education northwest

ECMC FOUNDATION BASIC NEEDS INITIATIVE EVALUATION REPORT 2

Exploring the reach and impact of basic needs services at postsecondary institutions: Learnings from a multi-state evaluation in 2020–21 and 2021–22

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About Education Northwest

Education Northwest is a nonprofit, nonpartisan organization dedicated to helping all children and youth reach their full potential. We partner with public, private, and community-based organizations to address educational inequities and improve student success. Through an equity-centered approach, we collaborate to support learners of every age on their path to and through education and training after high school.

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Executive summary

Many college students experience basic needs insecurity, which includes a lack of—or fear of the lack of—access to healthy food, stable housing, reliable transportation, affordable child care, physical and mental health care services, the internet and technology, and other necessities students need to survive and thrive in a postsecondary academic setting (Hodara et al., 2023). According to the National Postsecondary Student Aid Study (NPSAS), in 2020, 23 percent of undergraduates had experienced food insecurity and 8 percent had experienced homelessness within the last 30 days.[1] Research consistently shows that basic needs insecurity adversely affects students' overall well-being and college enrollment, achievement, and completion and reinforces the connection between family socioeconomic status and postsecondary outcomes (Goldrick-Rab, 2021; Hallet & Freas, 2018; Haskett et al., 2020; Maroto et al., 2015; Martinez et al., 2018; Phillips et al., 2018; Silva et al., 2017; Trawver et al., 2020; Wolfson et al., 2021).

To support students' postsecondary success, ECMC Foundation launched the Basic Needs Initiative (BNI), funding seven organizations from 2019 to 2022[2] to address college students' basic needs through direct service, technical assistance, and research. ECMC Foundation also engaged Education Northwest to lead an evaluation of the BNI and facilitate a learning community for grantees.

In this evaluation report, we focus on measuring the extent to which students used basic needs services at select institutions supported by BNI grantees in the 2020–21 and 2021–22 academic years and the impact of using services on students' short-term academic outcomes, including enrollment intensity (credits attempted), credits earned, grade point average, and fall to winter/spring retention.[3] We partnered with four BNI grantees on this report—Arkansas Community Colleges, Auburn University's Hunger Solutions Institute, John Burton Advocates for Youth, and United Way of King County—to access student-level data on the use of basic needs services, student demographics, and academic outcomes from 20 postsecondary institutions in Arkansas, Alabama, California, and Washington.

[1] We obtained estimates of food and housing insecurity from the U.S. Department of Education, National Center for Education Statistics, National Postsecondary Student Aid Study: 2020 Undergraduate Students (NPSAS:UG), a nationally representative survey of all students enrolled in postsecondary education in the United States.

[2] Some grantee projects concluded in 2023. Due in part to the pandemic, many projects experienced delays.

[3] Because we only have data from the individual institutions included in this study, we measure student retention (whether the student returns to the same institution) rather than persistence (whether the student returns to any postsecondary institution). Additional considerations for this outcome are described in appendix D.

This report has three key **findings** with implications for practice:

1. **Collecting data on students' use of basic needs services and linking it to student demographic and outcome data was a new activity for many of the institutions included in this report, and the basic needs services data had several limitations.** Our experience provides lessons for how to improve the collection of basic needs services data and their linkage to demographic and outcome data.
2. **Very few students in our sample used basic needs services, suggesting a large gap between students' reported needs and their access to services.** In our sample, only 1 percent of all enrolled students accessed food assistance in 2020–21 and 2 percent accessed food assistance in 2021–22. However, nationally, in 2020, 23 percent of undergraduates reported experiencing food insecurity. We discuss potential reasons for this gap, including a lack of data collection on the use of basic needs services and challenges with connecting students to those services.
3. **Access to basic needs services had a positive impact on the number of credits students attempted and earned was positively related with retention.** Overall, students who accessed any type of basic needs service attempted and earned an additional 0.75 and 0.74 credits, respectively, in the same term. Students who accessed food assistance in the fall term were 6 to 13 percentage points more likely to return to the winter/spring term than observationally similar students who did not access food assistance.

Based on data collections efforts for this report, the analytical findings, and the data collected for the prior evaluation report (Hodara et al., 2023) we offer three **recommendations:**

1. **Develop integrated data systems.** The gaps we observed between student need and resource use can be attributed, in part, to the limitations of existing data systems. Postsecondary institutions and systems need standard practices to guide data collection on basic needs service usage and electronic data systems that integrate with student information systems. At a minimum, integrated data systems need to facilitate the capture of students' need for services (typically from a survey), their use or receipt of services (typically from a basic needs center or hub), and student demographic and academic outcomes (from the student information system). These systems can then be used to understand the extent to which students with need are accessing services, where the gaps are, the extent to which access is equitable across students from different groups, and the extent to which services effectively improve students' academic outcomes.
2. **Increase use of services.** The low percentage of students accessing basic needs services also suggests challenges with connecting students to those services, while the findings on the positive impact of basic needs services provide further motivation for increasing use of services so that more students benefit. To increase students' use of services, colleges should adopt student-centered approaches that integrate basic needs services into other campus services and normalize

their use. Additionally, better systems to collect data and training to support data collection and interpretation will allow staff members to more effectively target and support students with needs.

3. **Measure the effectiveness of basic needs services.** This study reveals promising findings on the impact of basic needs services on short-term academic course outcomes. More research is needed on the long-term benefits of addressing college students' basic needs insecurity, including benefits that go beyond academic outcomes. Integrated state- or system-level data systems would allow for a more complete understanding of the impact of basic needs services and resources on students' lives.

Currently, we have a nascent understanding of who is accessing campus-based basic needs services, college students' access to public benefits, and the connection between service usage and outcomes. Improving student access to basic needs services and building capacity to collect and use data on student use of services and their subsequent outcomes can provide key data to effectively target and support students who have these needs, ultimately reducing basic needs insecurity.

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Many college students experience basic needs insecurity, which includes a lack of—or fear of the lack of—access to healthy food, stable housing, reliable transportation, affordable child care, physical and mental health care services, the internet and technology, and other necessities students need to survive and thrive in a postsecondary academic setting (Hodara et al., 2023). According to the National Postsecondary Student Aid Study (NPSAS), in 2020, 23 percent of undergraduates said they had experienced food insecurity and 8 percent said they had experienced homelessness in the last 30 days.[4] Students of color; those with children; former foster youth; veterans; students identifying as lesbian, gay, bisexual, transgender, or queer (LGBTQ); and students who are the first in their family to attend college are all at much higher risk of basic needs insecurity (The Hope Center for College, Community, and Justice, 2021). Research consistently shows that basic needs insecurity adversely affects students' overall well-being and their college enrollment, achievement, and completion rates, while also reinforcing the connection between family socioeconomic status and postsecondary outcomes (Goldrick-Rab, 2021; Hallet & Freas, 2018; Haskett et al., 2020; Maroto et al., 2015; Martinez et al., 2018; Phillips et al., 2018; Silva et al., 2017; Trawver et al., 2020; Wolfson et al., 2021).

To support students' postsecondary success, ECMC Foundation launched the Basic Needs Initiative (BNI), funding seven organizations (hereafter, "BNI grantees"; see exhibit 1 below) from 2019 to 2022[5] to address college students' basic needs through direct service, technical assistance, and research. ECMC Foundation also engaged Education Northwest to lead an evaluation of the BNI and facilitate a learning community for grantees.

The first evaluation report (Hodara et al., 2023) drew on qualitative, survey, and Integrated Postsecondary Education Data System (IPEDS) data to provide examples of basic needs services at postsecondary institutions working with BNI grantees and lessons for sustaining the work to support postsecondary student success. The evaluation team also developed a rubric that any college can use to assess their progress in implementing basic needs services. The publicly available evaluation reports, case studies of basic needs services, and rubric are available here.

[4] The authors obtained estimates of food and housing insecurity from the 2020 National Postsecondary Student Aid Study (NPSAS), a nationally representative survey of all students enrolled in postsecondary education in the United States.

[5] Some grantee projects concluded in 2023. Due in part to the pandemic, many projects experienced delays.

In this final evaluation report, we focus on measuring the extent to which students used basic needs services at select institutions in the 2020–21 and 2021–22 academic years and the impact of using services on students' short-term academic outcomes, including enrollment intensity (credits attempted), credits earned, and grade point average, and fall to winter/spring retention. We partnered with four BNI grantees on this report—Arkansas Community Colleges, Auburn University's Hunger Solutions Institute, John Burton Advocates for Youth, and United Way of King County—to access student-level data on the use of basic needs services, student demographics, and academic outcomes from 20 postsecondary institutions in Arkansas, Alabama, California, and Washington. We also drew on the findings from the 2022 report to support the final recommendations.

During the two-year period covered in this study, the grantees and postsecondary institutions were dealing with the impacts of the global COVID-19 pandemic, which included a shift to online instruction and large enrollment declines. These impacts will be discussed throughout the report.

This report has three key **findings** with implications for practice:

- **Collecting data on students' use of basic needs services and linking it to student demographic and outcome data was a new activity for many of the institutions included in this report, and the basic needs services data had several limitations.** Our experience provides lessons for how to improve the collection of basic needs services data and their linkage to demographic and outcome data.

Exhibit 1. ECMC Foundation Basic Needs Initiative grantees

Arkansas Community Colleges worked with four community colleges to increase student enrollment in the Supplemental Nutrition Assistance Program (SNAP) and SNAP Employment and Training benefits.

Auburn University's Hunger Solutions Institute focused on building capacity across a coalition of 10 universities in Alabama to systematically address food and nutrition insecurity.

Ithaka S+R developed research products, including an interactive resource providing guidance on basic needs data collection.

John Burton Advocates for Youth worked with the California Community College and California State University systems to implement rapid rehousing programs, helped seven community colleges establish or expand basic needs centers, and sponsored an effort to obtain state funding to support basic needs centers at all community colleges.

Michigan Community College Association focused on building the capacity of 25 community colleges to understand students' basic needs, scale the support services they provide, increase student access to MI Bridges (an online portal through which individuals can apply for public benefits), and share best practices statewide.

University of Tennessee, Knoxville, in partnership with the **University of Texas at San Antonio,** focused on building capacity among Hispanic-Serving Institutions in Texas to develop and evaluate basic needs services.

United Way of King County implemented on-campus benefits hubs that provided food, housing, and financial supports to students across 10 postsecondary institutions in Washington state.

See appendix A of Hodara et al. (2023) for more information about these grantees.

- **Very few students in our sample used basic needs services, suggesting a large gap between students' reported needs and their access to services.** In our sample, only 1 percent of all enrolled students accessed food assistance in 2020–21 and 2 percent accessed food assistance in 2021–22. However, nationally, in 2020, 23 percent of undergraduates reported experiencing food insecurity in the last 30 days. We discuss potential reasons for this gap, including a lack of data collection on the use of basic need services and challenges with connecting students to those services.
- **Access to basic needs services had a positive impact on the number of credits students attempted and earned and was positively related with retention.** Overall, students who accessed any type of basic needs service attempted and earned an additional 0.75 and 0.74 credits, respectively, in the same term. Students who accessed food assistance in the fall term were 6 to 13 percentage points more likely to return to the winter/spring term than observationally similar students who did not access food assistance.

In the following sections, we first describe the report data and methods, including the limitations of the basic need services data. Next, we present findings on the extent to which students accessed services and the types of basic needs services they accessed in the 2020–21 and 2021–22 academic years, the average rates at which student groups accessed basic needs services, and the average number of services students accessed. Third, we present findings on the impact of accessing services on student academic outcomes. This report concludes with recommendations and next steps.

Accessing data to study basic needs services use and impact

Report data

To conduct this study, over the course of three years (2020 through 2023), we worked with four BNI grantees, their partner institutions, and external partners to access two years (2020–21 and 2021–22) of student-level data documenting students' use or receipt of basic needs services and administrative data on student demographics and academic outcomes. We executed data-sharing agreements with seven postsecondary institutions, one state education agency that provided data for nine institutions (Washington State Board of Community and Technical Colleges [SBCTC]), one BNI grantee (United Way of King County [UWKC]), and one BNI grantee external evaluator (DVP-Praxis) that provided data for four institutions. Each entity provided anonymized student-level data on use of basic needs services, which came from a variety of sources (table 1) and/or student-level demographic and academic course data.

Table 1. Description of basic needs service data

State	Institutions that shared data	Basic needs services data
Alabama	1 public university	Student use of the **food pantry** by term.
Arkansas	4 community colleges	Student use of **food pantries,** which were transforming into Hubs, with their date(s) of service.
California	5 community colleges	Student receipt of services from **basic needs centers,** with the date of receipt. Most basic needs services are captured in this data (see exhibit 2 and Data limitations below).
Washington	9 community colleges 1 public university	Student receipt of services from **Benefits Hubs,** with the quarter of receipt and count of services received for that quarter. Most basic needs services are captured in this data (see exhibit 2 and Data limitations below).

