

# Meal Vouchers Matter for Academic Attainment: A Community College Field Experiment

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Given growing awareness of the high prevalence of food insecurity among college students, higher education leaders are implementing various food interventions on their campuses. However, there is little research on the efficacy and impact of these initiatives. Using data from a field randomized control trial, we find that a relatively modest financial investment in campus meal cards coupled with proactive outreach by an existing campus office improved community college students' academic attainment outcomes. Students who were invited to participate in the meal voucher program attempted and completed more credits during their first year of college and were more likely to graduate in 2 years than otherwise similar peers, indicating that a campus meal program can promote college success.

**Keywords:** achievement; community colleges; experimental research; poverty; retention

Low rates of college completion, especially among students from economically disadvantaged backgrounds, is a key area of concern for higher education policy and leadership (Adelman, 2006; McGovern, 2021). The problem of low attainment is even greater for community colleges that serve a larger proportion of students from marginalized backgrounds and have fewer institutional resources to help students succeed. According to the National Center for Education Statistics, the 3-year graduation rate for first-time full-time students attending public 2-year institutions was only 32% (McFarland et al., 2019). This is concerning given that higher education provides upward social mobility and a higher education degree is associated with various economic, social, and health benefits (Hout, 2012).

The COVID-19 pandemic has only exacerbated higher education's attainment challenges, prompting federal policymakers to invest in several rounds of the Higher Education Emergency Relief Fund (HEERF). During the pandemic, food insecurity rates increased, and HEERF funds were used to provide direct assistance to students in need, including via the provision of meal vouchers (Goldrick-Rab et al., 2022; U.S. Department of Education, 2022). This marks a significant shift in the recognition of basic needs insecurity (i.e., going without adequate food, shelter, and other basic material goods; Broton & Goldrick-Rab, 2018; Goldrick-Rab et al., 2016, 2022) as a key area of concern. Prior to the pandemic, scholarship on college attainment challenges largely emphasized limited academic preparation and

motivation, lack of capital to navigate college, adverse campus climates, and financial challenges—although research on paying for college tended to be narrowly focused on tuition coverage rather than the full cost of attendance, including securing sufficient food and housing (for a review of this literature, see Mayhew et al., 2016; Wang, 2017). A growing body of literature explains the importance of basic needs security for academic success (Broton, 2021; Schofield & Venkataramani, 2021; Wolfson et al., 2022), and colleges are increasingly investing in addressing students' basic needs (e.g., Balzer Carr & London, 2020); however, there is little empirical evidence evaluating the efficacy of such interventions (for notable exceptions, see Hope Center reports, including Goldrick-Rab et al., 2020).

In this study, we ask: What is the impact of a meal voucher program (MVP) on students' academic attainment? We partnered with a community college and conducted a field experiment, allowing us to provide the first causal evidence on the impact of a campus MVP on students' academic success outcomes. Findings indicate that students who were randomly selected to participate in the MVP attempted and completed more credits during their first year of college and were more likely to graduate over 2 years than otherwise similar peers. Although limited to one college, our study provides a

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proof-of-concept that a modest campus dining hall meal card program implemented by an existing campus office can result in measurable improvements in academic attainment.

## Background

In K–12 education, the National School Lunch Program (NSLP) provides meals to millions of students each year. Meal programs not only contribute to students' food security and well-being but also enhance academic performance (Cohen et al., 2021). For example, Frisvold (2015) leveraged geographic variation in take-up of the National School Breakfast Program and found that program participation resulted in a significant increase in students' cognitive achievement and improved reading and math test scores. However, when students transition from high school to college, they are left without this critical support. In fact, before the COVID-19 pandemic, nearly half of college students reported that they experience food insecurity (Baker-Smith et al., 2020; Nazmi et al., 2018). The share of food-insecure students is even greater at community colleges, which serve a disproportionate share of students from minoritized and structurally disadvantaged backgrounds, including those who identify as Black, Indigenous, Person of Color, LGBTQ, or women; those who grew up in poverty or foster care; and those with significant responsibilities, including student parents and working students (Baker-Smith et al., 2020; Wood & Harris, 2018).

