded from the analysis.

Food security was measured using U.S. Department of Agriculture’s (USDA) 18-item validated food security scale in which a higher score represents higher levels of food insecurity. This table presents the scale score and in additional models not shown, we also analyzed food security outcomes using different binary categorical coding of the dependent variable, including: Very Low Food Security=0 and Low-, Marginal-, and High-Food Security=1; Very Low- and Low- Food Security=0 and Marginal-, and High-Food Security=1; Very Low, Low-, and Marginal Food Security=0 and High-Food Security=1. None of the models show statistically significant treatment impacts.

To measure depression and generalized anxiety, we used PHQ-9 and GAD-7 validated measures.⁵⁵ Depression and generalized anxiety were coded as an interval variable based on the total score from PHQ-9 and GAD-7 items, respectively. As recommended, we assigned scores of 0, 1, 2, and 3, to respective response categories of “not at all”, “several days”, “more than half the days”, and “nearly every day” to question regarding depression indicators in the “last 2 weeks” prior to the survey.⁵⁶ The nominal range for PHQ-9 composite score was 0-27 and for GAD-7 the composite score scale was 0-21. Higher scores represent more affirmative experiences of depression or anxiety.

To measure stress, we used the PSS4 validated measure.⁵⁷ Perceived stress was coded as an interval variable based on the total score from PSS4 items. We assigned scores of 0, 1, 2, 3, and 4, to respective response categories of “never”, “almost never”, “sometimes”, “fairly often”, and “often”, to questions regarding perceived stress indicators in the “last month” prior to the survey. The nominal range for PSS4 composite score was 0-15 with higher scores representing

more experiences of perceived stress.

Sense of belonging was measured by a composite score (0-28) from a 7-item instrument that asked students to indicate to what extent they agreed with the following: “People at BHCC accept me”, “I feel like an outsider at BHCC”, “I feel alienated from BHCC”, “I fit well at BHCC”, “I get along well with people at BHCC”, “I feel comfortable at BHCC”, “I feel like I belong at BHCC”.⁵⁸ The responses were coded as 0= “strongly disagree” to 4= “strongly agree” and so higher scores represent more experiences of belonging. We also analyzed each item of the instrument and found no statistically significant difference among those in control and treatment conditions. The nominal range for Sense of Belonging composite measure was 0-28.

§ p<0.1 * p<0.05 ** p<0.01 *** p<0.001

TABLE A2. Survey Response Rates

	Follow-up 1 January 2018			Follow-up 2 May 2018		
	Control	MVP	Total	Control	MVP	Total
Response Rate (%)	36.67	44.44	40.65	35.00	53.97	44.72
Survey responders (#)	44	56	100	42	68	110
Invited to take the survey (#)	120	126	246	120	126	246

Notes: Calculation includes partial respondents who skipped certain items.

Notes and References

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⁷<https://cufba.org/>

⁸[Swipe Out Hunger](#) has partnered with over 100 campuses across 28 states. They mostly partner with universities but have recently expanded to work with a few community colleges, particularly in California.

⁹ Kruger, K., Parnell, A., & Wesaw, A. (2016). [Landscape analysis of emergency aid programs](#). NASPA.

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Also see [the Impacts section on the Swipe Out Hunger](#) website for student testimonials

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¹² Statistics obtained from <https://map.feedingamerica.org/county/2017/overall/massachusetts/county/suffolk>

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¹⁷ For example, see <https://www.bhcc.edu/about/achievingthedream/>

¹⁸ See <https://www.bhcc.edu/singlestop/>

¹⁹ Students were identified for the pilot program using several categories: FAFSA information indicating a very low EFC, 30 completed credit hours, current enrollment in at least 9 college-level credit hours, and a cumulative GPA of 3.0 or higher.

²⁰ The pilot was officially extended in the Fall 2017 with improvements made as a result of work done by the Hunger Team through focus groups with OSM students and coordination with the campus cafeteria. This work indicated that almost all of the thirty students ate on campus no more than three times a week. Twenty self-identified students were therefore added to the program and the other food venue on campus (i.e., the café, which is similar to a convenience store) was authorized to accept the paper vouchers.

²¹See [Goldrick-Rab, S., Baker-Smith, C., Coca, V., Looker, E., & Williams, T. \(2019\)](#).

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²⁵Bowman, N. A., Jarratt, L., Polgreen, L. A., Kruckeberg, T., & Segre, A. M. (2019). [Early identification of students’ social networks: Predicting college retention and graduation via campus dining](#). *Journal of College Student Development*, 60(5), 617–622; Mayhew, M. J., Rockenbach, A. N., Bowman, N. A., Seifert, T. A. D., Wolniak, G. C., Pascarella, E. T., & Terenzini, P. T. (2016). [How college affects students: 21st century evidence that higher education works](#) (Vol. 3). San Francisco, CA: Jossey-Bass.

²⁶[Goldrick-Rab & Kolbe \(2016\)](#)

²⁷The debit card was provided as a gift card that could only be used in the BHCC campus cafeteria, café or coffee kiosk. BHCC also has a Culinary Arts dining room run by students and this cash-only dining room was not included in the MVP.