In all states except Washington, the food pantry or basic needs center staff members shared their service use/receipt data with the institutional research office. The institutional research office then shared the service use/receipt data and student-level administrative demographic and academic outcome data. In Alabama and California, the complete data came directly from the institutional research office. In Arkansas, the complete data came from DVP-Praxis, which had the data for the purposes of their study of Arkansas Community Colleges' work (Valentine & Deal, 2023). This reduced the burden on the four Arkansas community colleges. In Washington, the basic needs services data came from UWKC, a BNI grantee that helps Washington colleges and universities run the Benefits Hubs and collects data on

student request for and receipt of services. For the community colleges, the SBCTC provided student-level demographic and outcome data. The university provided a linked dataset including demographic and outcome data for their institution, as well as data from UWKC. A detailed description of the data collection process and data collected is included in appendix A.

A note on postsecondary institution privacy

Following our data-sharing agreements, we do not name the institutions in this study. We present all findings in aggregate. Our study provides a snapshot of basic needs services use and impact at select colleges and universities that were actively working toward improving basic need services, supported by ECMC Foundation BNI grantees. We account for institutional and state contexts in our regression models, and all institutions in this study received their own data on their students' basic need services use and outcomes.

Data limitations

There are three main limitations of these data. First, while we have complete data on food assistance, we have incomplete data on the other basic needs services. In addition to food assistance, we also have data on emergency funds; housing assistance; and health care, mental health, and personal care assistance for institutions in California and Washington. Additionally in California (but not in Washington), we have data on access to technology, transportation assistance, and child care assistance, and in Washington (but not in California), we also have data on financial planning, employment support, or legal assistance (see exhibit 2). However,

Exhibit 2. Categorization of basic needs services provided by institutions sharing data

Food assistance includes student access to campus food pantries (and in some cases, items received), meal vouchers, financial support to purchase food (i.e., gift cards), and food delivered via Door Dash.

Emergency funds includes emergency financial assistance/grants and gift cards provided to students without an explicitly stated use (e.g., student receipt of a gift card to purchase food is classified as food assistance and not emergency funds). Our data do not indicate the funding source for emergency funds (i.e., whether they were supported by Higher Education Emergency Relief Fund [HEERF] dollars or other resources) and likely do not capture all emergency funding administered under HEERF.

Housing assistance includes ongoing and one-time financial support to pay rent and utility bills, hotel/motel vouchers, help applying for Section 8 housing assistance or other subsidized housing, and off-campus moving assistance/furnishing.

Financial planning, employment support, or legal assistance

Access to technology includes financial support to pay internet bills, use of a Wi-Fi hotspot, use of a laptop/tablet, and financial support to purchase required course supplies (e.g., art supplies, books, pens).

Transportation assistance includes financial support to pay for gas and car repairs.

Health care, mental health, and personal care assistance includes mental health services or referrals, physical health services or referrals, and receipt of hygiene supplies (e.g., towels, toilet paper, toothbrush, deodorant, shampoo, gift cards for hygiene items) from a campus basic needs center.

Child care assistance includes financial support to pay for child care services and other related expenses (e.g., diapers).

in Alabama and Arkansas, we only have data on the receipt of food. In Arkansas receipt of food also means the student was offered other services and may have applied for SNAP, but in this study we only measure use or receipt of services, not connections to services, and we do not have data on application for public benefits. Students at institutions in Alabama and Arkansas may have used other services, but these data were not recorded. As a result, use of other services beyond food assistance are underreported in this study.

Second, not all the records on students' use or receipt of basic needs services matched to demographic and academic outcome data, as these data were obtained from different systems or offices. In the cases of all Auburn and California institutions, as well as the Washington community colleges, we received separate data files for demographic, academic, and basic needs services. We matched basic needs services data to demographic data using IDs self-reported by students when they accessed basic needs services.

Across these seven data providers, we were unable to match 28 percent of basic needs services records. We do not know if these students were not enrolled during the study period or were enrolled and provided a mismatched ID. We also do not know the extent of this issue across the Arkansas colleges or the Washington public university, as we received matched data files from these providers. We later report that 4,702 students (1.79%) accessed any services in 2020–21 and 7,876 students (3.61%) accessed any services in 2021–22. If everyone who accessed services and was not matched was included in these statistics, we would find that 6,019 students (2.29%) accessed any services in 2020–21 and 10,081 (4.62%) students accessed any services in 2021–22.[6]

Third, data reporting across all services likely improved from 2020–21 to 2021–22. In 2020–21, many of the institutions were setting up basic needs centers or hubs for the first time with the support of the BNI grantee. Along with setting up these centers or hubs, they were tracking data on use of services for the first time. Basic needs center staff members were also stretched thin because they were dealing with the impacts of the pandemic, which resulted in increased student need, additional challenges related to connecting with students in an online environment, and an influx of federal emergency funding[7] they needed to disburse to students for basic needs services (Hodara et al., 2023).

[6] These should be considered upper-bound estimates. It is entirely possible that some students who did not match are already represented in the data because they provided an incorrect ID during at least one encounter with the food pantry or basic needs center.

[7] Emergency funding was uniquely common in 2020–21 and 2021–22 because of the pandemic. Congress passed the Coronavirus Aid, Relief, and Economic Security Act in March 2020. The act included approximately $14 billion for the Office of Postsecondary Education to administer the Higher Education Emergency Relief Fund (HEERF). More funding followed in December 2020 with HEERF II and through the American Rescue Plan in March 2021 with HEERF III. Postsecondary institutions had to use part of their HEERF funding to address students' basic needs insecurity, including providing students emergency financial aid for non-academic needs. All information from the U.S. Department of Education website: https://www2.ed.gov/about/offices/list/ope/caresact.html

At many institutions in this study, basic needs services use data were manually entered into Excel documents, Google forms, or Word documents, and it was also the first time they were sharing these data with their institutional research office for the purposes of this study (and in Arkansas, for the DVP-Praxis evaluation). As a result of the newness of this data collection activity and challenges associated with the pandemic, data may not be as complete in 2020–21 as in 2021–22.

These data limitations are not unique to this study and the data we collected. We validated our findings with data on basic needs services use collected from these same colleges by other external entities and found the same basic needs service utilization rates. This points to opportunities to improve administrative data collection of basic needs services usage data, which we discuss in the recommendations.

Report methods

We use descriptive and regression approaches to examine student access to basic needs services and the impact of access on short-term outcomes. Our data and methodological approaches are distinct from prior research on the impact of basic needs service, which take place at a single institution and/or focus on an individual basic needs intervention (e.g., Broton et al., 2023; Clay & Valentine, 2021; Goldrick-Rab et al., 2021a). The contribution of this study is that we examine access to and the impact of basic needs services among all students across 20 institutions in four different states implementing traditional campus-based basic needs services, rather than studying the impact of a specific program or intervention on the outcomes of a specific group of students at a single institution.

Descriptive methods

- We calculate descriptive statistics on the number and percentage of students who used basic needs services across the sample and the count of services used by students who accessed any services.
- Descriptive data are presented separately for the 2020–21 and 2021–22 academic years because of the data limitations described above and because students had very different learning experiences in these two years due to the COVID-19 pandemic.
- See appendix B for more information on the descriptive approach and detailed results.

Regression methods

- We examine the impact of accessing basic needs services on credits attempted, credits earned, and grade-point average (GPA) and the relationship between accessing basic needs services in the fall term and returning to the same institution in the winter/spring term.
- The core component of our analytic strategy to study the impact of accessing basic needs services is a regression framework with individual fixed effects. This approach allows us to make "within-student" comparisons, where each student serves as their own control. Our retention analysis does

not allow for the use of individual fixed effects due to limitations that stem from the number of possible observations per individual and the nature of the outcome.

- See appendices C and D for more information on the impact and retention analyses.

Survey and qualitative data

- The recommendations in the final section of this report also draw on survey and qualitative data collected by the evaluation team in spring 2022 (see Hodara et al., 2023, for more details).
- We administered a survey to the BNI grantee partner institutions to learn about basic needs services implementation on each campus. In this report, we present responses to relevant close-ended questions from the full sample of survey respondents and the sample of 20 institutions in this study.
- To learn more about basic needs services implementation, we conducted virtual site visits with five institutions partnering with the BNI grantees. We interviewed administrators and staff members who worked on basic needs services and students who accessed those services. Two of the institutions in this study who provided student-level data participated in these virtual site visits. We provide select findings from the site visits as further support for the recommendations.

Description of study sample

The study sample includes 20 institutions and more than 262,000 students in 2020–21 and 218,000 students in 2021–22. Large enrollment declines during this period were common across the country (Berg et al., 2023).[8] More than two-thirds of the sample were students of color, and 45 percent of the institutions had federal designation as minority-serving. About half of the institutions were in cities and a quarter were in suburbs. Most of the institutions were community colleges.

Compared to all degree-granting institutions, the institutions in this study enroll a larger share of students who identify as Asian, Hispanic/Latino, and Two or More Races, are far more likely to have a federal designation as minority-serving, are more often two-year institutions, and are disproportionately urban and much less likely to be in a town or rural area (table 2; see appendix tables B1 and B2 for more detail).

This has many implications. For example, rates of basic needs insecurity are much higher for students of color. As a result, while we might assess service utilization against a baseline of 23 percent of undergraduates who report food insecurity in the 2020 NPSAS, the real rate of food insecurity in our sample of institutions may be higher (Goldrick-Rab, 2023).

[8] National Student Clearinghouse found an average 10 percent decline in enrollment from 2020–21 to 2021–22 among public two-year institutions (Berg et al., 2023). Enrollment declines during this period varied greatly by state. For example, Washington had a 15 percent enrollment decline while Arkansas had a 3 percent decline. Across our sample of 20 institutions, we found a 17 percent decline. Our institutional sample is not representative of institutions nationally, and these institutions may have experienced larger declines on average than the national or state average.

Table 2. Characteristics of postsecondary institutions in study sample and across the country, 2021–22

	All degree-granting institutions (n = 3,738)	All public two-year degree-granting institutions (n = 978)	All institutions that provided student data (n = 20)
12-month total undergraduate enrollment	20,083,996	8,715,436	218,051
Percentage of students in cohort who identify as:			
American Indian/Alaska Native	0.7%	0.7%	0.4%
Asian	6.7%	6.4%	18.3%
Black or African American	12.4%	12.6%	8.2%
Hispanic/Latino	21.4%	26.3%	26.1%
Native Hawaiian/Pacific Islander	0.3%	0.4%	0.4%
International	2.7%	1.3%	0.7%
Two or More Races	4.0%	4.0%	7.6%
Unknown	4.9%	4.4%	4.7%
White	46.7%	43.9%	33.5%
Percentage of students who received Pell grants	31.7%	28.9%	20.6%
Percentage of institutions with any MSI designation	19.1%	28.5%	45.0%
Asian American and Native American Pacific-Islander-Serving Institution	5.0%	8.5%	40.0%
Historically Black College or University	2.7%	1.0%	0.0%
Hispanic-Serving Institution	13.5%	24.0%	25.0%
Tribal College or University	0.9%	0.0%	0.0%
Percentage of institutions by geographic locale			
City	48.0%	32.1%	55.0%
Suburb	24.4%	21.2%	25.0%
Town	17.0%	24.2%	5.0%
Rural	10.4%	22.2%	15.0%

	All degree-granting institutions (n = 3,738)	All public two-year degree-granting institutions (n = 978)	All institutions that provided student data (n = 20)
Percentage of institutions by Carnegie classification			
Associate's colleges	31.6%	100.0%	90.0%
Baccalaureate colleges	13.5%	0.0%	0.0%
Master's colleges and universities	19.1%	0.0%	5.0%
Doctoral universities	8.6%	0.0%	5.0%
Special focus institutions	26.2%	0.0%	0.0%
Tribal colleges and universities	0.9%	0.0%	0.0%

MSI = Minority-serving institution.

Note: Pell grant data from IPEDS (samples = "All degree-granting institutions" and "All public two-year degree-granting institutions") are from the 2020–21 academic year. Pell grant data from IPEDS for the 2021–22 academic year were not available at the time of the study.

Source: Authors' analysis of data from the 20 institutions in this study and IPEDS.