At the national level, scholars and policymakers are calling for the expansion of the NSLP into higher education (Food for Thought Act, 2019; Goldrick-Rab et al., 2016; McGovern, 2021), and at institutions across the nation, college leaders are implementing their own MVPs, enabling students to eat at the college cafeteria alongside their peers (Sumekh, 2020). With nearly 60% of community colleges offering vouchers prior to the pandemic (Kruger et al., 2016), these programs remain an important, although understudied, avenue for addressing food insecurity in higher education as more institutions seek ways to support students' material needs (AACRAO & The Hope Center, 2020). Although relatively easy to operate (e.g., campuses do not have to store and distribute food items like they do with a campus pantry), voucher programs tend to be small, operate on donations or discretionary budgets, and are often unable to serve all students in need due to high demand (Kruger et al., 2016; Sumekh, 2020). As a result, students often learn about these resources via word-of-mouth; only 16% of campuses report using data to proactively identify students who would likely benefit from participation in a voucher program (Kruger et al., 2016). This self-selection limits the ability to study voucher programs using observational data.

Students who participate in MVPs generally report that these initiatives help them get more to eat, feel better and more connected to their colleges, and succeed academically (Novak & Johnson, 2017; Sumekh, 2020), but these programs have not been systematically investigated using methods that allow for causal conclusions. So, we partnered with Bunker Hill Community College (BHCC) to test the efficacy of their MVP in a field experiment. BHCC is a large, diverse college serving the Greater Boston area, with 57% of the student body identifying as female, 25% as African American or Black, 24% as

Hispanic or Latino, and 21% as White, with an average student age of 26 years old (National Center for Educational Statistics, n.d.). The county in which it is located has higher than average rates of household food insecurity at 14%, and the annual average net price of attendance is more than \$7,000 (Map the Meal Gap, n.d.; National Center for Educational Statistics, n.d.). As is the case at many community colleges across the country, graduation rates at BHCC are low. For BHCC's 2017 cohort, just 6% of first-time full-time students graduated within normal time of their program (i.e., 2 years for an associate's degree), and 15% graduated within 150% of normal program time (National Center for Educational Statistic, n.d.). Recognizing low graduation rates and the significant problem of food insecurity on campus, BHCC had previously implemented a similar, small-scale pilot meal voucher initiative, which produced promising results using observational methods: All but one of 30 participants had graduated or persisted over three semesters (Broton et al., 2020). With support from our research team, BHCC modified and scaled their meal voucher initiative and employed a randomized control trial to investigate the causal relationship between MVP and academic success for students at risk of food insecurity.

## MVP

The MVP provided a debit card to students at high risk for food insecurity that they could use to buy food from the BHCC cafeteria or café. Students randomly selected to participate in the program were offered a debit card loaded with \$300 in September of their first semester, and it was reloaded with \$400 for their second semester, enabling them to eat in the cafeteria three to four times a week (the average meal price was \$7). Although it was designed as a 1-year initiative, program staff had enough funds that they were able to continue to top up students' cards with \$400 each semester of their second year of college, too (Broton, Mohebbi, & Goldrick-Rab, 2022). MVP students, like all BHCC students, still had access to the college's support programs, including academic counseling services, a campus pantry, and support in applying for public benefits through the college's one-stop Single Stop office. Single Stop staff invited selected students to participate in MVP via email, letter, text, and/or phone call, and students had to stop by the Single Stop office to pick up their MVP debit card.

This study is part of a larger mixed-methods research project that includes administrative, survey, and interview data. In previous work, we investigated processes and mechanisms through which MVP operates and found that students felt supported by the program and reported that it improved their physical and mental health (Broton et al., 2020). Given these changes, in this article, we ask: What is the impact of the MVP on students' academic attainment? Although efforts to enhance students' well-being are important, higher education leaders and policymakers are often interested in learning whether such initiatives also matter for persistence and graduation.

## Conceptual Framework

The MVP was designed as a 1-year intervention to provide extra targeted support to first-year community college students at risk

of food insecurity. It was intended to have minimal administrative burdens that are all too common in social and financial aid programs. By reaching out to students with the meal card early in their college career, rather than asking them to apply for additional support, the college signaled that they recognized food insecurity as a real program and acknowledged that food-insecure students belong on campus (Brotton, Mohebali, & Goldrick-Rab, 2022; Goldrick-Rab & Kolbe, 2016). The flexible way in which the college offered the monetary assistance—as a cafeteria debit card that students could use over the course of the semester as they liked—provided autonomy and indicated that they trusted students (Brotton et al., 2020). It also helped MVP students integrate with peers by eating together in the campus cafeteria and may have encouraged them to stay on campus longer (Bowman et al., 2019; Brotton et al., 2020).