²⁸Students received \$300 (rather than \$400) in the Fall semester because the program started in October rather than the start of the school year.

²⁹Few students complete a credential after one year of community college, so we plan to examine impacts on credential attainment in the future when additional data are available.

³⁰That is, they reported low- or a very low- food security based on the U.S. Department of Agriculture (USDA) [standardized food insecurity measure](#).

³¹Administrators did not use student names in the randomization process, only identifying numbers.

³²The staff reported one such case and in reviewing survey data, we found two students who had reported high levels of food security at follow-up 1 that did not pick up the card.

³³ Results not presented but available upon request.

³⁴ See [Bowman et al. \(2019\)](#), [Strayhorn \(2019\)](#), and [Tinto \(1993\)](#).

³⁵ This is a conservative estimate of the share of students who visited the Single Stop office as some students may not have signed in during their visit.

³⁶ Gillborn, D., & Youdell, D. (2000). *Rationing education: Policy, practice, reform, and equity*. Buckingham, England; Philadelphia, PA: Open University Press; Wutich, A., & Brewis, A. (2014). [Food, water, and scarcity: Toward a broader anthropology of resource insecurity](#). *Current Anthropology*, 55(4), 444–468; Daoud, A. (2010). [Robbins and Malthus on scarcity, abundance, and sufficiency](#). *American Journal of Economics and Sociology*, 69(4), 1206–1229; Hadley, C., & Crooks, D. L. (2012). [Coping and the biosocial consequences of food insecurity in the 21st century](#). *American Journal of Physical Anthropology*, 149(S55), 72–94; Dachner, N., Ricciuto, L., Kirkpatrick, S. I., & Tarasuk, V. (2010). [Food purchasing and food insecurity: Among low-income families in Toronto](#). *Canadian Journal of Dietetic Practice and Research*, 71(3), e50–e56.

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⁴⁰ See Kroenke, Spitzer, & Williams ([2001](#)) to learn more on the PHQ-9 scale.

⁴¹ See Kroenke, et al. ([2006](#)), and Löwe et al. ([2008](#)), to learn more on the GAD-7 scale.

⁴² See Cohen, Kamarck, & Mermelstein ([1983](#)), and Vallejo et al. ([2018](#)), to learn more about the PSS-4 scale.

⁴³ See Walton and Cohen ([2007](#), [2011](#)) for more details on the Sense of Belonging instrument.

⁴⁴ There is no evidence that program impact varies by students whose eligibility was determined by their food security status or their EFC and family income.

⁴⁵ See Reason, R. D. (2003). [Student variables that predict retention: Recent research and new developments](#). *NASPA Journal*, 40(4), 172-191; and Bowman et al. (2019).

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⁴⁸ [Food for Thought Act of 2019](#), H.R.4065, 116th Cong. (2019); Buttigieg, P. (2019). [The American opportunity agenda: Affordable college, stronger workforce development, and lifelong learning](#). Goldrick-Rab, S., Broton, K., & Colo, E. B. (2016). [Expanding the National School Lunch Program to higher education](#) (Policy Brief No. 16-02). Wisconsin HOPE Lab.

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⁵¹ See Saldaña, J. (2016). [The coding manual for qualitative researchers](#) (3rd Ed). Los Angeles; London: SAGE.

⁵² For four students who were missing age, we assigned them the average age of the sample. For four other students who were missing financial (in)dependence status, we assigned their status following federal guidelines based on age, marriage status, veteran status, and having legal

dependents. Another 8 students were missing multiple covariate data and are excluded from the analyses, resulting in an analytic sample size of 590.

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⁵⁴ U.S. Department of Education’s Institute of Education Sciences (IES). (2017). [*What works clearinghouse standards handbook*](#) (Version 4.0). Washington, D.C.; U.S. Department of Education’s Institute of Education Sciences (IES). (2017). [*What works clearinghouse procedures handbook \(Version 4.0\)*](#). Washington, D.C.

⁵⁵ See Kroenke, Spitzer, & Williams ([2001](#)) to learn more on the PHQ-9 scale. See Kroenke, et al. ([2006](#)), and Löwe et al. ([2008](#)), to learn more on the GAD-7 scale.

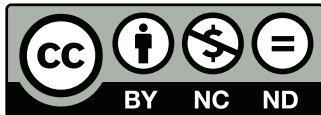
⁵⁶ See here for more details: <https://www.pcpcc.org/sites/default/files/resources/instructions.pdf>

⁵⁷ See Cohen, Kamarck, & Mermelstein ([1983](#)), and Vallejo et al. ([2018](#)), to learn more about the PSS-4 scale.

⁵⁸ See Walton and Cohen ([2007](#), [2011](#)) for more details on the Sense of Belonging instrument.



We thank The Kresge Foundation and The Boston Foundation for generous financial support. The staff, administration, and students at Bunker Hill Community College proved excellent partners in this effort. We also acknowledge research support from the University of Iowa College of Education and Center for Research on Undergraduate Education (CRUE), assistance from the Hope Center research and communication teams, and survey support from M. Davis and Company.



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