Use of basic needs services

In this section we provide overall percentages of students who used any type of basic needs service. We also focus on the percentages of students who received food assistance, specifically, because we have complete data on food assistance from all 20 institutions. We explore the potential gap between student need, based on NPSAS data, and resource use overall and by race/ethnicity. We then present data on the types of services used and among students who accessed services, the average number of services accessed. Select findings are presented in this section, and complete results are available in appendix B.

Student use of basic needs services

Student use of basic needs services is low and does not match the level of need

Across our sample, we find that:

- 1.8 percent of all enrolled students accessed **any type of services** in 2020–21
- 3.6 percent of all enrolled students accessed **any type of services** in 2021–22
- 1.2 percent of all enrolled students accessed **food assistance** in 2020–21
- 2.3 percent of all enrolled students accessed **food assistance** in 2021–22

Our data suggest an enormous gap between the percentage of students who have basic needs, as documented by NPSAS (23% of undergraduate students attending community colleges[9] reported food insecurity in 2020) and the percentage of students accessing services at the institutions that provided data to us (1% accessed food assistance in 2020–21).[10] These gaps could be due to the data limitations described earlier in the data and methods section. Specifically, we only have complete data on food assistance, so the percentage of students accessing "any type of services" could be lower than the actual percentage. Second, we encountered some challenges linking student demographic and academic outcome data to basic needs data. And third, tracking data on services was a new activity for institutions in 2020–21, so the percentages in 2020–21 could be underreported for all services, and the 2021–22 data could be a better reflection of the percentage of students who received services. In the recommendations section, we discuss strategies to improve data capacity and measurement of basic needs services use and impact.

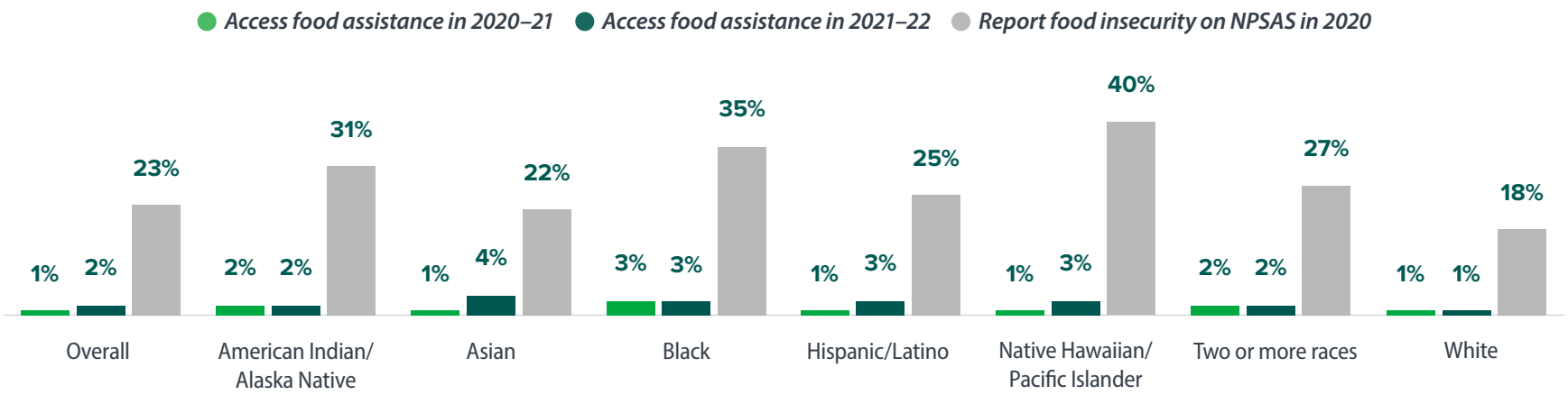
[9] Because 90 percent of institutions in our sample are community colleges, we restrict our NPSAS comparisons to undergraduate students enrolled in community colleges.

[10] While NPSAS also includes data on students who are experiencing homelessness, we focus our comparison on food insecurity since all institutions included in our study provided data on access to food assistance, whereas just the California and Washington colleges and universities provided data on housing assistance.

These gaps could also be due to actual low levels of use of basic needs services among students. If need in our sample mirrored the estimates from NPSAS and all students who had need accessed services, then 50,172 students in 2021–22 would have accessed food assistance. Instead, we see that 4,986 students accessed food services in 2021–22. Underreporting on use cannot explain a gap this large. In the recommendations section, we discuss strategies to increase use of services among students.

Further, we find that gaps in need versus resource use are largest for students who are from underrepresented minority groups. Based on NPSAS, the percentage of students reporting food insecurity was much higher for students who identify as Native Hawaiian/Pacific Islander (40%), Black (35%), and American Indian/Alaska Native (31%). When compared to students who accessed food assistance at the institutions providing us with data, the gaps between estimated need and access are largest for these same groups of students (figure 1).

Figure 1. Gaps between student access to food assistance and students who report food insecurity are especially large for students identifying as American Indian/Alaska Native, Black, and Native Hawaiian/Pacific Islander



Note: Estimates of food insecurity were obtained from the 2020 National Postsecondary Student Aid Study (NPSAS), a nationally representative survey of all students enrolled in postsecondary education in the United States. The NPSAS values reported here reflect all undergraduate students attending community colleges in 2020.

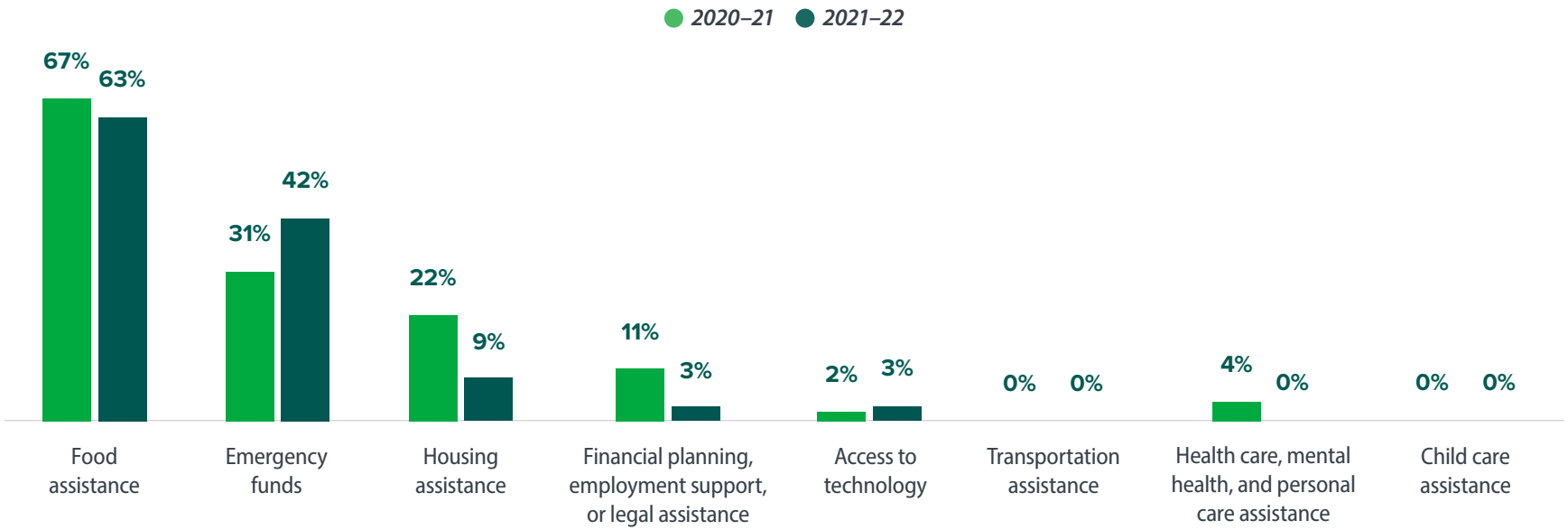
Source: Authors' analysis of data from the 20 institutions in this study and the U.S. Department of Education, National Center for Education Statistics, National Postsecondary Student Aid Study: 2020 Undergraduate Students (NPSAS:UG).

Other research on basic needs services uses. Most research on students' use of basic needs services draws on student survey data, rather than administrative records, so it is difficult to make comparisons between our findings and prior research. For example, in California, a 2023 survey found that 59 percent of community college students who responded to the survey reported using a campus food pantry (The RP Group, 2023). In Washington, a 2022 survey found that about half of responding students at 39 state colleges and universities reported food and/or housing insecurity, and among the students indicating basic needs insecurity, half accessed public resources and a third accessed campus resources (Washington Student Achievement Council, 2023). This means that about 17 percent of the sample reported accessing campus resources. However, internal administrative data from the institutions in our study show percentages of students accessing food support and other basic needs services that are comparable to our findings. Further, researchers at DVP-PRAXIS conducted an external evaluation of efforts to connect students with basic needs supports through campus hubs at four community colleges in Arkansas (part of Arkansas Community Colleges, one of the seven BNI grantees) and found that 4.4 percent of students enrolled in these colleges accessed the food pantry during the 2020–21 and 2021–22 academic years (Valentine & Deal, 2023).

Diverse groups of students use food assistance and other basic needs services

A total of 4,702 students in 2020–21 and 7,876 students in 2021–22 accessed any basic needs services. Across both years, a majority of these students accessed food assistance (67% in 2020 and 63% in 2021), followed by emergency funds (31% in 2020 and 42% in 2021) and housing assistance (22% in 2020 and 9% in 2021). (See figure 2 and appendix table B3 for more detail. See exhibit 2 in the previous section for information on how we categorized individual services.)

Figure 2. Among students who accessed basic needs services in 2020–21 and 2021–22, more than half accessed food assistance



Note: The sum of individual categories can exceed 100 percent as students may access more than one service type per year. The 0 percent values are all greater than 0 but show as 0 due to rounding. See appendix table B3 for details.

Source: Authors' analysis of data from the 20 institutions in this study.

Among students who accessed any type of services, we find that 533 students (11% of all students who accessed services) in 2020–21 and 1,103 students (14% of all students who accessed services) in 2021–22 ever did so during a term in which they were **not enrolled** (see appendix table B4). These students were all enrolled in coursework at some point during the academic year and may have accessed services during those terms as well. This finding points to the importance of basic needs services to support students who are not currently enrolled but continue to be a part of the campus community. Future research could explore these questions of access and enrollment in more depth. For example, which students are most likely to access services while not enrolled, and does accessing services while not enrolled increase the likelihood of re-enrollment?

We also find that 114 students in 2020–21 and 153 students in 2021–22 who accessed any type of services were **concurrently enrolled in high school** (see appendix table B4). While a small share of the total population of students who access services—and the total population of students concurrently enrolled in high school included in our study—it is notable that high school students are connecting with basic needs services on

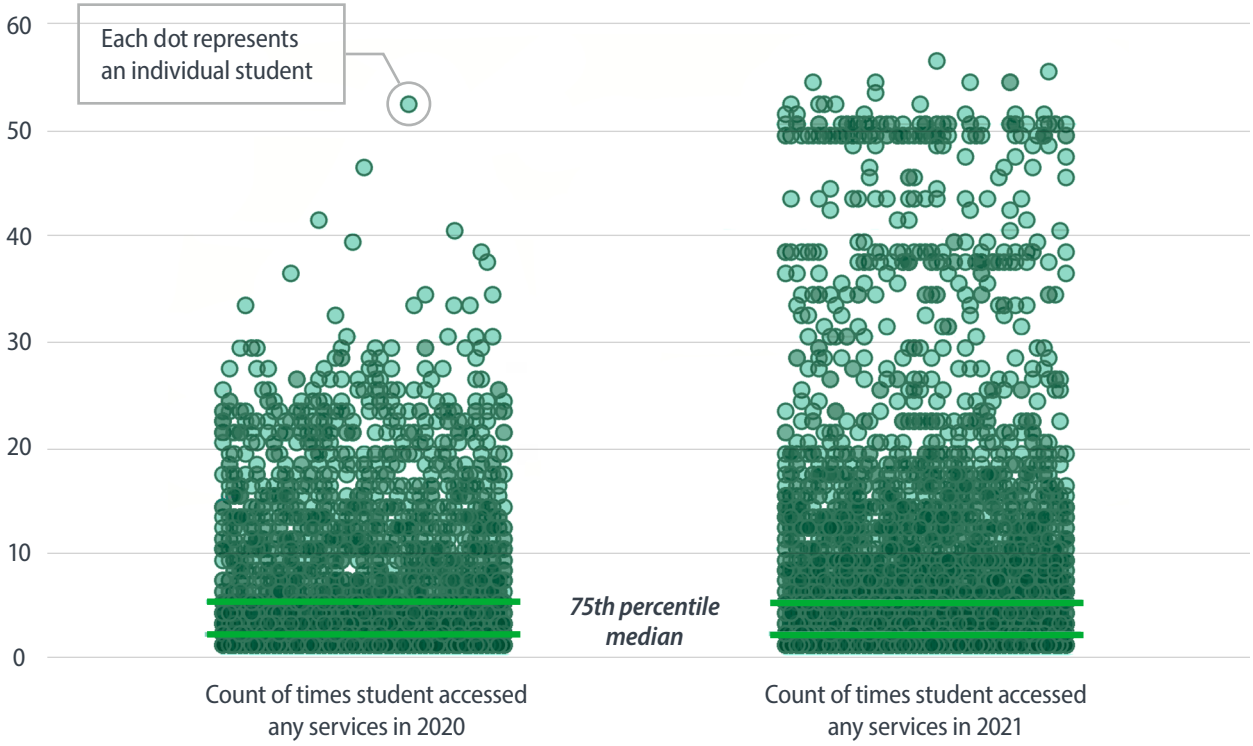
their college campuses. It is possible that these students miss out on receiving benefits for which they are eligible at their high school (e.g., free or reduced-price meals) while they are taking coursework in person on a college campus. Or students may be accessing benefits that are not available to them through their high school. These details were not available to us in this study, and it is a topic that deserves further attention in future work.