These multiple mechanisms inherent in the program design and implementation are important because a growing body of scholarship indicates that students with food insecurity feel isolated, shameful, or that they do not belong on campus (Collier et al., 2021; Henry, 2020) and are more likely to report depression, anxiety, and suicidal ideation (Brotton, Mohebali, & Lingo, 2022; Goldrick-Rab et al., 2022). Poor mental health and belonging are important indicators of students' academic success and persistence that may help explain the reported associations between food insecurity and higher risk of withdrawing from courses, inconsistent enrollment patterns, and lower odds of attainment (Balzer Carr & London, 2020; Meza et al., 2019; Stebleton et al., 2020; Wolfson et al., 2022).

Overall, the cafeteria meal vouchers offered quick, ready-to-eat, hot and cold meals that did not require advance preparation or kitchen facilities. This is essential because many students experience time poverty as they manage multiple school, work, and family commitments (Brotton, Mohebali, & Goldrick-Rab, 2022). Thus, MVPs can help students by enabling them to eat more so that they can better focus on their studies, reduce stress and anxiety around obtaining their next meal, and promote belonging. To understand how these multiple mechanisms relate to academic outcomes, we further ground our study in the theory of academic momentum.

Academic momentum theory suggests that students' early experiences in college, including the speed at which they initially progress through coursework, can affect the likelihood of earning a degree (Adelman, 2006; Attewell et al., 2012). Advancements to the theory argue for a fuller or richer conceptualization of momentum for community college students, including incorporating the cultivation of students' beliefs as a core part of building momentum and promoting academic attainment (Wang, 2017). Importantly, the theory allows for the consideration of factors such as intensity of course-taking, which has a positive relationship with students' academic outcomes (Adelman, 2006; Attewell et al., 2012; Wang, 2017), along with factors that have been shown to hinder or disrupt students' progress, such as basic needs insecurity (Brotton, 2021; Henry, 2020; Wolfson et al., 2022). By centering students' progress through college, the theory also helps us consider how addressing food security barriers early in college can help maintain or even enhance students' academic momentum to help them persist and graduate. As is customary in research on college completion (McFarland et al.,

2019), we examine academic attainment outcomes over 3 years (i.e., 150% time to degree), which also allows us to consider students' academic trajectory. We anticipate effects will be largest in the first year, given the 1-year program design (i.e., staff and students did not expect the program to continue for a second year until the first year was completed).

## Methodology

### *Experimental Design*

In Fall 2017, BHCC identified 598 students who were eligible for participation in MVP. All of the students were domestic students enrolled in their first semester at BHCC, taking at least one credit-bearing course at the Charlestown campus (where the cafeteria is located), age 18 or older, and either indicated prior experiences of food insecurity on a pretreatment survey or had an expected family contribution of \$0 and adjusted gross income less than or equal to \$24,000, according to financial records. Given budget constraints and high need, BHCC randomly selected 126 students from the eligible pool to receive an offer of the MVP debit card; these students make up the treatment group. The remaining eligible students who were not selected make up the control group. Randomization was blocked by eligibility mechanism (i.e., prior food insecurity on pretreatment survey vs. administrative data showing limited financial resources). Eligibility for participation was independent of treatment status, and BHCC program staff worked closely with the research team to ensure that only those assigned to the treatment group were offered a meal card.

### *Sample and Descriptive Statistics*

The analytic sample included 590 students for whom background information was available from the pool of 598 students identified by BHCC, as shown in Table 1. In the analytic sample, nearly six in 10 students identified as female, and the average age is 23 years old. Thirty-five percent identified 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. About nine in 10 students earned a regular high school diploma rather than a GED. According to BHCC's placement testing results, 11% scored college-ready for math, 37% scored college-ready for reading, and 42% scored college-ready for writing. Almost all students in the sample had an expected family contribution of \$0, and 36% were financially independent according to their Free Application for Federal Student Aid data. Probability theory suggests some differences across groups as a function of chance, and examination of baseline characteristics across treatment and control groups showed no statistically significant ( $p < .05$ ) differences, indicating high internal validity (Table 1).

### *Measures*

Given program design and our conceptual grounding in academic momentum theory that emphasizes the importance of the first year of college, we assessed academic impacts in each

**Table 1**  
**Baseline Characteristics of Analytic Sample by Treatment Status**

Characteristic		Analytic sample	Control group	Treatment group	p	Effect size
Age <sup>a</sup> (years)	Age	22.78	22.72	23.04	.673	0.048
Sex (%)	Female	57.41	58.21	54.07	.427	-0.102
Race/ethnicity (%)	White or Caucasian	13.02	12.23	16.32	.247	0.203
	African American or Black	33.95	34.08	33.42	.894	-0.018
	Hispanic or Latino	35.01	34.81	35.86	.834	0.028
	Other races <sup>b</sup>	11.31	11.67	9.79	.574	-0.119
	No report or decline to answer	6.71	7.21	4.61	.334	-0.289
High school credential <sup>c</sup> (%)	High school diploma	92.73	93.52	89.40	.128	-0.326
Reading placement (%)	College-ready	37.06	35.34	44.28	.079	0.227
	Not college-ready	41.36	42.29	37.40	.346	-0.124
	Did not take the test	21.59	22.36	18.32	.347	-0.152
Math placement (%)	College-ready	10.52	10.79	9.41	.665	-0.092
	Not college-ready	83.29	82.87	85.06	.576	0.098
	Did not take the test	6.18	6.34	5.53	.753	-0.088
Writing placement (%)	College-ready	42.15	41.85	43.43	.759	0.039
	Not college-ready	48.37	47.88	50.46	.623	0.063
	Did not take the test	9.48	10.27	6.11	.176	-0.343
Financial status <sup>d</sup> (%)	Independent student	36.06	35.69	37.60	.705	0.050
FAFSA (%)	Completed	99.03	98.96	99.31	.619	0.252
	Zero EFC <sup>e</sup>	98.50	98.67	97.77	.315	0.319
N		590	467	123		

*Note.* Data come from students' college administrative record except for sex and race/ethnicity, which come from a combination of students' administrative data and their self-reported survey data. No imputation is performed for missing data items unless noted. All data are adjusted by the sampling weight. Effect sizes are calculated according to What Works Clearinghouse (2020). FAFSA = Free Application for Federal Student Aid; EFC = expected family contribution.

<sup>a</sup>We assigned the average age of the sample to four students who were missing information on age.

<sup>b</sup>Includes Alaskan Natives or American Indians (0.87% treatment, 0.88% control), Asian or Asian American (6.12% treatment, 6.06% control), Cape Verdean (0.87% treatment, 0.71% control), and multiple race/ethnicities as indicated by students (3.80% treatment, 3.66% control). Racial/ethnic categories are defined by the college.

<sup>c</sup>All students have a traditional high school diploma or GED.

<sup>d</sup>The status of four students who had missing information about their financial status was predicted following federal requirements for independent students' status using supplemental information.

<sup>e</sup>Nonzero includes students who were selected from a pretreatment food security survey and who had EFC larger than zero and the students who did not have an EFC reported.

semester of students' first year in college (2017–2018) and then annually in Years 2 (2018–2019) and 3 (2019–2020). We assessed enrollment and graduation using BHCC administrative records and data from the National Student Clearinghouse, allowing us to track students who transferred institutions. Graduation was defined as earning any degree or credential. Enrollment was defined as attempting at least one credit hour in the stated semester and included those who had previously graduated. We also examined the number of attempted and completed credits at BHCC.