Usage among students who accessed any services

Most students who accessed basic needs services did so only a few times during the academic year

In both years, half of all students who accessed any services did so a total of one to two times, and just one in four students who accessed services did so five times or more during the academic year. Most students who accessed services did so fewer than 10 times during the academic year (figure 3, appendix table B5). Usage is slightly higher for older students and students who identify as American Indian/Alaska Native, Black, Native Hawaiian/Pacific Islander, and two or more races (appendix table B5).

Figure 3. The majority of students who access services only do so one to two times per year



Note: Each dot represents the total number of times an individual student accessed any type of basic needs services during the 2020–21 or 2021–22 academic years. See appendix table B5 for details.

Source: Authors' analysis of data from the 20 institutions in this study.

Within service types, use rates are highest for food assistance. Half of all students who accessed food assistance did so one to two times during the academic year and only one in four students did so more than seven (2020–21) or eight times (2021–22). The use of other service types is much lower. For all types except food and housing, fewer than one in four students accessed the type more than once in the academic year. One in four students who accessed housing assistance did so more than 2.5 times in the academic year (see appendix table B6).

So, in addition to a large gap between estimated need and access, students who do access services generally do so at very low levels. This finding could suggest that students' needs are being met after accessing resources just once or twice, that students are reluctant to continue to access services because they fear doing so will deprive other needier students of services (i.e., an "austerity mindset," Goldrick-Rab, 2021), or that institutions are needing to limit the number of times an individual student accesses services because they have limited resources to distribute. However, to preview our next section's findings, we find evidence that most students would continue to improve their academic outcomes by increasing their use of basic needs services. Efforts to understand and mitigate student and institutional barriers to increased use could further improve student outcomes.

Impact of basic needs services

In this section, we discuss our findings on the impact of accessing basic needs services on three short-term academic outcomes: credits attempted, credits earned, and GPA. We examine both the impact of access on these outcomes in the same term and the impact of access on outcomes in the following term. We also examine the relationship between accessing basic needs services in the fall term and persisting to the winter/spring term at the same institution. To preview, we find that:

- Accessing services has a positive impact on credits attempted and credits earned during the same term.
- Increasing the number of services accessed to five or six times per term continues to produce positive impacts on credits attempted and earned during the same term, but each additional service beyond six produces small negative effects.
- The impact of accessing services on outcomes in the next term is mixed. Accessing housing assistance or emergency funds has a consistently strong impact on credits attempted and earned in the next term. However, accessing food assistance only has a positive impact on next-term outcomes if the student continues to access food assistance.
- Students who access basic needs services in the fall term are generally more likely to return to the winter/spring term than observationally similar students attending the same college who do not access services.

Our positive findings are consistent with prior research that generally finds a positive association between basic needs services and academic outcomes (e.g., Daugherty et al., 2020; Maroto et al., 2015; Silva et al., 2017; Valentine & Deal, 2023). Recent causal studies of the meal voucher program at Bunker Hill Community College, free public transit services at Rio Hondo College, and the basic needs center at Amarillo College also demonstrate the positive impact of basic needs services (Broton et al., 2023; Clay & Valentine, 2021; Goldrick-Rab et al., 2021a).

However, there are also studies that find no evidence of the positive impact of basic needs services. For example, a randomized controlled trial study of food scholarships at Houston Community College found no evidence of impact (Goldrick-Rab et al., 2020). A study of a housing program with Tacoma Community College found positive effects of housing vouchers on health outcomes but no impact on student academic outcomes (Goldrick-Rab et al., 2021b).

The impact of access on outcomes in the same term

Accessing basic needs services has a positive impact on students' academic outcomes in the same term

Students who accessed any type of basic needs service attempted and earned an additional 0.75 and 0.74 credits, respectively, in the same term. The overall impact on GPA was small and not statistically significant. One explanation for this finding is that access to basic needs services, in general, enables students to increase their enrollment intensity and credit accumulation while maintaining academic performance. The link between access and credits attempted is somewhat unclear, as we do not know the exact timing of benefits access within the term. Accessing services after course registration should not influence credits attempted in the term; however, if a student accessed services early in the term, prior to the add/drop deadline, access could impact total credits attempted that term (see appendix table C1 for full results).

We find larger impacts on credits attempted and credits earned for students who access food assistance (+0.99 credits attempted, +1.10 credits earned) or access to technology (+0.94 credits attempted, +0.81 credits earned). We also find that access to housing assistance or financial planning, employment support, or legal assistance increased a student's cumulative term GPA by 0.11 points (appendix table C1).

Among students who received Pell grants, accessing any type of basic needs service had a positive, yet smaller, impact on credits attempted (+0.45) and credits earned (+0.44). Similar to the full sample, access to food assistance had the largest impact on credits attempted (+0.62) and credits earned (+0.87), yet also increased cumulative term GPA by 0.08 points. Access to housing assistance increased cumulative term GPA by 0.13 points (appendix table C2).

Accessing services multiple times per term has a positive impact on credits attempted and earned during the same term

Our findings above show that, on average, accessing services increases credits attempted and credits earned in the same term. These models accounted for the total number of services that a student received in that term to isolate the average impact of accessing services on outcomes. Here, we estimate a series of models that examine how this positive impact varies with the total count of services received in the term.

We find that increasing the total count of all services received has a positive impact on credits attempted and credits earned to a point. For the first five to six services accessed in an individual term, each additional service increased the student's total credits attempted (+0.26) and credits earned (+0.23). Each additional service accessed beyond six produced a slight decrease in credits attempted and earned (-0.02; appendix table C3).

Nearly 50 percent of students who accessed services during a term did so just once, and fewer than 15 percent did so more than six times. This suggests that most students in our analysis who accessed services would have experienced even stronger outcomes by increasing the total number of times they accessed services each term. Even for students who accessed services more than six times per term, the marginal decrease is very small: the estimated increase in credits attempted for a student who accesses services five times is 1.44. It is 1.70 for students who access services six times and finally returns to 1.44 for a student who accesses services 19 times in the term. These findings shouldn't be construed as a rationale to cap the provision of services to students. Rather, they provide strong evidence that for many students, increasing the number of services accessed could have further positive impacts on credits attempted and earned.

The impact of access on outcomes in the next term

Accessing housing assistance or emergency funds has a positive impact on academic outcomes in the next term

Next, we estimate a series of regression models to examine how access to services in one term impacts a student's outcomes in the next term in which they are enrolled. Our sample for this analysis included all students who had at least two terms of enrollment during the 2020–21 and 2021–22 academic years (see appendix B for details).

Overall, we find that accessing any **type of service** produces a null impact on credits attempted, credits earned, and term GPA in the next term. However, students who access any services in both terms have higher credits attempted and credits earned in the next term than students who do not access services in either term (see appendix table C4 for full results).

We find mixed evidence across individual service types:

- Accessing **housing assistance** or **emergency funds** has the strongest positive impact on credits attempted (+0.80, +0.74, respectively) and credits earned (+0.71 and +0.66, respectively) in the following term. For both service types, accessing the service has a positive impact on the next term's outcomes, regardless of whether the student accesses the same type of service (or any type) in the following term.
- Accessing **financial planning, employment support, or legal assistance** has a positive impact on credits attempted, credits earned, and cumulative term GPA in the next term. The positive impact on credits attempted and earned is eliminated if the student accesses financial planning assistance in both terms; however, the impact on term GPA is unchanged and remains positive (+0.17).
- Accessing **food assistance** has a negative impact on credits attempted and credits earned in the next term; however, these negative effects are overcome if the student accesses food assistance in both terms. A student who accesses food assistance in both terms attempts and earns more credits in the next term than a student who does not access food services in both terms.

- Findings for access to **health care, mental health, and personal care assistance** and **technology** are null or inconclusive, which could be due in part to the low number of students accessing these services (see appendix table B3). We do not estimate results for **child care assistance** or **transportation assistance** due to an insufficient number of observations.

To contextualize these results, we turn to Weiss and colleagues (2023), who analyzed effect sizes from well-executed RCTs across 39 community colleges. The interventions in their analysis produced a mean effect of 0.31 credits attempted and 0.48 credits earned in the semester following random assignment. Our estimated impacts of housing assistance and emergency funds on credits attempted and earned in the next term are large and fall between the 79th and 87th percentiles of the distributions reported by Weiss and colleagues.

Accessing basic needs services in the fall term generally has a positive relationship with retention to the winter/spring term

Finally, we estimate a series of models to examine the relationship between students' access to basic needs services in the fall term and their retention to the next term offered at their college (winter or spring). Our sample for this analysis included all students who were enrolled in either the fall 2020 or fall 2021 terms (see appendix D for details; see appendix table D1 for full results).

We find that students who access **food assistance** in the fall term are 6 to 13 percentage points more likely to return to the winter/spring term than observationally similar students who do not access food assistance. This finding holds across samples (all students enrolled in the fall and first-time students enrolled in the fall) and for the fall 2020 and fall 2021 terms.

We also find that students who access **health care, mental health, and personal care assistance; housing assistance; transportation assistance;** or **financial planning, employment support, or legal assistance** are 7 to 23 percentage points more likely to return than observationally similar students who do not access these services.

The relationship between access to **emergency funds** and retention is more varied. We observe a positive relationship for students who accessed emergency funds in fall 2020 and a negative relationship for students who accessed emergency funds in fall 2021 (the pooled result is not statistically significant, though slightly negative).

The change in the relationship between fall 2020 and fall 2021 could be due to differences that cannot be explained by our models, such as differences in the student populations that received emergency funds. Over this period, the number of students who received emergency funds increased from 602 (fall 2020) to 1,758 (fall 2021). If institutions targeted funds toward students who were already at risk of dropping out (for reasons unobservable in our data), then we might expect to find a negative relationship between access to emergency funds and retention that is not necessarily indicative of the true effect.

Recommendations and next steps

This study highlights both the current limitations of administrative data on basic needs services usage and its value in uncovering which students access services among the total student population (even among students not enrolled in a term and high school students) and the connection between accessing services and outcomes. Further efforts are needed to improve data capacity so that postsecondary institutions and systems can use data to improve the reach and effectiveness of services. We provide three recommendations based on evaluation findings.

Develop integrated data systems to improve the quality of services

The gaps we observe between estimated basic needs insecurity and student access to basic needs resources can be partially attributed to the limitations of existing data systems. Across the sample of all institutions partnering with the ECMC Foundation BNI grantees, low data capacity was a common theme. On the spring 2022 evaluation survey, only 14 percent of institutions (equivalent to 7 institutions out of 57) reported that they were at full implementation for collecting and using in-depth student data and demographics (see figure 2 in Hodara et al., 2023). Among the sample of 20 institutions in this study, in spring 2022, only 2 reported that they were at full implementation for collecting and using in-depth student data and demographics; the remaining institutions indicated they were at early or pre-implementation of collecting and using data. Similarly, when asked about challenges the colleges were facing related to basic needs service implementation, only 3 institutions out of the 20 in this study indicated that evaluating basic needs services was not a challenge: the remaining rated evaluation as a small, moderate, or large challenge.

To better measure the effectiveness of basic needs services in addressing student need and improving student outcomes, postsecondary institutions and systems need standard practices to guide data collection on basic needs service usage at the institutional level. Extant systems are not meeting the needs of practitioners, and some approaches to data collection may hinder student access to and comfort with services. For example, it may not be necessary to record every type of item students access from a food pantry or basic needs center. Standardizing data collection practices could provide guidance to staff members about which data elements on service use or receipt should be collected and recorded.