### *Analytic Plan*

Given the high program take-up rate (83% picked up their MVP card) and interest in real-world implementation, we used an intent-to-treat regression analysis (see Equation 1) to estimate the causal effect of MVP on outcomes of interest described previously.

$$y_i = \alpha + \beta(\text{MVP}_i) + \gamma X_i + \varepsilon_i, \quad (1)$$

where  $y_i$  is the outcome of interest for student  $i$ ,  $\text{MVP}_i$  is an indicator of the randomly assigned meal voucher offer,  $X_i$  is a vector of pretreatment control variables, and  $\varepsilon_i$  is an idiosyncratic error term. Logistic and Poisson regression were used, respectively, for estimating impacts on dichotomous and count outcomes. Due to the small number of BHCC graduates over 2 years, we used Firth logistical regression models for rare events (Firth, 1993; Heinze & Schemper, 2002) in predicting that outcome. Individual-level pretreatment controls included each of the measures listed in Table 1 and were added to increase precision and account for any baseline differences (What Works Clearinghouse, 2020). Inverse probability weights were used in all analyses to account for unequal assignment probabilities among eligible students. Treatment impacts are reported as changes in the number of credits for count outcomes and as percentage-point differences for dichotomous outcomes. In addition, the magnitudes of the treatment impacts are reported as effect sizes to aid the reader in substantive interpretation (Lipsey et al., 2012). The standardized mean difference, Hedges's  $g$ , is reported for credit outcomes, and the Cox index, which is a

comparable measure, is used for dichotomous outcomes (What Works Clearinghouse, 2020). In addition, we report unadjusted impact estimates in the online appendix as a reference for the reader (Table A1, available on the journal website).<sup>1</sup>

### *Fidelity of Implementation and Treatment Contrast*

To assess fidelity of implementation and better understand the difference between the “business as usual” control condition and experimental condition, we administered a short survey at the end of students’ first semester of college asking them how often they ate in the college cafeteria or café. We invited all MVP students and a randomly selected subset of 120 control-group students to participate in the survey, given financial constraints. Students were first invited to participate via the web and then had the option to complete the survey via phone and were offered a financial incentive for participation. The overall response rate was 41% (44% in treatment group and 37% in control group), and there was no evidence of statistically significant differences ( $p < .05$ ) between the groups on any of the background characteristics listed in Table 1.

Survey results (Table A2 in online appendix, available on the journal website) showed that among those eligible for but not offered the MVP, 65% reported that they never ate at the campus cafeteria or café during a typical week on campus. An additional 29% ate one to five meals on campus per week, and the remaining 6% ate more than five meals per week at the campus cafeteria or café. Among those offered the MVP, however, 62% ate one to five meals on campus per week, 15% ate six to 10 meals, 7% ate 11 to 15 meals, and 2% ate 16 or more meals per week at the campus cafeteria or café. Just 13% of MVP students reported that they did not eat on campus in a typical week during the fall semester. Results from a chi-square analysis indicated that the offer to participate in the MVP induced students to eat in the college cafeteria or café ( $p < .001$ ). The modal treatment contrast was going from never eating in the cafeteria or café to eating there one to five times per week, which is the range that includes the number of meals that MVP was designed to help students purchase (i.e., three to four meals per week).

### *Limitations*

The main strength of our study is the use of random assignment, which mitigates concerns of selection bias but also imposes limitations. Although conceptually grounded, this analysis does not provide insights into the particular mechanisms through which the voucher program impacts academic outcomes; however, prior analyses drawing from the larger mixed-methods study suggest multiple pathways (Brotton et al., 2020; Brotton, Mohebali, & Goldrick-Rab, 2022). Next, the use of a lottery among all eligible students identified via college records, rather than relying on volunteers to come forward and test the intervention, likely enhances the external validity of the findings to those at risk of food insecurity, but the results may not generalize to all voucher programs or institutional contexts. Finally, our analyses are limited to intent-to-treat estimates to cleanly exploit the exogenous variation in the experimental design and inform other basic needs initiatives that will likely face take-up challenges in real life; analyses

incorporating nonrandom compliance would result in slightly larger impacts. A treatment-on-the-treated effect that considers students who picked up their MVP card is estimated to be 20% larger when multiplying the experimental difference by the inverse of the take-up rate.

### **Findings**

Overall, MVP improved students’ academic attainment outcomes (Figure 1). Over 2 years, MVP students completed 2.99 more credits ( $p < .10$ ), or about one more class, than students in the control group. The impacts of the MVP on credit attempt and completion were strongest in the first year, when students were informed about and could expect the provision of additional meal dollars. In their first semester, MVP students attempted 0.71 more credits ( $p < .05$ ) and completed 1.64 more credits ( $p < .05$ ) than otherwise similar peers in the control group. Over the first year, MVP students attempted 1.48 more credits ( $p < .05$ ) and completed 2.23 more credits ( $p < .05$ ) than those in the control group (Table 2).

After 2 years, a greater share of MVP students had graduated from college (Figure 1). As shown in Table 2, 4.97% of MVP students compared to just 1.17% of control-group students had earned a college credential from BHCC ( $p < .05$ ). When we consider graduation from any institution over 2 years, 5.13% of MVP students had earned a credential compared to 1.41% of students in the control group ( $p < .05$ ).

Differences between treatment and control groups did not persist over 3 years, perhaps because program support was not sustained (Figure 1). Although the MVP group retained a 2 percentage-point advantage in graduation rates, it could not be statistically distinguished from zero. Program impacts on persistence in the first, second, and third years tended to be positive but could not be statistically attributed to the program (Table 2).

### **Discussion and Conclusion**

Using a randomized field experiment, we find that a meal voucher program that enabled students at high risk of food insecurity to eat at the college cafeteria or café a few times per week improved academic attainment. Program impacts on credit accumulation were particularly notable during the first year, when program messaging and usage was strongest (Brotton et al., 2020; Brotton, Mohebali, & Goldrick-Rab, 2022). These effect sizes are very large for the field of education, where interventions rarely find positive impacts, let alone impacts of considerable magnitude (What Works Clearinghouse, 2020). Data from interviews and focus groups indicate that the program worked through multiple mechanisms as students reported that MVP reduced the severity of their food insecurity challenges while enhancing emotional well-being and sense of belonging (Brotton et al., 2020; Brotton, Mohebali, & Goldrick-Rab, 2022). In addition, we did not find any evidence that there was variation in program impacts by eligibility mechanism (i.e., pretreatment survey indicating food insecurity vs. limited financial resources according to administrative records), suggesting that the proactive identification of students with limited resources using already existing college record data is an efficient and effective way of targeting MVPs.