Postsecondary institutions and postsecondary systems also need integrated data systems that are designed with a human-centered process, developed to integrate with student information systems, and available for low or no cost to institutions. These systems should always include students' college ID so that basic needs services usage data can be connected to data on students' basic needs insecurity, demographics, and outcomes. As noted in the data limitation section, some students self reported their

IDs, which led to issues connecting basic needs services usage data with demographic and academic outcome data. To facilitate linking or matching data, we recommend institutions and systems implement electronic intake systems that automatically verify student IDs as they are entered. One drawback is that this system will not be able to capture service usage among students who do not have an active ID because they have stopped out and are not enrolled that term.

At minimum, integrated data systems need to facilitate the capture of students' need for services (typically from a survey), their use or receipt of services (typically from a basic needs center or hub), and student demographic and academic outcomes (from the student information system). These systems can then be used to understand the extent to which students with need are accessing services, where the gaps are, whether access is equitable across students from different backgrounds, and whether services are effective at improving students' academic outcomes.

Increase use of services through a student-centered approach

The low percentage of students accessing services also suggests challenges with connecting students to basic needs services. On the spring 2022 evaluation survey that we administered to institutions partnering with the ECMC Foundation BNI grantees, more than half of the institutions reported significant challenges with connecting students to services (see table B13 in Hodara et al., 2023). Among the 20 institutions in this study, all indicated that connecting students to services was a challenge. Limited staff capacity to implement basic needs services was an even more common challenge among the institutions partnering with the ECMC BNI grantees: Seventy-four percent of institutions reported that staffing services was a moderate or large challenge (see table B13 in Hodara et al., 2023). Among the 20 institutions in this study, all but one indicated staffing services was a challenge.[11]

Further, we find that among students who accessed services, the vast majority only did so once or twice each year. These low usage levels may be tied, in part, to students' cautiousness with accessing services. For our first evaluation report (Hodara et al., 2023), we profiled five institutions, two of which are also in this study, using more in-depth interview data. At all five institutions, students who accessed basic needs services described stigma, anxiety, stress, and uncertainty associated with doing so. Some students had negative prior experiences with accessing public benefits and resources, which made them anxious about accessing basic needs services from their college.

[11] The period of the data in this study represents a particularly challenging time for institutions dealing with the impacts of the pandemic and pandemic recovery. For example, in 2020–21, students were not typically on campus and institutions had to connect with students remotely. In both years of this study, staff members were tasked with distributing federal funding for basic needs to students and thus may have been stretched thin. Thus, challenges with connecting students to services and staffing services may have been more pronounced in spring 2022 than they are now.

To increase students' use of services, colleges should adopt student-centered approaches that integrate basic needs services into other campus services (e.g., financial aid and student services) and normalize their use. Among the institutions that partnered with the ECMC Foundation BNI grantees, normalizing use meant that students, faculty members, and staff members were involved in communication efforts about basic needs services and that services were broadly marketed on the syllabi, learning management system, website, and social media and by word of mouth. For example, at one college that participated in a virtual site visit in spring 2022 and is also included in this study, staff members at the basic needs center partnered with faculty members to include language and links to basic needs resources on course syllabi and the campuses learning management system. One staff member commented on the success of this approach:

> *"I think the most successful strategy has been to create an identity within the campus of our center [and] really be a part of the ecosystem of the school. And sometimes people will send someone our way. They'll come to our building and they'll just say, 'Oh, somebody just said I should come here.' That's music to my ears. They don't need to know every event we have, all the pilots we have going on, what our hours are for this or that. But if people just know that they can send people our way and that we'll help them with four out of five things or whatever, then that's fine because you see a lot of students bringing other students."*
>
> **– Basic needs center staff member**

Second, new data systems and practices should be implemented along with professional learning opportunities to develop staff capacity to collect and interpret data on basic needs insecurity and use of services. Better systems to collect these data, as well as training to support data collection and interpretation, will allow staff members to more effectively identify and support students with needs. Basic needs staff members also require sufficient time and resources to design and implement effective outreach strategies, answer students' questions and concerns, and meet demand, particularly as outreach increases the number of students seeking help.

Measure the effectiveness of services using integrated data systems

This study reveals promising findings on the impact of basic needs services, but we only collected two years of data from the institutions themselves and thus are limited to studying short-term academic course and retention outcomes. More research or evaluation is needed on the long-term benefits of addressing college students' basic needs insecurity and benefits beyond academic outcomes.

Institutions should enhance integrated data systems to connect data on basic needs service use to academic outcomes and measures beyond academic outcomes. Looking beyond educational outcomes can capture the extent to which basic needs services improve students' financial stability, physical

health, mental health, and well-being. Identifying any positive effects on students' health and well-being is critical since we know basic needs insecurity can have negative impacts on students' mental health (Haskett et al., 2020) and psychological well-being (Martinez et al., 2020). A robust data system should allow institutions and systems to develop and test a theory of change for basic needs services that includes measures beyond traditional educational outcomes.

Using integrated state- or system-level data systems is also an important next step for studying basic needs services effectiveness for three main reasons. First, state or system-level data allow for a more complete picture of the impact of basic needs services on student persistence; if students leave an institution, state or system level data can be used to determine if they stopped out or if they transferred to another institution. (The most accurate measure of persistence comes from the National Student Clearinghouse, which collects enrollment and completion data from most postsecondary institutions in the country.)

Second, with the right processes and agreements in place, state postsecondary data can be connected to state data on students' use of publicly funded health, housing, and human services to better understand the extent to which college students' access publicly funded basic needs services and the effectiveness of publicly funded basic needs services on outcomes. Third, state postsecondary data can be connected to state labor data to understand the effect of accessing basic needs services during college on workforce outcomes.

Finally, for any causal or impact research, it is important to implement evaluations with appropriate comparison groups so that researchers can disentangle the effects of the services themselves from any utilization challenges and biases that may influence whether students receive services.

Conclusion

There are many lessons learned from our collaboration with ECMC Foundation BNI grantees and the institutions and partners who shared administrative data on students' use of services and demographic and outcome data. While we find that only a small percentage of students accessed basic needs services, doing so had a large impact on their short-term academic outcomes and a positive relationship with retention. These positive findings provide further motivation for increasing use of services so that more students benefit. Postsecondary institutions and their external partners should make providing basic needs services a key component of their efforts to improve student success. Improving student access to basic needs services and building capacity to collect and use data on student use of services and their subsequent outcomes can provide key data to effectively target and support students with basic needs insecurity and capture the full impact of basic needs supports for students and institution.

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Appendix A. Data collection

Over the course of three years (2020 through 2023), we worked with four BNI grantees, their partner institutions, and external partners to access student-level data documenting students' use or receipt of basic needs services and administrative data on student demographics and academic outcomes. We executed data-sharing agreements with seven postsecondary institutions, one state education agency that provided data for nine institutions, one BNI grantee, and one BNI grantee external evaluator that provided data for four institutions. The data-sharing agreement process began in early 2020, and all agreements were fully executed by summer 2023. Most institutions transferred 2020–21 data in 2022, allowing us to verify data and provide feedback on what we needed, particularly related to basic needs services use data. Institutions transferred 2021–22 data in late 2022 and into 2023.

Arkansas

We collected data from **four community colleges** in Arkansas who were working with the BNI grantee, Arkansas Community Colleges, to transform their food pantries to basic needs Hubs. The **basic needs services data** includes individual-level records of student use of the food pantry (Hubs), with their date(s) of service. Students who accessed the Hubs received food and support on how to apply for Supplemental Nutrition Assistance Program (SNAP) and SNAP Employment and Training (E&T) services, career closets, transportation vouchers or gas cards, financial and career advising, and housing assistance (Valentine & Deal, 2023). While visiting or checking out food from the pantry, staff members talked to students about these additional supports and then students indicated whether they wanted to pursue any. We do not have data on these additional supports offered to students or the receipt of SNAP, which comes from the Arkansas Department of Health and Human Services.

To collect data, Education Northwest was included in a data-sharing agreement between the colleges and DVP-PRAXIS, the external evaluator for the grantee project. DVP-PRAXIS provided Education Northwest raw data files of food pantry use and students' demographic and outcome data with a common student ID across files.

Alabama

We collected data from **one public university** in Alabama that was working with the BNI grantee, Auburn University's Hunger Solutions Network, to systematically address food insecurity by developing and implementing action plans tied to institutional strategic plans. The **basic needs services data** includes individual-level records of student use of the food pantry. While the food pantry was the primary basic needs service at this university, the university also helped students apply for public benefits, emergency aid, clothing and hygiene supplies, and physical and mental health services. Services beyond accessing food from the food pantry were not available for the purposes of this evaluation.

To collect data, Education Northwest set up a data-sharing agreement with this university. For the first time, for the purposes of this project, the institutional research (IR) office requested food pantry use data. This data listed student names, ID (upon request from Education Northwest), and the number of times they visited the food pantry for food that term. IR staff members provided raw data files of food pantry use and students' demographic and outcome data. Education Northwest linked data files using student ID.

California

We collected data from five community colleges in California who were working with the BNI grantee, John Burton Advocates for Youth (JBAY), to implement basic needs centers on their campuses. They received mini-grants and technical assistance from JBAY for this work. The basic needs services data includes individual-level records of specific types of services requested and received by date from the colleges' basic needs centers.

To collect data, Education Northwest set up individual data-sharing agreements with each of these community colleges. For the first time, for the purposes of this project, basic needs center staff members organized the data they had on students' request and receipt of services and shared it with the IR office. Education Northwest met with basic needs center staff members and IR staff members from the five colleges multiple times to discuss the requested data elements and to collaboratively develop a data template to help meet the request. Each college provided raw data files of basic needs services request/receipt and students' demographic and outcome data. Education Northwest linked data files using student ID.

Washington

We collected data from **nine community colleges** and **one public university** in Washington who were working with the BNI grantee, United Way of King County (UWKC), to implement Benefits Hubs. The **basic needs services data** includes individual-level records of the specific type of service received by quarter and count of that service for the quarter from UWKC Benefits Hubs. Data also includes students' college name, students' UWKC project ID, and services requested.

To collect data, Education Northwest set up individual data-sharing agreements with UWKC, the Washington State Board of Community and Technical Colleges (SBCTC), and the public university. UWKC provided Education Northwest with services requested and received for students enrolled in the nine community colleges; we only used the services received data for this study. This data was anonymized and each student had a UWKC project ID. SBCTC provided demographic and outcome data for the nine community colleges, which Education Northwest linked to UWKC data using the UWKC project ID. UWKC also provided the university with these data so they could link the UWKC data to their individual student records. The university provided a linked dataset including demographic and outcome data for their institution, as well as data from UWKC. The university data were anonymized to prevent disclosure of personally identifiable information.

Appendix B. Descriptive methods and tables

Descriptive methods

We calculated descriptive statistics on the number and percentage of students who used basic needs services across the sample. We also calculated the count of services used by students who accessed any services. Given the data limitations, these results should be interpreted as slightly lower estimates of basic needs service usage. We disaggregated all descriptive statistics by student and institutional characteristics.

Descriptive data for this report are presented separately for the 2020–21 and 2021–22 academic years because of the data limitations previously described and because students had very different learning experiences in these two years. As a result of the COVID-19 pandemic, most higher education institutions shifted to distance learning in spring 2020: 84 percent of undergraduates had some or all of their classes moved to online-only instruction during this semester (Cameron et al., 2021). Many campuses remained closed for part or all of the 2020–21 school year. As a result, our data covers one academic year when many students were not on campus and were experiencing distance learning, and one academic year when most institutions returned to pre-pandemic learning environments. There were a few institutions in our study in Washington state that were still remote and transitioning to in-person instruction in the 2021–22 school year.