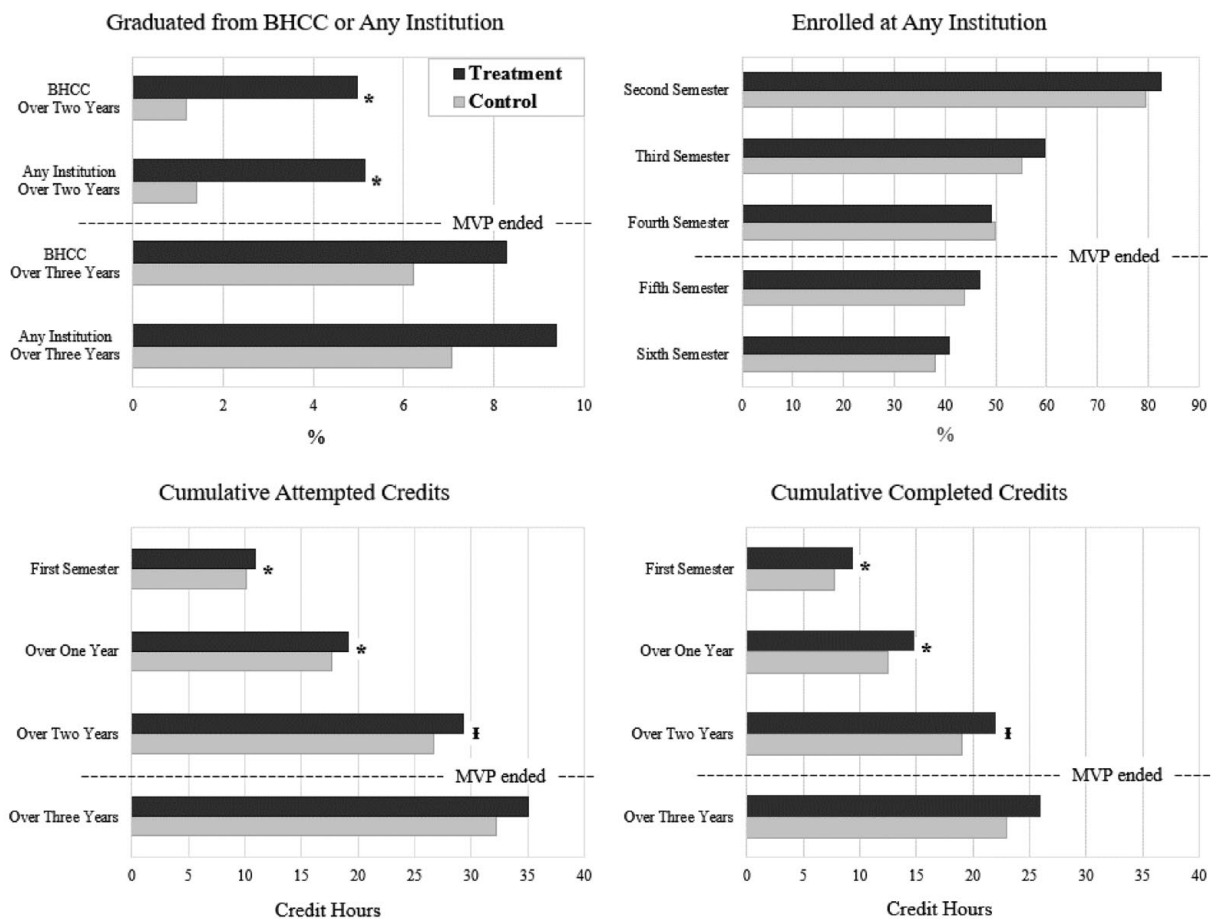


FIGURE 1. Meal voucher program impacts on academic attainment  
 Note. Data for the graphs comes from Table 2.  
<sup>†</sup> $p < .1$ . \* $p < .05$ .

Academic momentum theory (Adelman, 2006; Wang, 2017) suggests that the increase in the number of attempted and completed credits early in college can improve long-term academic success. Indeed, we find that MVP students were more likely to graduate over 2 years than their peers who were eligible for but not invited to participate in the meal program. However, this early bump was not enough to sustain measurable program impacts over 3 years. The proactive offer of the meal program and lump sum loaded onto debit cards as students started at BHCC likely sent a strong message to students that they mattered and that they were trusted. The program encouraged students to eat on campus but did not micromanage or surveil students. In contrast to this careful start, the second year of the program was only made possible because of resources that the staff learned about near the completion of the first year. So, the uncertainty around meal cards being offered for a second year and lack of assurance around the program may have undermined the anxiety relief that the extra resources provided in Year 1. Perhaps unsurprisingly, when program support ended after 2 years, so did treatment impacts. The onset of the COVID-19 pandemic, in spring of students' third year of college, may have also affected overall attainment rates and perhaps especially for treatment students, given that the program focused on getting them connected to the physical institution, which was abruptly

shuttered. This suggests that ongoing support throughout a student's college career may be necessary to continue to promote attainment or that additional supports were needed to offset pandemic-related challenges.

Nonetheless, this study illustrates how a relatively inexpensive financial investment in meal vouchers (\$42,000 in the first year for 126 students) implemented by an existing campus office positively influenced students' academic attainment. Over 2 years, a program budget of \$90,000, or about \$350 per student per year, more than doubled graduation rates (from two to five students at any college and from one to four students at BHCC). We are not aware of any other rigorous examination of cash-like voucher benefits in the higher education context, although unconditional cash transfer programs are increasingly popular across the globe given their flexibility, efficiency, and positive impact on targeted communities and outcomes (McDonough, 2022). In U.S. community colleges, ASAP (Accelerated Study in Associate Programs) has shown some of the largest gains in attainment rates, nearly doubling graduation rates over 3 years. However, it is much more intensive and expensive than MVP, providing an array of wraparound financial, academic, and personal supports, and students are required to enroll full-time and participate regularly in program services. As a result, it costs over \$3,000 per student per year to administer—approximately 10

**Table 2**  
**Meal Voucher Program Impacts on Academic Attainment**

Outcome	Control group	Treatment group	Treatment impact	Effect size	p	
<b>Over 3 Years: 2017–2018 to 2019–2020</b>						
Graduated from any institution (%)	7.06	9.39	2.33	0.197	.406	
Graduated from BHCC (%)	6.22	8.28	2.06	0.196	.439	
Cumulative attempted credits ( <i>n</i> )	32.18	35.07	2.89	0.143	.144	
Cumulative completed credits ( <i>n</i> )	22.93	26.00	3.07	0.144	.154	
Enrolled at any institution in Fall 2019 (%)	43.92	46.90	2.98	0.079	.558	
Enrolled at any institution in Spring 2020 (%)	38.02	40.86	2.84	0.077	.566	
<b>Over 2 years: 2017–2018 to 2018–2019</b>						
Graduated from any institution (%)	1.41	5.13	3.72	1.001	.017	*
Graduated from BHCC (%) <sup>a</sup>	1.17	4.97	3.80	1.410	.011	*
Cumulative attempted credits ( <i>n</i> )	26.70	29.28	2.58	0.176	.076	‡
Cumulative completed credits ( <i>n</i> )	19.01	22.01	2.99	0.173	.094	‡
Enrolled at any institution in Fall 2018 (%)	55.06	59.69	4.62	0.124	.361	
Enrolled at any institution in Spring 2019 (%)	49.93	49.14	-0.79	-0.021	.875	
<b>First year: 2017–2018</b>						
Cumulative attempted credits ( <i>n</i> )	17.70	19.17	1.48	0.222	.023	*
Cumulative completed credits ( <i>n</i> )	12.45	14.78	2.33	0.222	.041	*
Enrolled at any institution in Spring 2018 (%)	79.59	82.56	2.97	0.123	.481	
<b>First semester: Fall 2017</b>						
Attempted credits ( <i>n</i> )	10.16	10.87	0.71	0.235	.012	*
Completed credits ( <i>n</i> )	7.70	9.34	1.64	0.225	.046	*
<i>N</i>	467	123				

*Note.* This table presents covariate-adjusted predicted probabilities. Treatment impact is the difference in predicted probabilities between treatment and control groups. Regression models include random assignment to meal voucher program group, which is the main predictor of interest, and pretreatment covariates as described in Table 1. All data are adjusted by the sampling weight. Effect sizes are calculated according to What Works Clearinghouse (2020). BHCC = Bunker Hill Community College. <sup>a</sup>Due to the small number of graduates over 2 years, we use a Firth logistical regression model for rare events (Firth, 1993; Heinze & Schemper, 2002). <sup>†</sup> $p < .1$ . <sup>\*</sup> $p < .05$ .

times more expensive than MVP (MDRC, 2015). In contrast, MVP was restricted to some of the most vulnerable students among a group that has been historically marginalized and tends to have low attainment rates. MVP students were not required to enroll full-time and were struggling to meet their basic food needs, so although MVP’s 5% 2-year graduation rate may seem low, it is nearly on par with BHCC’s overall cohort graduation rate of 6% for first-time full-time students (National Center for Educational Statistics, n.d.). The specific ways in which MVP was designed to minimize administrative burdens and implemented to emphasize trust, autonomy, and flexibility likely matters. It illustrates the power of a simple straightforward program design coupled with additional resources in students’ pockets.

Our study serves as a proof-of-concept, showing that meal vouchers can be one of many ways to help students complete community college. This finding is particularly timely given that rates of food insecurity have increased in recent years and there is increased recognition that food insecurity impedes academic success (Goldrick-Rab et al., 2022; U.S. Department of Education, 2022; Wolfson et al., 2022). The study provides causal empirical evidence to the nascent field of food insecurity interventions in higher education and can serve as a template for assessment of an increasing number of basic needs initiatives in various higher education contexts moving forward (Broton &

Cady, 2020). The results of this study can also continue to inform ongoing policy discussions on establishing a “school lunch” program in community colleges (Food for Thought Act, 2019; McGovern, 2021). Ultimately, the complex problem of food insecurity among college students will not be eliminated with on-campus meal vouchers alone, but evidence from this study indicates that meal vouchers can play an important part of a comprehensive institutional response that acknowledges students’ daily lived experiences and promotes academic attainment.

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<sup>1</sup>In exploratory analyses, we examined whether the impact of the meal voucher program varied by students’ background characteristics,

including race/ethnicity and gender, or by eligibility mechanism. We did not find any evidence of heterogeneous impacts and do not report that investigation here due to space limitations.

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