Descriptive tables

Table B1. Characteristics of postsecondary institutions in study sample and across the country in 2020–21

	All degree-granting institutions (n = 3,825)	All public degree-granting institutions (n = 1,632)	All public two-year degree-granting institutions (n = 990)	All institutions that provided student data (n = 20)
12-month total undergraduate enrollment	20,731,066	16,152,562	9,087,941	262,823
Percentage of students in cohort who identify as:				
American Indian/Alaska Native	0.7%	0.7%	0.7%	0.4%
Asian	6.6%	7.1%	6.4%	17.4%
Black or African American	12.3%	11.7%	12.3%	7.8%
Hispanic/Latino	21.0%	22.5%	25.9%	26.2%
Native Hawaiian/ Pacific Islander	0.3%	0.3%	0.4%	0.4%
International	2.7%	2.4%	1.3%	0.7%
Two or More Races	4.0%	4.1%	4.0%	7.5%
Unknown	4.8%	3.6%	4.2%	8.6%
White	47.5%	47.6%	44.7%	30.9%
Percentage of students who received Pell grants	31.7%	30.6%	28.8%	20.8%
Percentage of institutions with any MSI designation	16.7%	26.0%	25.7%	45.0%
Asian American and Native American Pacific-Islander-Serving Institution	2.5%	4.2%	4.3%	30.0%

	All degree-granting institutions (n = 3,825)	All public degree-granting institutions (n = 1,632)	All public two-year degree-granting institutions (n = 990)	All institutions that provided student data (n = 20)
Historically Black College or University	2.6%	3.1%	1.0%	0.0%
Hispanic-Serving Institution	11.7%	18.9%	22.3%	20.0%
Tribal College or University	0.9%	1.7%	0.0%	0.0%
Percentage of institutions by NCES Locale				
City	48.1%	38.1%	32.0%	55.0%
Suburb	24.7%	21.0%	21.5%	25.0%
Town	16.8%	24.4%	24.1%	5.0%
Rural	10.4%	16.4%	22.0%	15.0%
Percentage of institutions by Carnegie classification				
Associate's colleges	31.6%	60.7%	100.0%	90.0%
Baccalaureate colleges	13.7%	6.0%	0.0%	0.0%
Master's colleges and universities	19.1%	16.7%	0.0%	5.0%
Doctoral universities	8.5%	12.1%	0.0%	5.0%
Special focus institutions	26.3%	2.9%	0.0%	0.0%
Tribal colleges and universities	0.9%	1.7%	0.0%	0.0%

Source: Authors' analysis of data from 20 institutions and IPEDS.

Table B2. Characteristics of postsecondary institutions in study sample and across the country in 2021–22

	All degree-granting institutions (n = 3,738)	All public degree-granting institutions (n = 1,595)	All public two-year degree-granting institutions (n = 978)	All institutions that provided student data (n = 20)
12-month total undergraduate enrollment	20,083,996	15,565,542	8,715,436	218,051
Percentage of students in cohort who identify as:				
American Indian/Alaska Native	0.7%	0.7%	0.7%	0.4%
Asian	6.7%	7.2%	6.4%	18.3%
Black or African American	12.4%	11.8%	12.6%	8.2%
Hispanic/Latino	21.4%	22.9%	26.3%	26.1%
Native Hawaiian/ Pacific Islander	0.3%	0.3%	0.4%	0.4%
International	2.7%	2.3%	1.3%	0.7%
Two or More Races	4.0%	4.1%	4.0%	7.6%
Unknown	4.9%	3.8%	4.4%	4.7%
White	46.7%	46.8%	43.9%	33.5%
Percentage of students who received Pell grants*	31.7%	30.6%	28.8%	20.6%
Percentage of institutions with any MSI designation	19.1%	29.3%	28.5%	45.0%
Asian American and Native American Pacific-Islander-Serving Institution	5.0%	8.4%	8.5%	40.0%
Historically Black College or University	2.7%	3.1%	1.0%	0.0%

	All degree-granting institutions (n = 3,738)	All public degree-granting institutions (n = 1,595)	All public two-year degree-granting institutions (n = 978)	All institutions that provided student data (n = 20)
Hispanic-Serving Institution	13.5%	21.2%	24.0%	25.0%
Tribal College or University	0.9%	1.7%	0.0%	0.0%
Percentage of institutions by NCES Locale				
City	48.0%	38.4%	32.1%	55.0%
Suburb	24.4%	20.2%	21.2%	25.0%
Town	17.0%	24.8%	24.2%	5.0%
Rural	10.4%	16.5%	22.2%	15.0%
Percentage of institutions by Carnegie classification				
Associate's colleges	31.6%	61.3%	100.0%	90.0%
Baccalaureate colleges	13.5%	5.3%	0.0%	0.0%
Master's colleges and universities	19.1%	16.6%	0.0%	5.0%
Doctoral universities	8.6%	12.2%	0.0%	5.0%
Special focus institutions	26.2%	2.9%	0.0%	0.0%
Tribal colleges and universities	0.9%	1.7%	0.0%	0.0%

Source: Authors' analysis of data from 20 institutions and IPEDS.

Table B3. Among students who accessed basic needs services in 2020–21 and 2021–22, number and percentage who accessed each type of service

Type of service	Count who accessed in 2020–21	Percentage of those who accessed in 2020–21	Count who accessed in 2021–22	Percentage of those who accessed in 2021–22
Any services	4,702	100%	7,876	100%
Food assistance	3,168	67%	4,986	63%
Emergency funds	1,437	31%	3,345	42%
Housing assistance	1,055	22%	692	9%
Financial planning, employment support, or legal assistance	539	11%	231	3%
Access to technology	80	2%	209	3%
Transportation assistance	10–20	0%	32	0%
Health care, mental health, and personal care assistance	202	4%	30–40	0%
Child care assistance	<10	0%	<10	0%

Note: The sum of individual categories can exceed values in "any services" as students may access more than one service type per year. 0% values are all greater than 0 but show as 0 due to rounding.

Source: Authors' analysis of data from the 20 institutions in this study.

Table B4. Count and percentage of students who accessed any basic needs services in 2020–21 and 2021–22, by student and institutional characteristics

Group	Category	Count who accessed in 2020–21	Percent of category who accessed in 2020–21	Count who accessed in 2021–22	Percent of category who accessed in 2021–22
Overall	**Overall**	**4,702**	**1.79%**	**7,876**	**3.61%**
Student age during first term student enrolled in data (categories)	Under 18	160	0.42%	433	1.56%
	18–22	1,143	1.24%	2,721	3.09%
	23–24	443	1.77%	713	3.99%
	25–29	1,017	2.37%	1,522	4.62%
	30–39	1,136	3.18%	1,377	4.87%
	40–49	500	3.23%	635	5.42%
	50–59	205	2.96%	304	5.90%
	60+	98	1.54%	171	2.77%
Student race/ethnicity	American Indian/Alaska Native	29	3.03%	24	3.05%
	Asian	905	1.98%	2,401	6.01%
	Black	941	4.58%	814	4.55%
	Hispanic/Latinx	1,139	1.65%	2,799	4.91%
	Native Hawaiian/Pacific Islander	25	2.33%	54	5.76%
	International	15	0.77%	18	1.19%
	Two or More Races	545	2.76%	535	3.22%
	Unknown	172	0.76%	164	1.61%
	White	931	1.15%	1,067	1.46%
Student gender	Female	3,295	2.29%	4,892	4.17%
	Male	1,360	1.21%	2,896	3.03%

Group	Category	Count who accessed in 2020–21	Percent of category who accessed in 2020–21	Count who accessed in 2021–22	Percent of category who accessed in 2021–22
Student ever eligible for Pell in the academic year	No	3,122	1.36%	3,302	1.91%
	Yes	1,580	4.68%	4,574	10.20%
Student is ever degree seeking in the academic year	No	1,671	1.53%	1,562	3.14%
	Yes	2,993	2.26%	6,266	4.24%
Student is ever concurrently enrolled in high school in the academic year	No	4,588	1.89%	7,723	3.88%
	Yes	114	0.58%	153	0.80%
Student enrolled in ANY remedial coursework in the academic year	No	2,617	1.82%	5,919	3.16%
	Yes	2,085	1.75%	1,957	6.34%
Student is first-time student at institution/system in the academic year	No	3,850	2.09%	5,720	3.95%
	Yes	837	1.11%	2,106	3.13%
Student ever accessed basic needs services in a term while not enrolled in the academic year	No	4,169	1.59%	6,773	3.12%
	Yes	533	100.00%	1,103	100.00%
Sector of student's institution in the academic year	Public, 4-year or above	2,468	2.04%	1,504	1.52%
	Public, 2-year	2,234	1.58%	6,372	5.34%

Group	Category	Count who accessed in 2020–21	Percent of category who accessed in 2020–21	Count who accessed in 2021–22	Percent of category who accessed in 2021–22
Student attended minority-serving institution in the academic year	No	1,531	1.55%	1,396	1.69%
	Yes	3,171	1.93%	6,480	4.79%
Student attended Asian American and Native American Pacific-Islander-Serving Institution in the academic year	No	3,008	1.59%	1,570	1.79%
	Yes	1,694	2.31%	6,306	4.84%
Student attended Hispanic-Serving Institution in the academic year	No	3,187	2.11%	2,086	1.82%
	Yes	1,515	1.35%	5,790	5.61%
Locale of student's institution in the academic year	City	2,422	1.51%	4,307	3.06%
	Suburb	1,973	2.12%	3,132	4.54%
	Town	72	4.92%	90	6.41%
	Rural	235	3.24%	347	5.03%

Source: Authors' analysis of data from the 20 institutions in this study.

Table B5. Utilization levels of basic needs services in 2020–21 and 2021–22 among students who accessed any services, by student and institutional characteristics

		Count of services accessed in 2020–21				Count of services accessed in 2021–22			
Group	**Category**	**25th %tile**	**Median**	**Mean**	**75th %tile**	**25th %tile**	**Median**	**Mean**	**75th %tile**
Overall	**Overall**	**1**	**2**	**4.48**	**5**	**1**	**2**	**5.12**	**5**
Student age during first term student enrolled in data (categories)	Under 18	1	1	4.24	4	1	2	5.70	5
	18–22	1	2	4.39	5	1	1	4.22	4
	23–24	1	2	4.20	4	1	1	4.55	4
	25–29	1	2	4.46	5	1	1	5.31	5
	30–39	1	2	4.55	5	1	2	6.07	7
	40–49	1	2	4.50	5	1	2	5.59	7
	50–59	1	2	5.02	6	1	3	6.67	8.5
	60+	1	3	5.51	8	1	3	6.33	9
Student race/ethnicity	American Indian/ Alaska Native	1	2	4.10	3	1	2	7.04	7
	Asian	1	2	5.26	8	1	2	5.22	6
	Black	1	2	4.06	4	1	2	5.98	5
	Hispanic/Latinx	1	2	3.98	5	1	1	3.57	4
	Native Hawaiian/ Pacific Islander	1	1	6.84	7	1	1	6.85	3
	International	1	1	2.67	4	3	4.5	5.22	7

		Count of services accessed in 2020–21				Count of services accessed in 2021–22			
Group	**Category**	**25th %tile**	**Median**	**Mean**	**75th %tile**	**25th %tile**	**Median**	**Mean**	**75th %tile**
	Two or More Races	1	2	4.90	5	1	2	8.30	10
	Unknown	1	1.5	3.63	3	1	2	8.37	12
	White	1	2	4.66	5	1	1	6.05	5
Student gender	Female	1	2	4.55	5	1	2	5.48	6
	Male	1	2	4.38	5	1	1	4.53	4
Student ever eligible for Pell in the academic year	No	1	2	4.18	4	1	2	5.78	6
	Yes	1	2	5.08	6	1	1	4.64	4
Student is ever degree seeking in the academic year	No	1	2	4.31	5	1	2	4.35	5
	Yes	1	2	4.61	5	1	1	5.33	5
Student is ever concurrently enrolled in high school in the academic year	No	1	2	4.46	5	1	2	5.10	5
	Yes	1	1	5.17	8	1	1	5.93	4
Student enrolled in ANY remedial coursework in the academic year	No	1	2	4.57	5	1	1	4.91	5
	Yes	1	2	4.37	5	1	2	5.75	6
Student is first-time student at institution/system in the academic year	No	1	2	4.55	5	1	2	5.76	6

		Count of services accessed in 2020–21				Count of services accessed in 2021–22			
Group	**Category**	**25th %tile**	**Median**	**Mean**	**75th %tile**	**25th %tile**	**Median**	**Mean**	**75th %tile**
	Yes	1	2	4.22	4	1	1	3.44	4
Student ever accessed basic needs services in a term while not enrolled	No	1	2	3.89	4	1	1	3.89	4
	Yes	2	7	9.08	14	2	7	12.67	16
Sector of student's institution in the academic year	Public, 4-year or above	1	2	5.47	7	1	4	11.74	17
	Public, 2-year	1	1	3.39	4	1	1	3.55	4
Student attended minority-serving institution in the academic year	No	1	1	4.01	4	1	2	8.39	10
	Yes	1	2	4.71	6	1	1	4.41	4.5
Student attended Asian American and Native American Pacific-Islander-Serving Institution in the academic year	No	1	2	4.06	4	1	3	8.20	10
	Yes	1	2	5.23	6	1	1	4.35	4
Student attended Hispanic-Serving Institution in the academic year	No	1	2	4.69	5	1	2	10.08	13
	Yes	1	2	4.04	5	1	1	3.33	4

		Count of services accessed in 2020–21				Count of services accessed in 2021–22			
Group	**Category**	**25th %tile**	**Median**	**Mean**	**75th %tile**	**25th %tile**	**Median**	**Mean**	**75th %tile**
Locale of student's institution in the academic year	City	1	2	4.67	5	1	1	5.40	4
	Suburb	1	2	4.17	5	1	2	4.89	6
	Town	1	1	1.46	1	1	1	1.50	1
	Rural	1	3	6.06	7	1	2	4.55	6

Source: Authors' analysis of data from the 20 institutions in this study.

Table B6. Utilization levels of basic needs services in 2020–21 and 2021–22 among students who accessed any services, by service type

	Count of services accessed in 2020–21				Count of services accessed in 2021–22			
Type of service	**25th %tile**	**Median**	**Mean**	**75th %tile**	**25th %tile**	**Median**	**Mean**	**75th %tile**
Any services	1	2	4.48	5	1	2	5.12	5
Food assistance	1	2	4.27	7	1	3	5.18	8
Emergency funds	1	1	2.14	2	1	1	1.29	1
Housing assistance	1	1	2.05	2.5	1	1	1.21	1
Financial planning, employment support, or legal assistance	1	1	1.18	1	1	1	1.32	1
Access to technology	1	1	1.00	1	1	1	1.16	1
Transportation assistance	1	1	1.27	1	1	1	1.30	2
Health care, mental health, and personal care assistance	1	1	1.00	1	1	1	1.00	1
Child care assistance	1	1	1.17	1	1	1	1.03	1

Source: Authors' analysis of data from the 20 institutions in this study.

Appendix C. Impact methods and results

General estimation strategy

Because we observe access to services and academic outcomes for the same students over multiple terms (and in some cases, years), we estimate a series of regression models with individual fixed effects to examine the impact of accessing services on student outcomes. By using this strategy, individual students serve as their own control group (conceptually, we compare outcomes for a student in term(s) in which they access services compared to outcomes for the same student in term(s) they do not access services). This approach allows us to control for all fixed (time-invariant) student-level characteristics, some of which may be correlated with student access to services and outcomes (e.g., intrinsic motivation, social capital, tenacity, and wealth) yet are unobservable or unavailable in our data, to estimate the impact of access to services on student outcomes.[12]

To strengthen our approach, we also control for time-variant student-level attributes (which could be correlated with access and outcomes), including whether the student received a Pell grant during the academic year, whether the student was enrolled in any remedial coursework during the academic year, and whether the student was enrolled in their college for the first-time during the academic year.[13] We also control for the total number of services that a student received during that term, so that our estimates capture the average impact of accessing services—net of the total number of times a student accessed services that term. If a student accessed services in multiple terms, we are comparing term(s) of similar access to term(s) of no access.

[12] The sample we use to examine the impact of access on outcomes in the same term includes all students with non-missing data who were enrolled any time during the 2020–21 and 2021–22 academic years. Because our regression models use individual fixed effects, our estimates are derived from students with more than one term of enrollment during the study period. Students who are only enrolled for one term do not contribute to the estimate. Across our sample, 36 percent of students (14% of all student-term observations) are only enrolled for one term. To ensure our findings are not driven by the omission of this group of students, we estimate a series of robustness checks. Our estimates are consistent across model specifications and confirm that our findings are not driven by changes in the sample. We obtain smaller coefficients in models that include student fixed effects, and we show that this is almost entirely the result of changes in our estimation strategy and not due to changes in sample (see table B5).

[13] We do not control for whether the student is degree-seeking in the academic year because this variable is always missing for one college in our sample. However, we estimate numerous robustness checks, and our results are consistent regardless of this variable's inclusion.

All models also control for academic term and year, which accounts for any shocks/changes experienced across all colleges during the 2020–21 and 2021–22 academic years (e.g., changes in instruction and provision of basic needs services due to the COVID-19 pandemic). Because students do not change colleges in our data, the student fixed effects serve as college fixed effects as well, controlling for all time-invariant college characteristics (e.g., college type and locale). Though not included in our primary models, our findings are also robust to the inclusion of institution-specific time trends, which effectively control for shocks/changes over time that are specific to each college (e.g., changes in the implementation status of a college's basic needs initiative).

Depending on model specifications, our primary analytic samples include 785,705 to 919,272 observations for same-term estimates and 259,469 to 321,731 observations for next-term estimates. These samples are sufficiently large to detect very small effects, so the omission of any basic needs services data (as described above in data limitations) should not affect the statistical significance of our results. The size of our estimates could be biased if we believed the relationship between access and outcomes to be systematically different for students who were dropped from our sample, but even so, this is a relatively small number of observations, and we would expect any changes to be very minimal.

Our estimates can be interpreted as causal if we believe student access to basic needs services is random after accounting for fixed student characteristics, some time-varying student attributes, term, and institution trends. We anticipate this is not entirely true, as there are likely some time-varying student attributes related to access and outcomes that we are unable to include in our models (e.g., changes in student income or need during the academic term). While our results may contain some errors due to student selection we cannot account for, they are much less biased than other regression approaches with observational data.

Impact of access on outcomes in the same term

Table C1. Academic outcomes are higher for students who access basic needs services in the same term

	(1) Credits attempted in term	(2) Credits earned in term	(3) Credits attempted in term	(4) Credits earned in term	(5) Term GPA
Any type of services	0.87***	0.94***	0.75***	0.74***	0.02
	(0.05)	(0.06)	(0.05)	(0.06)	(0.01)
Food assistance	1.00***	1.19***	0.99***	1.10***	0.03*
	(0.07)	(0.07)	(0.07)	(0.08)	(0.02)
Health care, mental health, and personal care assistance	0.32	-0.16	0.31	-0.02	0.03
	(0.29)	(0.32)	(0.33)	(0.36)	(0.08)
Access to technology	1.12***	0.80**	0.94**	0.81**	-0.05
	(0.28)	(0.29)	(0.29)	(0.31)	(0.07)
Housing assistance	0.58***	0.77***	0.39***	0.56***	0.11***
	(0.11)	(0.13)	(0.12)	(0.13)	(0.03)
Transportation assistance	0.52	0.03	0.08	-0.46	-0.09
	(0.75)	(0.59)	(0.67)	(0.57)	(0.18)
Financial planning, employment support, or legal assistance	0.17	0.20	0.19	0.24	0.11**
	(0.17)	(0.18)	(0.17)	(0.18)	(0.04)
Emergency funds	0.42***	0.38***	0.23**	0.13	-0.01
	(0.07)	(0.08)	(0.07)	(0.08)	(0.02)
N	919,272	919,272	758,705	758,705	758,705

Note: Table displays OLS regression coefficients and cluster-robust standard errors (clustered at the student).

** p<0.01; *** p<0.001 communicate the results of t-tests that examine whether the coefficient is different than zero. The dependent variable, as specified in the table header, is regressed on the coefficient of interest (e.g., an indicator capturing whether a student received any type (or a specific type) of service, as specified in the rows). All models include indicators for whether the student received a Pell grant during the academic year, whether the student was enrolled

in any remedial coursework during the academic year, and whether the student was enrolled in their college for the first-time during the academic year, the total number of services the student accessed during the term, student, term, and college fixed effects. Each cell represents a separate model (i.e., the impact of each type of service is estimated individually). Models in columns 1 and 2 include all students with non-missing values for credits attempted and credits earned. Models in columns 3 through 5 restrict the sample to only include students with non-missing values for all outcomes: credits attempted, credits earned, and cumulative term GPA. We do not present results for child care assistance due to an insufficient number of observations.

Source: Authors' analysis of data from the 20 institutions in this study.

Table C2. Academic outcomes are higher for Pell grant recipients who access basic needs services in the same term

	(1) Credits attempted in term	(2) Credits earned in term	(3) Credits attempted in term	(4) Credits earned in term	(5) Term GPA
Any type of services	0.63***	0.70***	0.45***	0.44***	0.02
	(0.07)	(0.08)	(0.07)	(0.08)	(0.02)
Food assistance	0.64***	0.94***	0.62***	0.87***	0.08***
	(0.10)	(0.12)	(0.10)	(0.11)	(0.02)
Health care, mental health, and personal care assistance	0.29	-0.18	0.07	-0.08	0.04
	(0.41)	(0.41)	(0.43)	(0.41)	(0.11)
Access to technology	0.83*	0.64	0.61	0.64	0.06
	(0.36)	(0.37)	(0.35)	(0.37)	(0.09)
Housing assistance	0.12	0.45*	-0.01	0.17	0.13***
	(0.16)	(0.18)	(0.17)	(0.18)	(0.04)
Transportation assistance	0.34	0.55	0.38	-0.24	0.12
	(0.86)	(0.71)	(0.78)	(0.62)	(0.19)
Financial planning, employment support, or legal assistance	-0.23	-0.44	-0.18	-0.19	0.06
	(0.28)	(0.30)	(0.28)	(0.29)	(0.05)
Emergency funds	0.44***	0.31***	0.20*	-0.00	-0.04
	(0.08)	(0.09)	(0.08)	(0.09)	(0.02)

	(1) Credits attempted in term	(2) Credits earned in term	(3) Credits attempted in term	(4) Credits earned in term	(5) Term GPA
N	162,583	162,583	148,669	148,669	148,669

Note: Table displays OLS regression coefficients and cluster-robust standard errors (clustered at the student).

* p<0.05; ** p<0.01; *** p<0.001 communicate the results of t-tests that examine whether the coefficient is different than zero. The dependent variable, as specified in the table header, is regressed on the coefficient of interest (e.g., an indicator capturing whether a student received any type (or a specific type) of service, as specified in the rows). All models also include indicators for whether the student received a Pell grant during the academic year, whether the student was enrolled in any remedial coursework during the academic year, and whether the student was enrolled in their college for the first-time during the academic year, the total number of services the student accessed during the term, student, term, and college fixed effects. Each cell represents a separate model (i.e., the impact of each type of service is estimated individually). Models in columns 1 and 2 include all students with non-missing values for credits attempted and credits earned. Models in columns 3 through 5 restrict the sample to only include students with non-missing values for all outcomes: credits attempted, credits earned, and cumulative term GPA. We do not present results for child care assistance due to an insufficient number of observations.

Source: Authors' analysis of data from the 20 institutions in this study.

Impact of count of services access on outcomes in the same term

Table C3. Academic outcomes continue to improve with increases in services received in the same term

	(1) Credits attempted in term	(2) Credits earned in term	(4) Credits attempted in term	(5) Credits earned in term	(6) Term GPA
Access any services this term	0.54***	0.66***	0.40***	0.44***	0.03
	(0.08)	(0.08)	(0.08)	(0.08)	(0.02)
Count of services accessed this term	0.25***	0.20***	0.26***	0.23***	-0.01
	(0.04)	(0.04)	(0.05)	(0.05)	(0.01)
(Count of services accessed this term)^2	-0.02***	-0.02***	-0.02***	-0.02***	0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Vertex	6.25	5.00	6.50	5.75	–
N	919,272	919,272	758,705	758,705	758,705

Note: Table displays OLS regression coefficients and cluster-robust standard errors (clustered at the student).

*** p<0.001 communicates the results of t-tests that examine whether the coefficient is different than zero. The dependent variable, as specified in the table header, is regressed on an indicator for whether the student received any services this term, the count of any services the student received this term, and the square of the count of any services the student received this term. All models also include indicators for whether the student received a Pell grant during the academic year, whether the student was enrolled in any remedial coursework during the academic year, and whether the student was enrolled in their college for the first-time during the academic year, student, term, and college fixed effects. The table also displays the vertex for each model, which is the estimated point at which the relationship between count of services accessed and outcomes turns from positive to negative. Models in columns 1 and 2 include all students with non-missing values for credits attempted and credits earned. Models in columns 3 through 5 restrict the sample to only include students with non-missing values for all outcomes: credits attempted, credits earned, and cumulative term GPA.

Source: Authors' analysis of data from the 20 institutions in this study.

Impact of access on outcomes in the next term

Table C4. The impact of basic needs services on outcomes in the next term is mixed

	(1) Credits attempted in next term	(2) Credits earned in next term	(3) Credits attempted in next term: NM GPA	(4) Credits earned in next term: NM GPA	(5) GPA in next term: NM GPA
Access ANY SERVICES this term	0.12	0.26*	0.18	0.19	0.01
	(0.10)	(0.11)	(0.11)	(0.12)	(0.02)
Access ANY SERVICES next term	1.05***	1.19***	0.98***	1.04***	-0.03
	(0.11)	(0.12)	(0.12)	(0.12)	(0.02)
Access ANY SERVICES this term*	-0.37*	-0.38*	-0.43*	-0.34	0.06
Access ANY SERVICES next term	(0.16)	(0.17)	(0.17)	(0.18)	(0.03)
Access FOOD this term	-0.74***	-0.41**	-0.78***	-0.56***	-0.02
	(0.13)	(0.14)	(0.15)	(0.15)	(0.03)
Access FOOD next term	0.97***	1.22***	0.98***	1.13***	-0.04
	(0.12)	(0.13)	(0.13)	(0.14)	(0.02)
Access FOOD this term*	-0.12	-0.30	-0.16	-0.20	0.09*
Access FOOD next term	(0.19)	(0.20)	(0.22)	(0.23)	(0.04)
Access HEALTH this term	-0.88	-0.14	-1.10	-0.27	0.23*
	(0.46)	(0.45)	(0.58)	(0.52)	(0.12)
Access HEALTH next term	-0.33	-1.14*	-0.19	-0.84	0.10
	(0.42)	(0.47)	(0.53)	(0.57)	(0.13)
Access HEALTH this term*	1.26	2.12*	1.21	1.67	-0.11
Access HEALTH next term	(0.84)	(0.80)	(0.99)	(0.93)	(0.22)
Access TECHNOLOGY this term	-0.62	-0.57	-0.92	-1.32	0.24
	(0.79)	(0.79)	(0.84)	(0.88)	(0.17)
Access TECHNOLOGY next term	0.34	-0.24	0.05	-0.24	-0.17
	(0.55)	(0.62)	(0.59)	(0.65)	(0.15)

	(1) Credits attempted in next term	(2) Credits earned in next term	(3) Credits attempted in next term: NM GPA	(4) Credits earned in next term: NM GPA	(5) GPA in next term: NM GPA
Access TECHNOLOGY this term*	0.26	2.77*	0.37	3.19*	0.27
Access TECHNOLOGY next term	(1.27)	(1.30)	(1.55)	(1.36)	(0.36)
Access HOUSING this term	0.76***	0.75***	0.80***	0.71***	0.05
	(0.19)	(0.21)	(0.19)	(0.22)	(0.04)
Access HOUSING next term	0.41*	0.62**	0.20	0.35	0.09
	(0.19)	(0.22)	(0.21)	(0.23)	(0.05)
Access HOUSING this term*	-0.23	0.18	0.03	0.40	0.03
Access HOUSING next term	(0.38)	(0.42)	(0.39)	(0.43)	(0.08)
Access FINANCIAL this term	0.88***	1.22***	0.88***	1.20***	0.17***
	(0.24)	(0.27)	(0.25)	(0.27)	(0.05)
Access FINANCIAL next term	0.26	0.28	0.36	0.46	0.04
	(0.31)	(0.34)	(0.31)	(0.33)	(0.06)
Access FINANCIAL this term*	-1.39*	-2.30**	-1.37*	-2.38**	-0.20
Access FINANCIAL next term	(0.59)	(0.71)	(0.62)	(0.74)	(0.17)
Access EMERGENCY this term	0.77***	0.70***	0.74***	0.66***	0.01
	(0.13)	(0.14)	(0.13)	(0.15)	(0.03)
Access EMERGENCY next term	0.47**	0.40*	0.30	0.27	-0.01
	(0.18)	(0.20)	(0.18)	(0.21)	(0.04)
Access EMERGENCY this term*	0.13	0.46	0.27	0.52	0.06
Access EMERGENCY next term	(0.30)	(0.34)	(0.31)	(0.33)	(0.07)
N	321,731	321,731	259,469	259,469	259,469

ANY SERVICES - Any type of services | FOOD - Food assistance | HEALTH - Health care, mental health, and personal care assistance
TECHNOLOGY - Access to technology | HOUSING - Housing assistance | FINANCIAL - Financial planning, employment support, or legal assistance
EMERGENCY - Emergency funds

Note: Table displays OLS regression coefficients and cluster-robust standard errors (clustered at the student).

* p<0.05; ** p<0.01; *** p<0.001 communicate the results of t-tests that examine whether the coefficient is different than zero. The dependent variable, as specified in the table header, is regressed on an indicator for whether the student received services, an indicator for whether the student received services in the next term, and the interaction term between services received in this term and the next term. All models also include indicators for whether the student received a Pell grant during the academic year, whether the student was enrolled in any remedial coursework during the academic year, and whether the student was enrolled in their college for the first-time during the academic year, the total number of services the student accessed during this term and the next term, student, term, and college fixed effects. Models in columns 1 and 2 include all students with non-missing values for credits attempted and credits earned. Models in columns 3 through 5 restrict the sample to only include students with non-missing values for all outcomes: credits attempted, credits earned, and cumulative term GPA. We do not estimate models for child care assistance or transportation assistance due to an insufficient number of observations.

Source: Authors' analysis of data from the 20 institutions in this study.

Robustness checks. Impact of access on outcomes in the same term

Table C5. The impact of accessing basic needs services on credits earned is consistent across model specifications

	(1)	(2)	(3)	(4)
Any type of services	1.33***	1.26***	0.74***	0.74***
	(0.06)	(0.06)	(0.06)	(0.06)
Food assistance	1.73***	1.46***	1.10***	1.10***
	(0.08)	(0.08)	(0.08)	(0.08)
Health care, mental health, and personal care assistance	0.01	-0.15	-0.02	-0.02
	(0.44)	(0.45)	(0.36)	(0.36)
Access to technology	0.90**	0.77*	0.81**	0.81**
	(0.33)	(0.34)	(0.31)	(0.31)
Housing assistance	0.19	0.21	0.56***	0.56***
	(0.14)	(0.15)	(0.13)	(0.13)
Transportation assistance	1.00	0.55	-0.46	-0.46
	(0.54)	(0.61)	(0.57)	(0.57)
Financial planning, employment support, or legal assistance	0.34	0.40	0.24	0.24
	(0.23)	(0.23)	(0.18)	(0.18)

	(1)	(2)	(3)	(4)
Emergency funds	0.46*** (0.09)	0.59*** (0.09)	0.13 (0.08)	0.13 (0.08)
Sample	All students	Students with two or more terms of enrollment	All students	Students with two or more terms of enrollment
Student controls for age, gender, race/ethnicity	YES	YES	NO	NO
Student fixed effects	NO	NO	YES	YES
N	758,610	662,711	758,705	662,769

Note: Table displays OLS regression coefficients and cluster-robust standard errors (clustered at the student).

** p<0.01; *** p<0.001 communicate the results of t-tests that examine whether the coefficient is different than zero. The dependent variable, credits attempted in the term, is regressed on the coefficient of interest (e.g., an indicator capturing whether a student received any type (or a specific type) of service, as specified in the rows). All models also include indicators for whether the student received a Pell grant during the academic year, whether the student was enrolled in any remedial coursework during the academic year, whether the student was enrolled in their college for the first-time during the academic year, the total number of services the student accessed during the term, term, and college fixed effects. Each cell represents a separate model (i.e., the impact of each type of service is estimated individually). Additional specifications are as follows:

Models 1 and 2 include control variables for fixed student characteristics, which include student age, gender, and race/ethnicity, in lieu of student fixed effects. Model 1 includes all students with at least one term of enrollment. Model 2 includes all students with two or more terms of enrollment. The coefficients reported in model 2 are only slightly different than those reported in model 1, which we can attribute to changes in the sample.

Models 3 and 4 replace student control variables with student fixed effects, which account for all fixed student characteristics (including those unobservable in our data). Model 3 includes all students with at least one term of enrollment. Model 4 includes all students with two or more terms of enrollment. The estimates are identical between models 3 and 4 because students with only one term of enrollment do not contribute to the estimate.

We do not present results for child care assistance due to an insufficient number of observations.

Source: Authors' analysis of data from the 20 institutions in this study.

Appendix D. Retention analysis and results

General estimation strategy

We estimate a series of regression models to examine the relationship between accessing services in the fall term and returning to the following winter/spring term at the same institution. Thirteen of the 20 institutions in our study offer a winter term. For students attending these institutions, retention is measured from fall to winter. For students attending the remaining seven institutions, which do not offer a winter term, retention is measured from fall to spring.

These analyses do not allow for the inclusion of individual fixed effects due to limitations that stem from the number of possible observations per individual and the nature of the outcome. Instead, we include controls for a robust set of student-level determinants of access to services and retention and include college fixed effects to limit comparisons to observationally similar students who attend the same colleges.

In addition to the indicator of interest (e.g., student access to any type of basic needs services in the fall term), all models include controls for student age, gender, race/ethnicity, total credits attempted in the fall term, and indicators for receipt of Pell grant, dual enrollment, enrollment in college-level coursework, and first-time enrollment in the college in the academic year. Analyses that pool the fall 2020 and fall 2021 terms include a year indicator. All models include college fixed effects.

Our estimation strategy controls for many observable student characteristics and all fixed—observable and unobservable—college characteristics. Even so, this approach may not fully account for all differences between students who access services and students who do not. To the extent that our models omit variables that are correlated with accessing services and retention, our estimates will over or understate the true effect of accessing services on retention.

In addition to the limitation noted above, the outcome may not be an accurate measure of retention because our study data do not include information about student degree/credential completion. Thus, we do not know if a student does not show up in a term because they dropped out and were not planning to return to higher education at all or completed their intended degree/credential prior to the term in question. We are also unable to measure student persistence (whether the student returns to any postsecondary institution) because we only have data from the 20 institutions included in the study.

To limit the possibility that we erroneously count a student who earned a degree/credential as not returning, we restrict our analysis to retention from fall to the following winter/spring term. We also conduct additional analyses that restrict our sample to students who enrolled at their institution for the first time in the fall term, as these students would be very unlikely to complete their degree in the same term, and we find similar results.

Relationship between access in fall term and retention to winter/spring term

Table D1. Retention rates are higher for students who access basic needs services

	(1) Retention from fall 2020 to winter/ spring 2021	(2)	(3) Retention from fall 2021 to winter/ spring 2022	(4)	(5) Retention from fall 21/22 to winter/ spring 21/22 (pooled)	(6)
Any type of services	0.07***	0.09**	0.02	0.04	0.04	0.05
	(0.01)	(0.02)	(0.03)	(0.08)	(0.02)	(0.06)
Food assistance	0.08***	0.12***	0.06***	0.13**	0.06***	0.12**
	(0.01)	(0.03)	(0.01)	(0.04)	(0.01)	(0.03)
Health care, mental health, and personal care assistance	0.18***	0.27**	0.03	–	0.16***	0.23**
	(0.05)	(0.07)	(0.13)	–	(0.03)	(0.07)
Access to technology	0.28***	–	-0.03	-0.02	0.07	0.08
	(0.03)	–	(0.02)	(0.03)	(0.07)	(0.13)
Housing assistance	0.07**	0.01	0.05*	0.05	0.07**	0.04
	(0.02)	(0.04)	(0.02)	(0.06)	(0.02)	(0.03)
Transportation assistance	0.28***	–	–	–	0.26***	0.12
	(0.01)	–	–	–	(0.01)	(0.16)
Financial planning, employment support, or legal assistance	0.06	0.00	0.09*	–	0.07**	0.02
	(0.04)	(0.05)	(0.03)	–	(0.02)	(0.07)
Emergency funds	0.06*	0.10	-0.06*	-0.08*	-0.02	-0.04
	(0.02)	(0.05)	(0.02)	(0.03)	(0.03)	(0.04)
Sample	All students	First-time students	All students	First-time students	All students	First-time students
Year indicator	NO	NO	NO	NO	YES	YES
N	171,110	39,832	153,076	41,965	324,186	81,797

Note: Table displays OLS regression coefficients and cluster-robust standard errors (clustered at the institution).

* p<0.05; ** p<0.01; *** p<0.001 communicate the results of t-tests that examine whether the coefficient is different than zero. The dependent variable, as specified in the table header, is regressed on the coefficient of interest (e.g., an indicator capturing whether a student received any type or a specific type of

service, as specified in the rows). All models also include student age, gender, race/ethnicity, total credits attempted in the fall term, and indicators for receipt of Pell grant, dual enrollment, enrollment in college-level coursework, and first-time enrollment in the college in the academic year. Pooled analyses (models 5 and 6) include a year indicator, and all models include college fixed effects. Each cell represents a separate model (i.e., the relationship between each type of service and the outcome is estimated individually). Models in columns 1, 3, and 5, include all students enrolled in the fall term. Models in columns 2, 4, and 6 restrict the sample to first-time students enrolled in the fall term. We do not present results for child care assistance due to an insufficient number of observations. Other coefficients are suppressed when fewer than 10 students accessed the service type in the fall term.

Source: Authors' analysis of data from the 20 institutions in this study.